



IN THE LIGHT OF CULTURAL FUNCTIONS, A RESEARCH ON CRITERIA OF PRISONS' RE-EVALUATION

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Abstract.

Introduction:

Prisons have spatial organizations whose main functions are observing, controlling, cutting off the contact between the internal and external world. In this sense, they are different from other building types. Choices of the prisoners do not have any effect on their design processes. When it is looked at a jail from the external world, most people are terrified of even walking in front of it or entering in it. This situation affects prisons' forms, locations, physical, psychological and sociological relations with the city and people who are placed in it. Taking above aspects and comfort vectors like usability, necessity, capacity, etc. into consideration, some prisons have lost their main functions. Those prisons have been re-evaluated and served the public from different perspectives.

Developments:

Prisons that are transformed to public buildings may come from several different physical types, for instances: educational, cultural, accommodation, etc. In contrast to these physical types, prisons consist of painful memories and lots of exemplary experiences that are never lost associated with their main features. Due to the fact that cultural type would reflect most prisons' true-life memories to public and city, it could be chosen as the most appropriate re-evaluating mechanism. There are some examples that are examined in the study, coming from Turkey and world's well-known places regarding cultural functions in terms of crime, prisoner and prison as an architectural building; relations between prisons and city, prisons and people live in the city.

Remarks and Conclusion:

Main focus of this study reveals whether there are common criteria exist or determined while examples of prisons that are re-evaluated in the light of cultural functions. During the investigation comparing of different prison types to each other will reveal the common typological, functional and morphological characteristics, which will led to the occurrence of a model for future interferences.

1 INTRODUCTION

Prisons that are important types of public buildings lose some of their functions by time. In this study, starting with concepts of crime and punishment, reevaluation and reintegration of prisons that make certain changes on building typology and city morphology are examined through selected examples.

The study examines differing prison types comparatively in light of cultural functions and has researched to find whether any criterion or array of criteria that can be common for the basic reasoning for transformation.

2 CONCEPTS OF CRIME, CRIMINAL AND PUNISHMENT THROUGH HISTORY

The formation of societies that has made rules organizing life has become essential for communal life. Rules organizing life has led to emergence of new concepts of breaking rules, crime and criminal. Dictionary of sociology defines crime as “an offence which goes beyond the personal and into public sphere, breaking prohibitory rules or laws, to which legitimate punishments or sanctions are attached, and which requires the intervention of a public authority” [1]. German legal scholar Rudolf Von Jhering defines crime as “any offence against the conditions of living as a society.”[2]. While these definitions socially review the concept of crime in general Prof. Dr. Timur Demirbaş states that a general description of crime is not provided in criminal codes and thus such a definition is not necessary [3].

Criminal is the person who performs actions or behaviors against social norms that are within the definition of crime. In general any person that commits any type of crime is called “criminal”. However criminals are classified according to different views with regards to specific properties. Italian criminologists Enrico Ferri and Cesare Lombroso study criminals under five groups. These are; born criminals, epileptic criminals, criminal of passion, occasional criminals and criminals with mental disease or mental vulnerability [4]. Modern classification examines criminals in five different groups from the aspects of reasons causing the crime (etiological), psychological and psychiatrically (characterological), clinically, direction and quality of crime and punishment policy, correction and rehabilitation [4, 5]. The most important benefit of classifying criminals is the facilitation of determining the most appropriate punishment for each class.

As crime is seen as unfairness, societies have started to search for ways to remedy such unfairness. Punishment concept has arisen to serve justice. In his book "Punishment and Deterrence", Bentham states that each punishment causes harm and harbors evil [6]. An inspection prehistoric ages reveals that punishment is equal to retribution. Therefore suffering the criminal for extended times and mutilation, etc. has been used. Until Middle Ages, these torture methods are known as eye for an eye. And the perpetrator is locked up until the punishment finalized. By the 18th century, locking away the criminals away from the society and life has in itself become a punishment and started to replace eye for an eye punishments. Such casting out were generally performed by sending prisoners away to jails, exile or galleys. In the 19th century, The Enlightenment has influenced positive developments in execution of punishments. The idea that the most important birthright of humans is to live humanely has evolved. With 20th century, the idea of humanization of punishment, which took root with The Enlightenment, has slowly started to grow [7].

In this context, the punishment method that survives until today and will survive into the future is imprisonment. Imprisonment, where the criminal is locked away from the outside world requires specialized space according to execution method.

3 HISTORIC DEVELOPMENT OF IMPRISONMENT AND PRISON SPACE

After the Dark Ages where primitive methods were used for punishment, the punishments were mainly focused on keeping the prisoners in confined spaces. Until 1250 cities used prisons to meet their needs. These locations were located in castles, city gates, guild organizations and sometimes in places of worship [8]. However, none of these fully have the properties of prisons. Prison sentence became a clear method of punishment when Amsterdam Penal Court decreed to create a space to rehabilitate a prisoner instead of executing as was the custom of the day in 1588 [9]. However this execution of sentence started to give rise to many injustices. Lack of certain standardization in either the trial phase and execution phase in pursuit of justice and uncertainties in inspection of evidence has created tensions in the population. The request was to punish the criminal instead of revenge, to execute the sentences more mildly and proportionality of the sentences to crimes. With the increase in riots against injustice, certain reforms have occurred in Europe. In “Views on Criminal Justice”, Legal scholar Le Trosne have put forth some views that have changed the fundamentals of Criminal Law in 1777. Foucault, in his book “Birth of Prison” summarized Le Trosne’s views as: [7]

- Prerogatives of the Crown should be reduced
- Judge should be a just arbiter between the criminals and the society
- Laws should be “fixed, constant and determined in the most precise way”
- Criminals shall know, to what they are exposed
- Magistrates should be nothing more than the organ of the law

Prison sentence is proposed to be practiced with changing sentence times in proportion to the dimensions of the crime the person committed and with support of additional punishment methods. However, imprisonment as the punishment itself has been criticized by some reformists. The reasons were destroying distinctiveness of the crimes, lack of being exemplary to public, being incentive to crime rather than discouraging since the criminals will not be busy with any activity and most importantly being costly. Despite criticism, prison sentence has been the most widely used method among all punishment types. Special spaces have been designed to isolate the criminals from the society and leave them to themselves. Therefore prisons have been built close to the outer borders of the cities, especially in the beginning. [7]

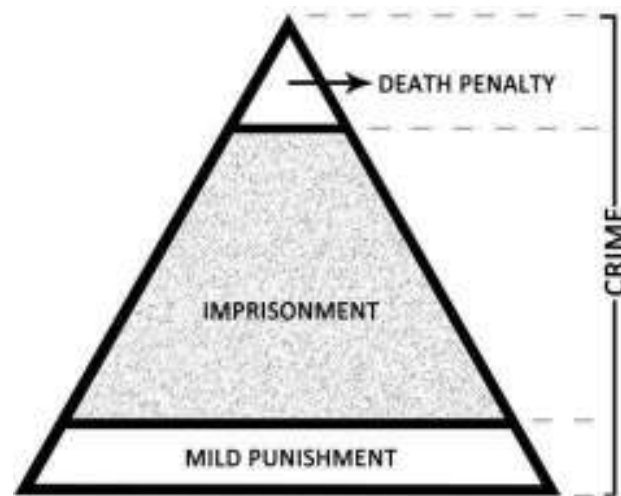


Figure 1: The proportion of the penalties according to crime

The rise of the number of criminals, crowding in the prisons and worsening of conditions after this change has led criminology scholars into several pursuits. In this process known as Enlightenment Age reforms, John Howard has defined many properties of prisons. Accordingly, violent criminals should be separated from petty criminals, man should be separated from women and children should be separated from grown criminals. Along with religious teachings and education, rehabilitation such as working or serving should be practiced. These functions have influenced the emergence of criminal architecture during the reform process [9].

3.1 Basic forms that influence prison architecture in the world with the Enlightenment Age (Morphology)

The Prison reform starting in Europe with the Enlightenment Age has spread to all the world and many forms have been tried. Starting in the 20th century five basic forms are mentioned for prison architecture. These are campus, telephone pole, radial, courtyard and panoptic forms. After the second half of the 20th century, however, there have been attempts outside these forms. These are modular system which brings together a multiple use of a geometrical form in a spatial and functional pattern and skyscraper model that is generally in the city centers and built as high rises [9].

THE MORPHOLOGY OF PRISONS			
	Basic Form	Examples of Prisons	Place
CAMPUS FORM		New Jersey Reformatory	Jamundale, USA
		Wentland Goal	Wentland, Australia
TELEPHONE POLE		Kingston Penitentiary	Ottawa, Canada
		Wentworth Street Prison	London, England
		St. Pierre Departmental Prison (Pauze-Les-Bains)	Paris, France
RADIAL FORM		North County Jail	London
		Est. De Justice House of Correction	Brazil
		Eastern State Penitentiary	Philadelphia, USA
		Prison Modelo	Madrid, Spain
		Penitentiary Prison	London, England
COURTYARD FORM		Newgate Prison	London, England
		Kaiser Prison	Germany
PANOPTIC FORM		Penitentiary	Designed but not built
		Castro Prison of Santa Fe de Bogota	Colombia, Bogota
		First Western Penitentiary	Dayton, USA
		Second Panoptic Prison	Madrid
		National Penitentiary	Madrid
MODULAR		Federal Correctional Institution	Phoenix, Arizona, USA
		Architect Prison	New Zealand

Figure 2: Prison examples of basic forms

3.2 Change of prisons in our country and prison typologies after the Republic

Prison designs that were rapidly advancing in the world started to be discussed only during Tanzimat Reform Era. The first major step to moving towards freedom restricting punishments was turning İbrahim Pasha Palace into a prison. After the proclamation of the Republic, many novelties were adopted with the Turkish Republic Law issued in 1926 [9].

Early Republic Era prisons were based on ward-communal system. In these overcrowded prisons problems such as hygiene, epidemics, dysfunctional airing yards and lack of infrastructure arose. In 1943, General Directorate of Prisons and Holding Facilities initiated a reform and has adopted a new typology system that has laid the foundations for Turkish prison system [9]. The practice aiming to reduce security problems has adopted a system that names prisons with letters according to their architectural organization and building size in order to establish standardization in prisons. Until 1970, A, B and C type prisons have been built and a regular ward system has been established. In these prisons prisoners served their time only by restricting their freedom. In 1990s, while these types of prisons using ward system were used, a new search for a new space organization has begun and after 1995, F and L type prisons using room-cell system were started to be built. Used widely today, these systems were born from high security needs. Prisons are classified as closed, semi-open and open prisons in our country [9, 10].

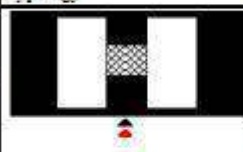

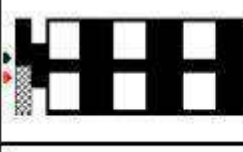
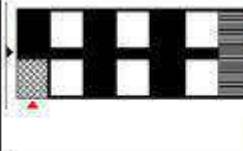







THE TYPOLOGY OF CLOSED PRISONS			
	Typology	Examples of Prisons	Place
A Type		Çınar A Type Closed Prison	Diyarbakır
		Çarşamba A Type Closed Prison	Çarşamba
		Karacabey A Type Closed Prison	Bursa
Band C Types		Çal B Type Closed Prison	Denizli
		Ereğli B Type Closed Prison	Konya
		Kocaeli C Type Closed Prison	Kocaeli
K Type		Araban K1 Type Closed Prison	Gaziantep
		İpsala K1 Type Closed Prison	Edirne
		Lice K2 Type Closed Prison	Diyarbakır
E, M, H Types		Ümraniye E Type Closed Prison	İstanbul
		Silifke M Type Closed Prison	Mersin
		Kartal H Type Closed Prison	İstanbul
F, L, T Types		İmralı F Type Closed Prison	Bursa
		Silivri L Type Closed Prison	İstanbul
		Sincan T Type Closed Prison	Ankara
LEGEND		 Wards, cells and administration  Social places  Officer and guilty entrance	 Courtyard  Visitors' meeting space  Visitor entrance

Figure 3: Prison examples of the closed prison typology in Turkey

4 PRISONS' REEVALUATION IN LIGHT OF CULTURAL FUNCTIONS

When architecture products and their surrounding lose their original function due to various reasons, it can be reintegrated into the city and the population with a different function, in case the physical conditions of the building are adequate. This reintegration is not only evaluated physically but is also deemed a positive action for cultural heritage. Because, a building which serves in its original function, accumulates many experiences during its service [11].

There are two prisons that are reevaluated in light of their cultural functions, while world has many examples. This study analyzes historical Sinop Prison Museum and Ulucanlar Prison Museum in Turkey and Eastern State Penitentiary (USA) and Maitland Gaol (Australia) Museums from around the world.

4.1 Historic Sinop Prison Museum

Historic Sinop Prison is located in the neck connecting Boztepe peninsula to the Sinop hinterland. Being used as a shipyard until the end of 19th century, this area is in the walls of a keep built in Seljuk Era. The prison was built by Sinop Governor Veysel Ali Pasha in Ottomans Era in 1885. A single “U” shaped building was designed initially. Later buildings with different functions have been added as the need arose and a major part of the area within the keep walls have been turned into a prison campus. Consequently Sinop Prison can be called a “prison with campus plan”. In the group of eclectically forming buildings that increased according to needs, a layout plan maximally utilizing the opportunities has taken place. [12, 13]. The main building with an “U” plan consists of three parts. First wing in the east is the first part, middle section is the second part and west wing is the third part. Entrances and airing yards of all three parts are separate and divided with high walls. Due to a slope towards the sea, first and second parts are built as “ground floor + first floor” while the third part is constructed as “basement + ground floor + first floor”. While the ground floor and first floor generally hosted wards, the basement of the third part contains disciplinary containment cells. [13].



Figure 4: Historic Sinop Prison site plan

Due to worsening of its physical conditions beyond improvement and due to lack of capacity, Historic Sinop Prison has transferred its prisoners to a newly built E-type prison in

1996 and has been given over to the Ministry of Culture in 1997 to be used for cultural purposes due to its central location [12, 14]. After the transformation the main building has been completely turned into a museum. Wards and other spaces in parts 1 and 2 are generally exhibited as empty spaces. One ward is displayed with its particulars referring to the events of the days of prison. Part 3 has been turned into a Justice Museum. The garden of the children's prison within the campus has been designed to perform art activities. Prisoner workshops have not been utilized and the area they occupied has been designed as prefabricated sales units' location [13].

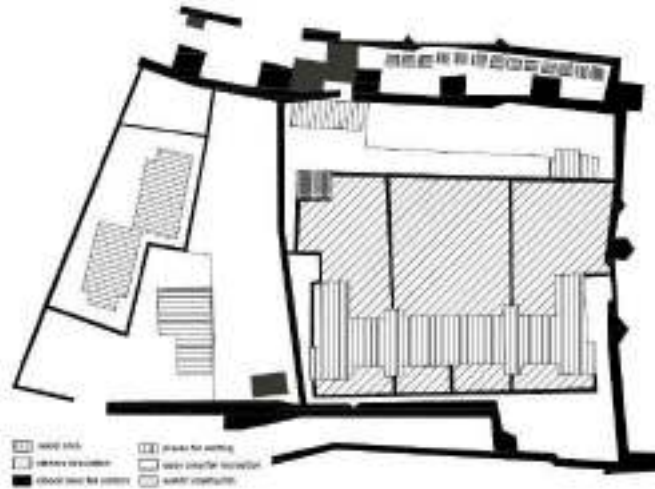


Figure 5: Prison museum's function scheme after re-evaluation

4.2 Ulucanlar Prison Museum and Culture & Arts Center

Ulucanlar Prison is located in Altındağ County of the Capital city of Ankara. Built as a military warehouse in 1920, the building has been changed into a general prison with the recommendation of urban planner Lörcher in 1925. Named Ulucanlar Prison later, this prison has witnessed many pains and torture during the history of the country [15, 16].

The plan of the prison reveals a plan of a courtyard form, established eclectically in accordance with the needs. The building used as the general prison was later used as the administrative building and wards with courtyards, disciplinary cells and service units have been built to its north. To the east of the closed prison there is also a semi-open prison which contains workshops where prisoners ending their sentence participate in production [15].

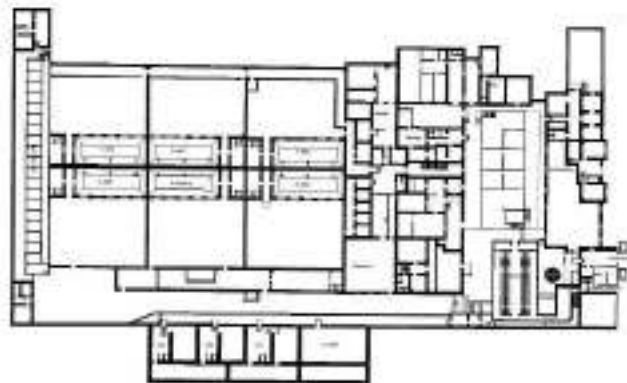


Figure 6: Ulucanlar closed prison plan (Ulucanlar Prison Museum archive, 2011)

Housing many pains and torture in its 81 years of service, the closed prison section has been evacuated in 2006 and has been changed into a museum and congress hall to reflect the scars it bears in its memory to the society in 2009. Built with courtyards, the building group

has been preserved plan-wise and wards, disciplinary cells, dungeons, Turkish baths, kitchens etc., have reenacted history with particulars and wax statues. Furthermore disciplinary cells section has vocal reenactments. One of the wards, where the prison transfers its memory to the visitors, exhibits a collection of prisoner belongings.

Semi-open section of the prison has been changed into a culture and congress center. Prisoner workshops have been changed into art galleries, pocket cinemas, meeting and seminar halls and dining hall has been changed into restaurant and cafeterias. This section, considering its past function, has been designed as an art street [15].

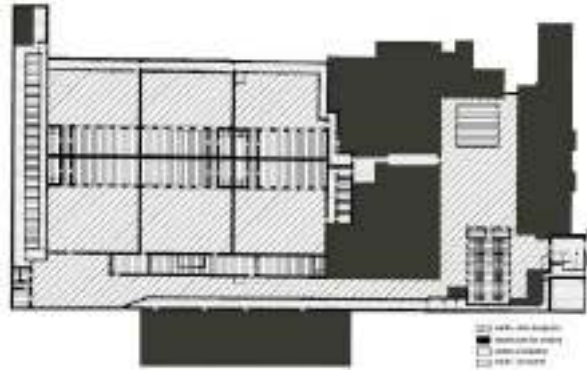


Figure 7: Prison museum's function scheme after re-evaluation

4.3 Eastern State Penitentiary

Eastern State Penitentiary was built in Pennsylvania, USA in 1821. With the influence of the Enlightenment Age the administration of the era has abolished death sentence for crimes other than murder and has established The Philadelphia Society for Alleviating the Miseries of Public Prisoners to make arrangements to prison sentence. The regulations anticipated the inmates to serve their sentence with the philosophy of religious purification, to spend time alone in their cells with God and to hate the crime they committed. Eastern State Penitentiary is the first example of Pennsylvania example also known as isolation system. Designed by Architect John Haviland, the building is in radial form consisting of seven beams protruding from the rotunda in the centre. The cells in the beam arms contain all service elements the inmates require personally, due to isolation policy. Thus the inmate can perform all his needs, day and night without leaving his cell. However this system ended up in severe mental disorders and suicides in a couple of years. Therefore, several alterations were made and some cell walls were demolished, establishing a common working pattern [8, 9].

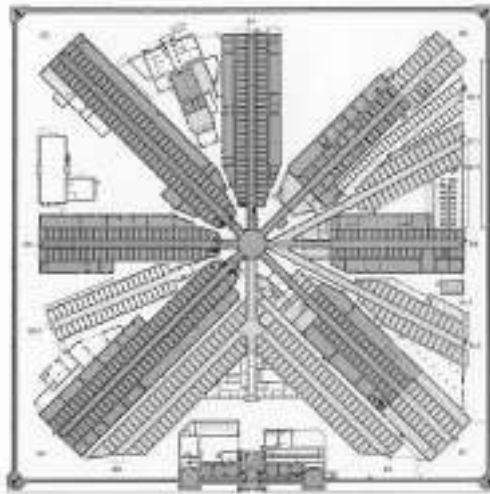


Figure 8: Ulucanlar closed prison plan [17]

Used until early 1990s, the penitentiary was shut down since it lost its physical competence and has been transformed into a museum to reveal the suffering and horror it witnessed during its service to visitors. After an extensive restoration the building of the penitentiary has been fully preserved. Cell blocks are exhibited with the belongings resembling the past. Additionally, there are horror tours named “Terror Behind the Walls” are held several nights of the week to revitalize the memories within the memory of the penitentiary that are full of horror. Open air outside the penitentiary hosts activities such as festivals, ceremonies, etc.[18].

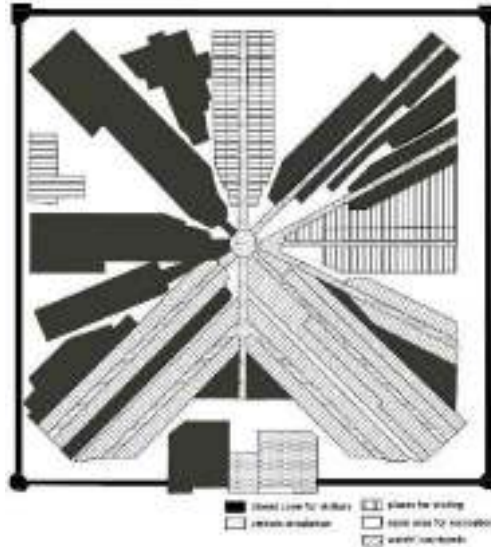


Figure 9: Prison museum's function scheme after re-evaluation

4.4 Maitland Gaol

Maitland Gaol was built in 1844 east of Maitland in New South Wales region of Australia in separate blocks. Expanding eclectically in time according to needs, the prison has a campus plan with cell and inmate blocks, block containing chapel, kitchen and other service units, visitor block, workshop and seminary blocks and open air. Blocks A and B has a system separating inmates according to the severity of their crimes. Block C is the section for female criminals. The biggest problem of the campus during its service was security. Control centre, 6 watchtowers and high walls surrounded by barbed wires were not sufficient enough to prevent escapes. Within time new blocks were built as there were new arrangements in execution of punishment. In 1993 a high security block was added. However, inability to prevent escapes combined with high costs caused disuse of the building and finally shutting down in 1998. [19].

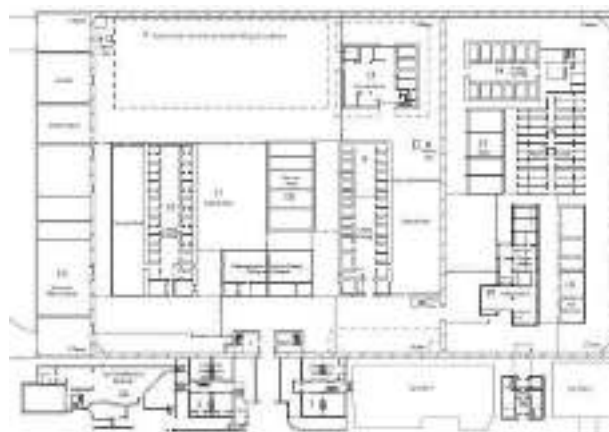


Figure 10: Maitland Gaol site plan [20]

After being shut down the prison campus has been changed into a museum and culture and arts centre to exhibit executions, escapes and prison life. All blocks are open to visits and the locations have been preserved. However several improvements have been made in the texture both inside and outside the compound during restoration. Apart from the museum that can be visited, the block containing inmates' laundry and workshops have been transformed into a seminar hall and cultural area. The building for the staff at left after the entrance has been turned into a cafeteria while the area on the right after the entrance has been used for the same purpose it served when it was a prison and kept as a parking lot. The open air outside the blocks in the campus is used for festivals, ceremonies and concerts.



Figure 11: Prison museum's function scheme after re-evaluation

4.5 Evaluation

The examples of prisons reintegrated into the society and the city have been examined in light of cultural functions and several deductions were noted.

Historical Sinop Prison, a national example has never ceased to be in the city centre since the time it was built. However, the fact that it was surrounded by walls has preserved its impenetrable image in the perception of the city dwellers. Even after being shut down and turned into a museum the building compound has not fully lost its impenetrable image. Some of buildings in the campus have been lost after being turned into a museum. The main building of the prison has been preserved until this day. This location has opened its gates to visitors barren, without any items or animations. Inmates' workshop within the campus has been kept intact but has not been assigned a new function. Prefabricated gift shops have been designed across this building.

Another national example, Ulucanlar Prison was located outside the city when it was built but city has grown to encompass the prison. The prison built with a courtyard plan consists of a closed and a semi-open section. Despite being surrounded with high walls, entrance façade of the prison is open and can be observed from Ulucanlar Street directly. This has made transformation of the prison into a museum and a culture and arts centre easier for users and visitors. Upon entry into the closed prison section, which is completely open to visit, it can be observed that personal items along with interior and exterior texture have been preserved. Voiced animations along with wax sculptures in wards, solitary confinement cells and dungeons emphasize the experience and are highly efficient in transferring the memory of the prison to the visitors. Semi-open section where inmates who are about to complete their sentences perform fine arts or handicrafts have been used as a culture and arts centre in line with its original function and a completely public space has been created.

Eastern State Penitentiary in Pennsylvania, USA was likewise built in outer border of the city until the city grew to encompass it. The penitentiary has high walls to separate the city

from the penitentiary. Therefore it preserves the perception of being impenetrable. All parts of the building were open to public after being turned into a museum. Interior and exterior texture of all sections was successfully preserved. Exhibition of units opened to public with the items from the past is highly effective in transferring the memory of the penitentiary to visitors. The occurrence of mental disorders and suicides as result of the isolation policy employed during its service is a major characteristic of the building. Therefore the museum reflects this characteristic with activities. There are horror tours, named "Terror Behind the Walls", for the visitors who wish to experience horrific experiences in the memory of the penitentiary. Additionally open air inside the high walls surrounding the penitentiary hosts festivals, ceremonies and activities

Another international example, Maitland Gaol is a prison remembered with the escapes. One of the reasons for the frequent escapes, despite measure against it, is prison typology of campus plan makes control harder. Improvements have been made to the interior and exterior texture after transformation into museum. Visits to inmates' wards, cells and other services areas were guided with former inmates. Additionally, the campus houses mainly cultural activities and festivals. These activities are free from the scope of the memory of the prison. Therefore visitor density and diversity is higher.

5 CONCLUSION

After losing their function, prisons with long histories reveal life experiences they collect to the cities and societies with new functions. These buildings can be transformed into accommodation, education, service and cultural purposes. However, it is easier to introduce their exemplary truth to the society through cultural functions, because cultural buildings serve a wider and more diverse population, compared to other building groups.

Reevaluation of prisons in the light of cultural functions emphasizes the location and typology of the building. Because these factors are important in changing the perception of a building into which no person wishes to enter. In presence of high walls surrounding the building or the building compound, the shift in perception becomes harder.

Museum and exhibition areas designed to reflect the characteristics of the memory and the building are the founding stone of cultural reevaluation. Additionally art galleries, conference and seminar halls are complementary elements of the new function. Open air is suitable for festivals, concerts and ceremonies, regardless of the building typology.

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TOURISM EFFECTS IN CAPPADOCIA RURAL SETTLEMENTS

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Keywords: Tourism Effect, Historical Environment, Cappadocia, Alteration

Abstract.

Introduction:

Cappadocia located in the center of Turkey is a remarkable region with its natural and historical environment. Volcanic mountains of the region Erciyes and Hasandağ erupted in million years ago were covered the land with tuff layers. These layers were eroded by effects of rain, wind and flood and the formations today called as fairy chimneys are formed. Thus the land have turned into a unique geological structure and reached to the present day. Thanks to this geological structure an outstanding architectural pattern in which built environment and natural environment interlocked to each other was generated.

Developments:

Besides being a world heritage site in 1985, Cappadocia is also a tourism development area according to the Turkish legislation. This striking pattern drew attentions of the native and foreign tourists for many years; averagely two million people have been visited the region in a year. Therefore, traditional architectural pattern of Cappadocia have been shifted inevitably due to the intense tourism effects and changing living conditions. Some of the existing buildings are altered via new additions and arrangements.

Remarks and Conclusion:

The process of transformations of traditional buildings into the tourism facilities is studied in this paper. The methods which are used in this process is determined. The products of transformations are discussed in the context of not only traditional buildings but also settlements. Besides the material and design concept in transformed buildings, it is also analyzed the relationships of transformed buildings and the historic environment. The study is supported with the cases in the rural settlements of the region.

1 INTRODUCTION

Eruptions have generated layers with different mineralogical structure in different time of period. This is the reason that it can be seen fairy chimneys and badlands in changing colors from yellow to pink. The land with a unique natural and geological structure could be reach until today thanks to tuff which corroded by the nature and human impacts. The process of generation hasn't been finished yet. However many of the formations have disappeared today, the new ones are showing up at the same time.

The settlements which enclose these formations are Ürgüp, Göreme and Avanos districts of Nevşehir and Güzelyurt districts of Aksaray. It is known that the inhabiting in the region was started in Neolithic age (B.C. 8000-5000) and the region became more significant by the Byzantium sovereignty in B.C 17 [4]. Ottomans had established sovereignty at the 15th cc. in Cappadocia. It is listed as World heritage natural and cultural site since 1985 with its unique rock carved churches of Byzantium arts; tradition-al architecture which reaches today with all its authenticity and outstanding example of nature [4].

Declare as a World heritage site and feature the traditional settlement enables the region a popular tourism destination. Today more than 2 million tourists have visited Cappadocia in a year. However Agriculture was the main source of income before the region's popularity was increased; today tourism is one of the important sources of income besides agriculture.

2 ARCHITECTURAL FEATURES OF SETTLEMENTS

Traditional settlements of Cappadocia have been generating by means of the geology of the region. Caves formed by carving rocks supplied the housing requirement in the first stage of settling. Via the using of materials which carved out from the rock masses, constructing masonry structures were started. In this period stone quarries were opened thanks to the land and tuff stone was began to use as construction material. Today it can still be seen that rock-cut and stone masonry houses are interlocked to each other. Masonry houses are usually sat on the slopes and built as 2 or 3 storied, flat roofed and with rich stone carved ornaments. Rock carved spaces are formed sometimes as a room of the house; sometimes as a barn, storage or a tandır (a place for cooking). They are usually built with an aiwan or a room within the courtyard boundaries. Local people have generated an indigenous settlement pattern by using these two construction techniques (see fig.). The tuff formations are shaped according to the needs; existing topography and authentic landscape elements are intervened in mini-mum, thereby an integrated architectural method with nature has generated. Thus, Cappadocia became a significant cultural landscape area with its unique pattern, preferences of construction material and land-use decisions.

Local tuff stone is a light yellow colored material which can be formed easily after quarried. It would be stronger when it aerify after shaping and using in the building. The color of the stone might change after getting in touch with air. It is quite an ecological material in terms of climatization. Tuff stone keeps the inner space warmer during the winter and cooler during the summer. Timber and iron is the other main construction materials used in the traditional houses in the region. Timber cannot be used so much due to the limited forest area of the re-gion. It usually used in the architectural elements such as door/window profiles and cupboards, and used as a tension rod within the walls. The most important usage area of iron is again within the walls as tension rod.

3 THE PROBLEMS OF SETTLEMENTS

The first conservation activities were started in 1970s by the Turkish authorities. In the archives it could not be found any other document about conservation or construction regulations in the area before this date. There was not any other source about documentation of the land except some engravings of travelers, some short documentation films and old pictures. Protected sites were determined in 1976 by High Council of Immovable Monuments and Antiquities and drawn in the 1/25000 scale maps.

In 1985, some part of the region was listed a World heritage site by UNESCO. In 1986, Ministry of Forest was declared the area as Natural Park. When it comes to 1989, the land was inscribed as a tourism area by the Ministry of Tourism.

Among these conservation activities many other provisions and amendments were carried out since 1980s. Nevertheless Cappadocia has now international legislation of World Heritage Site; national legislation of Urban, Archeological, Natural Protected Sites, Tourism Conservation and Development Site and National Park. All those designations show us the significance of the site as a natural and cultural property, however, this situation also indicates to an inter-governmental paradox in the site of which management plan has not been prepared yet. The basic problem of the relationship between new constructions and historical environment is this intergovernmental paradox.

One of the other threatening factors to region is the challenge of the adaptation of traditional houses into the contemporary living conditions. Economic difficulties of providing new construction materials and lack of aesthetical sense make the interventions and additions to traditional buildings in poor quality. Cappadocia rural settlements are being in a transformation. The transformation which began with alterations of traditional houses to touristic facilities is now a critical issue by means of alterations of some entire districts of rural settlement to touristic facilities.

4 TOURISM EFFECTS ON TRADITIONAL SETTLEMENTS

Cappadocia rural settlements have been altering on the ground of above mentioned problems on the background. For sure increasing tourism activities and changing original function of the buildings are one of the reasons of this alteration. Tourism has an important role in the economy of the region. Agricultural activities have been decreased in the recent years; tourism takes its place and become the only source of income in some settlements. The process of the transformations of traditional buildings into the tourism facilities are actualized in some several ways. In one way local user realize the potential of the tourism and tend to alter the building in his own way. In the other way, big companies which realized the tourism potential in the region are bought the traditional buildings and alter them big luxury facilities. These transformations can be done via restoration works, simple repair works and new buildings evaluation.

In simple repair, it is allowed to works which do not affect the space integrity of the building. Roof and installation repair, repairing flooring and door/ window profile are some of the simple repair works. Structural alterations are not being allowed. The permission aims to prolong the building life and it may take from the municipality council for preservation of cultural heritage or KUDEB (the conservation implementation and control bureau). However simple repair permission cannot be enough for the functional change, users attempt to transform their houses. With this permission users try to construct by their own without an architectural help. This causes the generating imitation buildings which at the same time cannot be

new designs and cannot be compatible with historic environment. It can be seen in the settlements that different qualifications of transformed buildings with simple repair permission.

It is important to consider that the institutions which give the permission of simple repair have a great responsibility in this point. KUDEB (the conservation implementation and control bureau) was founded in 2009 within the body of provincial special administration. It officiates in the villages which provincial special administration responsible and in Ortahisar district with the request of Ortahisar municipality. Above mentioned transformations via simple repair permissions are usually seen in Ortahisar district (Figures 1-7). It is obviously affected by the lack of experience of KUDEB employers and technical incompetence.

The inner space organizations are mostly altered due to the functional transformations done via restoration works. It can be distinguished some basic approaches of these restorations. These constructing activities are the implementations of imitation buildings and compatible buildings with historical environment in terms of height, mass proportions, facade features. Imitation buildings have the same features with historic buildings in the sense of material, facade and mass proportions. Even sometimes it can be hard to differentiate new and old buildings when the constructor used old-stones detached from old buildings. The inner space organization is also reshaped in these buildings in order to supply the needs of a hotel.

By the way it is also possible to see new designs inspired from the historical environment. These cases are successful in terms of establishing a relationship with natural and built environment. The plans of the traditional houses can also be read in the successful works.



Figure 1: Completely new hotel building imitates traditional buildings (Ortahisar)



Figure 2: New hotel building imitates traditional buildings (Ulaşlı village)



Figure 3: Re-functioned traditional building, implementations done via simple repair permission (Ortahisar)



Figure 4: Re-functioned traditional building, implementations done via simple repair permission (Ortahisar)



Figure 5: Re-functioned traditional building, implementations done via restoration works (Ürgüp, Kayakapı)



Figure 6: Re-functioned traditional building, implementations done via restoration Works (Ürgüp, Kayakapı)



Figure 7: Re-functioned traditional building, implementations done via restoration works (Ürgüp, Kayakapı)

5 EVALUATION

Nowadays, Tourism facilities have been built in increasing number in Cappadocia. These facilities are usually generated by transforming traditional buildings due to the both legal restrictions of building a new structure in the region and desire to serve the guests an “authentic” building. In this transformation process buildings are preserved in terms of facade organization however, the significant alterations are done in interior spaces. These facilities are caused some changings not only in plan and facade organization but also in settlement it-self. Local people are leaving their houses to hotel business. It causes to decrease the number of local inhabitants in the traditional settlements. Thus, local inhabitants, a significant element which must be preserved, are started to vanish in the region.

In this study it is aimed to traditional houses which are transformed into the tourism facilities. The effects of these transformations to historic environment are discussed. The natural and built environment, which units with landscapes, cannot be separated in Cappadocia. It is tried to emphasize how and in which way the vernacular architecture evaluated by the recent alterations and additions. Whether some alterations can be recoverable, it is tried the give a clue about what to extent of the damages of these alterations in the cultural landscape area.

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RENDER AUTHENTICITY

REVISITING INTANGIBLE HERITAGE TO REFLECT ON RESTORATION OF HISTORICAL STRUCTURE NETWORK

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Keywords: Shakhari Bazar, Historic Environment, Restoration, Intangible Heritage

Abstract.

Introduction:

Shakhari Bazar is one of the first streets to be built in South Asia during the reign of Mughal Empire. Old Dhaka is an area with buildings of architectural beauty, historical, religious and cultural significance. Today, most of these buildings in Shakhari Bazar are either deteriorating through ignorant renovation or collapsing due to neglect, resulting in hazardous living conditions for the unique artisans and their families. These artisans have made this street their home and passed on their expertise from one generation to the next since 1608. If the present condition persists, it will not be long until many of these grand structures, along with the specific 'live heritage' they house, will be lost forever.

Developments:

Often the hands will solve a mystery that the intellect has struggled with in vain (Carl Juan). The 'soul' of Shakhari Bazar remains strong as the physical heritage of the street amalgamated with the traditions and cultures of the craftsmen, even though it has through an amazing transformation and molded itself according to the changing needs of its occupants. It has been the artisans' unspoken duty for more than 400 years to maintain the function and, therefore, the identity of the street.

Remarks and Conclusion:

A comprehensive research has influenced me to propose an architectural and economical solution that could help sustain the physical and live heritage. The pivotal focus lies on the formalised institutionalization of the Crafts School that could enable the craftsmen's place in a wider international market. The influx of capital is the missing piece of the puzzle required to ensure educated restoration of the Shakhari Bazar, and sustain the integrity of the live heritages they house. With the help of the artisans, the historical street could result in a sustainable micro economy that will refuse to accept uniformity and the disappearance of memory.

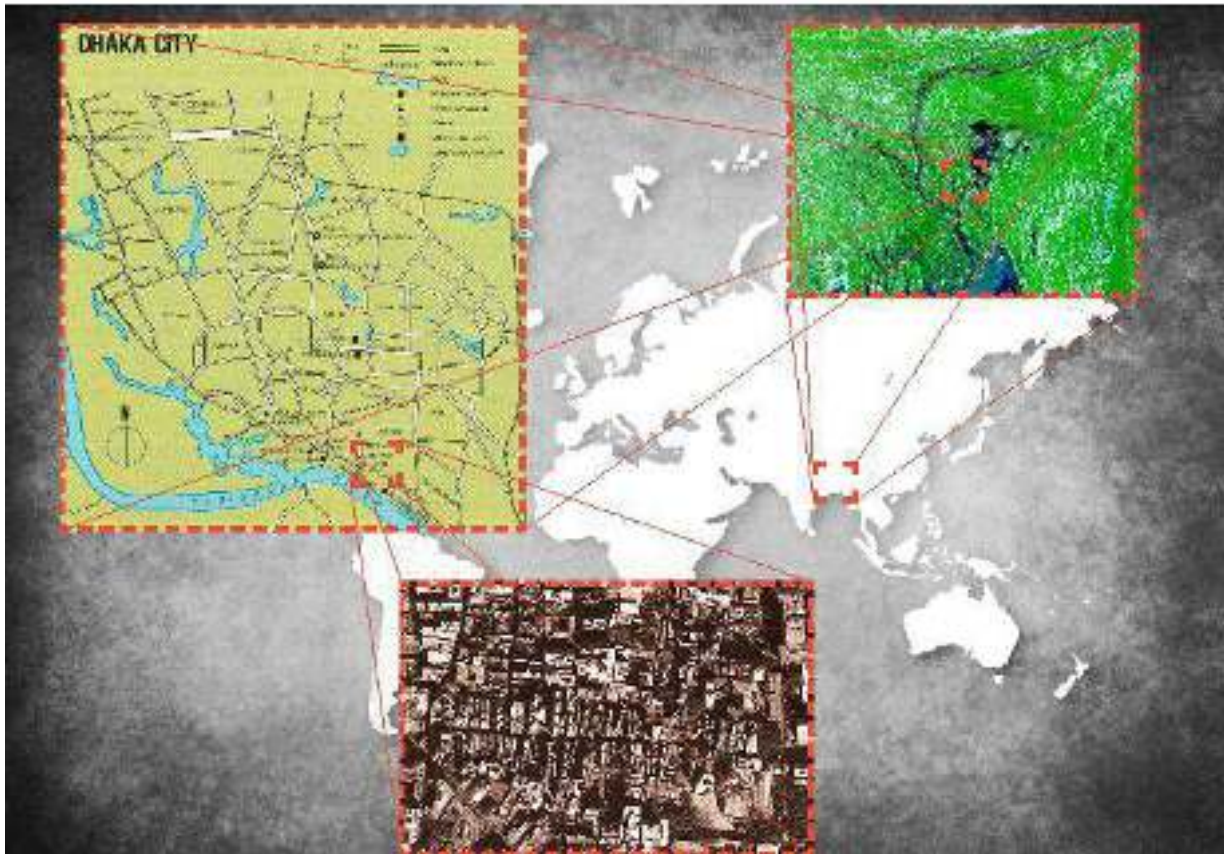


Figure 2: Location of Shakhari Bazar

The name Shakhari Bazar, in Bangladesh, is derived from the name Shakhari, who are artisans that work with shakha, which is a richly decorated bangle made out of slices of conch-shell that hindu women wear as a symbol of marriage [4]. There are various other unique crafted objects made from conch-shell. There are also goldsmiths and sculptures that house in this street. Therefore, this street is a rich treasure of artisans and crafts. The identity of the street is closely bound with the crafts that it produces. These artisans have made this street their home and passed on their expertise from one generation to the next since 1608. Craftsmanship works like a medium that allows our inner world to collide with the external logics of the world. It makes it possible for these artisans to communicate with the world and make us aware of our roots in the society.



Figure 3: Local children playing on a fourth storey shared courtyard



Figure 4: Unused ground floor courtyard space intended to be used by adjacent neighbours

CHANGING DHAKA CITY

For the past few decades, villagers from various parts of Bangladesh, have migrated to Dhaka in search of better amenities and job, and have taken shelter in the vacant houses in Shakhari Bazar through squatters rights. Old Dhaka is an area with buildings of architectural beauty, historical, religious and cultural significance. But sadly, most of these buildings are either deteriorating through ignorant renovation or collapsing due to neglect, resulting in hazardous living conditions for the unique artisans and the migrants. If the present condition persists, it will not be long until many of these structures, along with the specific ‘live heritages’ they house, will be lost forever.

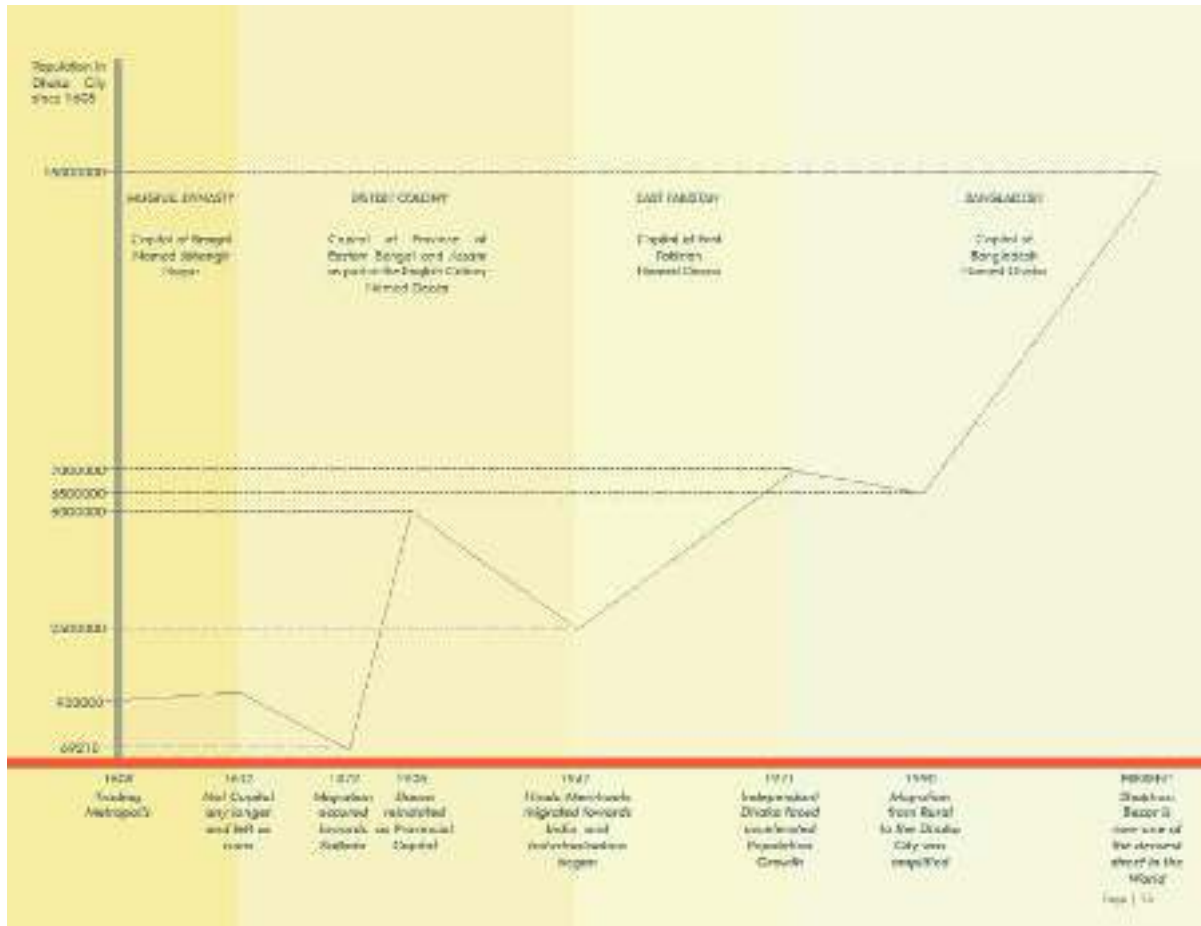


Figure 5: Population Timeline of Dhaka City since 1608 [1].

2 LIVE HERITAGE

One should not consider that the freedom exists in the human being; one should seek freedom, rather, in the work that emerges spontaneously when one entrusts oneself to the materials and the tools. The same, inevitable process is seen in all true craft work. It is not accidental, yet neither is it artificial. It is governed by the same kind of laws that make water run downhill and clouds rise.

- Soetsu Yanagi, The Unknown Craftsman

What differentiates these crafts from ‘art’ is simply that these crafts have ‘functions’. Unfortunately, it is because they are useful that they are valued less than an art piece might be. The Shakha crafted objects are beautiful pure white shell that is crafted by hand by the artisans to create jewellerys and accessories that are adorned by the hindu community. The Goldsmith creates artifacts and jewellerys that have gained popularity in the country for their uniqueness. The Sculptures work with their hands as they mould special clay into life sized hindu sculptures that are worshipped during Hindu ceremonies. Each artisan will create each piece with care and in their own unique style that they have mastered throughout the years, and possibly generations. Yet it is ironic how adding a function reduces, instead of increasing, the value of the articles. Despite the fact that these objects are scrutinised for beauty and then bought to be utilised, these nameless craftsman need to struggle financially to provide bread and butter for their families. Therefore, with this lack of economic influx, it is almost impossible to ensure proper renovation of the historical buildings they reside and work in.



Figure 6: A local shakha artisan working for the past 20 years under the same master



Figure 7: Local Sculptor apprentices

Shakhari Bazar’s cultural abundance is not limited to the physical or ‘tangible’ heritage of the street, but extends to the cultural or ‘intangible’ heritage they house. The term ‘intangible’ heritage is a term popularized by UNESCO, to describe the ‘the wealth of knowledge and skills that is transmitted through it from one generation to the next’[6,7]. Old Dhaka’s craftsmen have not been identified as an intangible or live heritage yet, but that is only because the crafts have been recognised as ‘utilities’, with functions, rather than ‘art’, which is devoid of daily functions other than aesthetic ones. This discrimination has left the artisans to earn minimal living, which in turn feeds to the discouragement of continuing these crafts, and therefore, in threat of losing the identity of the street. The lack of influx of financial assistance for the area has only added to this issue of deteriorating physical and live heritage. The poor living conditions that seemed to have engulfed most of the population in the street seem to have driven away all the upper class citizens of the country from the area. The volatile political situation in the area is leading the community in losing its sense of pride in their products and culture. Further analysis has shown that these buildings and the live heritage work hand in hand to create a unique ‘tangible’ heritage. The migrants have started a trend of more than one family occupying each building unit with store front in the ground floor facing the street.

RESEARCH AND DESIGN IMPLEMENTATION



Figure 8: The linear structures open at the back to a shared courtyard. The concept of shared courtyard has been adopted from Islamic Architecture during Mughal Dynasty in 1608 [4].

A comprehensive research and site visit has influenced me to propose an architectural and economical solution that could help sustain the physical and live heritage. Artisans, craftsmen and their apprentice make up 74% of the earning members on the street of about 20,000 people [1] Diagrams have determined the visual and physical porosity, or lack of, from the street to the shared courtyards, revealing the limitations of space for any new structures due to high density. Other research methods, such as horizontal and vertical grain diagrams, demonstrate that the linear pattern of the narrow structures on the street front differ widely from the new constructions around the site, displaying a unique Mughal design strategy that has sustained for hundreds of years of change [4]. There are shared courtyards that could either be on the ground floor in the middle of various structures, or on any floor that can be connected to four or five other adjacent buildings. This network of shared infrastructure speaks directly to the network of crafts that inhabit the space.

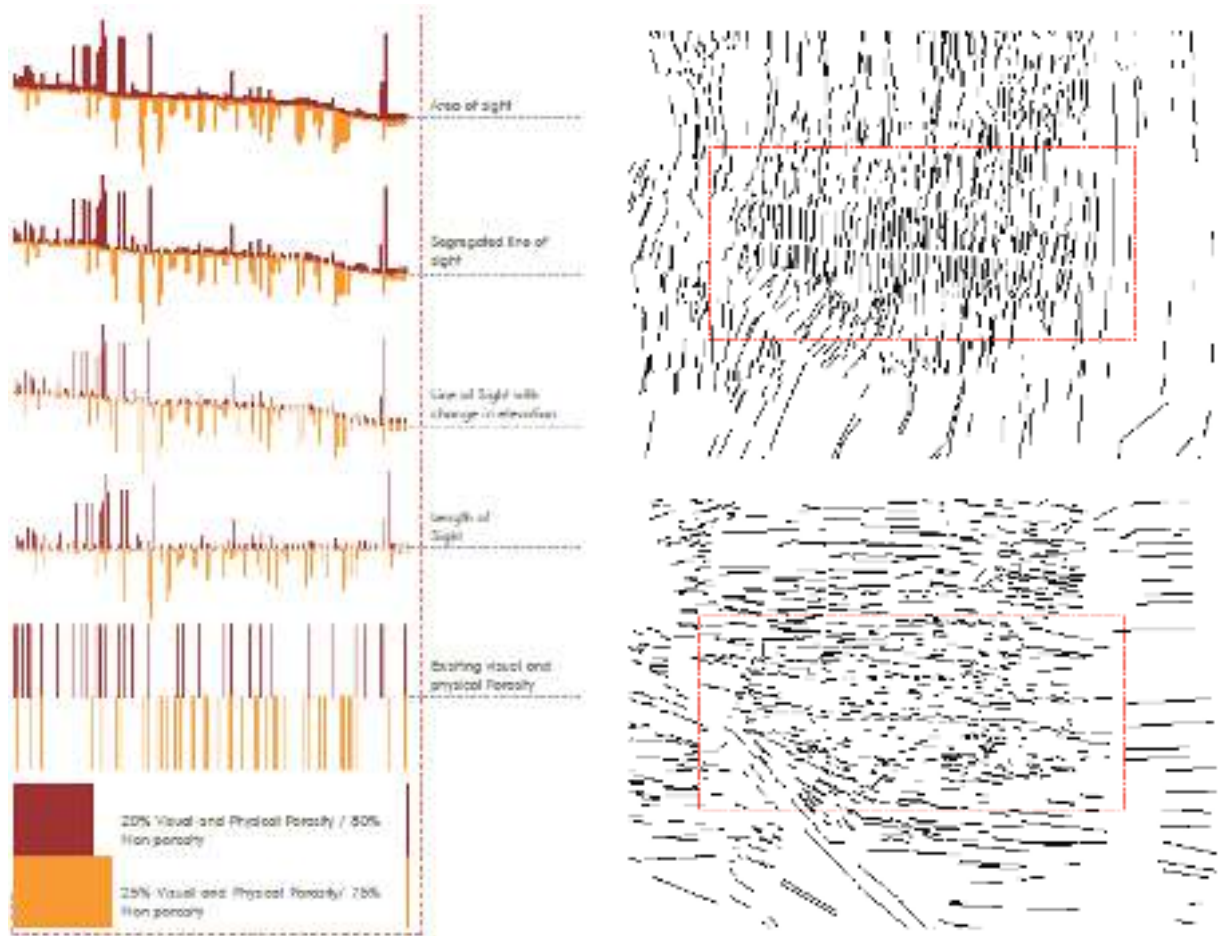


Figure 9 (left) and 10 (right): Exploration of the existing porosity of the street through the buildings on either side. If one were to stand in the middle of the street to try and walk or look among the densely packed linear buildings, we would notice only 20 - 25% porosity. This porosity is not taking into account the various temporary structures put up between the buildings making it even harder to penetrate through the facade of the roads. The Horizontal and Vertical Grain analysis (right) highlights the unique density of the structures on the street of Shakhari Bazar. The building facades creates an almost continuous wall between the street and the courtyards behind the buildings.

*Often the hands will solve a mystery
that the intellect has struggled with in vain*

- Carl Juan

The pivotal focus of the solution lies on the formalised institutionalization of the Crafts School that could enable the craftsmen's place in a wider international market. Crafts Economy has recently come into light in the world market as an important sector with the total world exchange in Crafts Sector of US \$30 Billion in 2012 [5]. Bangladesh is yet to measure this impact on its economy. Aarong, one of the leading NGO crafts store in Bangladesh, generates up to US \$14 million annually in revenue, illustrating the extent to which Bangladesh could benefit from investing in crafts industry (BRAC). This influx of capital is the missing piece of the puzzle required to ensure educated and organised restoration of the heritage site, initiated by sustaining the tangible live heritages they house.

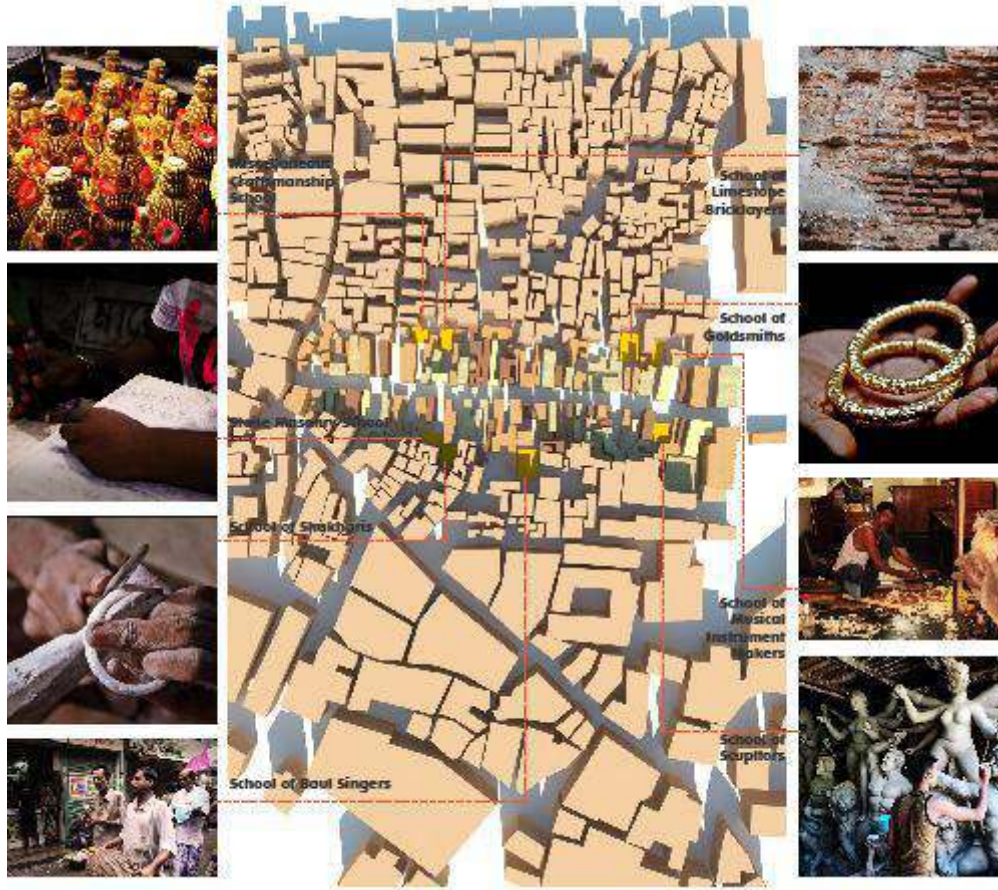


Figure 11: Proposal of Distribution of Trade Schools to create a network facilitating the existing trades business of Shakhari Bazar. The Schools will be located at the shared courtyards. Each branch will be dedicated to each specialised trade, creating a string network of crafts throughout the street of Shakhari Bazar

With the help of the artisans, these trade schools creates a loop where the matured artisans would teach interested apprentices their practices, while introducing a designer to help create wider variety of crafts to increase their market niche. Formalising the trade schools will help this craft gain cultural and economic importance, increase employments for the migrants, creates inclusion, and creates opportunity for renovation of the craft objects and the renovation of the craftsmen's homes, with the help of the apprentices. The historical street of Shakhari Bazar could result in a sustainable micro economy that will refuse to accept uniformity and the disappearance of memory, through the continuing traditions and cultural values that are kept alive by the occupants of the historical street.



Figure 12: Bird's eye view of Shakhari Bazar illustrating the newer additions on the facades of the old structures



Figure 13: Proposal of Trade School creating a vibrant macro economy

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NEW STRATEGIES OF ANALYSIS AND URBAN DESIGN FOR THE HISTORICAL CENTRE OF THE BLUE CITY OF JODHPUR

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Keywords: Survey, Urban Design, Documentation, Conservation, Historic Environment, Social Challenges

Abstract.

Introduction:

Strongly influenced by the geographical layout and the political dynamics of the region, the historic town of Jodhpur, called the Blue City, provides an outstanding example of traditional urbanism in Rajasthan, India. To make the city a unique example of the Indian heritage is not only the characteristic morphology that summarizes, in a single glance, all the layers that have concerned the territory over the centuries, but rather the deep cohesion between the architectural heritage and the socio-cultural order.

Developments:

Enclosed in the sixteenth-century walls, for most preserved, excluded from areas of new expansion and ignored by municipal development plans, the historic center has been able to preserve almost entirely the traditional urban fabric while maintaining the system of internal relations within the community; nevertheless the historic city today is having to balance the demands of a modern town with the preservation of tangible and intangible heritage of the urban center. New concepts and criteria of the new design in the Jodhpur historical context need to address in particular inadequate infrastructures (reorganization and rehabilitation of water and electrical systems and the waste collection), density pressure and the conservation of the cultural identity.

Remarks and Conclusion:

The paper will present new approaches and methodologies to analyze the historical urban context in order to harmonize the new interventions and projects in existing heritage and meet the contemporary requirements. The main challenge involves the awareness of the public opinion, the need of sensitising in the matter of heritage conservation respecting the local tradition and meeting the needs of both the public administration and the local community. The progressive policies of protection will also trigger new tourism bringing benefits to the local economy.

1 INTRODUCTION

Cultural heritage is unique, irreplaceable, but constantly changing, therefore placing the responsibility of its care on the present young generation is essential. Historic city centers in India are dynamic and vibrant environments of a cultural heritage that goes beyond the built forms. They are continuously evolving, thereby, fragile as they straddle between ideologies of present and continuum. As the world of conservation expands itself to acknowledge the coexistence of the old with the new as the way forward, the new professionals will need to be particularly equipped to understand the complexities of such possibilities in historic core.

The Department of Architecture, University of Ferrara, and CEPT University, Ahmadabad, are in the process of developing interdisciplinary competence of analysis of historic city centers through survey and diagnostic methods. Two of the workshops held in Jodhpur, in 2013 and 2014, was a great success. The historic city of Jodhpur proved to be an extraordinary design laboratory to experience a progressive and conscious conservation but also an approach to valorisation.

Jodhpur, a place with a rich history and culture, has been an area of interest for many. And yet, there is much that needs attention, particularly in the public realm in core city. It is this composition of dense narrow crowded roads, and dense commercial hub full of wholesale markets. The fabric of Jodhpur walled city is interwoven with complex surfaces of architecture, traditions and everyday activities. Laid over a hilly terrain centuries ago, the city exhibits exuberant signs of culture and heritage.

Sadly the city is under lot of pressure of population. With growing tourism, the old houses became abandoned or get converted into lodges. Markets and squares which were flourishing in past are now being troubled by traffic and congestion.



Figure 1: View of the Blue City (Photo by DIAPReM)

2 URBAN AND SOCIAL CHALLENGES

2.1 Social changes on vernacular heritage

Contemporary architectural interventions in Asia [1] are currently highlight an important fact: the majority of the solutions are closely linked to the respective local realities. These local initiatives, which are defined as vernacular solutions, are inevitably and permanently tied to the geographic, topographic and environmental features of their land of origin; nonetheless, they have the capacity to showcase new approaches to a more efficient energy management, especially in terms of natural light and overheating protection. In the last years many things have changed and have been lost in historic centres of many countries. People want to update their houses with modernity, there is the urge of improving the living standard of the people. Changes in the physical structure are inevitable and have been continuing from ancient times but there is the need of control over these changes [2].

The so called new architectonic regionalism is driven by solutions developed in different areas and mediated by different authors, whose creative capacity, designing skills and knowledge originated from vernacular traditions. Despite the recognition gained in these years various elements have composed and emphasized the immense complexity and challenges for the management of the entity of the world wide cultural heritage in historic centres. Since the mid-eighties a growing development pressure made itself visible within historic centres in different countries. Among these India stands out as one of the most strong economies of emerging markets countries [3]. In these contexts very often the major transformations are brought by social changes: new needs and lifestyle lead people to transform the inner spaces, hereditary divisions of the buildings causes a “split-up” and different transformations of the various parts of the same building; common spaces are facing illegal occupation and encroachment; these are only some of the causes that lead to heavy hybridization of the vernacular architecture.

Additionally, as stressed by Niels Gutschow in the essay, “Architecture: The Quest for Nepaleseness” [4] various contemporary interventions outlines the ways that architecture displays the intertwining of nostalgia, politics, and technology. The construction of large-scale temples, coronation platforms, and domestic spaces in Asia reflects not only changing aesthetic tastes but also a desire for an architecture that is free of Western influences. In these historic cities people are very attached to their traditional house for different reasons but they need to be helped and supported by municipalities and other institutions in every single modification/conservation process.

In the past years a slow transformation process of the urban scenario appeared in historic city of Jodhpur. Almost two hundreds of interviews with local residents in a two years on field campaign show the main changes and related causes on the vernacular heritage. For instance at Ground Floor level of residential buildings very often the major transformations are brought by commercial development with a subsequent occupation of common public spaces. Dwelling use is still prevalent in Jodhpur private buildings upper floors. More frequently in private buildings used for dwelling the residential spaces at upper floors has been substituted by hotel activities, bar and restaurant and trade. This has been changing the use of space and the internal layout of the buildings.

2.2 Urban and social transformation in Jodhpur

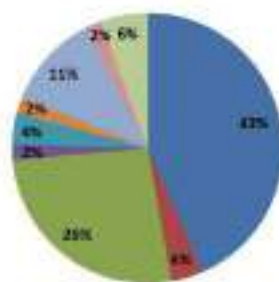
The rapid social and urban transformations takes place through continuous development, the yet unclear roles of the several concerned stakeholders, the lack of effective regulations. Very often the major transformations are brought by social changes [5]: hereditary divisions of the buildings causes a “split-up” and different transformations of the various parts of the

same building; commercial development at the ground floors, with a subsequent occupation and encroachment of the common and public spaces; these are only some of the causes that lead to heavy hybridization of the vernacular architecture.

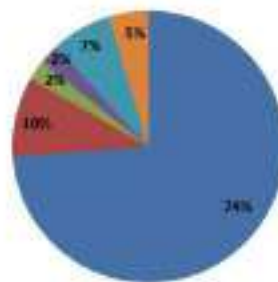
In these historic cities people are very attached to their traditional house for different reasons but they need to be helped and supported by municipalities and other institutions in every single modification/conservation process. There is a strong need of legislation and mechanisms to start a Building By-Law implementation. For instance a preservation plan could be applied to parts of old cities maybe starting with some pilot projects.

The buildings

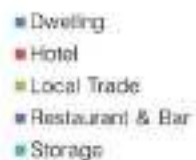
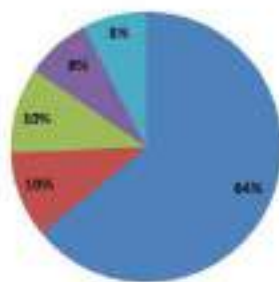
Current use of Ground Floor



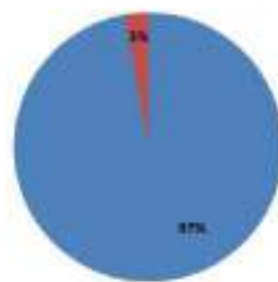
Past use of Ground Floor



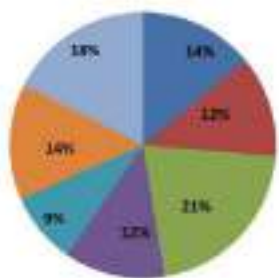
Current use of Upper Floors



Past use of Upper Floors



Past transformation on buildings



Causes of transformation

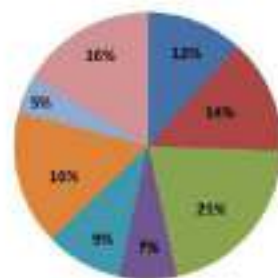


Figure 2: A social analysis about transformations and features of the buildings in a cross-section of 500 inhabitants

3 THE HISTORICAL CENTRE OF THE BLUE CITY OF JODHPUR

3.1 A unique heritage site

The main historic centre is a perfect picture. The Mehrangarh fort stands guard over the city like a sentinel. The blue city or the sun city as it is known, is a perfect mix of warm hues with a contrast of indigo. The area chosen for the year 2014 is the settlement around the Gulab Sagar Lake. It is a mix of Bazaars, Streets, Lake edge, other water bodies, residential areas, school and temples. The narrow winding streets of the walled city are an evolution into the era of automobiles. The auto rickshaws are tweaked for easy movement into the old city. However narrow roads and lack of parking facilities is a curse for privately owned vehicles. In spite of this the traffic movement was mostly even. The land around the water bodies is considered *dev-bhoomi* and hence supports various social and religious activities but cleanliness has been ignored. With sewage and garbage being pumped into them and the edges vastly littered with garbage and cow dung, their potentials remain largely unrealized.

The historic city centre is thus a picture of the dichotomy, of tradition and modernity, colour and chaos, attractiveness and repulsiveness, artistic expertise and environmental ignorance, coexisting as an urban heritage that deserves not only to be conserved, but also to be nurtured and encouraged to attain its full potential.



Figure 3: The blue color is the main characteristic of the old city center and one of the most important heritage feature to be preserved

3.2 In situ documentation

During the workshops on site, students documented a small part of historic city of Jodhpur. Doing this, they realized how people stay in historic core cities, how their houses and work are, and appreciate the safety in neighbourhood. In the year 2014, this experiment was extended to find solutions to the problems of local residents, student were exposed to thinking,

besides just documenting. This is an experiment in learning about Historic city center. The program went smoothly, and was highly appreciated.

Students' experience is unique, they found that in spite of lack of modern facilities, people are courteous and warm, and a whole lot of changes have taken place (since its inception) in built form, infrastructure, culture, religiosity, food and dressing of the residents of this historic core city.

3.3 Design case studies in the historic context

In order to analyze the historic environment and outline design strategies, the city centre has been divided into some significant study areas to define an overview of the problems of Jodhpur.

Some areas have completely changed their use destination: Katla Bazaar, for example, was a monastery of the Kunj Bihari temple and now it's one of the main market of the east part of the city. All shops surrounded the "square" have the same interior structure. It's easy to identify the typical articulation of the *haveli*, the pristine Indian house, undergone over time to a double change: from monastery to public house and meanwhile from private to public square. This has overfilled the inner part of the square with motorbike and rickshaw, without a parking regulation and pedestrian areas.



Figure 4: Section East-West of the Katla Bazaar, the old monastery converted into a new market area. The drawing shows the internal part of the structure which is also the old one (image by A. Fornaca, H. Joshi, M. Parmar, S. Caposciutti)

The second main change concerned the house itself: the structure is the same of the past but the different uses over time changed the interiors in order to meet contemporary needs [6]. Although identify and survey changes over time is very difficult, but it is possible to appreciate the unique architectonic and morphological layering of these neighborhoods.

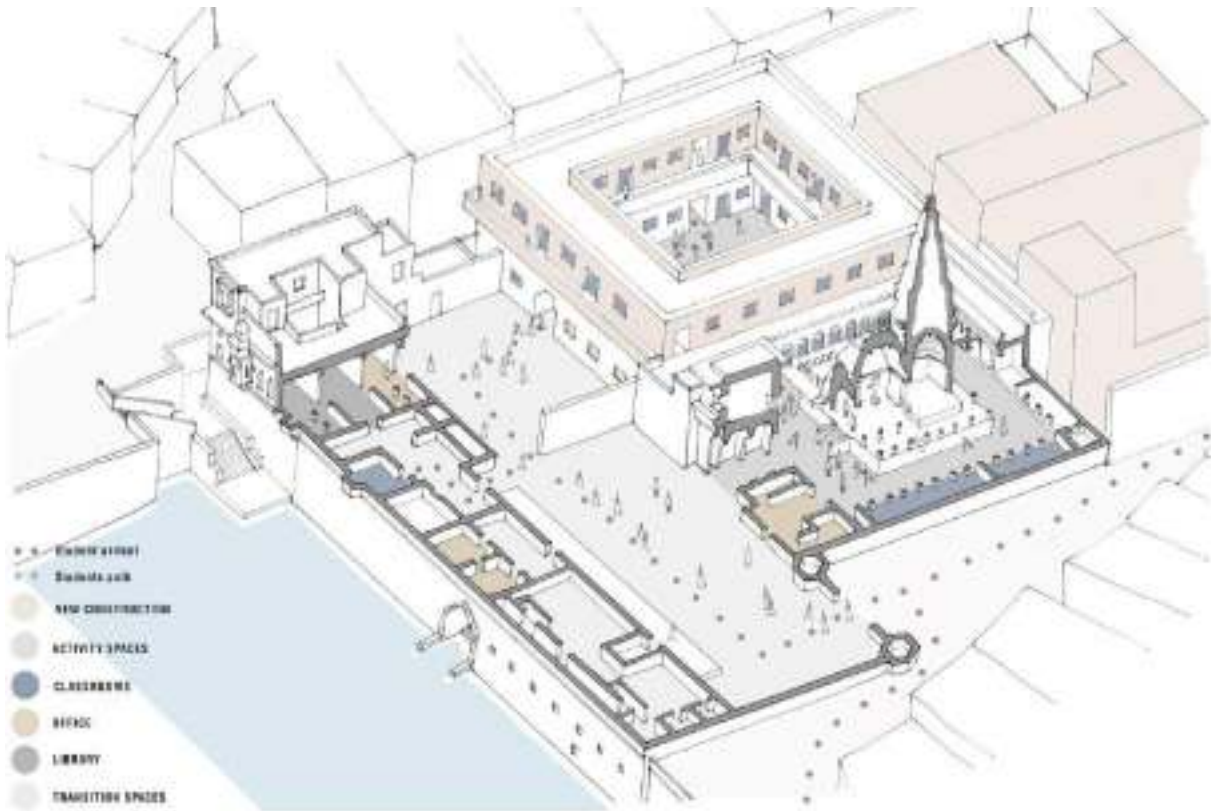


Figure 5: Axonometric section of the Rajmahal school: it's believed that the king commissioned the lake and the palace for a lover or a wife and now it's converted into a school (image by E. Tredici, G. Marchetti, K. Garg, N. Raphael)

The façades along the market streets have been analyzed; restoration and refurbishment have followed different assumptions, quite far from the heritage conservation: the reconstruction of an old house usually concerns its demolition and then the proposal of a new architecture trying to replicate the previous one. The urban survey has focused on identifying the original buildings from those reconstructed through a careful analysis of the original shapes and spaces.

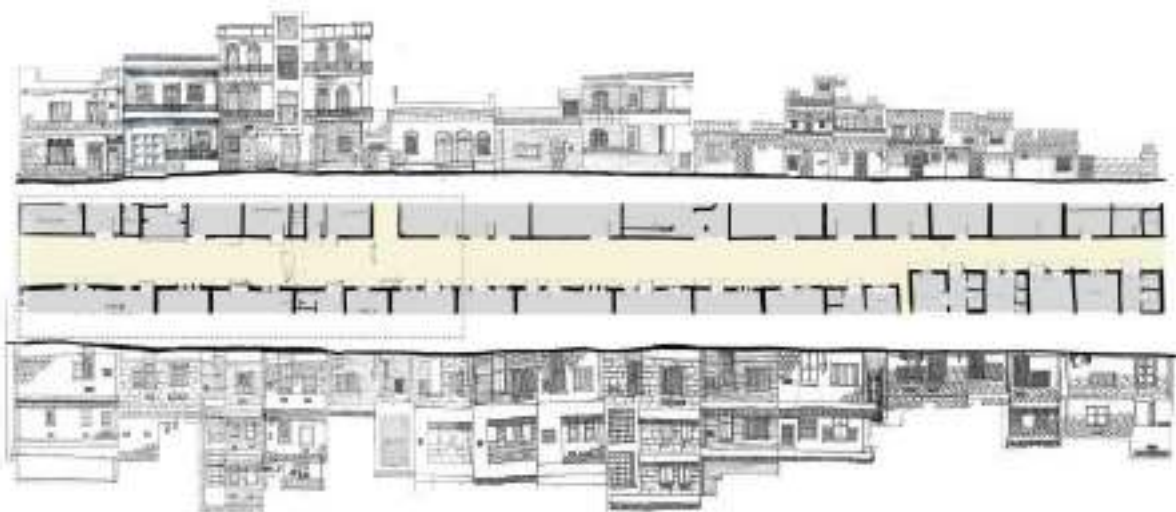


Figure 6: Plans and elevations of a street in the city center (image by A. Sheth, A. Zanirato, S. Perini, T. Timbolo)

It was possible to understand that the main spaces of the houses were unchanged, as the public spaces and the welcome spaces on the first floor, facing the main street.

Moreover, due to recent interventions in the conformation of the streets of the historic centre [7], motorbikes, rickshaw, animals, and people move altogether along roads, mixing vehicular traffic and making it congested. Therefore one of the main design challenges focused on how to lay the vehicle flows, studying the traffic at different times of the day.

Another essential topic for the urban design involved water bodies [8]; one of the main issue is the garbage. The population doesn't know where to leave the rubbish which is left near the water bodies, attracting cows and dogs in search of food. Rubbish and waste invade the streets and the water is highly contaminated; in addition to a sort of recycling by people, municipality van collects plastic and glass, but it's not enough to solve one of the main problems that affect the public space. Design strategies analyzed possible urban spaces and devices where to collect and storage waste and, at the same time, green spaces where cows can move freely and eat healthy without hamper vehicular traffic [9].

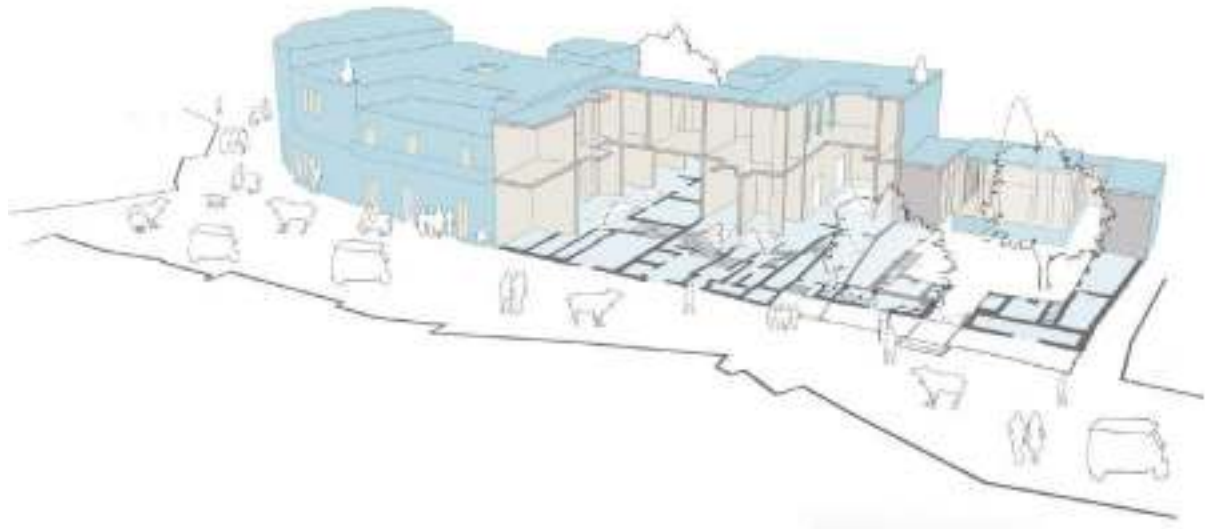


Figure 7: Umed Chowk Neighborhood: a 3D representation of the area near Gulab Sagar lake. The interiors have been completely renovated, and it is possible to see how dense is the structure inside the old aggregation of the *haveli* (image by A. Macrelli, F. Vanelli, N. Khan, T. Choudhary)

3.4 Analysis of the historical surfaces aimed at conservation

During the workshop in Jodhpur, starting from the visual analysis, the survey of facades' colors has been realized in order to complete the investigations collecting data related to one of the most important feature of the "Blue City".

The survey is an essential tool for pre-diagnosis. It is a basic instrument for analyzing constructive stages and techniques, deterioration processes and state of conservation of the artefact. Survey is a basic step of technical and historical-critical evaluation and it is an essential instrument for the conservation project [10]. An accurate and overall survey allows improving the awareness of the needs of the historical city in order to plan maintenance process able to preserve heritage to future generation and to understand how the development of the historic city could meet the need of preservation of tradition and heritage [11].

At a later stage than the analysis of location, context, social attitudes, architectonical features, analysis of materials, constructive techniques and state of conservation, a visual-

4 CONCLUSIONS

In the last years many things have changed and have been lost in historic centers of many countries. People want to update their houses with modernity, and there is the urge of improving the living standard [13].

With the rest of Rajasthan, Jodhpur is progressing into an era of tourism with several earlier havelis being modified into high end hotels and some into home stays. The locals are trying to find a place for themselves and fit into this new structure. While their love for the old city has not diminished, some of the residents are moving into the city outside of the walls in a search of a modern lifestyle making way for the migrant population.

Changes in the physical structure in Jodhpur old city are inevitable and have been continuing from ancient times but there is the need of control over these changes [14]. There is a strong need of legislation and mechanisms to start a Building By-Law implementation able to explain what to do in order to preserve the original structures: there must be a soft change able to retain quality of the building. It doesn't have to be development versus conservation; the two issues should go along together. Very often the major transformations are brought by social changes: new life styles, hereditary divisions of the buildings, need for space, and new services highly modified the cultural heritage in the past years. In Jodhpur historical centre three quarters of the residents are owners of the buildings, thus there is a strong need of legislation and mechanisms of protection that could drive and assist this people. Even if a preservation plan could be applied to parts of old cities maybe starting with some pilot projects it is important to highlight that a certain degree of alteration is nowadays necessary: strict conservation policies are useless without an effective compromises between development and preservation.

The design experience in the historic city of Jodhpur focused on new approaches and methodologies to analyse the historical urban context in order to harmonize the new interventions and projects in existing heritage and meet the contemporary requirements, with the aim of sensitising, in the matter of heritage conservation respecting the local tradition and meeting the needs of the local community.

The documentation by the students of 2013 and of 2014 was exhibited at CEPT and at Mehrangarh to allow people to see and be aware of their sustainable historic city in the form of "Jodhpur box". The creation of Jodhpur Box and its ability to trigger an active conscience is a great opportunity.

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CHAPTER IV

FACTORS AFFECTING NEW DESIGN in HISTORIC ENVIRONMENT



REHABILITATION OF HISTORICAL STUDENT RESIDENCES

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Keywords: Historical Student Residences, Assessment Performance Tool, Global Quality, Efficient Rehabilitation

Abstract.

Introduction:

The rehabilitation of the historical buildings is a significant field of investigation on the introduction of operative tools that can control many variables involved in the definition of quality levels. After an analysis of existing tools and methodologies for assessing the quality of buildings it can be immediately detect the characters of partiality of the aspects considered; categories identified above have, however, an obvious character of complementarity in the construction of an organic framework of parameters that come into play in the qualitative assessment of a building. The goal of the research is the definition of an innovative tool for assessing the quality of a collective residence based on objective parameters of technological, environmental and functional nature, in order to support decision making on the rehabilitation.

Developments:

The assessment tool is organized in 6 thematic areas, 16 indicators and 62 parameters to which are assigned different weights depending on the different incidence. For each thematic area are identified the requirements that must be verified, and its system of parameters, which are associated the scores; the tool returns an overall score, determined by the sum of the partial scores for each thematic area. The different scores can determine the strategies and action priorities for the improvement of functional and energy performance of the building.

Remarks and Conclusion:

The assessment tool of the global quality has been applied to university residences that were built in a very different historical period compared to the times we are living today and for this reason result to be inadequate in several aspects.

The comparison between these buildings, belonging to the same authority for the Right to the University Studies, seems to be very useful in order to prioritize the interventions and understand what are the major gaps found in these type of buildings.

1 INTRODUCTION

The issue of requalification and reuse of historical and architectural heritage is a topic of great interest in a country like Italy, where many public functions are located in the buildings of the past, for the excellent location (often in the center of the city) and the socio-cultural value that have taken over in the centuries. These are buildings (sometimes entire blocks or parts of town) that have become benchmarks not only for the community living in them daily, but also of the entire Italian population and, in some cases, their reputation has been beyond national borders.

Considering that approximately 40% of the artistic and architectural heritage of the world is in Italy, it is easy to understand that the requalification and reuse of this heritage is a challenge but also an opportunity for substantial growth. The challenge is the need to work in buildings and urban spaces of conscious and respectful of its history and identity, in order not only to preserve the image quality, but also to improve it. The opportunity for its development is given by the great "demand" of the culture that exists in today's society, where the possibilities of travel have increased in the past and said "cultural tourism" motivates thousands people (including students) to exhibitions, events and places that produce culture, motivated by the desire to share and learn and the desire to close the gap between him and the object of culture. The identity of Italian culture, at this time in search of survival and recovery, see precisely in the new forms of relationships between heritage and users new opportunities for development.

From this awareness, the research group of the University of Pavia (coordinated by prof. Alessandro Greco) conducts researches on requalification and reuse of historical and architectural heritage, with special attention to the historic buildings used by university students, such as student residences managed by EDiSU (Organization for the Right to University Study).

Pavia is a small town (about 65,000 inhabitants) in northern Italy whose the University has a history of over 650 years; the life of the city is so closely linked to that of the University, attended by over 22.000 students, many of whom come from other regions and from other States. To this demand for temporary residentiality, the EDiSU responds by offering around 1,400 beds in 10 student residences located in the city, some of them in the centre of the city and others in more suburban areas. Among these student residences some have historical origins, such as Collegio Castiglioni (1429), Collegio Cairoli (1781), Collegio Fraccaro (1800) and Collegio Spallanzani (1880), that result to be inadequate under the typological, technical and energetic aspects.

This paper presents the methodology used in the research phase to evaluate and compare the performance quality of the student residences managed by EDiSU in order to prioritize the interventions and understand what are the major gaps found in these buildings.



Figure 1: Student residences in Pavia managed by EDiSU (Organization for the Right to the University Studies)

2 ENERGY ANALYSIS OF HISTORICAL BUILDINGS

The historic buildings now play a greater significance to the community compared to what happened in the past when it was hard to identify their importance. Such constructions in fact, beyond their beauty and the recognition of their value, are essential as bearers of our historical identity, testimony of the period in which they were built.

Although, sometimes, the legislation allows invasive interventions not recognizing the building in question enough important to make it the subject of protection, however appropriate, considering the historical value that covers, subjecting it to a real restoration.

In the restoration, as is known, does not lie the solution more economic or practical, but the one most appropriate to the quality and value the object, by definition unique, unrepeatable and unrecoverable once it is been irreversibly damaged.

The category of so-called historic buildings, including both buildings defined cultural heritage, both worthy of being passed down to their historical-documentary or artistic value, contains a comprehensive set of buildings and consequently, a considerable variety of characteristics, values and constraints.

The amplitude of the topic makes it difficult to establish interventions operationally valid, for the inability to govern such variety in a limited time. In order to establish a practical way to proceed, it is therefore necessary to define the scope of investigation, focusing on a specific area, which allows to restrict the variables.

The limitation of this research to student residences in Pavia, a field of investigation limited by the geographical point of view to a region with own legislation on the subject, and limited from the point of view of the type of building to historic buildings typical of the area, allows to assess in detail the operations that are compatible.

The interest for these buildings, beyond the variety of characteristics they have, comes from the fact that today are often subjected to transformation operations, in order to make them appropriate to the needs of the present.

At present can't be ignored the carefully evaluate to energy aspects of the restoration project, though, for the analysis of the regulatory framework at international, national and regional level, this type is excluded from the scope.

The restoration intervention will not be so transformed, but only enriched by a component necessary today that, when integrated with other aspects of restoration, not be more invasive but placed evenly throughout.

In the first place there must be compatibility between the intended use and building; result essential verify that the selected function does not require a reversal of the physical substance and form of the building to be restored, not only in terms of loads, but also what are the facilities and microclimate conditions necessary for the establishment of such a function.

Reasoning to the scale of the building it is possible to evaluate every single technological element, every system and every bioclimatic device, in order to propose interventions that are compatible with the possibility to modify parts of the building object of intervention.

It follows that, analyze the characteristics of the building and taking into account the regulations, you will have to assess whether and which interventions are practicable.

In this sense it is important to understand where to stop: it is not always possible to find a meeting point between conservation and energy upgrading.

3 TYPOLOGICAL AND TECHNICAL ANALYSIS OF HISTORICAL STUDENT RESIDENCES

To achieve a good design on the intervention of the typological and technical improvement of a university residence is essential to understand what are the current needs of users: university students.

To do this it was necessary a temporal analysis of various university residences, taking into account both the Italian and European experiences.

To allow a comparison between the different entities, has been prepared a card - type which have been identified the particular characteristics of the university residence buildings. For each project are explained the technical data, space-time, quantitative and qualitative data based on the development of some parameters.

These are:

- Place. The geographical parameter reveals the residential tradition established in different countries and makes it recognizable the cultural and projectual matrix.
- Time. The historical data is important to understand the pattern of spatial organization in relation to economical and political trends of the society that has produced the space.
- Characters morpho-typological. The compositional and formal indicator is closely linked to the previous two, because it's determined by the building traditions of a place or of a given period.
- Quantitative data. The dimensional aspect is a fundamental parameter on both the quantitative and qualitative terms of the project. It is also able to determine the level of socialization of users and their interaction with the environment.
- Localization in the area. The university residence requires a high degree of integration with the environment, such as to establish three types of relationships at three different scales: relations with the region, relations with the structure of the city and relations with the university.
- Qualitative characters of the building. Through the reading of elements such as the provision of services and facilities you can determine the degree of attractiveness of the residence.
- Qualitative characters of residential spaces. The data for the model of organization of the group, the type of group rooms and their approval, allow to identify the size and modes of socialization.

To the model of student no more massified, with different needs even within the same environmental and social context, corresponds the analysis of international projects, even more recent, of university residence from which it is deduced as compared to the types identified even in the most updated manuals on the subject, the reality present a multiplicity of formal and organizational solutions very rich and varied.

The traditional and simple organization to hotel remains in a smaller number of cases, but with different joints ranging from the case where each room is equipped with bath those where every bathroom is attributable to two or more users.

Alongside this classical solution appear most complex joints such as those of integrated core (rooms that share a number of services, including kitchen/living room) or studio flat (complete and autonomous residential units for the presence of bathroom, kitchen and living room).

Unlike the organization as a hotel, the integrated core and studio flat record more spatial and functional articulations able to realize life environments less uniform, more stimulating from the point of view of perception and appropriation space.

These types also adapt well to different distribution organizations of the building, are them a corridor or central core and allow the design of residential unit size variable (from two to four rooms).

The organizational models of integrated core and studio flat, in some aspects, are the negation of collegiate life by increasing the maximum privacy, while reducing to the minimum the opportunities for socialization that arise from the sharing of activities to carry out in the common areas.

As regards the number of beds per room the majority of the residential units includes single rooms; double rooms are in Italian and American student residences, while in England and Germany these cases are negligible.

The living room, TV room, games room, study room with adjoining eventual library and laundry are the collective services most widespread and mainly located on the ground floor and distributed to the floors.

The kitchen as a centralized service and unique for the entire structure or even for multiple neighboring facilities and managed by staff (canteen) tends to become widespread service available to a contained number of students taking mostly the configuration of the kitchen at floor in order to allow the self-management of meals at least once a day to users that even with respect to this function follows different and individual rhythms of life.

Bars, cafes, restaurants and shops, which are present in a number of student residences, are nearly always expected open to the neighborhood and designed to avoid phenomena of spatial segregation and social marginalization resulting from strictly monofunctional territorial planning.

Exceptional and only in some foreign residences there are nurseries for child custody of students and chapels managed by religious communities for students of the theological faculties.



Figure 2: Card - type of university residences

Figure 3: Comparison of organization model, distribution system and collective facilities distribution in Italian and European student residences

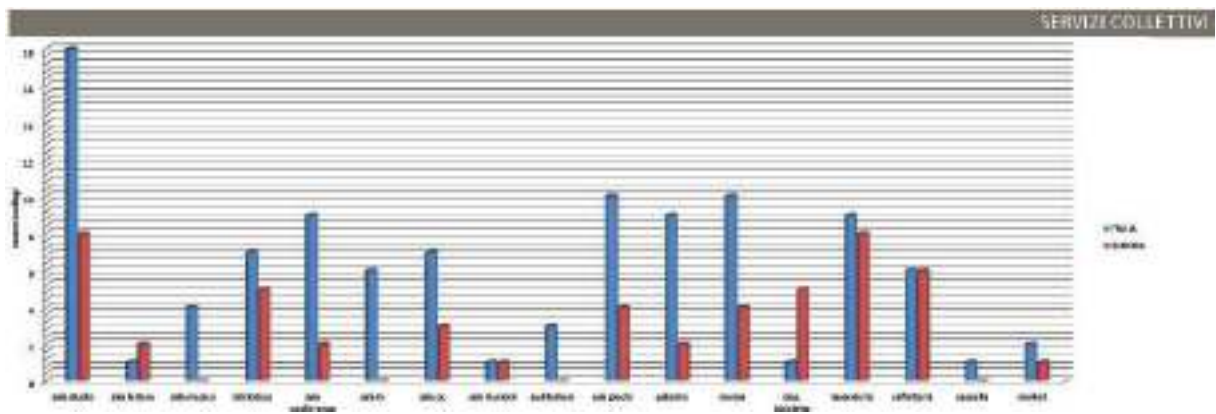


Figure 4: Comparison of collective facilities in Italian and European student residences

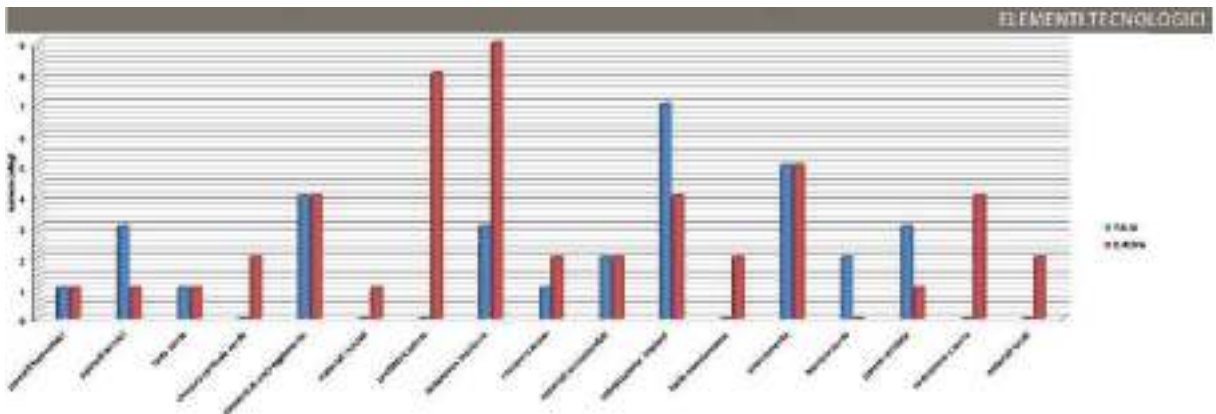


Figure 5: Comparison of technological elements in Italian and European student residences

4 APUR-TOOL: ASSESSMENT PERFORMANCE UNIVERSITY RESIDENCE

The inadequacy of technical-typological aspects is found in the different parts that compose a student residence (accommodations and rooms, communal services and building distribution) and in construction systems, typical of historic buildings (bearing walls poorly flexible and adaptable, shortages of plant equipment, ecc...). From the point of view of energy saving, the historic building usually presents problems related to the absence of building components (thermal insulation) or the absence of a programmed maintenance.

The aim of this work of research is the definition of a useful tool to assessing the conditions on the state of the art of a collective student residence based on objective parameters through which define the possible actions on the building to improve the energy, typological and technical aspects.

APUR tool (Assessment Performance University Residence) is organized in 6 thematic areas (Site quality, Comfort and well-being, Accessibility, Functionality, Safety and Energy), 16 requirements and 62 indicators to which are assigned different weights depending on the different incidence.

For each thematic area are identified the requirements that must be met, and its system of indicators, which are associated the scores; the tool returns an overall score, determined by the sum of the partial scores for each thematic area. The different scores can determine the strategies and action priorities for the improvement of functional and energy performance of the building.

The purpose of the indicator assessment tool is to illustrate the overall performance of a student residence evaluated in structured way. The calculations are made possible by the Excel tool.

The user of the tool needs first of all to fill, in the phase 1, a general information sheet of the building which is dedicated to the collection of general information regarding the building under analysis; these informations are used to provide a synthetic description of the building, with an indication of the dimension, the activities performed and the number of students.

The indicator assessment is done in the phase 2 with an evaluation sheet.

Each indicator is assessed by defining a level from A to E. This is done by using the letter "X".

The Excel tool computes values that describe the quality of the performance as an overall APUR score. The APUR score is a value between 0 and 100 representing the performance of a student residence in respect of the APUR framework.

The indicators are divided into five main thematic areas:

- Site quality.
This category assess the location of the residence in the city, the closeness to public transports and the security of the area.
- Comfort and well-being.
This category includes the evaluation of the parameters related to the healthiness of the indoor environment and the comfort of people living in the building or simply visiting it.
- Accessibility.
This category includes the indicators related to the easiness in using the building by people and the easiness of movement inside the building.
- Functionality.
This category is related at the adaptability of the spaces, at the maintenance of the building and at the quality of the facilities.
- Safety.

This category is mainly related to the building structures and equipments that could improve the security and safety perception of people and object inside the building.

- **Energy.**

The last thematic area assess the energy production (electrical and thermal) from renewable resources.

4.1 Site quality

This section contains the indicators identified to assess the level of site quality of the student residence. Three performance indicators have been identified in this thematic area:

1. Location. The location is related to the insertion in the urban context of the city and at the closeness of the Universities.

2. Transport. Transport refers to the closeness of public transportation, of car and bike sharing point and the presence of bicycle racks, parking area and cycle paths to city center and to universities.

3. Secutity. This indicator assess the presence of personal and material security in the building and in the external area and the distance of crosswalks from the entrance of the student residence.

4.2 Comfort and well-being

This section contains the indicators identified to assess the level of health and comfort for the indoor environments. Eight performance indicators have been identified in this category:

1. Thermal Comfort External Wall. Thermal comfort is related to the thermal conditions of an external wall, based on the transmittance and thermal lag values.

2. Thermal Comfort Roof. Thermal comfort is related to the thermal conditions of the roof, based on the transmittance and thermal lag values.

3. Thermal Comfort Ground Floor. Thermal comfort is related to the thermal conditions of the ground floor, based on the transmittance and thermal lag values.

4. Thermal Comfort Windows. Thermal comfort is related to the thermal conditions of the windows, based on the transmittance value and type of glass.

5. Indoor Air Quality. Indoor Air Quality is related to the quality of the indoor environment in terms of temperature and relative humidity and the presence of mould growth risk and air polluting substances in the indoor microclimate that could be a hazard for human health.

6. Water Quality. Water quality refers to the availability of water and the presence in it of chemical or biological pollutants. The indicator evaluation includes the presence and the quality of system for water re-use.

7. Visual Comfort. Visual comfort assess both the illumination of common spaces and private spaces. The presence of light in a room also has a positive effect, psychologically and biologically, upon human weel-being.

8. Acoustic Comfort. Acoustic comfort is related to provide acoustic conditions in a building that facilitate clear communication of speech between the users of the building, and silence whenever needed.

4.3 Accessibility

This section contains the indicators that play an important role in the evaluation of the easiness of use of the indoor environment of a building for people living. One performance indicator has been identified in this category:

1. Usability. Usability, is concerning the quality of use for a building meaning that it is efficient in use (use of resources, productivity, effectiveness, rationality) and that offers the de-

sired effect in use (increasing the value). Usability mainly focuses on accessibility and the easiness of movement inside the building.

4.4 Functionality

This section contains the indicators identified to assess the level of functionality in use. Two performance indicators have been identified in this category:

1. Adaptability. The adaptability of student residences could be defined as their ability to be changed or modified to make suitable for a particular purpose. Adaptability includes aspects of flexibility and convertibility. Good adaptability of a student residence should assure its functionality over time and during changes in user demands and needs, and new ways of using the building.

2. Service and maintenance. Service and maintenance is related to the quality of the collective and private services of the student residence and to the level of planned maintenance.

4.5 Safety

This section contains the indicators identified to evaluate the building structure from the point of view of safety, considering the building, the people working or living in it, the visitors and the valuable objects inside it. One performance indicator has been identified in this category:

1. Safety. Safety is related to the evaluation of the possible risks that could pose a menace to people and the objects in the building. This indicator considers the presence of adequate escape routes and the compliancy to national regulations in terms of safe environments.

4.6 Energy

This thematic area includes indicators to evaluate the energy production from renewable resources, considering electrical energy, thermal energy and domestic hot water production.

COLLEGIO SPALLANZANI													
APUR Tool													
Assessment_Performance_University_Residence													
AMBITI DI VALUTAZIONE		INDICATORI	CRITERI				CLASSE DI PRESTAZIONE					VALORE DI PRESTAZIONE	
							A	B	C	D	E		
1.	SUE QUALITY	Location	20%	1 Urban context	35%	1,05%			x			60%	0,63%
				2 University context	35%	1,05%			x		60%	0,63%	
				3 Student residences context	30%	0,90%			x		60%	0,54%	
		Transport	60%	4 Public transportation _ train station	20%	1,80%				x	40%	0,72%	
				5 Public transportation _ bus station	20%	1,80%				x	40%	0,72%	
				6 Public transportation _ bus inside the town	20%	1,80%	x				100%	1,80%	
	7 Cycle paths - city centre			10%	0,90%				x	0%	0,00%		
	8 Cycle paths - universities			10%	0,90%				x	40%	0,36%		
	9 Car sharing			10%	0,90%				x	40%	0,36%		
	Security & Safety	20%	10 Bike sharing	10%	0,90%				x	40%	0,36%		
			11 Personal and material security	50%	1,50%			x		60%	0,90%		
			12 Safety of surroundings	50%	1,50%			x		80%	1,20%		
		100%										8%	

5 APPLICATION OF APUR-TOOL TO DIFFERENT STUDENT RESIDENCES IN PAVIA

The aim of the research, in this phase, is to show which are the first results, applying APUR-tool to different student residences located in Pavia and managed by EDiSU (Organization for the Right to the University Studies).

In this group of university residence some of them have historical origins (Collegio Fraccaro – 1800; Collegio Spallanzani – 1880) and others have been built in more recent times (Collegio Valla – 1930; Collegio Griziotti – 1975; Collegio Golgi – 1977; Collegio maino – 1990; Collegio Volta – 2000).

After the compilation of general informations foreach building was carried out the assessment phase, using APUR-tool, assessing each indicator by putting an “x” in the correct column value (from A to E) using the instruction manual for the compilation.

At the end of building assessment the tool returns different results: one referring to the global quality of the student residence, one referring to the total of each thematic area, one referring to each requirement and another one referring to each indicator.

In this way is possible to establish a priority for interventions based on the total score of thematic area or based on a single indicator.

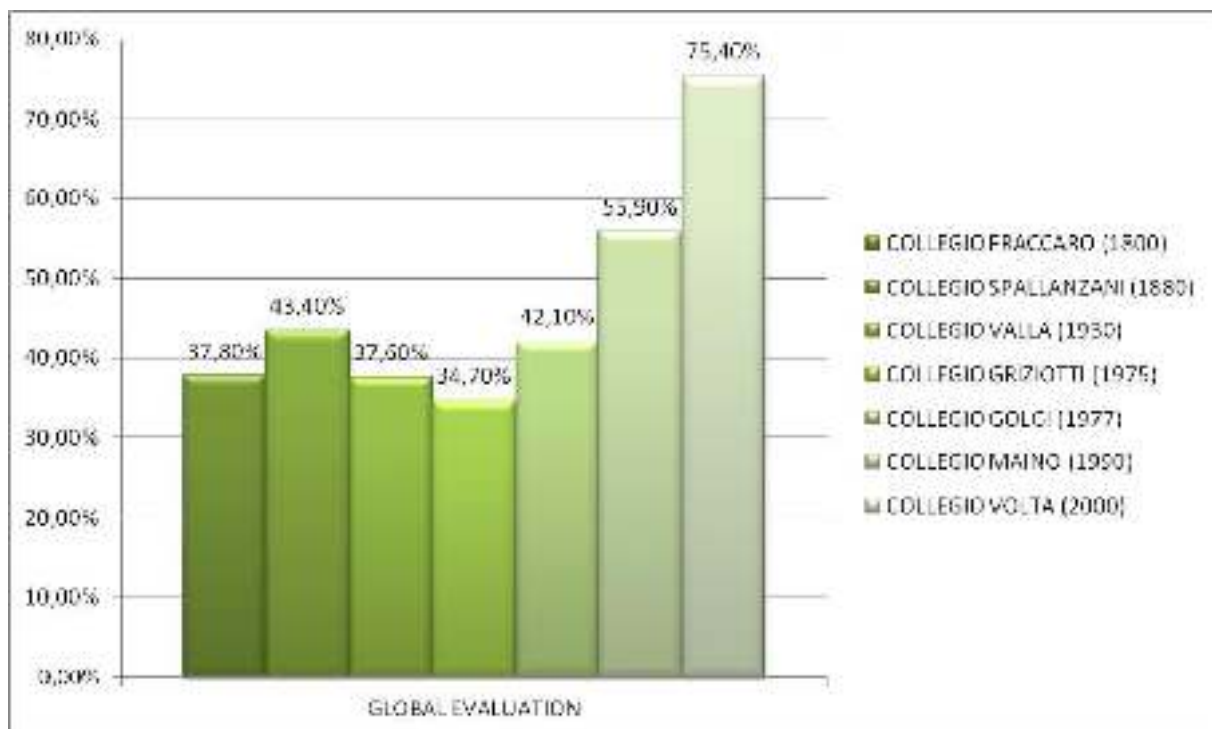


Figure 7: Global evaluation of student residences in Pavia

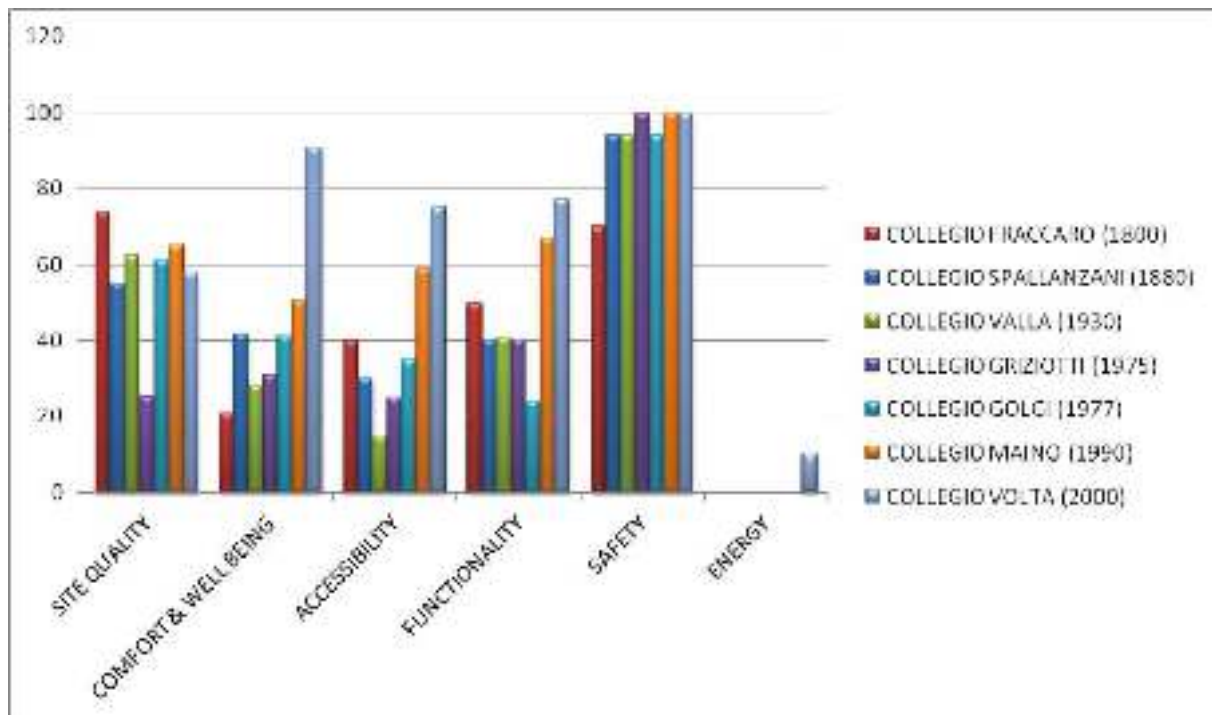


Figura 8: Thematic areas evaluation of student residences in Pavia

6 CONCLUSIONS

Comparing different results you can see how these student residences are inadequate in the energy production with renewable resources, in the comfort and well-being (thermal, visual and acoustic comfort) and in the accessibility of the building to different levels (from the entrances to common and private spaces).

It's possible to determine that the priority is the intervention on Collegio Griziotti and that the bigger problems are related to the energy production (0%), the accessibility (25%), the site quality (25,2%) and the comfort inside the residence (30,83%).

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AN ANALYTICAL APPROACH FOR EVALUATION OF CONTEMPORARY ADDITIONS TO ARCHITECTURAL HERITAGE

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Keywords: Conservation, Architectural Heritage, Remodeling, Contemporary Addition, Design Principles

Abstract.

Introduction:

Heritage buildings are valuable in terms of collective memory; therefore they need to be sustained for future by reusing and renovating existing fabric. In the adaptation process of these buildings, new additions are required either to meet the needs for new function or to create structural, aesthetic and functional missing parts. Design approaches to these additions are one of the most commonly discussed issues in the conservation field. In an addition design to historic building, to preserve the qualities of the existing building and being respectful to the existing building is crucial. The main goal of the study is to emphasize the constraints that must be cared in an addition design. The aim of the research is to develop an evaluation method which includes contemporary conservation principles and design principles for contemporary additions to historic buildings.

Developments:

For the development of the proposed evaluation method, 20 examples of contemporary additions on historic buildings have been selected and grouped. Then, a matrix has been developed for the evaluation of conservation and design approaches of the additions. These principles have been identified through the literature survey of the related sources. At the end, an empirical research has been done in order to test the proposed method. Kadir Has University building has been selected as empirical study. Different additions on the building have been evaluated by proposed matrix in terms of conservation and design principles.

Remarks and Conclusion:

Proposing the most appropriate addition to the heritage building is a crucial issue in terms of preserving the aesthetic and cultural identity of the building. In order to evaluate the success of the design of the addition; conservation and design issues should be considered together. An addition could be successful in terms of conservation issues. Moreover, it should be successful in terms of design approach as well.

1 INTRODUCTION

Reuse of existing buildings is becoming more crucial at the end of second millennium, especially in Central Europe. However, construction of new structures has started to decline. Awareness of ecological issues is increasing and demolition of old structures is perceived as ecological waste [1]. Working in the existing fabric is not only a problem of preserving historical buildings. But 40 percent of design and construction is conversion of old buildings instead of demolishing the existing resources [2]. Simply, conversion of an old building is cheaper and less complicated than new construction. However, the new interest in adaptive reuse transform abandoned buildings into major landmarks with necessary additions if needed [3]. Additionally, preservation of these structures is important since interventions to historic buildings provide a link to our cultural heritage and historic memory [4].

Adaptive reuse of a building is the process of converting an existing structure for new uses [4]. It is more than an intervention which includes changes in function and capacity of performance. It can consist of different methods like alteration, conversion, extension and refurbishment [5]. In the adaptation, new extensions can be required either to meet the need for new function or create structural, aesthetic, functional missing parts [6]. The main goal of the study is to emphasize the constraints that must be cared in an addition design.

2 THEORETICAL BACKGROUND ON CONTEMPORARY ADDITIONS

2.1 Definition of remodeling

There are different methods that used in conservation of historic buildings. Remodeling is one of the methods used in building conservation [7]. Additionally, it is one of the mostly discussed issues in the conservation field, since there are different arguments by different experts. It is the process of altering an existing building which it includes changes in its structure, circulation routes and orientation. The most obvious change is the function, while some parts can be demolished or new additions can be proposed [8]. Remodeling indicates all kinds of renovation activities for reuse of building during the adaptation process of an old building. It is to extend the physical, functional and social lifespan of building by improving its functions. It indicates repair, mending, renovation, expansion and reconstruction by keeping the basic frame of the existing building as it is [9]. “Remodeling is a North American term analogous to adaptation. It essentially means to make new or restore to former or other state or use [5]”.

Norman Fosters Dome on the old Parliament building, Louvre pyramid and British museum are the significant examples of remodeled historic buildings [7]. They became major landmarks of the city after conversion and additions. New additions have also added another value to the building rather than destroying the character and identity of the historic buildings.

2.2 New additions to historic buildings

Additions to historic buildings are a crucial topic of architectural conservation. There have been many discussions about the proper approach of additions to historic buildings [10]. New additions are considered major interventions to historic buildings. A new addition to a historic building comprises the problem of having an appropriate relation between traditional and contemporary architectural language [11]. A new addition should preserve significant materials, features and the historic character [12].

Addition design can be more complicated than a new design since existing structure brings design limitations of working. There are also problems such as planning, legal and structural issues that should be taken into account. Circulation, access, structural integrity and choice of materials should also be considered. It is hard to define universal characteristics of an appropriate addition since it varies according to the existing structure. Simply, an appropriate addi-

tion should revitalize and enrich the existing building. It should work as the part of the whole composition rather than a single project attached to the existing building [13].

3 METHODOLOGY

This study is analysis and synthesis type of research with different type of additions to existing historic buildings. The data is collected through analysis of the examples in the literature and observation of an empirical study. The main goal of the study is to emphasize the constraints that must be cared in an extension design.

20 examples of remodeled building are selected and categorized according to the connection between existing building and additional part as integrated, attached, inserted, wrapped and pierced. These categories are introduced after the analysis of the case studies which were selected out of 100 examples. Secondly, appropriateness of the additional parts has been examined in terms of conservation and design principles.

Then, an empirical research has been done to test the proposed method. Kadir Has University campus has been selected as the empirical study of the research. This building has been selected since different type of additions, which is identified, exists in the selected building. Proposed analysis method has been tested through empirical study and additions in case studies have been compared with the Kadir Has University building. At the end, evaluation of the results had been discussed in the conclusion.

4 DEVELOPMENT OF EVALUATION METHOD FOR CONTEMPORARY ADDITIONS TO ARCHITECTURAL HERITAGE

For the development of the proposed evaluation method, 20 examples of additions has been selected and grouped. Then, a matrix has been developed for the evaluation of conservation and design approaches of the additions. These principles have been identified through the literature survey of the related sources.

4.1 Classification of contemporary additions

20 case studies of remodeled buildings are selected according to some limitations. Selected buildings are public buildings which are converted into different functions like museums, cultural centers, libraries, etc. and are selected from different countries. The proposed additions have contemporary structure while existing parts are old structures. 20 selected examples are grouped in five categories as shown in Table 1.

CATEGORY	EXAMPLE 1	EXAMPLE 2	EXAMPLE 3	EXAMPLE 4
INSERTED	Museo del Novecento, Milan	Bastard Store, Milan	Gasometers, Vienna	Church of St. Mary Library, Munchenberg
ATTACHED	British Museum, London	Albertina Museum, Vienna	Landesausstellung Karnten, Huttenberg	Bedesten, Cyprus
PIERCED	Documentation Center for the Third Reich, Nuremberg	Archbishopric Museum, Hamar	Rivoli Museum of Contemporary art, Rivoli	Leopold Museum, Vienna
INTEGRATED	Tate Modern, London	CET, Budapest	ING and NNH Bank, Budapest	Reichstag, Berlin
WRAPPED	Santa Catherina Market, Barcelona	National Museum of Roman Art, Merida	Hedmark Museum and Glass Cathedral, Hamar	Culture and Education Center, Den Helder

Table 1: Selected case studies that are grouped in 5 categories

There are different classifications of additions in previous studies done so far [14]; [13]; [15]; however a different classification method has been developed in this research. In this study, additions are classified according to the location of the addition within the context of existing building as integrated, attached, inserted, wrapped and pierced [16].

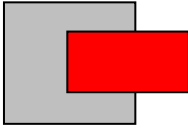

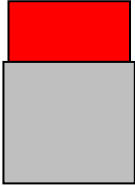
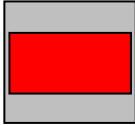
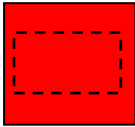
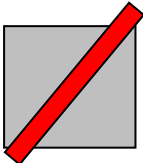


CLASSIFICATION OF ADDITIONS ACCORDING TO THE RELATIONSHIP BETWEEN EXISTING BUILDING AND ADDITION		
TYPE	RELATIONSHIP	PROPERTIES
INTEGRATED		<ul style="list-style-type: none"> • Reflection to the outside • Can be seen from elevation • Inserted inside but combined • Addition punched out from openings or roof.
ATTACHED	HORIZONTAL 	<ul style="list-style-type: none"> • Added horizontally next to the existing building • No integration with the existing • Free standing structure • Complete addition can be seen from outside
	VERTICAL 	<ul style="list-style-type: none"> • Added vertically next to the existing building • Integration with the existing • Complete addition can be seen from outside
INSERTED		<ul style="list-style-type: none"> • Interior scale projects • No reflection to the elevation • Defines space within space
WRAPPED		<ul style="list-style-type: none"> • Existing building is surrounded like an envelope • Provides unity between different parts of the existing buildings • Old structure cannot be seen from outside
PIERCED		<ul style="list-style-type: none"> • Linear extension • Reflection to the outside • Inserted inside but combined • Addition punched out from openings or roof.
LEGEND	 → EXISTING	 →

Table 2: Classification of additions according to the relationship between existing and addition [16]

4.1.1 Integrated with the existing building

In the process of remodeling, new spaces can be needed to define new spaces because of the changes in the function and space requirements. New structures can be added to the existing buildings in order to satisfy the needs of the new function. In this category the additional part is integrated with the existing building, forms a composition and it is perceived from the outside of the building.

4.1.2 Attached to the existing building

The second category there is no integration while new structure is attached to the existing building horizontally or vertically. Addition is a freestanding element attached to the existing without any structural integration. Addition can be perceived from outside of the building. It is the mostly used types in addition design to historic buildings since combination of existing and addition is less challenging in comparison with the other types structurally.

4.1.3 Inserted inside the existing building

Inserted type of addition is mostly seen in interior design projects. New structures added inside the existing building, mostly defines space within a space. It is again a freestanding element. The new addition may include different functional activities that can easily be separated from the main activity of the building. New addition can be a slab in the building or can be a volumetric object that defines sub-spaces with the existing building. Mostly, the addition cannot be perceived from outside of the building.

4.1.4 Wrapping the existing building

Wrapping type of additions covers the existing building as a shell that a surface is constructed to cover the surface of the original building. It gives the appearance of a completely new building. New addition is independent from the original building. Wrapped structure can be a ruin, a demolished structure or a complex having small different parts therefore addition acts as combining different parts together. Addition is needed to cover the old structure like an envelope to achieve sense of completeness between building masses. Addition creates a surprising effect for the people when they enter inside the building since old building cannot be perceived from outside.

4.1.5 Piercing the existing building

In conversion projects existing organizations of the buildings may not fit with the requirements of proposed functions so circulation and organization need to be changed with the help of an addition. In pierced type of addition mostly a linear addition is pierced through the building providing a circulation route inside the building which is commonly seen in museum conversions.

4.2 Evaluation criteria for contemporary additions on historic buildings

Design criteria of new buildings in historic environment and new additions to historic buildings are issues which are discussed a lot in the conservation field [5], since preserving the qualities of the existing building and being respectful to the existing building are crucial. This study examines conservation and design principles of the additions to remodeled historic buildings. Firstly, conservation principles are explained that must be cared in addition design and design principles is defined to answer the question how these conservation principles will be supplied.

4.2.1. Conservation approach to additions

There are different charters and standards in order to define criteria for the design of additions to historic buildings. Venice Charter [17] is one of the important charters and there are two articles for the new additions to historic buildings. Article 12 states that: "Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence". Another article 13 discussed that: "Additions cannot be allowed except in so far as they do not detract from the interesting parts of the building, its traditional setting, the balance of its composition and its relation with its surroundings".

In Burra Charter [18] that is another crucial one it is explained that: "Conservation is based on a respect for the existing fabric and should involve the least possible physical intervention. It should not distort the evidence provided by the fabric. The traces of additions, alterations and earlier treatments on the fabric of a place are evidence of its history and uses. Conservation action should tend to assist rather than to impede their interpretation. New construction work, including infill and additions, may be acceptable, provided: it does not reduce or obscure the cultural significance of the place".

On the other hand, The Secretary of the Interior's Standards for Rehabilitation [19] discussed that: “New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment”. Conservation principles that had been discussed in the international charters had been summarized as below:

- Compatibility with the existing building
- Legibility—differentiated from the old
- Harmonious integration with the context
- Relation of the building with its surrounding
- Balance in composition
- Respect for the buildings history
- Reversibility

4.2.2 Design principles that can be used in addition design

As discussed above there are many articles in charters indicating that the addition should be differentiated and compatible: to be differentiated without defining how, by whom, or to what degree, and to be compatible without offering criteria for achieving a harmonious relationship. The standards do not suggest where the balance between differentiation and compatibility should be placed [21]. In this study, design principles are defined as criteria to balance differentiation and compatibility between existing building and addition.

There are different ways to achieve a successful design of addition. However, the design approach to the addition depends on the creativity of the architect. Compatibility between existing and addition can be achieved either by harmony or contrast. On the other hand, unity can be achieved either by continuity of the existing layout or by adding variety for providing a sense of personality. All these possibilities are represented in the Table 3; however design principles are classified as unity, harmony, contrast, dominance, repetition, balance, scale and proportion, symmetry, hierarchy, rhythm in this study and will be explained in detail.

5 EMPIRICAL STUDY: KADIR HAS UNIVERSITY

Cibali was built in the nineteenth century as a tobacco factory by Ottomans creating a silhouette to the Haliç Sea. The building was designed by Alexandre Vallauray in 1876. Until 1995, building was used as a factory until 1995 and closed for renovation in 1997. There were many volunteers to rent the historic building and use it for different functions because of its strategic location. Finally, it has been decided to convert the factory to university building and the building has been rented to Kadir Has. The renovation project was prepared by Dr. Mehmet Alper. In 2000, conversion process had started and two years later, at 30 January 2002 building was opened as Kadir Has University. The project won the Europe Nostra Prize in 2003 with two of its A and B blocks. Restoration was successful in terms of preserving structure of the building, load bearing parts and originality of the building. The only interventions were about the division of the space with partitions and the adding necessary additions. The most significant characteristics of the building are different historic layers. The building consists of four different historic layers as a Byzantine water tank from the thirteenth century and an Ottoman Bath from the sixteenth century at the basement floor, tobacco factory which belongs to the nineteenth century and the new additions which were added in 2002 [21].

5.1 Analysis of the additions to Kadir Has University

The building has a linear organization, creating a silhouette facing with the Haliç Sea. It is composed of four blocks. There are different types of additions in different parts of the building that is represented by different colors as shown in Figure 1.

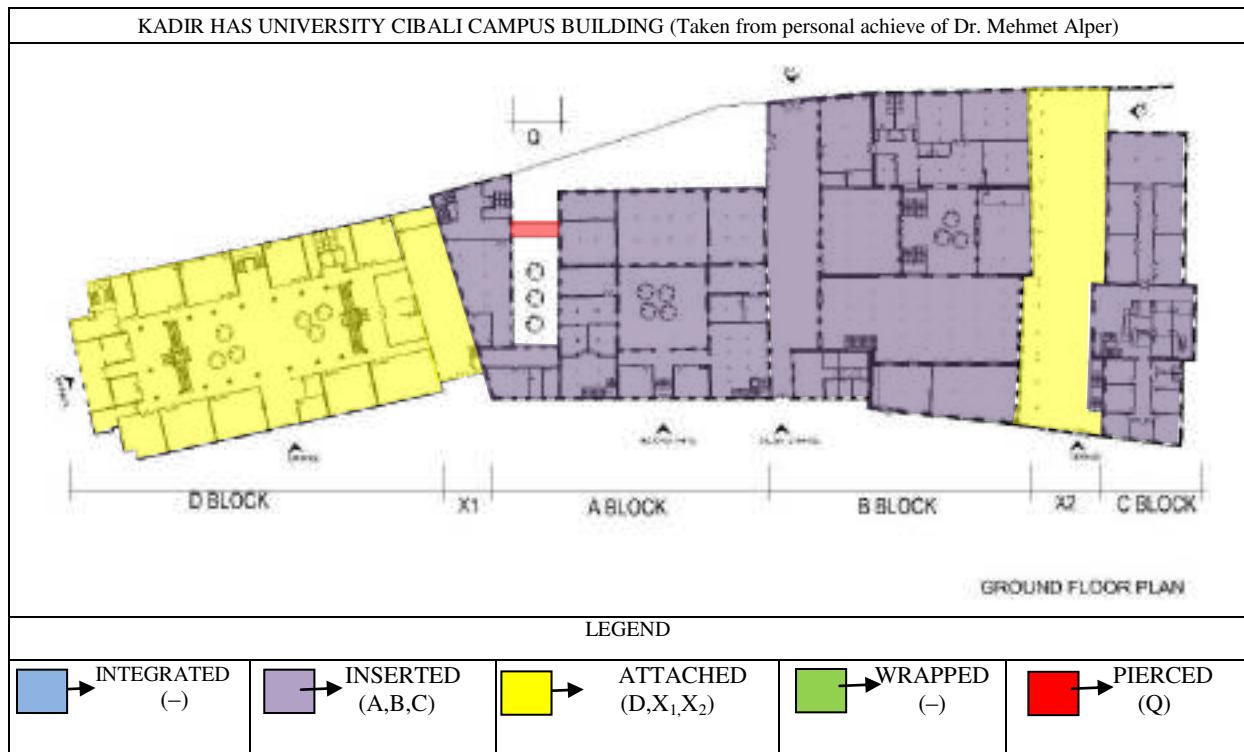


Figure 1: Different additions on the building

Blocks A and B are the renovated factory parts of the building, which is used as administration and educational activities. Some of the existing floors of the block have been knocked down during restoration because they were unsuccessful historical additions built after the construction of the factory and did not have the same language with the existing building. Since the function of the building has been changed, space requirements of the new function have been defined by proposing partition walls by preserving the existing historic walls. The vertical walls have been preserved and new floors were inserted which supported with the steel columns as shown in Figure 2a and 2b.

Block C is using as museum and fine arts department of the university. There is a Byzantine water tank from the thirteenth century, besides an Ottoman Bath from the sixteenth century at the basement floor, which is the museum part of the block. Also, there are temporary exhibitions in the Rezan Has museum. The Fine Arts Faculty of the university is above this museum. The historic walls have been preserved and new floors were inserted, which was supported with steel columns. New required spaces were created with the partition walls like in A and B blocks. Steel columns continue until museum floor, covered with glass at some points in order to have the visual contact between museum and fine arts exhibition hall (Figure 2c).

D block is a contemporary addition, functioned as Cultural Center of the university. It is attached to block A by creating unity with the existing in terms of color, proportion and space organization. New building has a centralized organization with an inner courtyard. New addition has the same proportion of windows with the existing facade. Transparent boxes constructed with steel and glass, functioned as offices were projected towards the inner courtyard.

The courtyard is covered with a glass and steel structure to have the natural light inside. It is constructed with the steel frames as a contrast to the heavy masonry walls (Figure 2d, 2e, 2f).

Additions which are named as X_1 and X_2 are attached type of additions which links the two blocks to each other (Figure 2g and 2h). The addition, which is used as entrance space links two existing blocks B and C. The other addition that is used as cafeteria links existing block A and the new addition, D block. The linear additions, which are parallel to each other act as a linkage of the different parts with different historic layers. The bridge addition, which is named as Q is acting as a linkage between two blocks on the first floor. It is a pierced type of addition which provides circulation access. It has a steel frame structure, covered with glass and hanged to the existing building. Transparency is achieved by the use of steel and glass so it is not destroying the existing facade of the building (Figure 2i). Kadir Has University campus is a large complex with different types of additions which are introduced in the study. Mostly, additions are used to link the different parts of the existing building in order to achieve appearance of completeness. There are different additions used for various functions. Functionally, building works as a whole by the help of the additions.

		
(a) Front Facade Inserted addition (A and B Block)	(b) Interior view Inserted addition (A and B Block)	(c) Museum Inserted addition (C block)
		
(d) View from the road Attached addition (D block)	(e) Front facade Attached addition (D block)	(f) Inner courtyard Attached addition (D block)
		
(g) Cafeteria- X_1 Attached addition (X_1 and X_2)	(h) Museum Entrance- X_2 Attached addition (X_1 and X_2)	(i) Bridge addition Pierced addition (Q)
All photos in the figure are taken by Damla Mısırlısoy in 2013.		

Figure 2: Visual media of the additions in Kadir Has building

5.2 Evaluation of Kadir Has University building

Evaluation criteria of the additions have been discussed so far. In Table 3, conservation and design principles which are discussed so far are brought together to compose a matrix to evaluate contemporary additions to historic buildings. Matrix consists of three parts. In the first part type of the addition is represented, in the second part conservation principles are listed and in the third part of the matrix design principles and approaches are defined. At the right side of the matrix, five different additions on the Kadir Has University building are evaluated according to the defined criteria. If the criteria is exists for the related addition, an 'X' has been inserted to the box. In the following section, the evaluation results of the matrix have been discussed and compared in terms of design and conservation principles.

CRITERIA			NAME OF ADDITION (as in Figure 1)						
TYPE OF ADDITION			A	B	C	D	X ₁	X ₂	Q
	Inserted inside the existing building		X	X	X				
	Attached to the existing building					X	X	X	
	Wrapping the existing building								
	Piercing the existing building								X
CONSERVATION PRINCIPLES	Integrated with the existing building								
	Compatibility with the existing building		X	X	X	X	X	X	X
	Legibility–differentiated from the old		X	X	X	X	X	X	X
	Harmonious integration with the context		X	X	X	X	X	X	X
	Relation of the building with its surrounding		X	X	X	X	X	X	X
	Balance in composition		X	X	X	X	X	X	X
	Respect for the buildings history		X	X	X	X	X	X	X
DESIGN PRINCIPLES	Reversibility		X	X	X	X	X	X	X
	UNITY	Continuity of the existing layout	X	X	X	X			
		Harmonious layout with existing old building				X			
		Repetition of geometrical shapes				X			
		Balance throughout composition				X			
		Adding variety for sense of personality							
		Appearance of completeness							
	HARMONY	Similarities of elements in terms of shape				X			
		Repetition of character with a little variety	X	X		X			
		Use of similar color				X			
	DOMINANCE	Creating center of interest							
		A sudden change in direction							
		A sudden change in size							
		A sudden change in shape							
	CONTRAST	In terms of size					X	X	
		In terms of shape			X		X	X	X
		In terms of material	X	X	X	X	X	X	X
		In terms of position							X
	REpetition	In terms of color			X		X	X	
		Repetition of existing architectural features			X	X			
	BALANCE	Informal balance in composition of layout							
		Formal balance in composition of layout	X	X	X	X	X	X	X
	SCALE–PROPORTION	Achieving human scale	X	X	X	X	X	X	X
		Appropriate height to width ratio							
		Proportion between existing and addition			X	X	X	X	
	SYMMETRY	Bilateral							
		Radial							
	HIERARCHY	By exceptional size							
		By a unique shape							
		By strategic location							
	RHYTHM	Size							
		Shape							
		Detail characteristic							

Table 3: Evaluation matrix applied for Kadir Has University

5.3 Findings

Kadir Has University building has been evaluated by using three criteria which are named as ‘type of addition, conservation principles and design principles’. By this evaluation intense findings have been indicated. According to the analysis, there are three different types of addition on the Kadir Has University building out of five which were defined in the previous sections. There are three examples of inserted and attached type of addition and one example of pierced. On the other hand, wrapping and integrated type of additions do not exist on the building.

Compatibility with the existing building is one of the most important criteria of the conservation principles. The proposed addition and the existing fabric should be compatible in terms of size, scale and massing. Generally, additions are successful in terms of conservation principles. All of the additions on the building are compatible with the existing historic building. Legibility is one of another important factor of the addition design in the historic fabrics. Addition can differ from the historic building in terms of different material, color or design language. New work is differentiated from the old and is distinguishable from the existing building for all different additions. New additions are not only harmoniously integrated with the context, but it also respects the relation of the building with the surrounding in terms of color, height and architectural characteristics. Historic buildings could have different historic layers. Aim of the conservation does not mean to remove all historic layers and preserve one of them. Restoration work respects the building’s history and cultural significance. Dimensions and proportions of the new additions are in balance with the old structure. All additions are designed with steel and glass, which is a demountable structure. Alterations are able to be returned to original conditions.

Unity, harmony, contrast, balance and proportion are the mostly used design principles. Unity is mostly achieved with the continuity of the existing layout for additions A, B, C and D. For the addition D unity is achieved with the harmonious layout with the existing, repetition of similar geometrical shapes and balance throughout composition. Harmony is achieved through similarities of elements in terms of shape and use of similar color on the facade for addition D and is achieved through the repetition of character with variety for the addition A, B and D. Contrast is one of the most commonly used design principle for the addition to historic buildings. Additions contrast with the existing building in terms of material for all types and in terms of size for the additions X_1 and X_2 . Again, contrast is achieved in terms of shape and color for the additions X_1 , X_2 and C. Repetition is achieved through the use of existing architectural features for C and D. Formal balance is achieved in composition for all additions. Also, human scale is achieved for all additions. For additions C, D, X_1 and X_2 , existing building and addition have a suitable proportional relationship.

On the other hand, hierarchy, symmetry, rhythm and dominance are not a commonly used design principle for the addition design to historic buildings since for the new addition dominating or having hierarchy on the historic building is not a correct approach in terms of conservation principles.

6 CONCLUSION

Reusing and remodeling an old building is a worthy challenge since having different layers on a single building makes buildings unique and charming in terms of identity. Combination of old and new is a problem when remodeling old buildings. Generally, it is agreed in the research that additions should reflect the date that they are built in terms of innovation, technology and material. When reflecting its own era, compatibility between the old and new must be shown.

Evaluation criteria for additions to historic buildings are an important issue in the conservation field. Preserving the qualities of the existing building and being respectful to the existing building is crucial. In this study, constraints regarding addition design have also been emphasized in Table 3.

Remodeling is a crucial issue since old buildings are aesthetic, cultural and economic resources. In order to evaluate the success of the design of the addition; conservation and design issues should be considered together. An addition could be successful in terms of conservation issues. Moreover, it should be successful in terms of design approach as well.

The study had been determined design criteria that must be cared in addition to historic building; and creates a reference for the designers who work on existing fabric. The significance of this study is to guide architects in designing new additions for historic buildings. Additionally, this method can be used for local authorities to judge the projects. The main goal of the research is to raise the awareness of the issue of addition design to historic buildings, and prepare a base for the other researchers to develop this study further as a guideline.

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Investigating Loft Spaces' Interior Design Approaches with Re-Use Principles: Case Study of London Lofts

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Keywords: Loft spaces, Re-use, Responsive Interiors, Autonomous Interiors, London Lofts

Abstract.

Introduction

Sustainable reuse of the built environment is an important subject and one of the main scopes of interior architects. They reorganize and improve existing spaces or provide completely a new approach in flexibility. Building itself with its close surrounding is the context of study in the field of interior architecture. Particularly, the context is significant in the historical or cultural environments due to the architectural value of the buildings.

Developments

There is various new design approaches in the reuse of the existing buildings. Responsive interiors and autonomous interiors is an approach that was developed by Brooker and Stone (2007). It mainly focuses on the “role of existing building” through out the redesign process with a particular emphasis upon issues of form and structure. Therefore, this study discusses mainly the effect of responsive and autonomous design approaches to the building during the reuse and redesign process. Lofts were determined as the main case study area. Accordingly, 4 lofts from London have been taken as the case: their design approach, intervention approach, effects of new design on the building and interior-exterior relationship were investigated.

Remarks and Conclusion

This study revealed that mainly autonomous design approach was investigated. Although, autonomous design approach is preferred for interiors, it could be said that neither autonomous nor responsive approaches' reflection can be realised from exterior of existing building. Mainly design and organization of interiors are autonomic and new designs developed in freedom according to space's necessities. Furthermore, combined interior space organization, which is the subtype of autonomous approach, is preferably used in the loft spaces where new additions of spaces covered the existing walls with linear elements mainly, curvilinear or folded elements are used alternatively. The main space of loft is divided into subspaces with different functions with the help of new additions.

1 INTRODUCTION

“The continued use and development of existing buildings is fundamentally sustainable. Its aim is to maximise the overall lifetime of buildings” (Breitling & Cramer, 2007). Sustainable reuse of the built environment is an important subject and one of the main scopes of interior architects. They reorganize and improve existing spaces or provide completely a new approach in flexibility. As a part of interior architect’s profession the analysis and understanding the existing buildings is significant. Accordingly, the analysed space could be transformed through the simultaneous combination of the analysed factors with the functional requirements of the new users. The existence of original building brought an important difference between the design of interiors and the design of almost anything else (Brooker & Stone, 2007). The setting in which an interior is situated provides its context. Particularly, the context is significant in the historical or cultural environments due to the architectural value of the buildings. The interior designer has to be forever conscious of the continual presence of an existing structure. But far from this being a handicap or constraining factor, it can be used as valuable tool, instrument of liberation (Brooker & Stone, 2008).

Besides, the exterior context around an interior can be an important and influential consideration that also influence the shape and form of a building and subsequently have an effect on the design of its interior. The location of a building influences its interior. The interior has relationship with what is immediately around it. This could be a dense urban context or an open landscape brings different effects to its interior design. Inside is not an autonomous space without any connection to what is happening around it. Thus, they must have significant bonds with both things and people beyond the exact boundaries. For instance, during the interior design process design idea could be initiated from a particular physical feature or it may be oriented towards a specific view; framed and perceived from a fixed point within the interior (Brooker & Stone, 2008).

On the other hand, the previous function of a building can have an impact on its redesign. For instance, a previous specific use of the original building may have traces that are present inevitably when it is remodelled. There are many methods of adapting old buildings for new uses. The qualities found within the existing can be highly influential factor within the redesign process. The form of the existing can inform the form of the new (Brooker & Stone, 2007).

Recently, Brooker and Stone introduces responsive and autonomous interiors as the latter two remodelling approaches. Accordingly, “responsive interiors take the existing building as a guide book containing much of the information necessary to provide the impetus for redesign. The reading of the original space can present certain clues or pointers for the nature and character of redesign. The designer or architect may strip away or remove elements in order to reveal the hidden meaning of the building, before adding elements that interpret this analysis and form basis of the redesign. The form of the existing influences the form of the new: form follows form. There are 3 categories of responsive interiors: intervened, inserted and installed. Intervened interiors will thoroughly alter the existing building; inserted interiors will make the use of the placement of an independent object, the nature of which is governed by the original building, and installed interiors will house an arrangement of a series of elements within a space that are closely related to it but will not alter it” (Brooker & Stone, 2007, p.101) (Figure 1).

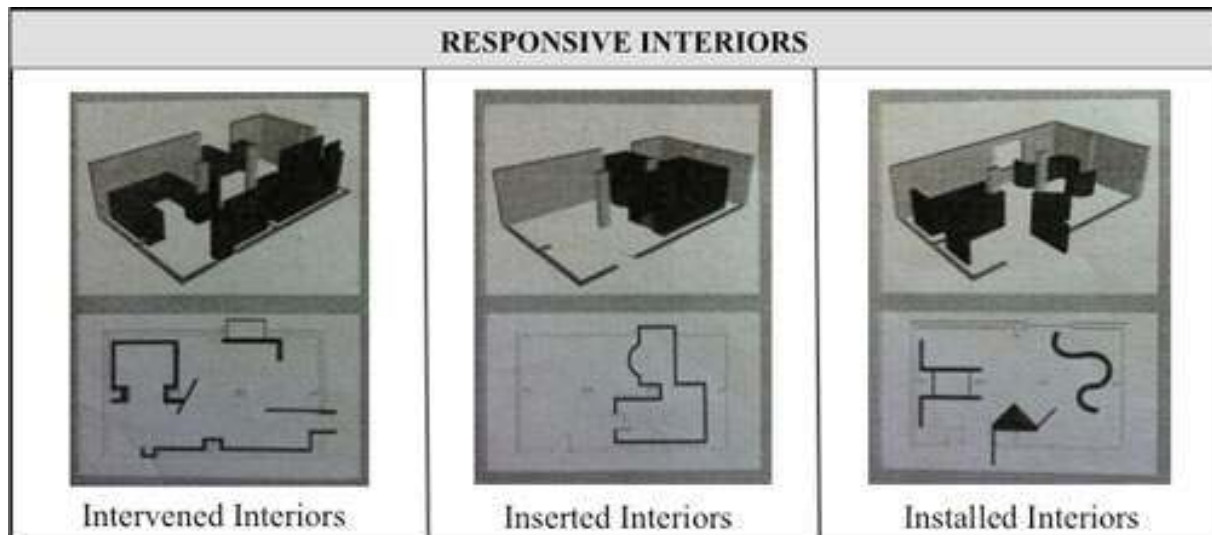


Figure 1: Sub types of responsive interiors (Brooker & Stone, 2007)

On the other hand “autonomous interiors provide the shaping or organization of the interiors as an independent process, constrained only by the extent of the established spatial volume. It takes the original building as an envelope that contains the new interior while exerting very little influence upon it. The new elements are positioned within the space, making reference only to themselves, not to the container that they are placed within. There are 3 categories of autonomous interiors: disguised, assembled and combined. Disguised approach used to line or hide the existing space; the assembled system to fill the space with new objects and when these two are used simultaneously, the method can be described as combined” (Brooker & Stone, 2007,p.123) (Figure 2).

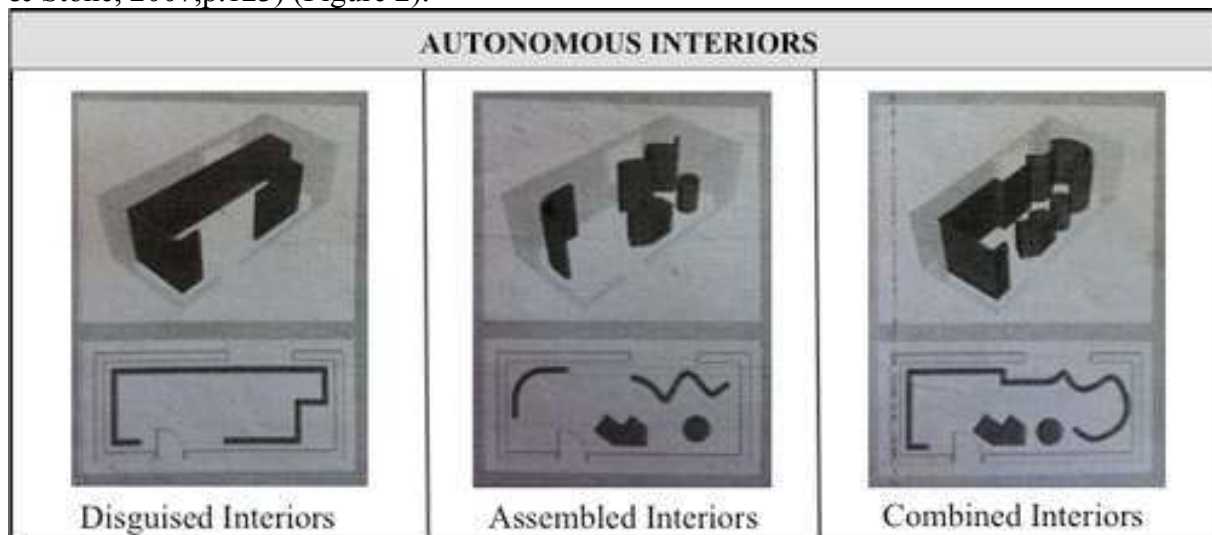


Figure 2: Sub types of autonomous interiors (Brooker & Stone, 2007)

This paper focuses on the reuse of the existing buildings by taking lofts as the main cases for the investigation since they are one of the most popular types of reuse process recently. Accordingly, at first there is a short discourse about the origins of the lofts; brief information about the method of analysis and at the last section investigation of loft spaces' interior design approaches with reuse principles are put forward.

2 DEVELOPMENTS

2.1 Loft buildings

Interior design is a discipline that is heavily involved with remodelling and repurposing existing buildings by taking possibilities associated there with into consideration through modifying and improving existing spaces. Coles and House (2007) stated, "Interior architecture is a discipline that is heavily involved with the remodelling and repurposing of existing buildings and so has an important role to play in the sustainable reuse of the built environment". Therefore, adaptive reuse and recycling of historical buildings is a basic component of sustainability (Anonymous, 2004). It means that, adaptive reuse concept has as a key role in the sustainability. The buildings' adaptation for new use or their originally intended purposes is evidence of sustainability of these kind buildings (Metcalf, 2014).

Loft buildings are conversion of old factories and warehouses into workshops, studios and living areas. In addition, they might be conversion of commercial spaces into private spaces. Furthermore, it could be said that lofts have a key role, which are basic component of sustainability with the adaptation of old industrial buildings and warehouses into new purposes.

In addition, the term of loft means an open, semi transparent spaces, which are located in industrial buildings or unused warehouses. Today, lofts have new meaning such as large, renewed space that industrial architecture is used for domestic purposes (Culto, 2001). It could be said that lofts are new lifestyle of residents. Therefore, they are pointed by minimalist strategies. This is not a minimalism related only with smooth surface areas that are white colour; this is a minimalism used to create useful and flexible homes that satisfy the architect and client's wishes. The results are simple domestic spaces that the structural elements used as decoration, creating a warm space without the use of designing appliance (Culto, 2001).

2.1.1 Origin of the Lofts

First loft were appeared in Manhattan district of New York City in 1950's. Loft buildings were started to be used by artists firstly as living and working spaces together in New York city. Economical condition of New York City is one of the reasons to start this trend by artists. They started to live and also work in these spaces (Figure 3).



Figure 3: Artists' lofts that were used as living and working spaces (Slesin, Cliff, and Rozensztroch, 1986).

Main point of attraction to those buildings was their cheaper price. Besides, lofts were enough to rent and also have enough size to live and work together (Field&Irving, 1999).

Sculpture artists and painter artists created their studios in the loft spaces. On the other hand, film directors started to use loft spaces to make a film or serial in it. This situation takes attraction of media where photos of loft spaces were taken to be pressed in the journals and magazines (Pamukcu, 2009).

After the emergence of lofts in New York, conversion of industrial buildings to living and working spaces were started to be spread other countries rapidly such as Berlin/Germany, London/England, Sydney/Australia, Los Angeles/America and Istanbul/Turkey (Figure 4).



Figure 4: Origin country; New York/America and other spread countries of Loft buildings according to years (URL 1: developed by author)

Nowadays, lofts also have a key role, as being a basic component of sustainability with the adaptation of old industrial buildings and warehouses into new purposes.

2.2 Method of analysis

Investigation of loft spaces' interior design approach was based on the above mentioned reuse principles of Brooker and Stone. There is a deductive approach (Figure 5). The investigation starts with the determination of the general approach of intervention in order to find out which one of the responsive or autonomous approach was used. Then, the detailed investigation was carried out to achieve the sub-type of the preferred approach in order to find out the level of intervention, interior space organization and the indoor-outdoor relationship.


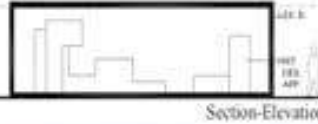
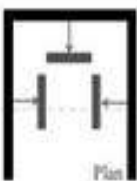
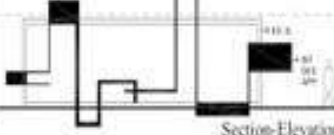
RESPONSIVE INTERIORS	Intervened Interiors		<ul style="list-style-type: none"> - Translate <i>qualities of the existing building</i> into the new design (Brooker and Stone, 2007) - New elements <i>don't cover all surfaces</i>
	Inerted Interiors	Plan	<ul style="list-style-type: none"> - <i>Very close relationship</i> between existing building and new design (Brooker and Stone, 2007) - Create <i>space within a space</i> with different functions (Brooker and Stone, 2007) - Design include single <i>dominating element</i> (Brooker and Stone, 2007)
	Installed Interiors		<ul style="list-style-type: none"> - Existing building and new design work <i>independently</i> (Brooker and Stone, 2007) - <i>Form of the existing building</i> allows the <i>form of new elements</i> (Brooker and Stone, 2007)
AUTONOMOUS INTERIORS	Disguised Interiors		<ul style="list-style-type: none"> - <i>Irregular space</i> can be created free from the character of the existing building (Brooker and Stone, 2007) - <i>Cover all inside walls</i> of existing building (Brooker and Stone, 2007) - New element physical characters are <i>independent</i> (Brooker and Stone, 2007)
	Assembled Interiors	Plan	<ul style="list-style-type: none"> - <i>Freestanding elements</i> create space within the existing spaces (Brooker and Stone, 2007) - <i>Interconnected</i> objects (Brooker and Stone, 2007) - <i>Contrasting designs</i> with the qualities of existing building (Brooker and Stone, 2007)
	Combined Interiors		<ul style="list-style-type: none"> - Space defined with <i>combination of disguised and assembled</i> approaches (Brooker and Stone, 2007) - Creation of <i>space within a space</i> - Hiding existing interiors with <i>contrasting forms</i> from original spaces (Brooker and Stone, 2007)

Figure 5: Reuse principles of responsive interiors and autonomous interiors

Case Study is the research method. 11 lofts were visited at London on 2014 and 4 lofts were selected as the research sample and examined in detail during the investigation stage.

2.3 Case study: London lofts

Nowadays, conversion of industrial buildings and warehouses to residential use, which is called lofts, is as a trend lifestyle. After New York/America in 1950, which is the origin place, lofts are started to be seen in many other countries and cities rapidly. London/England is one of those cities from these countries. In 1990's, remodelling of some warehouses to residential buildings started to be seen in London city. Therefore, Shoreditch district in London is one of the most popular area for conversion of warehouses to lofts.

Accordingly, 4 selected lofts from Shoreditch/London determined as the case area to clarify which organization type -autonomous and responsive interior space organization- is used with subtype when converted from warehouse to residential usage in this study. In addition, location of Shoreditch district in London and 4 selected lofts' location are shown on the below map (Figure 6).



Figure 6: Location of Shoreditch in London and 4 selected lofts in Shoreditch (URL 2: developed by author)

2.3.1 Shoreditch

Shoreditch is an inner city in the historic East End of London. In the ancient period, it was a trade center of the city. Because of this, most of wealthy people started to move from out of London to Shoreditch and these people were mostly tradesman. They lived in double storey warehouses to live and work in these places. Ground floor was utilized as workshop area and upper floor was used to live. After Early Victorian period (1840's), all of these places were destroyed to build multi storey warehouses (Owen, 1991).

After Industrial Revolution, warehouses were started to build intensively in the Shoreditch and it was a center of trade especially about clothing, furniture and printing. However, as the years pasted by, poor people started to move out from Shoreditch and population decreased, because of Industrial Revolution. After the migration of people, trade works were slow down and warehouses closed one by one (Owen, 1991). On the other hand, these empty warehouses, which were large open spaces, attracted by a large number of up and coming artists. Later, this group attracted other creatives like architects, and filmmakers (URL 3).

In 1990's, the interiors of historical warehouses were started to be converted as loft apartments by rich people of London city (URL 3). Today's, Shoreditch of London city is a popular place of loft apartments which are being sold or rented with high prices within the original characteristic features of warehouses that were converted to residential utility.

2.3.2 Analysis of case study

As mentioned before, loft spaces were assessed to find out whether autonomous or responsive organizations are used in the reuse of loft spaces. Space organization of 4 lofts was analyzed in line with a scheme developed based on Brooker & Stone's approach for each loft space.

2.3.3 Evaluation of case study

Accordingly;

Loft 1 space is in Shoreditch, London. It was built in 1840's and converted to loft apartments in 1990's. The old function of building was one of the clothing/furniture/printing warehouses (Owen, 1991). User of this loft space is a family at the moment. It has been determined that, autonomous interior space organization was used and combined interior space organization, which is the sub-type of autonomous interior space organization, was preferred to organize space in this loft space. New vertical definers that are linear form and curvilinear form were added to create different spaces and all existing walls are covered in this loft space. However, existing columns of the space were preserved with their actual characteristic.

There are horizontal additions for the division of the main space into two levels. In addition, level differences were used in the floors (Figure 7).

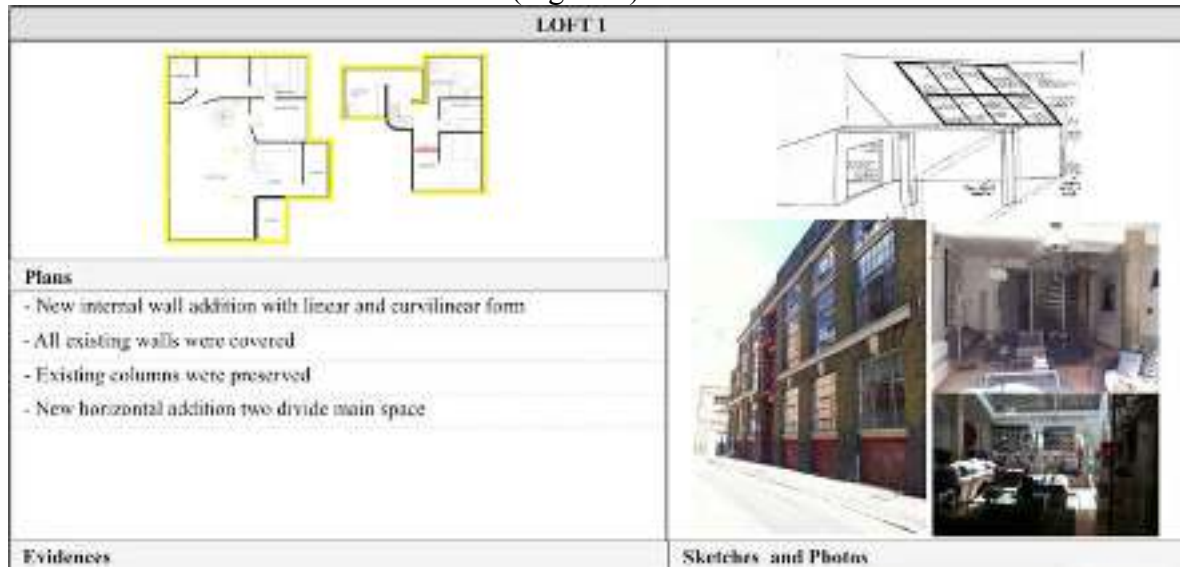


Figure 7: Analysis scheme of Loft 1

Loft 2 space is named as Banner Building in Shoreditch, London. It was built in 1840's and converted into loft apartments in 1996. Old function of this building was glue factory (Field and Irving, 1999). The users of this loft space are architects who designed the interior of this space in its current situation. As similar to the investigations at Loft 1, it was determined that autonomous interior space organization was preferred and combined interior space organization type was used as sub-type organization to organize this loft space. Therefore, some parts of the existing walls of the building that are original brick walls can be perceived and some parts were covered with new vertical additions in this loft space. Vertical additions were organized only with linear division elements in this space. There is not any horizontal level difference in this space. However, floors and ceilings were covered with new additions (Figure 8).

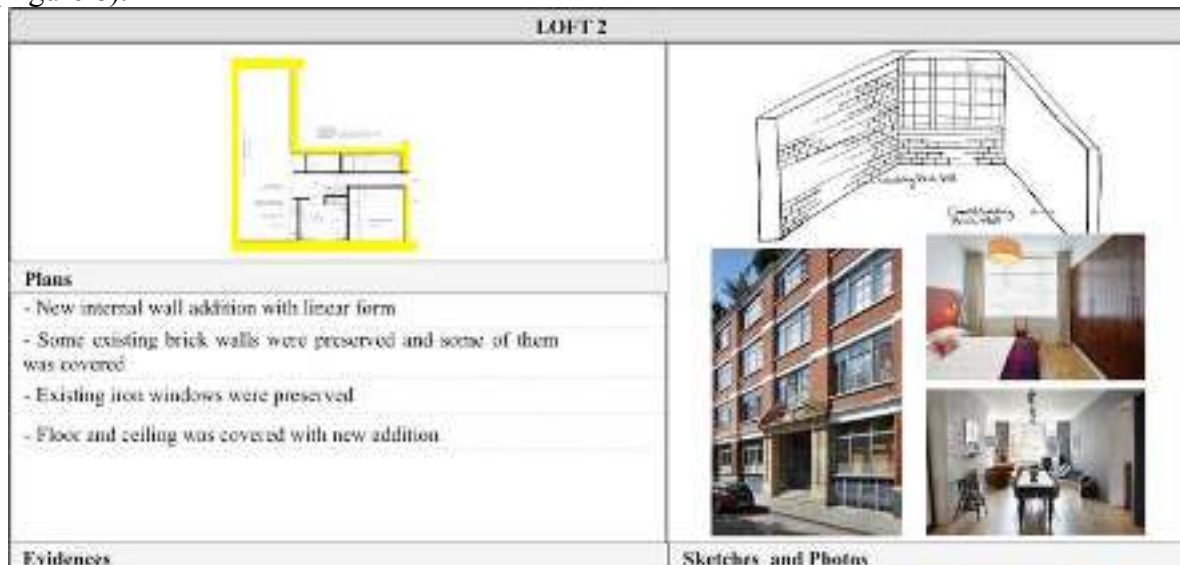


Figure 8: Analysis scheme of Loft 2

Loft 3 space is in Shepherdess Walk Building. Manuel Irsara designed this loft space in 2013 (URL 4). In this space, autonomous interior space organization was used and combined interior space organization is the preferred as the sub-type organization. All existing walls of space were covered and new vertical definers, which are linear form, were added to this loft space. Existing columns are preserved as a design element in this loft space. However, existing horizontal definers were covered with new additions (Figure 9).

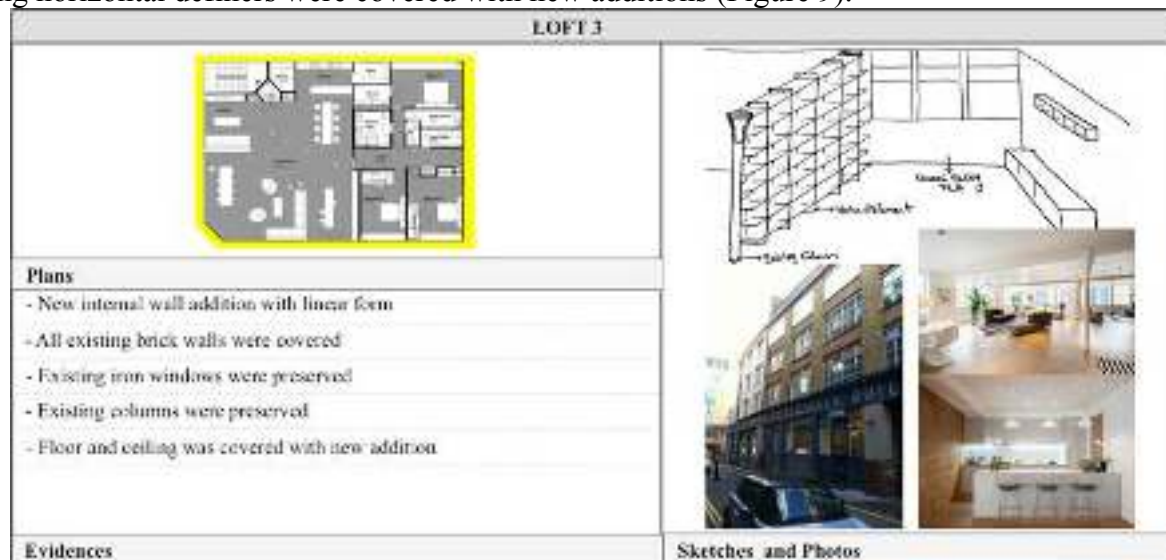


Figure 9: Analysis scheme of Loft 3

Loft 4 space is named as Royle Building and it was situated at Shoreditch, London. The building was built in 1826 and then it was extended in 1932. Old function of this building was printing warehouse and then it was converted into a loft apartment. Loft space that was selected from this building was designed between 1997 and 2000 (URL 5). User of this loft space is a family. Like other loft spaces, autonomous interior space organization was used and combined interior space organization, which is the sub-type of autonomous interior space organization, was preferred to organize this loft space. Generally, existing characteristic feature of building such as brick walls and concrete columns are perceived in this space but there are new vertical additions that were designed in linear form for inner walls and also to cover some existing walls as well. Original floors of space were covered with new addition but existing ceiling was preserved in this loft space (Figure 10).

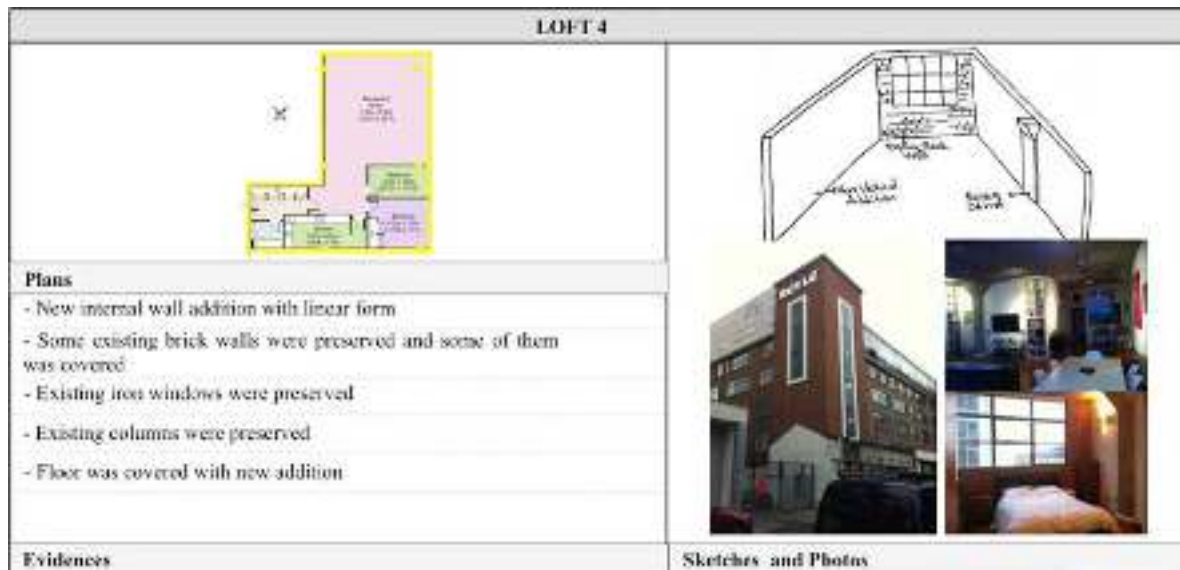


Figure 10: Analysis scheme of Loft 4

To sum up, in the loft spaces, autonomous interior space organization is preferred as organization type and responsive interior space organizations are not preferred for the organization of loft spaces. Combined interior space organization, which is the subtype of autonomous interior space organization, is used to organize spaces. There are vertical element additions in all loft spaces that were in linear form. The most effective characteristic feature of loft spaces that is brick walls can be perceived in Loft 1 and Loft 3 spaces but brick walls at the other loft spaces that are Loft 2 and Loft 4 were all covered. In loft spaces, the main space is divided into subspaces to create different spaces with different functions with the help of vertical definer elements. However, lofts are not organized with horizontal definer additions to divide main space into different floors. There is only one loft space that was organized with new horizontal definer additions to divide main space into different floors. Generally, horizontal additions are used to cover floor and ceiling in the loft spaces.

In addition, it could be said that in autonomous interior space organization there is no dependency on somewhere or something. Therefore, space organizations are organized and designed just depending on spaces' necessities. In autonomous loft spaces, organization and designs are priority.

On the other hand, above mentioned interventions that are in the interior space are not reflected to the exterior of building. There is not any impression of new design on the existing building. New designs' effects are only perceived in the interior of the loft spaces.

Furthermore, the relationship between interiors and exteriors of the loft spaces were investigated in terms of visual, physical and functional dimensions. And this study revealed that no strong relationship existed between interior and exterior spaces of new designs. It could be said that the interventions and effects of new designs in the interior of the loft spaces could not perceived at the exterior of old buildings visually. Each loft space in warehouses is single or double storey structure in itself where warehouses (overall building) are generally multi storey spaces in a single volume, which doesn't have very high ceiling. These buildings have huge glass windows, which are original windows of warehouses. And when there is a level difference in a loft space, it can be constructed from underground to first floor. Thus, spaces, which are at the underground level, have openings on the roof in order to provide a relationship with the outside. On the other hand, new designs don't have any extension or explosion towards the exterior of the existing old building that could be perceived from outside.

On the other dimension, this study revealed that the reuse process of old warehouses as loft spaces provide some effects to Shoreditch district in London. Before adaptation, all of the warehouses of Shoreditch were empty spaces, which were not used by anyone for any reason. Firstly, artists start to live and work in these spaces and this attracted rich people to buy and adapt these old buildings for new uses. Shoreditch was a place that nobody comes however nowadays, it become the center of cafes, restaurants, bars, offices and shops, because of the adaptation of loft spaces. Afterwards, lofts became popular as a lifestyle in Shoreditch, which are rented with high prices. Therefore, it could be said that there is also an effect of lofts on the region in economical dimension.

3 CONCLUSION

Brooker and Stone (2007) produced the concept of responsive and autonomous interiors as redesigning approach of interior spaces in general terms. These two reuse approaches can be used for loft spaces and all different types of interior spaces.

There are several different ways to organize interior spaces. Responsive and autonomous interior space organizations are introduced as redesigning approaches and tested through a case study research. Reuse of loft spaces provides new life to old warehouses, which were unused and empty spaces. In addition, redesigning of loft spaces in old warehouses, factories and industrial buildings provide a contemporary and modern approach in these old and historical spaces. When you look at the building from exterior, you can not perceive a contemporary approach on the existing building but in the interior of space which is an old building, you can perceive a contemporary approach that has a contrasting relationship with existing buildings' characters. For instance, generally, the original columns of existing building and some existing brick walls were preserved and they kept as inseparable parts of the interior design to create a contrast between existing building and new design.

In this paper, it is achieved that the main shell of the existing building is preserved and interior space is organized with some new additions but without any damage given to existing interior surfaces' character in responsive interior space organizations. However, different and new spaces are created in the existing building whereas the main shell is not neglected or tested but the existing character is not strongly act as a part of new organization in autonomous interior space organizations.

Either responsive or autonomous interior space organizations are used to organize different types of interior spaces such as, historical and old buildings, contemporary and modern buildings. Both organization types can be used to organize different reused interior spaces, which have different functions.

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URBAN REGENERATION AND ITS SURPRISE DUE TO THE DISCOVERY OF XVIII-TH CENTURY ARCHITECTURAL ARTEFACTS

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Keywords: Fortification, Sluice, Urban Regeneration, Innovative

Abstract.

Introduction:

Situated in Romania's westernmost corner, Timisoara is a typical Central European city, completely restructured after it was conquered by Austrians in 1716. The city was surrounded by a large-scale stellar shaped Vauban fortification endowed with a moat. On the historical city's west side an urban regeneration project started recently.

Developments:

On the site of this project, following foundation works, a number of artefacts emerged: defence walls including a XVIIIth century sluice used in the defence system around the bastion. Built by the Habsburg administration, the weir was intended to drain the moat of the fortress. The entire defence system present on site was altered previously, during the communist era. Still, a large part of the artefacts conserved are challenging the development process of the urban regeneration project.

Remarks and Conclusion:

The entire weir with all the fortifications nearby - approx. 400 sq. m - were proposed to be moved and exposed on the urban plaza offered by the project strategy. This particular example of an environmental control device is the proper symbol for a technological innovative city. It will generate a fragment of an open air museum, but it will also enhance the whole atmosphere of the pedestrian gallery and plaza, a surprise with all the walls and artefacts, with the controlled layer of water and a small exhibition dedicated to it and to Timisoara's modern history. The final design was preceded by intense debates and polemics in the local/national media, public opinion, professional and political circles. Various arguments were proposed, but finally The National Commission for Heritage had the upper hand, retaining the architect's strategy, ensuring a proper valorisation of the architectural cultural heritage.

1 INTRODUCTION – URBAN AND HISTORIC CONTEXT

Timisoara is one of the largest cities in Romania, the capital city of the Timis County, and a candidate to become the 2021 European Capital of Culture. As an old medieval strategic citadel, Timisoara was conquered by the Ottoman Empire (1552-1716) and played a crucial role as a military outpost for the Austrian-Hungarian Empire during the XVIIIth and XIXth Century. The City's core – the Citadel – was heavily defended by a complex, Vauban style fortification. Inside the city walls, the urban pattern was defined through the use of a rational grid of city blocks and open spaces which then generated the three main plazas that we can still see today - St. George Square, Liberty Square and Union Square. At the end of the XIXth century, during the expansion of the city, a major part of the old defense wall was demolished as Timisoara opened itself towards a modern industrial future. The Bega Channel's use was changed from being part of the defense system to being part of the transport system, thus connecting different parts of the city and the city itself to Europe.



Figure 1: Timisoara general plan and site location



Figure 2: "700 Square – Gate to the Centre"

Today, only a few parts of the old city wall remain standing, namely The Theresia Bastion in the east and a few others which are located on the western limit of the old city wall. These were later listed as part of the architectural heritage of Timisoara. In the last century, after the implementation of the Von Ybl urban strategy and before The Second World War, the old citadel was connected to the other parts of the city – Fabric, Josefin, Elisabetin- by large boulevards, esplanades and bridges over the channel (east to south-west direction). After the war, most of the development happened in the southern district (Girocului quarter and the University Campus). Thus from the initial linear development, the city slowly became radial and ultimately faced a rapid and chaotic expansion. Today, the two main directions in which the city is developing are to the north and to the west, both being crossed by the railway, which passes through and separates the city. The west side of the citadel, which is now called "700 Square", is the site where in the last decades a new urban regenerating strategy begun with the City Business Centre project. The idea of a "Gate to the centre" came to life with the purpose of regenerating the whole western area including the old citadel walls, the Military Church, the huge old Military Hospital, the old Synagogue and other buildings along the west-east path that is crossing the entire citadel. There is an important counterpoint at the east edge of the citadel, this being the most important old wall, which was saved in the sixties and was recently restored and reconverted – The Theresia Bastion – an important cultural and public space of the city.

For the last two centuries, Timisoara has been facing a complex challenge in urban planning and development due to the problematic connections between the historic centre and the surrounding areas. Consequently, various strategies were put forward during the last century which ultimately led to the “Gate to the Historic Centre” principle. The opening of the south-east gate at the beginning of the XXth century had generated one of the most emblematic and monumental public spaces of Timisoara, which is the Cathedral - Opera House Promenade, which today is called Victoria Square.

The relation between the old city centre and the eastern area, towards the Fabric district, was made possible in the same period, through the construction of the Revolution Boulevard, which passes the Decebal Bridge and is flanked by Lazlo Szekeley’s Neptune Baths. Both the northern direction, which presents a great potential - after the transferring of the ex-military area into the West University’s property - and the western one are about to be developed further. To the north, the edification of the Iulius Mall also represented a major step towards the contouring of this main development axis while to the west, the current works that are being carried out for the City Business Centre in 700 Square are speeding up the regeneration of the whole area.

The site on which 700 Square along with the CBC are located is on the western side of the old fortification walls and is juxtaposed over the walls built by Maria Theresia after the banishment of the Turks in 1716. It was no coincidence that after most of the wall was demolished and the railway set in place, this area’s character became a vague, undefined one and started to be perceived as the city’s outskirts. While it was gradually transferred from the military administration to civil administration, there were a few buildings which remained as witnesses of the area’s history, such as The Military Hospital, The Military Church and The Mercifulness Church along with a few parts of the old city wall.



Figure 3: XVIII century plan of the citadel



Figure 4: Fortification traces under the C.B.C. location

Later on, between 1944 and the early 60s – during the Soviet occupation - the military presence re-flourished within the area. After the retreat of the Soviet army, this area became part of the industrial framework of Timisoara, which started with the construction of the Modatim Textile Factory and the Civil Engineering High School and continued with the building of more and more interventions such as the Aquatim, Alcatel and Public Finance

headquarters after 1990, all developed in the absence of a coherent urban planning system or strategy.

In this context, the “Gate to the Historic Centre” principle was put forward in order to lead the way towards a long-term urban development strategy which would bring benefits to the whole area and the city. The main strategy revolved around creating a new public landmark that would serve both as a symbol for the city’s developing business sector and as a gateway connecting the historic centre with western Timisoara while also enriching the existing east-west axis. Moreover, considering that the rehabilitation of the Theresia Bastion at the eastern end of the axis had created a cultural pole for the old city, it is obvious that this connection along with the future rehabilitation of the Military Hospital – by turning it into an administrative, public and cultural facility - would be a gesture of great urban value. Especially when the CBC’s aspiration is to become a micro-scale lively city itself and bring office spaces, gallery space for exhibitions and outdoor public plazas together.

2 CITY BUSINESS CENTRE, REGENERATOR FOR THE WEST GATE TO THE CENTRE

The City Business Centre office and service building complex, which is currently in construction, has gradually replaced an industrial site and covers an area of approximately 65.000 square meters.

The densification study which generated the phased development of the micro-city was informed by many different factors such as the site’s limits and proximities, the project brief and investment plan and the expected urban outcome:



Figure 5: C.B.C. in the city



Figure 6: C.B.C. as a little city

2.1. Location ; the proximity to the city centre determined an intervention characterised by a height classification and land use typology which are complementary to the traditional urban tissue; the contiguity with the railway on the northern side, which separates the centre from the rest of the city and which, in the following years, will translate from being a limit and become the new development spine of the city.

2.2. The project brief and the possible phasing within the site of the Modatim plot; As a speculative investment, the development’s main goal was to build and rent class A office and service spaces, while the financing system which was available in this case, a progressive development of the built objects during the phased demolition of the factory, resulted in the relocation of the second. (the factory relocation took place in April 2009).

2.3. The preoccupation and strategy at the urban level was characterised through:

2.3.1. Opting for a “building blocks” pattern, which, as a whole, would generate a coherent ensemble and not interfere with the height and scale of the surrounding area and would

establish a relationship based on continuity with the rest of the surrounding buildings within the 700 Square. The organising principle was that of a mass from which clearly defined public and semi-public spaces were cut out in order to reflect the traditional urban tissue of Timisoara's city centre. Finally, by 2015, when the fifth building will be in place, the result will be a stratified, terraced ensemble in which the mineral character of the ground level plaza will be compensated by the mostly vegetal character of the business centre's higher levels.

2.3.2. Generating powerful urban spaces on the four sides of the site in relation to the exterior area, the city and the site itself:

There is a new street which is parallel to the railway and connects the two main roads – C. Bredeceanu towards the south and Gheorghe Lazar Boulevard to the north. In this “sector”, the City Business Centre ensemble's proximity to the north is the newly built Financial Administration building. Between the two, an “urban plaza” type of space is born, having two underground parking levels and leaving room for a possible access towards the urban railway access belonging to the 700 Square. This investment has been made recently, defining a great step within the wide process of modernisation and regeneration of the whole area.

Towards the east, the frontage of the two buildings leaves room for the possible development of the whole area in favour of a generous concept – 700 Square – “Gate to the Centre”.

Between the northern and southern poles of the urban plaza, a covered pedestrian gallery emerges and generates a gate towards the first two buildings from the east and integrates the two atriums from the west; when the railway will cease to be a barrier, the western side of the site will stop being a secondary one and the pedestrian access will be possible along the C. Bredeceanu Street, through the two atriums and from the northern urban plaza. Thus, for the City Business Centre, the longitudinal gallery following the site's north-south axis becomes the backbone of an ensemble where covered passages host lively landscaped spaces, urban art and glass funnels.

To the south and C. Bredeceanu Street there is another “urban plaza”-type of space, this one being located within the site boundaries. Considering the existing level difference, this space will be an amphitheatre, an event space where the artistic material can be easily integrated. Although the initial project featured an emblematic work of art in this location, the archaeological surprise offered a whole new perspective and purpose for this particular space.

2 THE SURPRISE

The whole design process, authorization and management procedures for the construction of the City Business Centre took into account the possible discovery of the old fortification's foundation yet was based on the idea of a total archaeological discharge, in accordance with all legal procedures. Yet, the archaeological research carried out during the summer of 2011, following the foundation works of the 5th building, revealed a part of the fortification which used to belong to the complex XIIth century defense mechanism of Timisoara.

The “Preemptive archaeological research report in the site Timisoara, 700 Square”, elaborated by dr. Alexandru Szenmiklosi, Ovidiu Bozu and Andrei Balarie revealed that the foundations found on site were part of the citadel's weir walls and of the sluice ensemble. The report describes the artefacts that were discovered on site and the condition in which these were found.

According to the report, the counterscarp of the First Counterguard had been affected alongside with the rest of the fortification walls by the foundation piles of the ModaTim textile factory. Initially, both the scarp and the counterscarp wall were built out of brick and rested on a wooden pile substructure. The sluice was situated to the south of the First

Counterguard and it was used in regulating the water levels and flow rates within the fortification's moat. It was mainly built out of stone blocks (granite and limestone) and presented brick interventions in some places. The dimensions of the granite building blocks varied from 1,5m by 0,50m to 0,45m by 0,50m, the bigger blocks being laid at the bottom of the sluice, which was made out of massive wooden beams of a rectangular section.

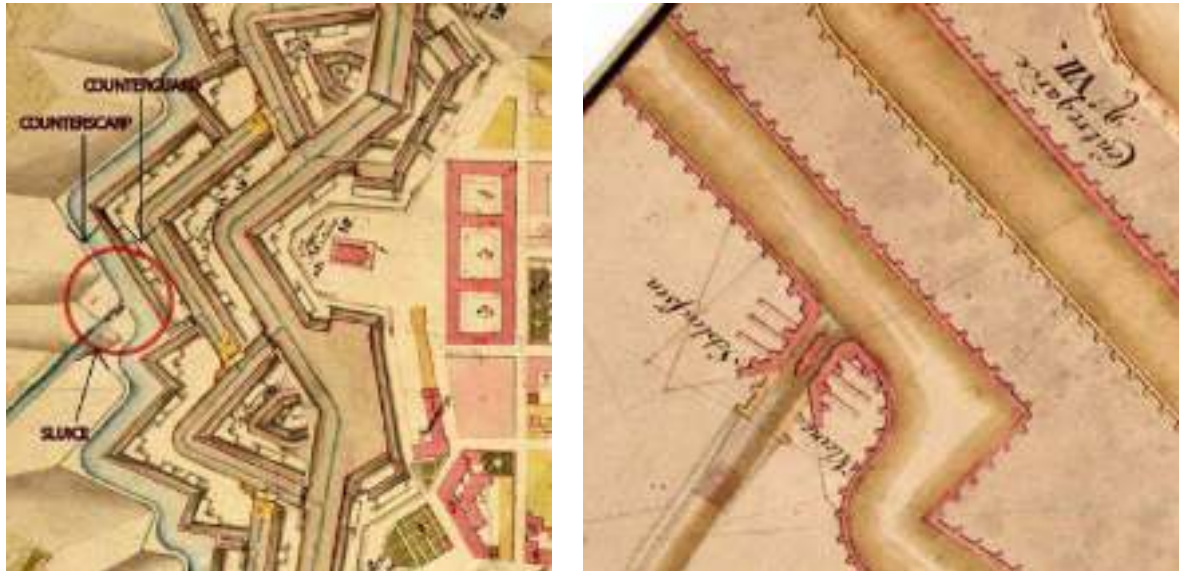


Figure 7,8. The sluice on XVIII century military maps – Vienna archives

When the Preventive Archaeological Surveying was done, the sluice had already been affected by the dismantling works carried out during the late XIXth and early XXth century, but also by a concrete pipe which was built around the same period as the textile factory. The archaeological find determined the postponing of the construction works until an appropriate solution was found for dealing with the artefacts. In this context, the ensemble's discovery generated intense public debate on the value of the artefacts to the city's heritage and eventually led the National Heritage Committee, the archeologists, the architects and the investor to the consentaneous conclusion that the sluice ensemble should be placed in a public space in order to showcase its true value.



Figure 9: The archaeological artefacts on original site



Figure 10: Overlapped artefact layout over basement parking plan of the 5th building

3 CONSERVING THE ARCHITECTURAL ARTEFACTS

According to the archaeological report, “the sluice represents an exceptional archeological discovery both because of its uniqueness and its construction method.” The same report concludes with the fact that “looking past the discovery’s unique character and the potential it holds from the tourist and educational point of view, the sluice also offers valuable scientific information about the history of Timisoara and the military hydrotechnical engineering works carried out in this area during the XVIIIth and XIXth century. Based on these arguments, the project proposes the conservation of the sluice and its exhibition within a public open air museum.” [1]

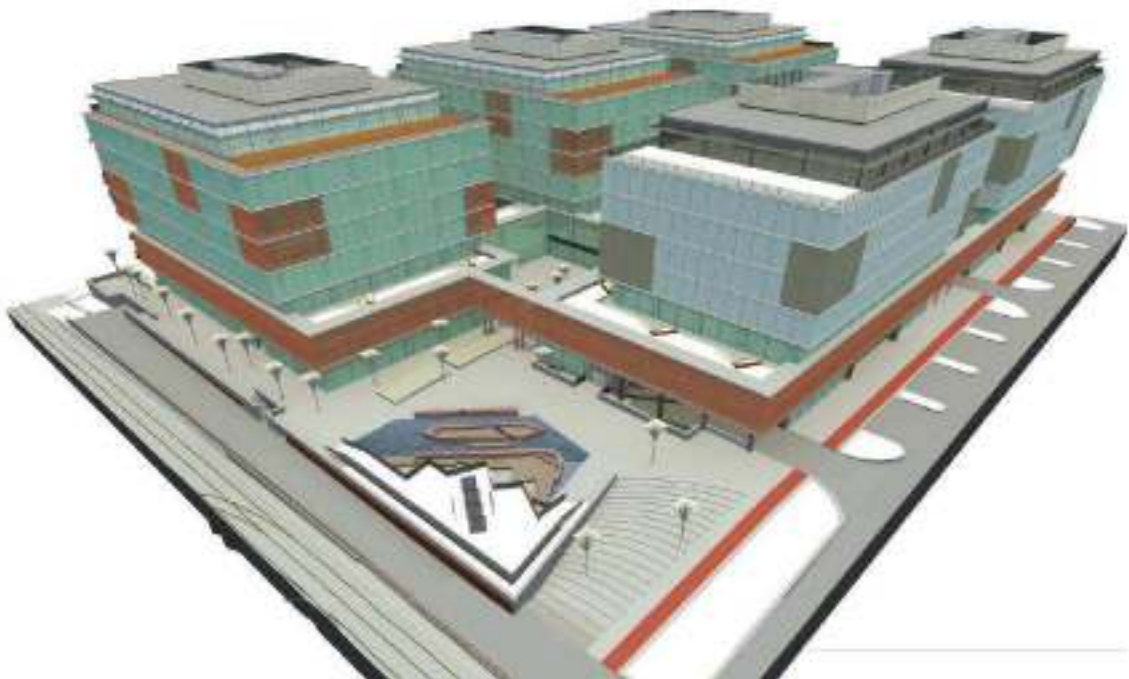


Figure 11: The artefacts in the open-air museum, 3D rendering

After taking into account the above mentioned, a few possible solutions were taken into consideration. The first solution was to continue the archaeological survey and the successive dismantle of the relics in order to gather additional data from the ground layers below the sluice and finally to clear the site and move the valuable remains into the Banat Museum. In this case, an explicit graphical representation of the sluice would have been presented on the basement floor of the fifth building at the exact location where the relics were found. Additionally, a permanent display of high quality pictures and models of the archaeological discovery would have been provided in the main hall of the building and within the urban plaza. One of the advantages of this approach was that the open air museum would have extended into the building along with the fact that the economical processes involved for the archaeological surveying and the construction process could have been managed separately, with the possibility of accessing European funding for further archaeological research. On the other hand, the major disadvantage would have been the loss of the original substance of the monument.

The second option was to keep only part of the archaeological ensemble within the building and to treat the remaining of it in a manner similar to the first solution, by imprinting it on the floor of the basement along with the provision of exhibition spaces for the

archaeological material such as photos and historical information. The advantage of this solution consisted in the in situ preservation of parts of the ensemble (approximately 160 sq. m), yet this would have implied lifting it by one meter, due to the thickness of the building's foundation mat and would have brought along more overall disadvantages. Firstly, the destination of the containing space (private underground parking and mechanical rooms) wouldn't have been an appropriate one for showcasing archaeological remains. Secondly, this solution would have led to the loss of 24 parking spaces, thus to the sub-calibration of the parking and violation of the Traffic Committee note stated within the Building Permit for City Business Centre. For these reason, the second solution wouldn't have been a beneficial one for either the city's heritage or the building process for the CBC.

Moreover, because of the terrain's swamp-like character, in which the groundwater level is very close to the land surface and because of the incapacity of continuously pumping the water into the city's already overloaded drainage system, a complete in-situ preservation of the medieval water gate could not be taken into consideration.

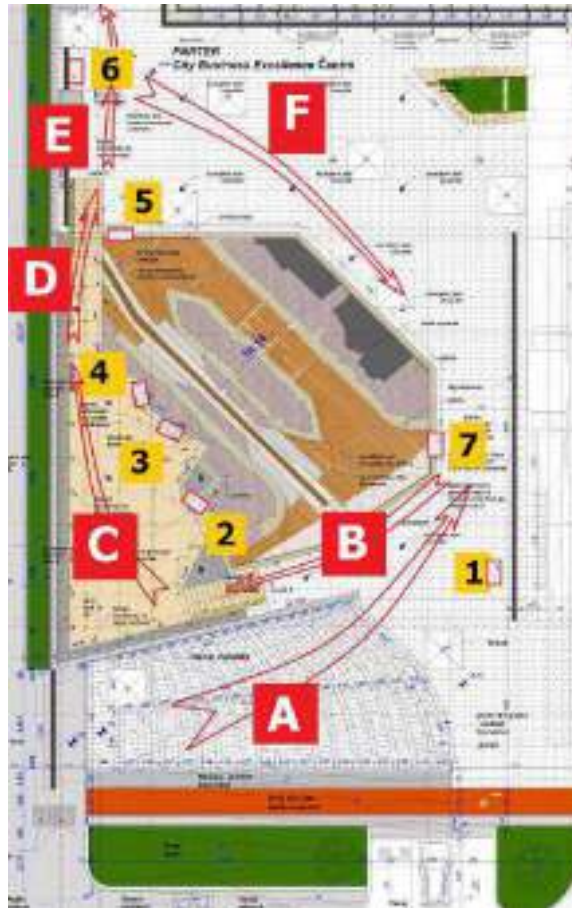


Figure 12: Exhibition layout proposal by archaeologists and curators

After a careful consideration of these facts, the final and best option in dealing with the relics was to disassemble and reassemble them within the urban plaza; while keeping their original orientation, they were translated to the east by 30 meters and lifted at a height of approximately 5m. Meanwhile, both the idea of imprinting the exact spot where the ensemble was found and the idea of a public display of the information gathered by the archaeology department remained among the project's aims.

Some of the valuable artefacts will be displayed in the main hall between the 4th and the 5th office building while the exterior exhibition is to be perceived from different levels by the visitor, thus defining an open-air museum which will be illuminated at night and at the same time present information about the old city wall and its features through exterior exhibition panels, a floor plan imprint and scale models of the XVIIIth century citadel.

This solution was the one approved by the National Heritage and Monument Committee, since the project was developed according to the 7th Article of the ICOMOS Venice Charter, which permits the relocation of monuments in some cases [2]. In this case, besides the fact that an in-situ type of conservation would have been impossible, the advantages of this particular solution outweighed the disadvantages and overruled the other options. First of all, a major advantage was the fact that this proposal determined a wider area of conservation (approximately 450sq.m as opposed the others which would preserve 160sq. m or less). Secondly, in the context of proximity, where across from the City Business Centre there is another part of the old wall still standing, it made more sense to expose another part of the fortification for public display as it would serve as an educational device on the innovative technology of the XVIIth century and as a tourist attraction. Neither of these would have been possible if the monument would have been kept underground. Moreover, in “Principles of preservation – An introduction to the International Charters for Conservation and Restoration 40 years after the Venice Charter” Michael Petzet makes a case for the relocation of monuments in more cases than just “where the safeguarding of that monument demands it or where it is justified by national or international interests of paramount importance”. According to Petzet, a case can be made not only for the “removal of historic buildings for brown coal mining or the flooding of a village for a man-made lake, but also in the case of the approval of a new building on the site, regardless of why the permission was granted.” [3] In this case, as the City Business Centre is of great strategic value to the city, The National Committee for Heritage, as a part of the Ministry of Culture even considered the option of accepting the first option, that of completely clearing the site, since the project was partly sponsored by European Funding and any delay could cause withdrawal of funds. It was then that the investor and the architects militated for the safeguarding of the artefact. This action ended up delaying the project by 8 months and raising the cost by 650.000 euros. The subject of the sluice later generated lively debate which put forward another possible solution, in which the City Council would buy the artefact’s location back from the investor in order to create an archaeological park over it, yet, for economical and urban planning reasons, this never happened.

In the end, as Petzet puts it, “Considering the omnipresent threats to our cultural heritage, in all necessary struggles for the right solution, in every individual case there should not be any “dogmatic wars” about the principles. Instead it is important to save what can be saved within the range of our possibilities” [4]. Additionally, if we take the first principle stated in the 1989 Washington Charter for the conservation of historic towns and urban areas into account, “In order to be most effective, the conservation of historic towns and other historic urban areas should be an integral part of coherent policies of economic and social development and of urban and regional planning at every level”. Also, given the fact that chapter 4 of Heritage and Economics (ICOMOS Paris Declaration of the General Assembly) clearly states “To better understand the economic and social impact of maximising the value of heritage, which is an asset to development”[5], we believe that the adopted solution is the correct one. Moreover, through the use of ceramics in their natural brick-like colour within the office building ensemble, the dialogue between the materials used would generate a subtle message about the local spirit which embraces both the old artefact and the new construction.

The project was also developed according to the Romanian legal norms as stated in Chapter III of the Law no. 422/18 from July 2011 – Interventions over historical monuments, Art. 22(2)e regarding the relocation of historical monuments, since the relocation of the monument is done at a small distance from its original location. We also consider that this version of the project is also done in the spirit of the LIEPZIG Charter, which calls for the harmonious integration of monuments within public spaces and keeping them alive in their original location.

4 SIMILAR EXAMPLES

One can find similar cases of moving and rebuilding large-scale monuments on different locations in Romania, with these interventions generated by important infrastructure works. In 1970, the Ada Kaleh isle was flooded by the waters of the Danube, after the large Iron Gates dam had been completed and the barrier lake had been formed there. A lot of artefacts belonging to the old Turkish citadel were then rescued, moved and partially rebuilt on the Şimian island a few kilometres downstream.

It is already a sad history for the Romanian people how many old orthodox churches have been destroyed during the communist regime, especially after the large earthquake in 1977. During the eighties, the Romanian engineer Eugeniu I. Iordanescu developed a system of translating buildings/churches with a number of monuments saved by this procedure of translation. The Mihai Voda church in Bucharest, dating from the XVIth century, was translated in 1985 horizontally 298m and lowered by 6,2 m from its original site, being moved following an oblique vector [6].

One interesting well-known example to mention is what happened with the ARA PACIS – The Altar of Peace – in Rome, which was reassembled with all its constituent fragments on a new site a few hundred metres away from its original location. It was integrated in the new urban context designed by Piacentini during Mussolini's government and covered for the first time by a building designed by the architect Victorio Morpurgo. After approximately forty years, in the eighties, Morpurgo's building was demolished and the Ara Pacis was covered and integrated into a new controversial building, this time designed by architect Richard Meier [7].

The artefact in this last example has been moved not once but twice: the sole surviving gate from London's ensemble of city gateways- The Temple Bar. The old medieval gate was replaced after the Great fire in 1666 by Sir Christopher Wren. The gate was taken down in January 1878 stone by stone and it was reconstructed as a gatehouse for the new residence of Sir Henry Meux. The property was sold in 1929 and the gate became a ruin. In the late seventies Temple Bar Trust was formed with the scope to rebuild the monument for the second time. The site for it - between St. Paul's Cathedral and Paternoster Square - was approved in 2001 and in 16 months it was removed, restored and re-assembled [8].



Figure 13: Mihai Voda church translation



Figure 14: Mihai Voda church translation



Figure 15: Artefacts reconstructed on their new location



Figure 16: Artefacts reconstructed on their new location

5 CONCLUSIONS

- The case study of the XVIIIth century sluice found on the site of the C.B.C. ensemble clearly emphasizes the necessity of a nondogmatic approach of the principles included in the praxis and major documents concerning the triad conservation-restoration-renovation when dealing with concrete, complex situations arising in our contemporary cities. Anticipating and establishing a hierarchy of interests, both public and private, on a medium and long term can lead to non-orthodox solutions. While a multicriterial evaluation is mandatory, one should always place the social and ecologic pillars of sustainability in a just balance with the other two – the economic and the cultural. In an apparently conspicuous assemblage, by means of a creative scenography in which archaeological artefacts are placed in dialogue with contemporary ambiances, dialogue can generate an enriched atmosphere where both the old – exhibited –and the new – containing- ambiances are enhanced (a less common situation, usually the old contains the new). It is our belief that these two incarnations of ceramic – on one hand as old massive blocks, on the other as a „textile” in the shading baguettes of the modern facade, speak equally about the inovative-technical and the conservative-agrarian spirit so typical for Timisoara and Banat.
- On the other hand, the submitted case in which a site destined exclusively to commerce and profit such as the C.B.C. ensemble becomes a nexus in the network of museum spaces in the city, with the cooperation and assistance of leading private economic agents, can surely prove to be an interesting lesson.
- One should not forget nonetheless that in the beginning of the 70s this artefact has been partially uncovered, during the construction of an important production building of the textile factory. The fact that we – archaeologists, historians and architects- were all taken by surprise at the end of the construction process of the office buildings is indeed arguable. But one questions remains: what if the construction of the office ensemble started with the present no. 5 building and the sluice had been discovered from the early beginning – would we still have a textile factory on the site?

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PROTECTION OF THE ARCHITECTURAL HERITAGE OF MONTENEGRO - OTTOMAN PERIOD ANALYSIS OF BUILT ENVIRONMENT

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Keywords: Protection of Architectural Heritage, Revitalization of Built Environment, The Ottoman Period

Abstract.

Introduction:

UNESCO's recent tendency towards the preservation of urban landscape, is based on the proper use of specific natural and architectural legacy values, formed in various historical epochs. Montenegro, in this regard, has recognized the importance and development potential. As a country belonging to the central part of the Balkan Peninsula, Montenegro has shared its history with the neighbouring countries through Illyrian, Roman, Slavic and the domination of the Roman Empire. Back in the 17th century Montenegro became the western border of the Ottoman Empire. In this regard, the substance of Montenegrin architectural heritage: architectural stratification and diversity (Medieval, Venetian, Ottoman period) make Montenegro particularly unique and significant.

Developments:

Current theory and practice do not address adequately the issues of heritage conservation. In such conditions, the remains of the architectural fund from the Ottoman period are, unfortunately, heading towards the inevitable and irreversible deterioration! Creating an overview of the current situation - the inheritance of urban and architectural values, is the fundamental idea and goal of this project.

Remarks and Conclusion:

All these activities represent a starting point for further actions and management interventions in architectural heritage, and above all, the support for the development of several revitalization projects: sustainable use-function for the Old Town of Ulcinj - the Citadel, Fortresses of Bar and Podgorica, "Španjola" Fortress in Herceg Novi. The same can provide a positive example for many other areas and units in the territory of Montenegro.

1 ORIGIN, FORMATION AND FACTORS THAT INFLUENCED THE DEVELOPMENT OF MONTENEGRIN TOWNS DURING ORIENTAL-OTTOMAN PERIOD

By their origin and method of their development Montenegrin towns constitute: 1. development pattern taken over from the Late-Classical and medieval squares that were further developed in during the Ottoman era and around which new settlements were being formed through reconstruction (Onogošt – Nikšić, Herceg Novi) or construction of new fortifications (Spuz, Podgorica); 2. Completely new town pattern (Taslidža – Pljevlja, Rožaje, Plav); 3. newly-built part of the settlements next to the medieval part (Nikolj-Pazar – Bijelo Polje – Ak-ova), 4. and finally, the inherited, somewhat rather developed Late-Classical and medieval fortifications (Bar, Ulcinj) which, in the altered conditions of the overall social and economic flows, change their physiognomy based on the renewal of the urban structure and on the transformation inside the walls, development of suburban areas with intensified architectural activities in the same.

Irrespective of the origin, i.e. whether the organization involves the development of a new square or the reconstruction and further development of an occupied square, and/or adaptation of the fortification, the development degree is in direct correlation with the inherited importance and/or conditions of new governing-administrative circumstances and the acquired function.

I The following settlements make the first group: I.A. the degree of development of which was conditioned by the administrative importance, i.e. function of a seat/capital which they acquire as new urban forms: Pljevlja (seat of the Sanjak of Herzegovina 1572-1763), I.B. the acquisition of the function of a seat/capital of the Sanjak was conditioned by certain development degree achieved: Podgorica, which after the year 1768 becomes the second permanent residence of the Sanjak-Bey of Shkoder; I.C. the degree of development of which was conditioned by the inherited importance of military headquarters and centres of power (district): (Herceg Novi, Bar, Ulcinj);

II The following make the second group of settlements the development of which was conditioned by the acquired military function and related architectural initiative concerning: II.A. adaptation and enlargement of the fortification in Nikšić; II.B. construction of new fortifications: at the beginning of the 17th century at Plav and Gusinje, formed at the end of the 15th century; 1708/1717 in Bijelo Polje, formed at the end of the 16th century; mid-17th and at the end of the 17th century at Kolašin and Spuz.

1.1 Podgorica

The establishment of settlements is connected to the military function (in the period 1474-1582), i.e. establishment of: basic structures (1474/1476/78), Tekija (zavije) of Čauš Iskender; Mehmed-han mosque (1455/57); bridge on the river mouth (XV); Starodoganj mosque (1582). Urban development of the old Podgorica is connected to the increased administrative, commercial and economic importance and the function of the settlements within the Ottoman Empire at the end of the sixteenth century (III. Period from 1582 until the 40-ies of the seventeenth century, from 1684 until the 70-ies of the eighteenth century). The formation of the town square – the building of Amad-Bašin mosque (1592); Tabački bridge at “Tabaci” (XVI), building of: a han, the clock tower (1785/1778), hammam (1889?), madrasas (harbi) (XIX), as well as shops according to a report from 1881 (320 shops). The fortification of the western part is connected to the military function of the late seventeenth and early eighteenth century (IV. From 1684 to the 70-ies of the 18th century), i.e. reconstruction and

fortification (1692, 1704, 1714), and in connection with that walls were erected whose spatial disposition was fortified with 6 bastions, 4 gates, walls and traffic routes.

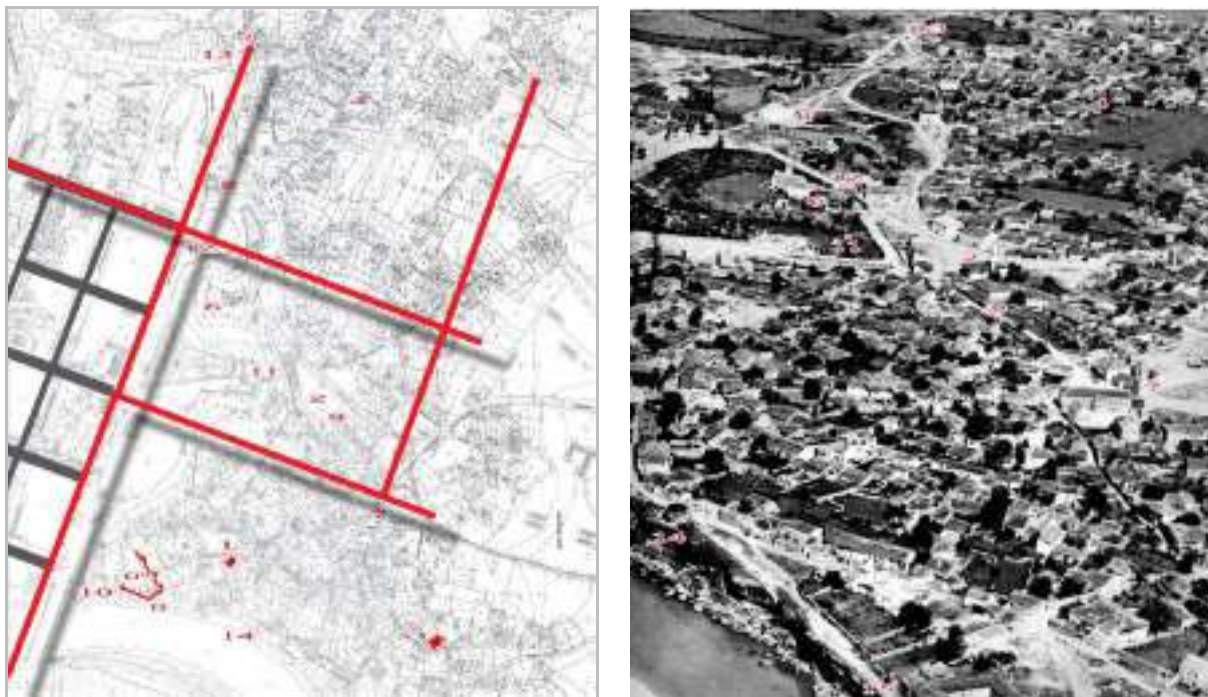


Figure1: Podgorica, Spatial-functional organization, urban growth, transformation

1.2 Herceg Novi

The construction of Sultan Bejazit Velija mosque (1481-1512) in the upper part of the Upper Town, on the site of the present-day church of Saint Archangel, laid the foundation to the future, second temporary seat of the Sanjak-Bey of Herzegovina. That was the first mosque in this town and one of the oldest. Its urban development during the Ottoman period lasts until mid-17th century, by which time all fortification belts had been completed and the works had been finalized on this important fortification complex. In the period from 1539 to the mid-17th century, Herceg Novi consisted of three distinctly formed parts: Upper Town – “Španjola” Fortress, “čaršije”-business areas alongside the western gate of the fortified town and three quarters inside the same. The residential area in the Upper Town consisted of two quarters: Sultan Bejazid Quarter (formed with the construction of a mosque with the same name – 1481/1512) and Lower Quarter (where Novo-šeherlija mosque was constructed in 1623/1626). These quarters covered the area below “Kanli” Tower up to the transversal central wall below which in the Lower Town there was a New Quarter with Sinan-pasha’s mosque, constructed in 1547/49 or 1552. The remaining part of the residential area outside the fortified section consisted of the Courtroom Quarter (Mahkeme) at Karača with Trnovica and Voranica Quarter between the Upper Town/”Španjola” Fortress and “Kanli” Tower. Within the Town perimeter, besides other important structures, in the territory of four quarters five mosques were erected, four “mescids” (places of worship), two hammams, inn and madrasa. After the Venetian occupation at the end of the 17th century (1687) its function was taken over by Nikšić, which becomes during the 18th century the biggest and the most important Ottoman stronghold of the Sanjak-Bey of Herzegovina.

1.3 Ulcinj

Besides the Old Bar, the Town of Ulcinj is the most picturesque example of organic permeation of the Mediterranean and Oriental-Balkan urban and architectural culture, particularly accomplished in the parts of the settlement inside the fortification. Its specificity and value are reflected in manifold civilisation, and in that sense architectural stratification, achieved in the following periods: 1. Illyric-Greek (from the 1st and 2nd century AD /Colchinium, Cicinium, Vicinum, Helcynio/ in 734 Ulcini, Dulcinium, Licini, Dolcignum/), 2. Medieval (during the 11th, 12th and 13th century), 3. Venetian (from 1412 – 1571), and 4. Ottoman period (from 1571 to 1878). At the time of the Ottoman domination, Ulcinj is developed and inhabited primarily within the ramparts where the Catholic Church (erected in 1510) was turned into a mosque in 1693. With the increase of the population, suburban area was being developed, as well as a wider residential area the spatial-functional organization was being determined by the conditions of the sloping terrain, and the formation and development directly linked to the construction of mosques – most reliable benchmarks for the monitoring of urban development of the oriental-Ottoman towns. It should be thus emphasized that the territorial scope of Ulcinj had been defined and completed during the 17th and the 18th century with the construction of Meterizi mosque (17th century) in the suburban area, Lajmina mosque (1689) at the end of the north-eastern development direction and Marinarva mosque (XVIII) at Pristan – southern, lowest part of the settlement. Intensive development of Ulcinj - its suburban part was documented with the construction of Pasha's mosque (1719). There, with the tendency of growth, the number of inhabitants sextupled in the period from 1689 till the end of the 18th century. The construction of other structures during the 18th century, primarily of Namazgah mosque (1728), Bregut mosque (1783), Meraja mosque (1779), hammam (1743), madras (XVIII), clock tower (1745) is associated with the period of the overall prosperity of the Town and the time when Ulcinj formally acquires *şehir* (town) status, which in 1845 counted 7000 inhabitants.

1.4 Bar

Through history, in its unchanged function of a fortification, Bar, together with Ulcinj, constitutes an important maritime-commercial place and an important military-naval base. According to the 1582 census, Bar is mentioned as a fortress, as a small town and as a *şehir* (town). Urban settlement outside the Town, *şehir*, consisted of two quarters, recorded as Lower town ("Varoš zir") and Upper Town ("Varoš bala"), in which at the beginning of the 17th century there were around 600 households.

The organization of the residential area of the settlement outside the ramparts is characterized by the development of two distinctly separated parts, the development concept of which is conditioned by the topographic features of the site and the sacral structures constructed there – in the Upper Town next to the northern gate, in the first half of the 17th century, Omerbašića mosque, in the mid-18th century Škanjevića mosque, and in the lowest part of the settlement Podgradska mosque (Derviš-Hasanova) in 1738.

2 ON OTTOMAN FORTIFICATION ACTIVITY

Due to the important military function of Montenegrin towns, fortification architecture is particularly pronounced and it is related to *adaptations, enlargements and new architectural forms*. At the end of the 15th century architectural activities are related to the adaptations of Žabljak and Medun fortresses (1455), of the western rampart (1490) and Abaz-Pasha's Tower (Forte Mare) (1493) – Herceg Novi Fortress. During the 16th century semi-circular towers were erected of Medun, Kanli (after 1539) and Upper Town/"Španjola" Fortress (1482-1572)

in Herceg Novi. The enlargement of the town perimeter in the area from Kanli Tower, Bey's Tower (St. Girolima), Trnovica Gate (Perast Gate) was carried out in 1606/1664, on which occasion southern (1667-1687) and eastern rampart (1606/1664) of Herceg Novi Fortress were constructed. After the occupation in 1751, with certain new construction projects, both Bar and Ulcinj fortresses were renovated. At the end of the 15th century Podgorica Fortress was constructed and in the 18th century Spuž Fortress was erected, both representing a new architectural form.

2.1 Podgorica/main fortress

The fact is that Podgorica Fortress is a prominent representative of the Ottoman type of fortification during the 15th century which is characterized by the construction of pentagonal towers with rounded corners, pseudo towers, circular and semi-circular towers. It was possible to make such conclusion primarily thanks to the results of the archaeological research conducted in 1963.

According to the results of the research, the inside space of the fortification measured 75 m in the east-west direction and 45 m in the north-south direction (with wall thickness ranging between 3.8 and 3.3 m and the height of 9.15 m in the pentagonal tower). The fortress with a polygonal base would be accessed through the main door directly from the eastern tower above the River Ribnica. A second smaller door was placed in the middle of the rampart alongside the River Morača and it served as a way out into the other part of the fortification, the redoubt next to the river bank. Approximately half of the upper area of the rampart was reserved for passage hallways and ramps. Towers: the pentagonal east tower with rounded corners, a pseudo tower with triangular sides, the south tower with a semi-circular foundation and the round north-west tower were all closed on the inside, except the south tower which had a conical roof and internal stairs. Two stone stairways led to the pentagonal tower and the rampart, starting from a shared platform, slightly northwards from the centre of the tower.

2.2 Herceg novi/upper town - Španjola fortress

Upper town - španjola fortress with four strong circular towers on the corners, in present-day form erected in the Ottoman time – from 1563/big earthquake – 1572/Admiral Venier's siege.

However, certain periodic architectural activities had been going on in the following order. Immediately next to the primitive rectangular tower erected in 1382, the Ottomans, after the occupation of Novi in 1482, erected the south-western semi-circular tower. The eastern and southern rampart, the north-western and the south-eastern tower, the southern perimeter, with guard facilities within, were all erected by the Spaniards after the occupation in 1538. Novi was under Spanish dominion until 1548, when it was recaptured by the Ottomans. As of that year, architectural activities are mostly related to the strengthening of the existing triangular fortress. In the period from 1566 to 1572 the Ottomans construct a rectangular fortress with circular towers by enlarging the existing triangular one, i.e. they construct the north-eastern tower, the northern and the eastern ramparts, as well as a mosque in the south-western part next to the tower, following the order and on behalf Sulejman Zakonodavac (*the Legislator*) (1520/1566). Other facilities – in the south-eastern corner, the storage of arms and ammunition, were constructed during the Venetian rule over Herceg Novi from 1687-1797, while during the dominion of Austria-Hungary bunkers were constructed (1797-1918) next to the fortress towards the east.

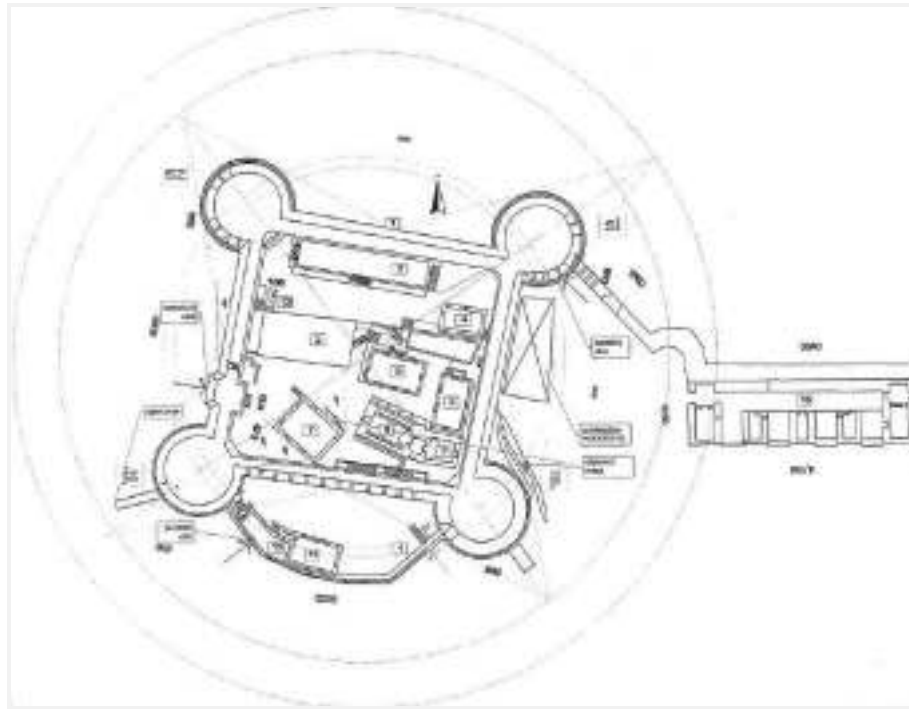


Figure2: Herceg Novi, Španjola fortress

2.3 Ulcinj

On a relatively already naturally flattened plateau covering the area of about $\frac{1}{4}$ hectare, there is a military fortification of irregular polygonal form. This form primarily results from the maximum use of the relief, technically rearranged on several occasions in the way that suited fortification architecture of certain epochs. Therefore, not only by the architecture of certain walls but also by their routing is it possible to discern several architectural epochs.

The first fortification (walls 221,223), built of roughly cut big stone blocks, originates from the Illyrian-Greek times. Part of the tower 4, the walls in the passage 2, the gates 7, the core of the wall 220, town walls, as well as parts of the walls below and north of the structure 6, the foundation of the wall 223, and possible core of the tower 3, originate from the middle ages.

In Venetian times, the town walls were mostly being modified: the central part of the southern wall was reconstructed, together with the neighbouring part of the walls on the western and the eastern side and the tower 3. At that time the citadel was encircled from the northern and the western side with high scarps covering the rock which the town rests on. Stone, as basic material, was mostly used as roughly cut and crushed. Relatively neatly cut blocks were used in the elaboration of the openings or for entire structures in case of important buildings. In that sense, the structure that stands out is the ravelin with casemets (8) erected during the Ottoman period. On the western side it is encircled by a high scarp the lower part of which is made of relatively small stone blocks, mostly in Venetian style, and the upper part, above the torus cornice, in the Ottoman style, as well as the parts of the protective structure in the form of less beveled scarp (2). The medieval tower (175) was largely reconstructed during the Venetian period, when it received the external scarp. The upper part of the tower (175) and the upper part of the neighbouring wall were reconstructed during the Ottoman period. Parts of the vaults, barrel and segmental arch of the town gates (7,200), built of thinner and thicker plates of rather elaborated stone, are also in Ottoman style, as well as the external revetment made of less robust material with the pieces of roof tiles in the joints of the north-western tower on the Citadel (4). Finally, the remains of the barracks in the Citadel (6), the structures

marked as 205, 207, 210, 211, 219, 222, gun powder store (179, 180) and the cistern (152), were all constructed in Ottoman period. The Ravelin marked as 174, got its final form during the Venetian and Ottoman periods. Particularly specific are the openings with pointing arches constructed using monolithic cut stones.

2.4. Bar

Architectural stratification of the fortification and its interior architectural content, achieved in the continuing architectural process of different civilization flows (Roman-Byzantine, medieval, Venetian, Ottoman), is the specificity of this urban ensemble. The oldest parts of this fortification originate from the 12th century, on the prominent higher plateau ("Londža"). In the High Middle Ages (from the end of the 12th to the end of the 14th century) the fortified section – ABC covered the area that was constructed during the Venetian times (end of the 15th century and the first half of the 16th century) – AJKB. The network of streets inside the fortified town might originate from the Ottoman period, when the houses were being built for the commander, soldiers, high ranking officials and the members of the judiciary, one part of the citizens, significant number of inns (24a, 30, 78, 129), military structures - barracks 38, 51, 157, 160, 161, 166.

The part of the fortification known as Tatarovica Citadel (159-172), such as it is, had been being formed during several centuries. This was a kind of citadel with purely military purpose – the last line of defence in case the town gets occupied. It was almost completely reconstructed during the Ottoman period 1571-1878. In that sense, particularly outstanding are the following: tower (162) which had the role to supervise the water pipe coming from the aqueduct (173); typical Ottoman triangular/pseudo tower (167); as well as the barracks (160, 161) and gun powder store (156). The entire structure of the tower – bastion (164) was built in the Ottoman times; segments – upper parts of the walls 170 and 170a; quite likely also the ravelin for the housing of cannons (171). The gate (158) with the remains of the segmental arch is also Ottoman, just like the outside southern edge with a part of the sickle-like broken arch of the same gate. The circular, and/or polygonal tower (163) represents a later Venetian type of addition, or, which is less probable, it was built by the Ottomans.

The main gate (184), on the inside finished in a segmental arch with overhang, is mainly of Ottoman style. During the Ottoman period certain reconstructions were being made at the complex of structures surrounding the town gate (184), especially in the upper part of the tower (186), on the bulwark of the rampart above the gate (184), as well as on the openings of the door itself. The ravelin 187, 187a next to the gate 184 and the wall 203 were reconstructed during the Ottoman period, as well as the bulwarks of the rampart 203 in between the towers 201-186 and 186-163, the bastion 202, the ramparts 203 – in between the gate 71 and the tower 201, the towers 201 and 186, the suburban rampart (205, 206) and the suburban structures making the same. The gate (71), defended by two slanting openings for cannons, as well as the vaulted transversal space marked as 70a (in between the clock tower 12 and the small gate 71) – the casemate for cannons most likely, also derive from the Ottoman period.

The most significant structure from the Ottoman period is the stone water supply system-aqueduct (173) 3 km long, with 12 cm diameter ceramic water pipes. It consisted of the channel supported by 17 arches of varying span. The arches were made of quite rough stone tiles and they rest on the appropriate number of unequal columns – made of crushed and very roughly cut stone (the edging is somewhat better elaborated). The arches are pressed or very lightly, or slightly broken. Above them, in the upper zone, there are openings, shaped in the same way in order to make the entire structure lighter.

The town has both water supply and sewage systems. In between the houses narrow channels were made to facilitate water discharge. Two quite large water tanks were also constructed there (37,139).

The clock tower inside the Bar Fortress was built in 1753 (12). There are no data about the year of the construction of the hammam (77). It belongs to the type of single hammam the main square area of which is vaulted with the dome on squinches. The narthex was barrel vaulted.



Figure 3: Bar fortress

3 HERITAGE FROM ORIENTAL-OTTOMAN PERIODA TODAY

Current theory and practice do not address adequately the issues of heritage conservation. The lack of environment protection directed construction created a misbalance in the specific setting, instead of solid solutions, in harmony with professional principles of protection and revitalization of the architectural heritage.

3.1. Podgorica

With regards to the status of Podgorica Old Town we keep going in the vicious conservation circle - “one step forward – one step backward” (GUP/1957; 1964- GUP/1970-1974; DUP Stara varoš 1984-1989; DUP Drač 1992; UP Stara varoš 2011). Insufficiently clear, guiding programme strategy unambiguously has encouraged illegal and uncontrolled development during the period of more than twenty years. As a consequence of such condition, nowadays as compared to the condition from 1989, we have twice as many neutral and incompatible structures. However, the fact that in current conditions for approximately 70 % of structures the issue of possible protection and enhancement is not questionable, as well as that 70 structures fall under the category of architectural values, constitutes valid information and an indicator for the establishment of the protection of this historic area, i.e. its spatial segments and individual structures.

Definitely, although preserved in fragments, Podgorica Fortress represents a part of traditional urban physiognomy, and in architectural sense a potential for possible sustainable function (revitalisation/reconstruction)!

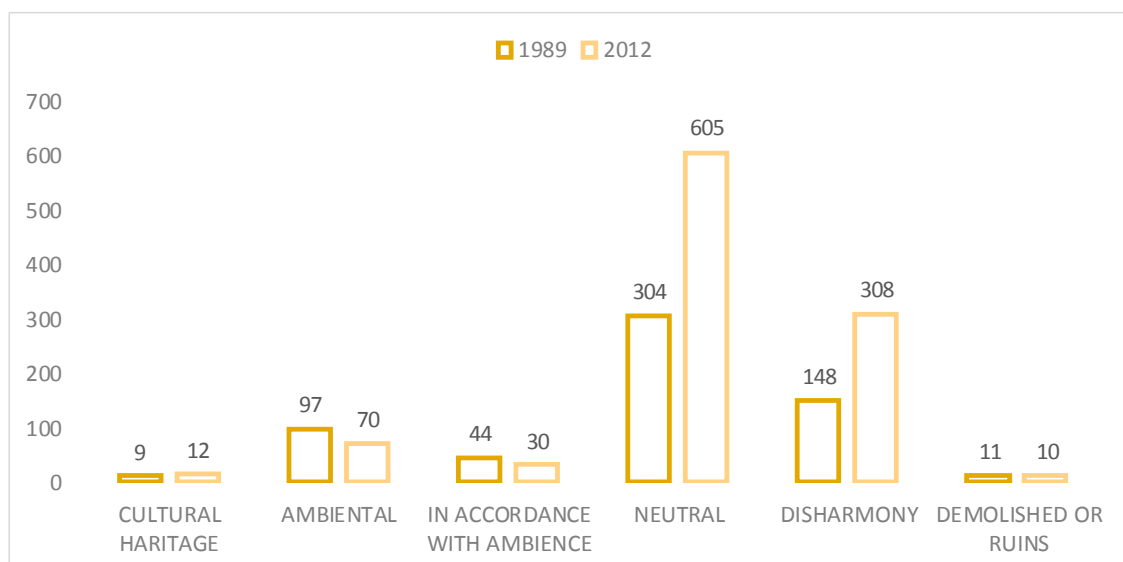


Figure 4: Podgorica Old Town – valorisation

3.2. Herceg Novi/Upper town

In current conditions the Upper Town of Herceg Novi /Španjola Fortress/ is deserted, in ruins and left to decay. The unplanned and unguided construction of residential structures in the buffer zone already endangers its dominant position and landmark role in the profile of Herceg Novi skyline.

Despite that, in current conditions, this mini-urban agglomeration with the structures it consists of (1. Defence perimeter with towers, 2. Eaves, 3. Barracks, 4. Residential building, 5. Residential building – Command quarters, 6. Sacral edifice/Mošēja/mosque/St Joseph Church, 8,9. Ammunition and weapons storage, 10,11. Guard and guard officer, 12. Prison, 13. Austro-Hungarian bunkers), draw its authenticity from the end of the 16th century.

3.3. Ulcinj

The authenticity and integrity of the urban-architectural ensemble of the Old Town of Ulcinj is unambiguously reflected in its unchanged urban concept. Besides certain changes at the

level of individual structures it preserved original feature of the houses – its basic structural units. Besides the preserved monumental features at all levels – the authenticity of the structures (8 structures -6.2%), evident is the number of those of value for the setting (24-20.7%), those neutral ones (14-11.76%), demolished (37-31.09%) and those compatible with the setting (15-12.61%). For these structures (90 of them), in the conditions of the implemented conservation measures (restoration; rehabilitation; reconstruction), it is possible to achieve the authentic value, both at the level of individual structures and at the level of the urban ensemble consisting of approximately 119 structures (82.35%).

The number of structures which are completely incompatible with the setting and which add to the devaluing of the entire setting is also not insignificant (21) which makes 17.65% of the total.

With regards to the issue of the revitalization of the Citadel, ever since the archaeological researches performed in 1953-1958; 1966-1971, 1977-1980, not a single conservation intervention has been made. In current conditions, overgrown in weed and vegetation, it constitutes a special challenge.

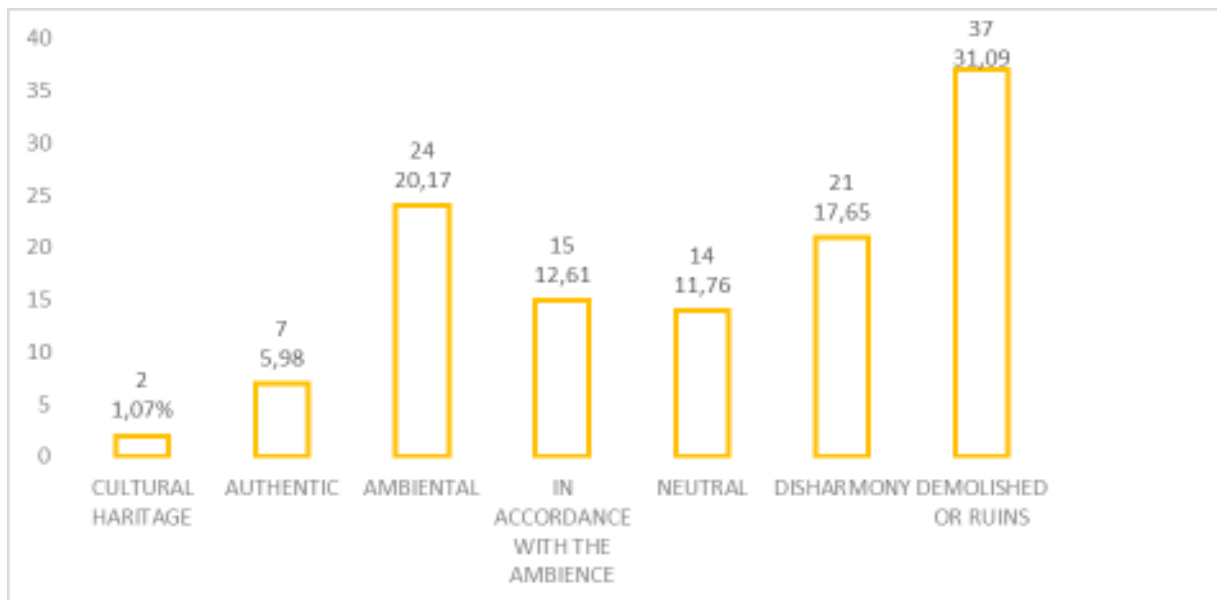


Figure 5: Ulcinj Old Town – valorisation

3.4. BAR

The Old Town of Bar is on the Tentative List of Montenegro which was accepted by the UNESCO. In the conditions of the conducted nomination measures it is expected that it will be placed under UNESCO protection regime.

4 ARCHITECTURAL HERITAGE PRESERVATION STRATEGY / TOMORROW

New UNESCO endeavour towards the preservation of the urban landscape is based on the proper use of natural specificities and inherited architectural values created in different historic epochs. Consequently, Montenegro is particularly important and has its development opportunity. It has excellent conditions for the creation of a network of the groups of heritage so as to establish numerous possible routes – representing different natural and architectural lay-

ers. The group of properties elaborated in this paper can be expanded with the sites of identical or similar historic, spatial, urban, architectural features, belonging to the same geographic area (Bar, Herceg Novi, Podgorica). This way of treating several sites as a group of properties of architectural heritage can serve as a positive example for other numerous sites and ensembles in the territory of Montenegro with insufficient capacities for the establishment of self-sustainable structures. In such conditions, it is necessary to define different planning levels, as follows:

- Strategic concept of a wider zone which includes four sites (Ulcinj, Bar, Herceg Novi, Podgorica)
- Strategic concept of the wider zone of individual sites
- Strategy of the Regulation Plan for the intervention zone of individual sites
- Guidelines for the rehabilitation of the zone of intensive protection at individual sites
- Guidelines for interventions at priority structures.

The flexibility of the space constitutes the condition and the imperative for revitalisation, which means that the revitalised spaces must ensure the possibility for new and possibly changed purpose, thus in the process of socio-urban changes and contemporary tendencies to encourage permanent sustainable utilitarian value and function, revitalisation of the subject sites. This comprises the development of the following:

- Rehabilitation project (revitalisation/reconstruction)
- Rehabilitation programme and re-use
- Preliminary plans and budgets for the implementation of the proposals
- Exploring the possibilities for the funding of project implementation

The issue of revitalization constitutes a special challenge, above all for Ulcinj Upper Town – Citadel, Podgorica Fortress, Španjola Fortress, Hadrovića mosque, Pasha's hammam.

	Function/Purpose										Period			
	Military structures					Utilities		Sacral	Educational	Other				
BAR	gate	towers	bastions	barracas	Gun powder stores/bunkers	water supply/bridge	hammam	church /mosque	madrassas		IX-XI	XII-XIV	XV-XVI	1571-1878
12		s												1753
24a										konak			*	*
30										konak			*	*
37										reservoir		*		*
38				*								*		*
42	*												?	*
43		*?										*	*	*
51				*						cistern			*	*
71	*											*		*
77							*							*
78										konak		*	*	*
88-89										house				*
95-96a										house				*
123										?				*
120		*								konak		*		*
134										house				*
151										turbe				*
156					*									*

157		*	*	*							*	*	*	*
158	*													-
160				*									*	*
161				?									*	*
163		*											*	*
164			*										?	?
166				*							?		*	*
170	*												?	*
171			*										*	*
184	*												*	*
185	*	*									*			*
185a	*										*			*
186			*										*	*
187			*										*	*
187a			*										*	*
202			*										*	*
173						*								*
197										house				*
215-228										house				*
231-233										house				*
173						*								*
197										house				*
215-228										house				*
231-233										house				*
173						*								*
197										house				*
1								*			*	*		*
154												*	*	*
**								*						*

Out of the sacral edifices inside the fortification three mosques had been built, upon the order of the state authorities. **Sultan Selim mosque was built in 1571-1574. It got the name after the sultan who had been the first to establish the dominion over Bar. It used to be in the vicinity of the Türbe (152)

Sultan Murat III mosque was built in 1595. Before that it had been St. Mark's Church (154), and/or a Franciscan church.

As for Sultan Ahmet III mosque, the literature adopted the information that it had been St. George's Church, but there are some deviations concerning the time of its construction (adaptation). According to certain sources this mosque was erected at the time of the sultan after which it was named (1703-1730). It was called "Londža" or Ahmet-Bey's mosque. According to another source, there once stood the church of St. George's (1) which got turned into a mosque in January 1649 following the unsuccessful attempt of the Venetians to occupy Bar with the assistance of the local population. According to the map in which it is clearly located (1) and the attached photograph (?) it could be concluded, but not proved, that these are two completely independent structures.

	Function/Purpose										Period			
	Military structures					Utilities		Sacral	Educational	Other				
PODGORICA	gate	towers	bastions	barracas	Gun powder stores/bunkers	water supply/bridge	hammam	church /mosque	madrassas		1474/78-1582	1582-sred XVII	1684-70-ih XVIII	70-ih XVIII -1878
0	*	*						*			*			
0 ⁰								*			*			
1								*				*		
2								*				*		
3								*				*		
4								*					*	
5								*					*	

6								*						*
7		*												*
8													?	
9									*					*
10						*					*			
11						*						*		
12						*						*		
13						*							*	
14**		*										*	*	
15**		*										*	*	
*Important structures: 0. Main fortification (1474/1476/78), 0 ⁰ Mehmed-han mosque (1455/57), 10 Bridge at the mouth (15 th); 2 Starodoganj mosque (1582); 3 Amad-Baša mosque (1592); 5 Dračka mosque 18 th ; 4 Hadrovića mosque 18 th ; Hammam (?); 7 Clock Tower (1785/1778), 9 madrasa (harbi) 19 th ; 6 Osmanagića mosque 1875; 7 Catholic church, 11 Tabacki bridge, 12 Abdovica bridge, 13 kapadzica bridge **Remains of the towers that once made the ramparts that used to encircle Old Podgorica at the end of the 17 th and during the 18 th century.														
	Function/Purpose										Period			
	Military structures					Utilities		Sacral	Educational	Other				
HERCEG NOVI	gate	towers	bastions	barracas	Gun powder stores/bunkers	water supply/bridge	hammam	church /mosque	madrassas		1482-1538	1539-1548	1548-1640	1640-1797
sw		*									*			
nw/se		*										*		
e/s			*									*		
n/e,3,7		*	*	*				*					*	
n/e			*										*	
8,9					*									*
5,13*				*	*									
**														
*Period 1797-1918 ** Main fortification – Lower town / *Ottoman architectural activities are related to the reconstruction of the Western rampart (1490) and Abaz-Pasha's tower (Forte Mare) (1493); or, is this a new architectural pattern: Enlargement of the town perimeter from Kanli Tower to Bey's Tower (St. Girolima) – Trnovica Gate (Perast Gate) (1606/1664), Southern rampart (1667-1687), Eastern rampart (1606/1664); Kanli Tower (after 1539); Sultan Bejazid Valija's Mosque (1481/1512); Sinan-Pasha's Mosque (1547/49); Murteza-Pasha's Mosque/Novošeherlija (1623/1626); Čaršijska/Downtown mosque (before 1661); madrasa; hammam														

Figure 6: Ottoman period - historical data

	BAR		
	27) Sultan Selim's Mosque****		1571-1574
	28) Sultan Ahmet III Mosque*/*****		1703-1730
	29) Sultan Murat III Mosque */*****		1595
	30) Omerbašića mosque*****		XVII
	31) Škanjevića mosque*****		XVIII
	ULCINJ		
	33) Upper Town Mosque *		1693
	34) Meterizi Mosque**		XVII

35) Pasha's Mosque *****	1719
36) Namazgah Mosque*****	1728
37) Bregut Mosque *****	1783
38) Vrh-Pazar Mosque*****	1749
39) Marinarve***	XVIII
40) Lajmina Mosque*****	1683
41) Meraja**	1779
HERCEG NOVI*	
22) Sultan Bejazid Valija's Mosque**	1481/1512
23) Sinan-Pasha's Mosque****	1547/49
24) Murteza-Pasha's Mosque/Novošcherlija**	1623/1626
25) Čaršijska/Downtown mosque****	before 1661
26) Suleiman Zakonodavac mosque*****	(1520/66)
PODGORICA/2	
48) Sultan Mehmed II el Fatih's mosque****	1485
49) Starodoganjska mosque*****	1582
50)Amad-Pasha's mosque /Glavatovića****	1592
51) Hadrovića mosque*****	XVIII
52) Dračka mosque****	1774/1782
53) Osmanagića mosque*****	1785
* adapted Christian temple ** Christian temple erected on the foundations of a mosque *** new mosque erected on the foundations of the older one **** demolished mosque ***** serving the original purpose ***** demolished mosque with traces of the remains	

Figure 6: The site and the status of sacral structures (out of the total of 25 mosques erected in these towns, 7 has been preserved)

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STRATEGIES OF INTERVENTION IN POST-INDUSTRIAL LANDSCAPE. CONNECTION BETWEEN NEW AND OLD ITEMS INTO THE URBAN LANDSCAPE

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Keywords: Industrial Landscape, Urban Landscape, Intervention Strategies, Reaction Areas

Abstract.

Introduction:

Industrial Landscape involves the interaction of several integral elements of an Industrial Landscape. Sometimes its scope is not continuous and is much broader than what initially we can see. Actually this very common type of landscape is ignored and sometimes despised; despite it have an undoubted architectural, urban, environmental, cultural and visual interest.

Developments:

Industrial Landscapes reflect progress toward the future, however, when its activity finish they become great silent silhouettes, piles of rubble or rusty iron. Landscapes continually change, transform, and what was once considered novel has now become a symbol of the past, representing the memory of a past time.

In this sense, Industrial reminders are considered history and they should be conserved as lessons from the past. While it is true that not everyone has the same sensitivity and consideration for this modern legacy and raises several interpretations and considerations about what is their value and how is the way to complete the transformation.

In this way, we can make a distinction between three types of intervention strategies:

- *The permanence is a regard with the past and memory.*
- *Integration or coexistence of new and old implies a contemporary regard on these abandoned landscapes and the feeling of providing a new use for the society.*
- *The change marks a break with the past.*

Remarks and Conclusion:

Old Industrial Landscapes represent symbols, landmarks within the Urban Landscape of a period of economic and technological power. Today it is reduced by the introduction of new, whether natural or artificial, contemporary elements. These elements are changing continuously, simultaneously, representing different times and spaces.

Old factory structures and Post-industrial Landscapes become elements of reflection on the past and future possibilities.

1 INTRODUCTION

Industrial landscape is a landscape mode that represents and symbolizes the development and advance of production activities, materials, technologies and social aspects of a determinate period of time called industrialization. That environment supposes a bigger and more complex consideration than Industrial Heritage, being this the main component, based on the architecture, machinery or structures [1].

Landscapes of industrialization are formed by mixing and connecting several parts and complementary elements of a manufacturing territory. The location of its components sought the efficiency of utilization of natural resources and the transport possibility, thereby; the position of industrial buildings changed, in a very abrupt manner, the natural landscape. Sometimes its extension includes rural, urban and peri-urban areas, being this surface much broader than the grandiose structure initially is seen from afar and it can extend from a domestic scale to a local or regional area. Also, industrial landscape presented as one of its main characteristics, the discontinuity between different industrial areas or factories. These punctual elements are connected along an extensive network of roads, a river routes, port areas or distribution network. All these elements, mentioned above, that link the different industrial parts with the neighborhoods of social housing or other industry-related equipments, are the linear elements of the industrial landscape.

One of the most singular features compared to any other conventional landscape is its existence as a result of the creation of a productive event, either for extraction, exploitation, production or transport; where a marked human footprint is reflected. These functional landscapes are also identified by their dynamic nature, caused by the continuous production activity, and technological advances which required replacing parts, machinery, or obsolete structures with modern and more profitable elements [2].

Therefore, we note that industrial landscapes, distinguished by its functionality, efficiency and production, were tireless machines that generate versatile landscapes throughout the day. During the day, different scenarios are originated due to transit transport, movement of worker, or the emission of smoke, sounds and smells characteristic of each production system. They are also noteworthy scenes produced during nocturnal activity, where lights, emissions of fumes and flames caused by the steel industry that dominated the landscape and directed our sight.

This type of landscape includes both, landscapes that might be considered outstanding for its size, hardness, activity or situation; as daily and abandoned or forgotten areas near urban centers. It is necessary their study to assess and evaluate, in each situation, its distinct quality and attractiveness as an architectural object. The latter landscapes we have mentioned are the landscapes that will focus our analysis along this small paper, which are now called post-industrial landscapes, because of they have completed its productive activity.

This typology of landscape, very common for its proximity to the urban landscape, is today, although to a lesser extent, ignored and sometimes despised, even when it has an undoubted historical, artistic, architectural, urban, environmental, cultural, social and visual interest. Therefore, a progressive collective awareness that allows us to appreciate its intrinsic qualities is necessary. One way to appreciate the value of these territories, from the designing perspective, is to inform the many possibilities offered by these areas and the enormous influence and enrichment they shed on the surrounding regions. Thus, Industrial Heritage or taking a broader consideration, post-industrial landscapes not only may be accepted even may be admired.

2 ELEMENTS OF POST-INDUSTRIAL LANDSCAPE

Actually we can see, in our immediate environment, sufficient trace and elements on the industrial period, to teach and explain to society the contributions of this historical stage. These elements, or industrial permanences, are currently coexisting or overlapping with contemporary elements within the urban layout. This event represents an imbalance and tension between these inherited ruins of the industrial age and the new buildings demanded by society. As it causes, many times, misunderstanding and lack awareness and appreciation of these post-industrial landscapes.

To find a good strategy to keep industrial identity and generate an attractive and necessary area for the city, it is essential to establish a clear structure of the various and complex elements that make and shape these new landscapes. Thus, we have an accurate reading and interpretation of them and to obtain a connection to the urban context in which they are now situated.

Intervention projects should be initiated by a first part of analysis of the components that exist in these landscapes of industry and as these elements relate to each other and with other elements of the contemporary landscape. That is, it is necessary to make a first work of composition and organization of these industries, territories or regions in different sizes and scales.

In this sense, we can distinguish two different groups of post-industrial landscape elements, on the one hand, permanent components, and on the other hand, variable components. These two parts that we have differentiated, to help us better understand of the complexity of these landscapes, have crosses that intertwine and connect. Thus, these elements, permanent and variable, create a sharp contrast, since they belong to different temporal spaces and help us perceive and measure the passage of time and the transience of the works of man.

2.1 Permanent elements of the industrial past

The permanent components of the industrial period can be defined as pre-existing in ruins of disused industrial structures that ensure subsequent reading of the industrial age. They consist of the punctual factories or remaining parts of them, large structures of production and extraction, railway tracks, and industrial working class neighborhoods, as well as additional machinery and equipment [3].

The permanences stand out for its simplicity and simplification of forms. These material evidences, destined to disappear by its centralized position into the urban plan, represent, a tangible way, the industrial age. The main material used in these industrial ruins is cast iron, and less, the industrial brick, which not only include major functional structures of the industry but the transport networks. These new materials used by industry represent the history of our contemporary buildings that we can see today in our cities.

The notion of modernity, progress and future regarded at the time as innovative with so many transformations, contrast with the current idea of nostalgia, ruin and past. The perception of the continued functionality of the industrial landscape is very different from the current image of neglect and decay that we have of it.

2.2 Variable elements of the post-industrial landscape

The landscape is in constant state of transformation as a result of the dynamic processes that occur therein. Therefore, the variable components can be defined as those elements that change or mutate over time and, for that reason, are required to achieve a balance between the city and industry. They are used to find a connection, that is to say, a suture with areas divided that the industry generated in the urban structure. In addition, their use ensures durability of the intervention as cover of needs for current and future society.

We can establish another distinction between these elements depending on whether they are generated, by the action of nature or man. In this way, the elements that belong to this level in continuum move are vegetation, water, roads, new connector elements, and finally the man or inhabitant of these spaces [4].

2.2.1 Natural elements

Natural elements are used, in most cases, as elements of transition or regulator between the old industrial area and cityscape. The green surfaces recreate, in many cases, the separation of the past between industry and city, but they create, this time, a public area.

We can make a distinction between those natural elements that grow spontaneously dominating and appropriating the abandoned industrial areas; and those green parts that are strategically designed with a pre-set order or system to achieve the desired effect in each situation [5].

Both, punctual natural provisions, as the most massive cluster, are useful to minimize the visual impact of industrial structures and show a recovery of environmental quality. They are also used by architects and landscapers, as a design tool to emphasize routes, frame views, or define the scope of the performance.

2.2.2 Water elements

The existence of water sample humanization of the territory and is common in industrial landscapes, since the existence of a waterway, river, canal, lake or sea for productive factory activity was necessary. But this need was not only conditioned by the use of water as coolant, but as fast transport way between different industrial areas and city.

The presence and flow of water is very used for analyzing these areas damaged when we have to make a decision on the intervention, as they determine the topography, delimit and connect areas, indicate the degree of contamination of ground and measure the landscape.

These linear elements, as discussed above, took advantage and are valued today as attachment mechanisms, but not only between industry and the city, but between different parts or disused industrial fragments. Thus, the river network becomes a unifying and organizing principle of the proposed action on brownfield sites. Their existence makes possible the connection and suturing the different points divided into the urban grid. Furthermore, they enhance relationships and create new economic and cultural tours.

A natural component so powerful, and with a huge ecological potential, does raise strategies for integrating the river with the other components, from being a boundary or border to configured as a master and structuring central element of the management of industrial areas and its connection with the city.

2.2.3 Road network

The trails and roads set the direction, the route or path to follow to get to a certain place. Therefore, they determine the routes on which is conducted our perception and experience of the post-industrial landscapes. These linear elements are generated by human activity and that can be formed by use of the ground when we walk on it.

Its presence into the landscape is vital and constitutes opportunities within the landscape to generate visual tours, connect divided regions, delimit areas and even, mark and emphasize those tours that reveal the former industrial layout. Thus, we should keep in mind these elements when developing strategies to favor a correct reading and interpretation of industrial memory.

Ultimately, the industrial road network, such as the river axes mentioned above, form lines in the landscape that are extending along the territory marking, defining, connecting, and measuring different parts of it.

2.2.4 New elements

In many cases, the insecurity when we act on this industrial heritage or the little knowledge about it, due to its relative modernity with respect to other historical elements of the city, force us to provide new symbolic and imaginary meanings for old industrial structures. Thus, we avoid the society rejection by drawing up a new perspective on ancient and gigantic industrial buildings [6].

To gain acceptance by society and strengthen the proposed action, new elements that are introduced in the post-industrial landscape, set a new and fresh look of industrial structures. In some cases, we only have to introducing small elements to do not detract too much factory image and bring near these landscapes to the community. But unfortunately, in many other actions, the old industries are replaced by new buildings looking for a scenario of trade, tourism and leisure. Although, usually the idea of the new constructions contains references to the industrial past, reading is not immediate and therefore the memory continuity is broken. For that, it is important to know the scope, the resources the landscape provided us and, planning, as far as possible, a subtle combination of old and new elements without contradicting, to facilitate the interpretation of the industrial heritage.



Figure 1: Elements of post-industrial landscape. Duisburg-Nord Park

2.2.5 The habitant

Man can be considered as a member of these landscapes, being that, their involvement in them is very active. Furthermore, they suppose the main component when we are designing spaces, as it seeks to satisfy, from the beginning of the design, needs required and demanded by society.

Residents and visitors of these areas intervene of different ways depending on each situation and areas in which they are located. Thus, their presence has multiple and diverse expectations. In some interventions, architects and landscapers suggest actions to be performed or which are prohibited in every area. However, other proceeding, we opt for a completely different strategy. In this alternative is the inhabitant which is responsible for designing and

search function to these degraded elements. Thus, the old industrial structures acquire a usage based on the interpretation, proposals and needs of users.

Relationship between the different elements of the landscape should be studied and analyzed concretely for every situation, trying to generate multiple connections and interdependencies between them, to give unity to the whole and ensure its success.

In addition, it is important understand the place because the landscape itself, provides us the resources and tools to achieve invent new landscapes connected with the needs of society today without losing continuity with the identity of each territory.

3 PERCEPTIONS OF THE POST-INDUSTRIAL LANDSCAPE

The distance between the observer and the territory cause awkwardness when we have to choose a strategy to integrate the post-industrial landscape in the complex urban structure. Therefore, before defining the strategies to follow, it should make a brief stop to see and reflect on the different tools we have in order to look at the environment.

How we should view the industrial landscape can lead to a long reflection. Not all observers interpret the landscapes that they see the same way. These can change with each of the observers and depending on the situation or the perception that people have of them.

Direct observation on industrial land provides a real connection with it, that is to say, a contemplation of the landscapes provided by the senses. The static perception gives us a unique view of the scene, as if it were a photograph, that is to say, it is a motionless moment [7].

It is interesting move from a static to a dynamic contemplation, as that, the perceptions change, are enriched; the nuances of scale vary, and creates different feelings.

The dynamic view can be defined as that way of looking at the scenery through movement, either walk or a means of transport. The introduction of new and faster forms of communication brought changes in the perception of landscapes. Residents and workers in industrial areas had a new way to approach and appreciate of the environment. This way of looking at moving landscape provides a new relationship between the individual and the landscape, more detached and quick. The sequence of images provided by the movement of the railway, as in a photographic sequence it were, it creates in the individual visual an experience where he links up a variety of landscapes.

The observation in the distance takes away the ornament of nearby buildings and we can only observe the geometric silhouettes of different pieces that cut the horizon.

Thanks to new tools and advances, we can have not only a general perception of the industrial area, but the whole of the post-industrial landscape, on a larger scale that that provided by the direct scene of the observer. Aerial perception helps us understand the organization around these industrial centers, the arrangement of buildings, and their relationship with other elements that we have described above. Therefore, it provides clues to find a global strategy, which links industrial areas and identifies new avenues of communication between different parts of the divided city.

For that reason, today, we have many tools to deal with a very broad manner over the territory on which we act and the impact, the implications or the reactions that we have on the surrounding areas and assess what each area needs. It is important to note that the value that the landscapes have, behind the design project, is marked by the ability that the society have in order to read and interpret them.

Thus, we have to consider, when we are planning the transformation of these territories of industrialization in new areas for contemporary society, elements that remain and new elements added to prevent a coded memory to read the landscape, and therefore we have to reject

the distorted understanding of the industrial territory as a result of the disappearance of the signs of identity.

4 STRATEGIES DESIGN

Factories and industrial elements were created with a clear functionality, it is called the production. At the end of its activity, the nature and new constructions colonized their land, and leads us to look at these industrial buildings in a different manner. Thus, not only the built elements lose their meaning for which they were planned, but the entire landscape, called post-industrial landscape. Currently, these uncultivated lands with scattered buildings throughout the landscape can find another sense based on their formal qualities, in their strategic position within the city, and in their artistic and historical values.

We can say that the industrialization changed the industrial landscape, although the static or permanent elements have not changed their position, that it to say, they occupy physically the same position they had at the time of their creation; now is the rest of the context which has changed. Thus, the industrial remains, located within the urban plan, must find a new identity within the territory and set the new contemporary landscapes. But how could we do this transformation? [8].

To answer this question, we will establish three very different directions of intervention depending on the degree of conservation of industrial remains. These strategies, grouped into three categories, show the various forms of action, from total industrial heritage conservation, until the destruction of the fragments of industrial history, through a partial conservation of the ruins in search of a new functionality.

4.1 The permanence

There are many strategies that pose a full or partial preservation of industrial buildings, with no other idea than that of preserving fragments of industrial history as sculptures. They become motionless elements in a period of time that form part of the city as a representations and symbols of the industrial era. Their presence is often linked to a public space, park or square, which serves as a division between the new urban context and the part or parts of the factory.

José Linazasoro, architect, pointed in a symposium on industrial architecture that nobody would now convert the pyramids of Egypt in about living spaces, except that they never were it. Or, the ruins of the Greek cities or Roman cities that are beautiful dead spaces, and they are part of geography. We always think to reuse as an effective way to conservation, but why don't we leave it as a testimony of something that was and, that basically belongs and even forms part to the geography? [9].

This strategy involves the “non-functional” claim of industrial remains, which offers an alternative to demolition, restoration, or conventional reuse by other applications. Through contemplation of incomplete traces of the now silent industrial structures, no activity, no movement, no noise and no pollution, we feel a sense of longing and loneliness and we were reflected in a certain way the echoes of the industrial past.

But we must not only understand the conservation of industrial ruin in a new environment outside its history as the arrangement of elements isolated in the middle of the urban spaces into an artistic way. It is a complex overall planning, linking these incomplete constructions with other landscape elements to enhance and give them vitality to the whole, as well as introducing other contemporary qualities in the city.



Figure 2: Permanences into the urban landscape. On the left, industrial container for grain is located in Burgos surrounding with residential buildings. On the right, elements of the post-industrial landscape coexist with natural elements.

4.2 Integration or coexistence of new and old elements

At other times we opt for a more functional approach, which aims reworks the industrial ruin integrating new contemporary elements, with the aim of getting a new use adapted to the needs of today's society.

Definitely, it is a matter of perception. Society, not yet imagines the potential of the industrial legacy, or understands its meaning, often by chronological proximity. Most of these landscapes, desolate, difficult to access, are seen from a distance, or are so majestic architectures that impose respect for the visitor, and therefore, he avoids approaching them [10].

For that reason, many architects and landscapers suggest the introduction of new forms or less aggressive, more flexible, more ecological and/or closest architectural elements, so that these monumental structures can be used, accepted, respected and valued by residents or visitors to these post-industrial areas.

Integration and coexistence of the new items with old industrial buildings part of a reflection on space and use of it [11]. Therefore, we should exploit the formal value, not only architecture, but the whole post-industrial field and setting the other elements of the landscape and its possibilities. This strategy of joining the new and old elements may have different capabilities and, consequently, different consequences in relation to the preservation and interpretation of the industrial remains. We can be summarized in the following concepts that we will be explained below: addition, subtraction, division and multiplication.

4.2.1 Addition

This system consists of adding new elements to get total, an outside or an inside space to existing one. This simple mechanism we can see in numerous interventions that have already made, such as the Tate Modern in London or Caixa Forum in Madrid. A new element, in these cases, deposited on the cover of the old industrial construction, provides added of the old space. In addition it provides a change of more contemporary look. These additions are quickly differentiated from the old elements, so that we can interpret that change or mutability.

4.2.2 Subtraction

The subtraction is based on eliminating part of industrial remains, leaving those significant elements to incorporate into this location, new more flexible and adapted element to the function that we will propose for them. Many proposals or interventions, already made, have used this resource, for example, the disappeared factory, called The Palera, in Valladolid. It is to-

day a Science Museum in Valladolid and it is only preserved the brick façade, and the architects have created a new building to house the exhibition halls. Or the numerous examples, such Algarve or Boca do Rio Hotel Resort, where the chimneys of the old factories are the only parts that remain as a symbol and new buildings, located on the site of the old industries, are created [12].

The conserved industrial parts serve as traces of history that recall the industrial past of that territory, while new spaces, replacing the site of the old buildings, satisfy the needs of the society.



Figure 3: Addition and subtraction systems. On the left, a new element on the top of the old industrial buildings creates a new area. On the right, only a part of the old industrial factory is preserved.

4.2.3 Division

The division is based on introducing one or more elements that divide the space, inside or outside of a building or an industrial territory for its later use. This division can be given by introducing an element inside of another and it is divided into several parts both horizontally and vertically. As an example of this procedure we note the Tate Modern in London or the Gasometer in Vienna, where due to the introduction of forged, the huge vertical space inside is divided into floors, either for museum or housing. Also in the latter example, each gasometer has divided into three parts. One part is the central courtyard and the other two parts joined with the original red brick façade where houses are located. Other examples of division can also show to a larger scale, in this case, the roads or trees, play a very important role, and consist in dividing or mark the various areas of intervention.

This mechanism provides a subdivision of a large container or an extensive industrial area to define different functions or uses.

4.2.4 Multiplication

The multiplication increases the amount or number of spaces because of the introduction of a new element. These elements serve to unite different points, parts or industrial areas, and they can be called the connectors. Usually, architects or landscapers introduce these elements to link and create visual connection between different parts of the industrial area. This is the

case of Duisburg-Nord Park. The stairs and paths represent these points of visual connection between the different parts of the park. In other cases these elements are used to perform a physical union of different parts, this is the case of Vienna Gasometer. The commercial centers of each gasometer are connected by elevated walkways. Thus, a continuum of interconnected interior spaces is created.



Figure 4: Division and multiplication systems. On the left, the interior of each gasometer is divided in several parts. On the right, the four Gasometers are connected with a new element to create a continuous area.

Finding a function to a predetermined shape and dimensions of these features is a challenge of great complexity. To oversee and provide greater flexibility for large industrial indoor and outdoor spaces, we can use the simple mechanisms previously seen.

These operations are very simple and easy to implement, but we should not forget the importance of keeping some information on the previous context to develop further reading of the interventions and recognize the traces of the industrial past. That is, it is necessary to highlight the relationship between old and new. Only thus, we can ensure continuity with history.

4.3 The change

Unfortunately, other strategies are based on the understanding that landscapes, like living organisms, are born, grow, develop, die, and finally disappear. Of course, we must understand that the urban landscape is constantly changing, but this does not mean delete all the above and start again from scratch. Typically, our project ideas are based on the preceding constructions, which help us to have a read of past history. At other times, the past disappears completely and, history is rewritten from new contemporary concepts and, a new identity for the city is created.

The transformations of land abandoned of industrial use, which suffer this sudden change or denial of the past, are basically due to the strategic opportunities to create tourist and economic projects to revalue the urban area surrounding [13]. These ambitious strategies, that have undergone a profound and radical conversion, leave in the background industrial remains, allowing view vaguely, sometimes, any industrial trace line as a symbolic element of industrial memory, into the new landscape management [14].

All strategies have been defined in order to respond to different modes of action on disused industrial areas, without regard to the effectiveness or validity thereof. We have observed that when we intervene, could arise thoughts disparate, for example, seniority versus modernity, stay in opposition to change, or, uniqueness against totality. But the key is to take into ac-

count when making the transformation project; we should not focus on one-dimensional, unidirectional and superficial performances. Because in that way, we do not address the complexity of space and we are unaware of the reaction and influence that our project can have on the different scales of the urban structure.



Figure 5: Figure example

5 CONCLUSIONS

It is important to point that the structures and post-industrial landscapes are elements present and visible in the urban landscape, and increasingly often are perceived by society as main elements of cultural heritage, and not as a useless ruin. These industrial elements, now without functionality, should be considered as an architectural, urban, environmental, social and cultural resource with enormous potential to revive the urban landscape.

The post-industrial areas are composed of static and variables elements. These elements are our tools to articulate strategies for the integration of these isolated large industrial buildings, or extensions within the urban territory. Removing some of the elements of the landscape, or replacing a landscape on the other, is related to the concept of identity. The post-industrial landscapes or some of its declared industrial heritage components are hallmarks of the territories, that is to say, distinctive elements that allow join global strategies that give value to the other elements of the urban landscape. Society is identified with the industrial ruins. These involve working memory, the memory of everyday life, and social memory. Therefore, projects must be linked to the recovery of these industrial settings, either in individual projects or large territories neglected and degraded.

New tools and technological advancements allow us to have a greater understanding and closeness with these landscapes. In this way, we can have a greater reach and success in our interventions. But all interventions should not follow the same path, because each country is different and has different needs that society demand.

Following this approach, we have seen that there are different possibilities of action against the old factories and industrial vacant areas. From the understanding of symbol and monument to be respected and valued their initial characteristics, to transform them into spaces for new uses, linked to business, culture, art, tourism, housing, and incorporating new elements that respect and reinterpret old, but with current and near society languages. Unfortunately, there are other strategies that advocate a break with the past, creating a complete transformation of the landscape, and erasing the traces of the industrial era.

Many of the post-industrial landscapes have disappeared or are in danger of disappearing because of formal, historical and cultural values are not recognized, and we acted in isolation on each of the elements of the landscapes. This way we do not give the whole unit and we cannot correctly interpret the entire industrial area. Therefore, the challenge remains to value these landscapes. For that reason, it is imperative to find patterns and integrative mechanisms. Recovery and enhancement actions must change the scale, it is to say, should not only focus on the isolated element but cover the whole landscape, where industrial buildings with the other elements of the environment are linked. Only in this way, we can create and integrated contemporary landscapes, where we can read and interpret the traces of the industrial past that coexist with the new elements and constructions of the city.

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THE IMPACT OF TRADITIONAL HOUSING TYPOLOGY ON NEW HOUSING DESIGNS IN EXISTING ENVIRONMENT: CASE STUDY IN AKCAKOCA

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Keywords: Housing Design, Typology, Traditional Housing, New Design, Spatial Organisation

Abstract.

Introduction:

Climate, livelihood, regional characteristics and etc. of an area has a significant impact for new housing designs in existing environment. This paper focuses on the information of the housing typology in existing areas by studying the traditional and the new type of housing plans to reveal the impact of traditional typology on the new housing plan types.

Developments:

It is discussed the relations between traditional housing typology and new housing designs in Akcakoca a district of Düzce, Turkey. In the case study, 13 houses has been selected on Doruk and Aydoğan street in Osmaniye Neighbourhood (5 traditional housing design, 4 new housing design with reference of traditional typology and 4 new housing design with no reference) Three different housing typology had been identified by subjective and objective measurement relevant to this study.

Remarks and Conclusion:

According to study results, it is concluded that there occur inadequate user satisfaction and functional efficiency in the examples of new housing design with no reference of traditional building scale and typology. On the contrary, in the examples of new housing design with the reference of traditional building typology has higher user satisfaction and comes up to expectations. As a result, the housing designs with the reference of traditional building typology and building scale in existing environment provide more functional efficiency and higher user satisfaction.

1 INTRODUCTION

Existing areas are the result of the architecture formation with small alteration in time which is been determined by climate, cultural and socio-economic characteristics of an area. These forms are being used for ages by preserving the plan layout that are expected to be guide for new design typology.

The need for new buildings in existing areas mostly occurs based upon an increasing population. It is supposed that new buildings can meet expectations in accordance with user needs and new building materials and technologies. As a result of these concerns, it can reveal the functional efficiency and the user satisfaction of new building follows the relations, similarity/diversity between new buildings and traditional typology.

The plan types of traditional houses is determined by socio-economic and cultural characteristics of occupants, climates, geographical datas, construction technology and etc. [1].

This paper proposes a methodology for the identification of the impact of traditional typology on new housing designs in existing environments. For this purpose, the study area is chosen in Akcakoca, Düzce (in west Black Sea region) where traditional and new design housing example can be found.

2 THE TRADITIONAL HOUSING ARCHITECTURE IN BLACK SEA REGION AND THE STUDY AREA

2.1 The Traditional Turkish Houses in Black Sea Region

The plan types of traditional Turkish houses is determined by the socio-economic and cultural characteristics of the occupants and the influence of physical factors is mostly manifested in the structural systems and plan layouts [2]. The plan types of Turkish traditional houses is formed by the location of “Sofa” surrounded by rooms. “Sofa” is identified as the space allows reachability to all rooms and service places of house and has a variable form. In traditional Turkish houses, room size and its characteristic is rarely changeable. The most characteristic of plan type of traditional Turkish house is determined by the characteristic of “Sofa”. Accordingly, there are 4 types of traditional Turkish houses illustrated in Figure 1, which are *sofasız* (plans without sofa), *dış sofalı* (exterior sofa plans), *iç sofalı* (interior sofa plans) ve *orta sofalı* (central sofa plans) [3].



Figure 1: Traditional Turkish House Typology due to The Characteristics of “Sofa” [2]

In Black Sea region the traditional houses has the plan type that is located due to climate and the sun conditions. Generally, on ground floor entrance “sofa” is located opened through

garden and surrounded by rooms one or two sided. The stair reaches the upper sofa located mostly across the entrance in the symmetry of house plan. Likewise, in upper sofa there is located rooms which surrounds Sofa [4]. The sofa is being used as a meeting place of families and also appropriate place for social gatherings on the occasion of weddings, engagements or funerals. Consequently, the role of sofa is interior spatial organisation and connection between rooms. Just as the rooms can be likened to self-contained dwellings, so the sofa can be summarized as a metaphorical street or square. The rooms always open straight onto sofa which serves as the centre of circulation in the house [2].

The kitchen is the hub of the house in the Black Sea coastal region. However, the kitchen is used for cooking and also for eating, sitting, resting, washing and other diverse functions. Therefore, the kitchen is multi-functional space and most of the equipment is portable apart from the cooking range and cupboards. The kitchen is mostly located in the side which is the best protected from the weather, since it is the place where the family spends most of their time. In traditional houses with storeys more than one, the lower is mostly used as stabling in country districts, or consists of storage areas and paved entrance hall in cities. The lower floor always has better isolation and more easily heated in winters. Even single storeyed Turkish houses are raised 1.5 to 2 metres above the ground level to protect building from damp [2].

In Turkish traditional houses, stone, timber, adobe, brick was mostly used as building materials. Local construction techniques, climate, local construction materials differs from region to region. Timber can easily be founded in Black Sea region, easily processable and has high strength in resisting to earthquake forces. For that reason, timber is used very commonly in traditional houses in Black Sea region. In addition to that, stone is used in garden walls and the foundation of the houses [5].

2.2 The Study Area, Akçakoca (West-Black Sea Region) and Traditional Houses

Akçakoca is chosen as a study area in the city Düzce in Black Sea region which has traditional typology with common characteristics. Due to political problems during 16 and 19 th century, the residential area is located mostly in higher locations or in forest areas which can not be easily reached from neighborhoods. After the Ottoman-Russian war in 1877-1878, new residential areas was located with the migration of people from east Black Sea region. With these migrations, in Akçakoca hazelnut production was started besides forestry and fishing [6]. Hazelnut fields and fishing is the most important sources of income in Akçakoca. Nowadays, the hazelnut fields production is decreased due to the division of families. Because of this reason, many families are searching new incomes like backyard poultry, fruit and vegetable gardening [7].

Dominant wind direction in Akçakoca is mostly north-east wind [8]. Akçakoca has mild climate with annual average temperature of 13,6 santigrad [7].

Akçakoca has 8 neighborhoods and 43 villages. The neighborhoods where can be mostly founded traditional houses in Yukarı, Orhangazi, Cumhuriyet, Hacı Yusufklar neighborhoods; rarely founded in Yalı Mahallesi and Osmaniye [7]. The traditional houses in Akçakoca has similar characteristics of traditional houses in Black Sea region. Mostly, the traditional housing typology has interior sofa plan which is located in the middle of the house and divide rooms into two side in traditional houses. Sofa is the biggest space in plan layout and directed to view and mostly due to climate and wind conditions. The construction system in traditional houses can easily be seen from the unplastered wall façade.

3 CASE STUDY

In this study it is focused on traditional and new building typology in order to investigate the impact of traditional housing typology on new building designs. In this context, in Os-

maniye neighborhood (which is near to city center) in Akçakoca district which has both traditional and new type of houses was chosen (Figure 2) and 13 houses was studied in this area. The proposed methodology for this study is include: analysis and observation, and focused interview. In the analysis and observation phase, the following steps is studied: (1) location of buildings, (2) the relation of building form in section and plan layout, (3) the changes of space organisations in plan layout. Firstly, as in the Figure 2 illustrated the houses are indentified in plan layout. In the study area, each of the houses was observed and each storey of each houses was drawn according to observations. Within this context, the typological study for each houses contained the plan layouts and the sections. Afterwards, the spatial organisations for each examples is studied in order to detect the changes or similarities on plan layout for each examples.

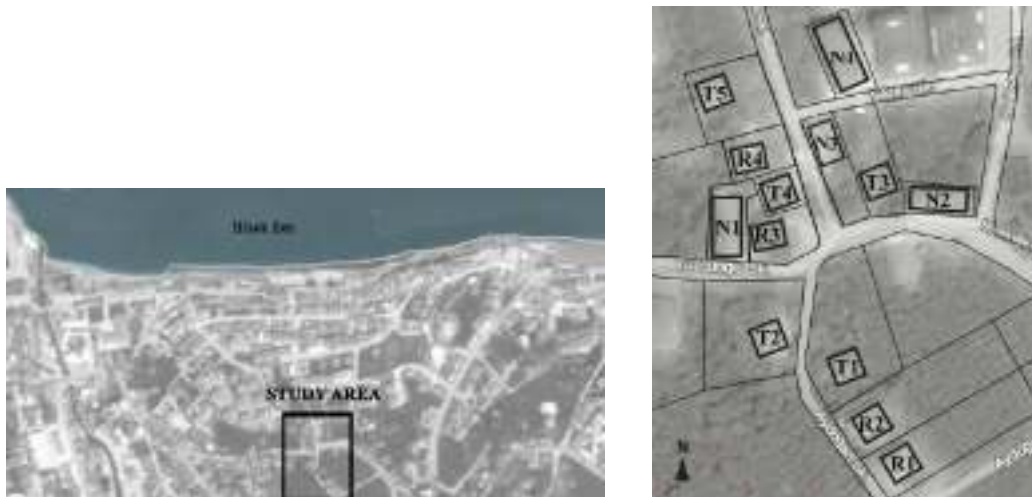


Figure 2: The Location of Study Area (Left), The Study Area (*T*: the traditional type, *R*: the type with reference of traditional, *N*: the type with no reference) (Right)

After the typological analysis of each houses, three cases of housing typology has obtained. Unlike traditional housing design examples, it is obviously seen that the new housing designs different from each other and according to typological analysis it is obtained two different groups from new housing design examples: one is with reference of traditional typology and one is with no reference. Hence, these three cases were obtained from the typological study results which are being demonstrated in Figure 2 with letter *T*, *R* and *N*: *T* for traditional housing type, *R* for new housing designs with the reference of traditional typology and *N* for new housing designs with no-reference.

In Figure 3, the direction of sofas and corridors of each study are demonstrated. In the result of this identification, it is seen that sofas are commonly in the same direction for case *T* and case *R*. Unlike the other cases, case *N* has different directions and the directions has likely no intents.

The focused interview is done with users. It is intended to gather informations about user satisfactions and general view of each different housing desings. Accordingly, the interview is consist of the following main question topics:

- How many years you are living in this house? How many persons do you live with?
- Do you use this house for all seasons of one year?
- Which places do you spend most of your time in the house in summers and in winters?
- Do you appretiate with the house generally?
- Do you want to change your house?
- Do you have problems about house? If yes, what are they?

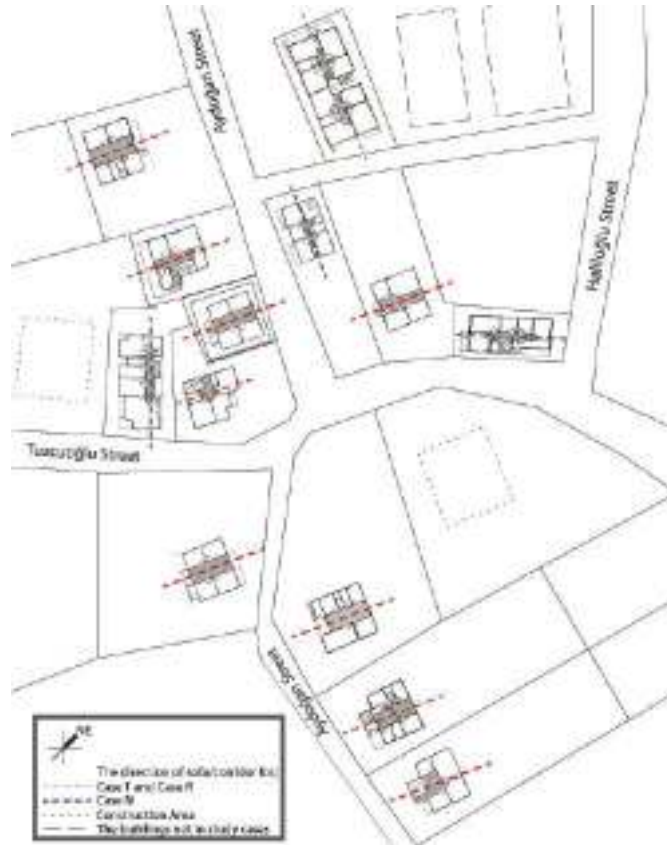


Figure 3: The Typological Analysis of the Directions of Sofas and Corridors in the Study Area

3.1 Case 1 (T): Traditional Housing Typology

In this part, the study is carried on traditional housing examples that are located in the study area which were constructed in 1935 with the traditional materials and construction techniques. In study area, 5 houses are identified as traditional housing examples with its common characteristics of Turkish houses in Black Sea region (like sofa, construction system and etc.). In Table 1, the general information about these examples is gathered. The information about construction system of each houses can be seen from the façades, except example T2 with the plastered façade. All traditional housing design examples has two storey usage except example T5 with the usage of storage of base floor.

The example T3 is unique in the cases of traditional housing types of this study. Because of that it has almost no alteration its plan layout and its section from the time its first use and first design. The house has two storey and has a stair on its sofa connects storeys to each other. On the contrary, each storey has unique dwelling in T1, T2 and T4 after the revision of usage as a result of the growing number of family members. The revision includes the cancelation of inner stair that locates on sofa and if it there is no entrance for each storeys the revision also includes the addition of new entrance. In Table 2, it can be clearly seen the balconies are the result of addition of new entrances.


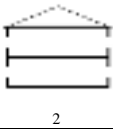
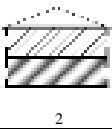

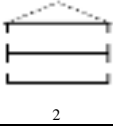
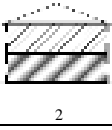

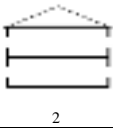
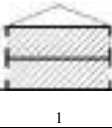

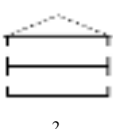




For all T case examples there is an intense garden usage with visual-physical connection between garden and spaces of house. The construction technique is commonly timber frame. Brick, timber and masonry (for the base of houses) are used as a traditional construction material in all example T. In Table 2 it is clearly observed that sofa is the most important unit that gives the formation of plan. The sofa in all T examples has common characteristics as followings:

- The sofa type is inner for each plan and surrounded by rooms on two sides.

- On general layout the direction of each sofa on each plan is located in the same direction as northeast to southwest (Figure 3).
- Each sofa has an entrance on one end and an opening in the other end.

All traditional housing examples in this study has the main typology on plan layout that located in the same direction as shown in Figure 2. This can be the result of dominant wind direction of Akçakoca. Hence, the openings in two sides of sofa directed into the same direction of dominant wind of the location can create natural ventilation in houses.

Table 1: The General Information about the Cases of Traditional Housing Type

The General Information				
Case Number	Garden Usage*	Number of Storey	Number of Dwelling**	Structure System***
T1		 2	 2	1st Floor: Timber Frame Const. Ground Floor: Timber Frame Const. Foundation: Masonary Balcony: Reinforced Concrete
T2		 2	 2	1st Floor: Timber Const. Ground Floor: Timber Const. Foundation: Masonary Balcony: Reinforced Concrete
T3		 2	 1	1st Floor: Timber Const. Ground Floor: Timber Const. Foundation: Masonary Balcony: Reinforced Concrete
T4		 2	 2	1st Floor: Timber Frame Const. Ground Floor: Timber Frame Const. Foundation: Masonary Balcony: Reinforced Concrete
T5		 2	 1	1st Floor: Masonary (Exterior), Timber (Interior) Foundation: Masonary Balcony: Reinforced Concrete
<p>*Garden Usage (approximately demonstrated)= It is illustrated the footprint of a building and its own garden area. **In the number of dwelling section, each hatching style demonstrates each single family dwelling. ***The information of structure system is gathered from observations.</p>				











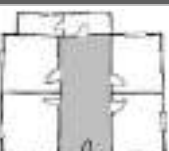
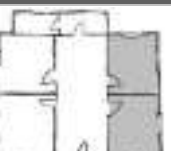
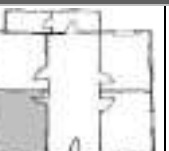
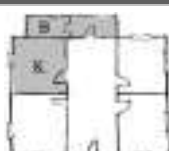
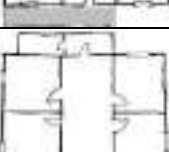
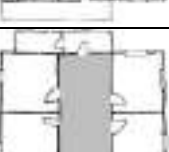
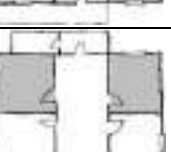
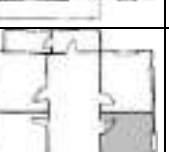
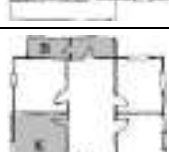
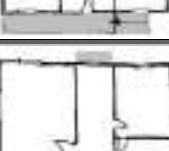



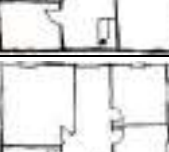
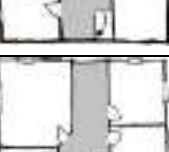

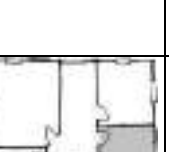
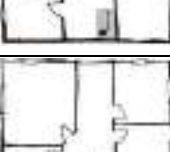
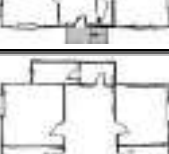
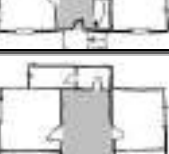
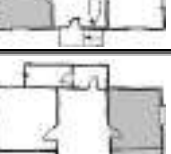
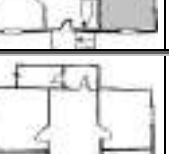
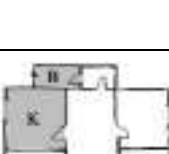
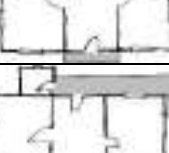
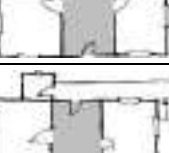

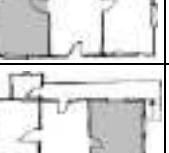
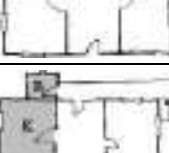
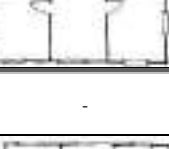
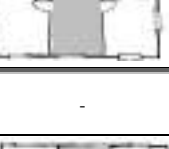
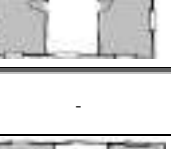
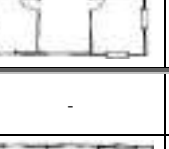
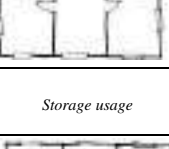
The focused interview is done with the users of T1, T3 and T5. The results gathered from the users are listed below:

- The user of T5 mentioned that he is appretiate with his house despite it is hard to keep house warm in winter. He mentioned that he feels very healty in the house and never want to move a multi-storey building.
- All of the users mentioned that they are satisfied with their houses eventhough they thought that their house needs a renovation inside.
- The users mentioned that it is relatively important the activities they are having in garden and in addition to all of these they have a common explanation that they spend most of their time in garden in all seasons of a year except coldest days in winter.

As conclusion of the study of Case T; there is high satisfaction of users eventhough they have some problems with the use of their houses. The comfort level and natural ventilation of each spaces in the house can be the result of the natural construction material that used in houses and the direction of sofa in layout. The section layout and relatively sized garden us-

age is leading the interaction between the spaces of house and garden. Hence, users are not isolated from garden which is very important feature for the users of this study area.

Table 2: The Spatial Organisation in Traditional Housing Types

The Spatial Organisation on Plan-Layout							
		Entrance/Balcony	Sofa	Room/s	Living Room	Stairs	Utilities*
T1	Ground Floor					Only Exterior Connection	
	1st Floor						
T2	Ground Floor					Only Exterior Connection	
	1st Floor						
T3	Ground Floor						
	1st Floor						
T4	Ground Floor					Only Exterior Connection	
	1st Floor						
T5	Ground	-	-	-	-	-	Storage usage
	1st Floor					Only Exterior Connection	

*K: Kitchen, S: Storage, B: Bathroom


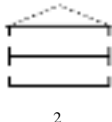


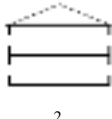
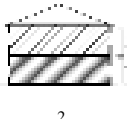


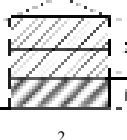


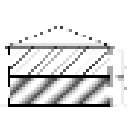
*K: Kitchen, S: Storage, B: Bathroom

3.2 Case 2 (R): The New Housing Designs with Reference of Traditional Typology

In this part, new housing designs which are identified as designs with the reference of traditional housing typology of the study area were studied. Four houses take part in this group that are constructed mostly after 1990s in the study area, and has characteristics that indicates the similarities with the traditional housing typology.

In Table 3, it is listed the general information of each new housing design cases as R1, R2, R3 and R4. Three of them has two storeys, except R3 with three storeys. Eventhough R3 has three storeys, two storey is perceived due to elevation difference. Except in R4, in all cases reinforced concrete is used as a construction material, as it can easily be founded and constructed. In addition, similar to case T, garden usage is relatively big enough comparing to building footing area. Except R1, two dwellings are living in all cases with separate entrance to the dwellings as it can be seen in Table 4.

Table 3: The General Information about Housing Designs with Reference of Traditional Typology

The General Information				
Case Number	Garden Usage*	Number of Storey	Number of Dwelling**	Structure System***
R1		 2	 1	Reinforced Concrete
R2		 2	 2	Reinforced Concrete
R3		 3	 2	Reinforced Concrete
R4		 2	 2	Steel Construction Foundation: Reinforced Concrete

*Garden Usage (approximately demonstrated)= It is illustrated the footprint of a building and its own garden area.
 **In the number of dwelling section, each hatching style demonstrate single family dwelling.
 ***The information of structure system is gathered from observations.

In Table 4, spatial organization of each house is studied and it is seen that the location of corridor has a form that evokes “sofa” of traditional housing typology, especially in the cases R1 and R2. In addition, there is a very important identification that the direction of the entrances and the corridors of R case has the same direction with the direction of sofa that belongs to traditional housing typology on general layout (Figure 3).

The focused interview is done with the users of R1, R2 and R3. All users emphasized in the interview that they are pleased with the use of their houses. The user of R3 mentioned that eventhough he is appreciate with the house he is using now he would prefer the traditional house to live in. One family (with 2 children) lives in R1 and they mentioned that they like the use of house and the relation with the garden.

As results of observations and typological studies, it is revealed that for all examples in R every dwelling has intense garden usage with visual and physical connection to garden in

all sections like in traditional housing typology. In the results of typological analysis, it can conclude that the typology of case R are following the trails of the traditional housing design Case T in the meaning of garden usage, section relations, the direction of the location of house and etc. Hence, it can conclude that the examples of Case R is the transition typology between new designs and traditional designs.

Table 4: The Spatial Organisation in Housing Designs with Reference of Traditional Typology



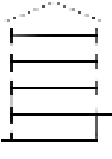



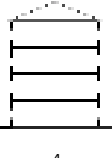








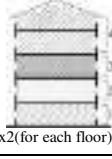
The Spatial Organisation in Plan-Layout						
	Entrance/Balcony*	Corridor/Sofa	Room/s	Living Room	Stairs***	Utilities****
R1	Ground Floor					
	1st Floor					
R2	Ground Floor				Only Exterior Connection	
	1st Floor				Only Exterior Connection	
R3	1st Floor					
	Ground Floor					
	-1. Floor				Only Exterior Connection	
R4						
						

*In some cases entrance has enough area to be used as a balcony. Further information had given in the description.
 **Balcony is not being used as an entrance unit.
 ***The stair connection from inside of dwelling to other floors.
 **** K: Kitchen, S: Storage, B: Bathroom

3.3 Case 3 (N): The New Housing Designs with No-Reference

In this case, it is revealed that in all cases N there is a typology which is totally distinctive to the existing environment, with usual size of section and plan layout. Four new type of housing designs are identified in the study area and demonstrated in Table 5. It is obviously seen that the section of buildings are considerably changed and the garden usage of each N example has incredibly decreased comparing the cases T and R. Additionally, the number of dwelling is reached up to eight which was reaching up maksimum two dwellings in the previous cases T and R.

Table 5: The General Information about Housing Designs with No-Reference

The General Information					
Case Number		Garden Usage*	Number of Storey	Number of Dwelling**	Structure System***
N1			 5	 3	Reinforced Concrete
N2			 4	 4	Reinforced Concrete
N3			 3	 3	Reinforced Concrete
N4			 4	 4x2(for each floor)=8	Reinforced Concrete
<p>*Garden Usage (approximately demonstrated)=It is illustrated the footprint of a building and its own garden area. **In the number of dwelling section, each hatching style demonstrate single family dwelling. ***The information of structure system is gathered from observations.</p>					

In the spatial organisation on plan layout of each N examples is demonstrated in Table 6. The plan layout has no reference of traditional housing typology and it has a completely has different formation. The “sofa” which is an important space of traditional plan layout of existing area is totally missing in the N examples and the direction of the buildings and the corridor has no reason and deduced that location is the result of coincidence.

From the observations it is concluded that the total usage of each building has no relation with garden and the garden area has no enough space for all users of building. The physical and visual relation with garden and ground is comparatively decreased. Moreover, from observation and analysis that in all case of N there is inadequate physical comfort and welfare to users.

The focused interview is done with the users of N1 and N3. The interview is done with the ex-user of one of the dwellings of N1, because there were no users living in any dwellings in case N1. The ex-user of N1 emphasized the main problems that he had with the dwelling and he especially emphasized that there was humidity problem inside of the dwelling and so that

he and his family had no comfort during their occupation. The user of N3 is happy with their dwellings. Each dwellings in this housing belongs to relatives. They emphasized that three storey of building is enough eventhough they could add more storeys according to law. Only N3 has kindly three storeys and larger area of garden usage comparatively with the other N cases. The user satisfaction of N3 can depend on this reason.

As a result, in case N the typology that has no reference of traditional typology, climate condition of the building neighbourhood, the wind direction and etc.

Table 6: The Spatial Organisation in Housing Designs with No-Reference

	The Spatial Organisation on Plan-Layout					
	Entrance*	Corridor	Room/s	Living Room	Stairs	Utilities
N1					Only Exterior Connection	
N2					Only Exterior Connection	
N3					Only Exterior Connection	
N4					Only Exterior Connection	

*Only used as an entrance to dwellings.

4 CONCLUSIONS

Buildings were constructed for thousand of year with the awareness of climate and environment conditions. However, in the recent past, the buildings had been constructed ignoring the climatic context of buildings [9]. In this paper, it is discussed the impact of the design characteristics of traditional housing typology and new housing typology with and without the reference of traditional typology. The results are listed below:

- There is central plan type with inner sofa in traditional housing examples and sofa is very important unit in plan layout that connects all other units of house. In traditional design examples sofa lets users meet consequently and spend time together in. This is seen with a little alteration in the new type of housing design which takes traditional typology as a reference. Hence, the traditional usage of corridor still keeps the traditional memory and provide comfortably space to users. Reverse, in the new housing design with no reference provide no interaction space for the users with fairly long corridors.

- The direction of sofa in traditional housing plan layout is located due to the view, sun and wind direction. Such like, this memory is seen in the new housing typology with the reference of traditional. But, the new housing design examples are located without any awareness of environment conditions and consequently this cause uncomfortable spaces in dwellings as an example of insufficient ventilation.
- In traditional housing design examples the relation with garden for all spaces of house is very strong. Similar to this in the new housing type with the references of traditional typology provides relatively same relation to its users. In opposite, the new housing type with no reference almost do not provide any relations to its users which is relatively unusual to the characteristic of the existing area.
- The number of dwellings in one housing is another very important effect. In traditional housing typology and the new housing typology with the reference of traditional has at most two separate dwellings. Reverse to this, in the new housing design with no reference of existing environment has 8 dwellings in one housing. That cause a fracture on the use of existing area, lifestyle, aspect of existing area and create uncomfortable housing spaces.

As a conclusion, it is very clear that in traditional typology it is considered the users needs and the environment conditions. Even the user needs can merely change in time the main characteristics of an existing area remain mostly the same. The specialized spaces, the section relation with ground, the population of an area, the direction of plan layouts of existing traditional housing are several factors that can lead the new designs in existing areas. In order to take best efficiency from new building designs in existing areas it is very important to be aware of the traditional housing typology and the climate condition of the area.

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CHAPTER V

DESIGN PRINCIPLES AFFECTING NEW DESIGN in HISTORIC ENVIRONMENT



SUSTAINABILITY OF BURSA ORHANGAZI SQUARE AS A HISTORICAL CITY HERITAGE AND NEW SQUARE ARRANGING PROJECT

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Keywords: Historic Environment, Urban Space, Perception, Bursa Orhangazi Square

Abstract.

Introduction:

When the city is considered as a whole composed of architectural objects, the architectural objects constituting this whole can be regarded as compactness and spaces between these objects as gaps. We see these areas as squares, courtyards, streets, etc. when they are designed. The urban gaps in historical cities are strong images that describe the best their specific eras, experiences, social stratification and differentiation and allow us to better perceive the city.

Developments:

Bursa Orhangazi Square which can be defined as an urban gap in the Bursa Hanlar site was used for various purposes over the years, and it is now called a square and serves as an urban space surrounded by the key landmarks and landscaping of the city. Since it was defined as a "square" during the 80s, the gap has become a multilayer centre where social and economic developments are reflected through the new functions added to the place. After 2000s, different arrangements have come to the agenda due to new requirements and social needs emerged with the impact of growing city. These arrangements have started to influence the social behaviour patterns and perceptibility of the historical environment, a long-established heritage in the historical square and Hanlar site.

Remarks and Conclusion:

A contest was launched for the Bursa Orhangazi Square in 2012, and the efforts to implement the winning project are on-going. The news design pays attention to the sustainability of the urban heritage through design criteria established for turning the old gap into a new public space. This study provides a comparison for the sustainability of Bursa Orhangazi Square as a historical heritage and the perceptibility of the historical environment after the new arranging project for the square. This comparison will be questioned using the five elements of a city established by Kevin Lynch for urban perception.

1 INTRODUCTION

Cities are not solely formed of structures meeting the needs of human. The urban area is a three dimensional space and acts involved in the urban space has a multidimensional nature such as economic, social, cultural, religious, political, educational, etc. Therefore, the urban space is a whole where all urban circumstances correlate. Urban spaces have become essential architectural elements in providing better living conditions for people. Thus, the city is a living system like an organism. The urban gaps and urban spaces inside this system are special areas joining the sub units that breathe and live inside of them. Urban space has been one of the important design problematic on an urban scale, in order to arrange human needs.

There will be no contribution to health by the urban space as children tries to play on narrow streets where the sun cannot reach and it will also not be true to say that social relations will be strengthened in a square where disabled individuals cannot move conveniently [1]. Therefore, the components of the city must be well examined in order for urban spaces or squares live healthily. Qualified urban space arrangements provide safety of pedestrians in the city and create urban environments for a healthy living.

Considering the city as a whole composed of architectural objects and thinking of these architectural objects forming this whole as occupancy and the areas between these objects as gap, the urban gap and new spaces created by gaps over time are key elements for qualified urban spaces. Urban gaps in historical cities are strong images that express their era, experiences, social stratification and differentiation in the best way, providing us a better perception of the city.

2 COMPONENTS OF URBAN SPACE/IMAGE OF ENVIRONMENT

City squares are important features for the urban environment and social area. The "urban setting" organizing the urban spaces as a whole reflects the essence of settlements created by the city. The main resource behind these views, Genius Loci refers to the unique character of place. N. Schulz [2] explains that the city image is not formed of interconnected "same" pieces and describes the main features forming the space as a whole with the concepts of closeness, proximity, and continuity [3].

We can understand how important is to ensure continuity or sustainability in historical cities or to protect the images formed over centuries in the cities. Historical sustainability is one of the main purposes of historical environment preservation. This continuity does not mean freezing old assets formed during a period in the history [4]. In this respect we can argue that the components of urban spaces are closely related with, or even essential for, the continuity of historical spaces.

Every city has an image of people resulting from the combination of individuals or individual images. Such images are important for the interaction of individuals with others in a society. Image ability of a space is affected by its meaning in terms of social relations, its function, its relation with the history and even its name. These effects will be adopted beforehand to reveal the role of the form itself. A real design form must be used not to reject the meaning but to strengthen it. According to Lynch, the content of an urban space created based on the elements of a city can be grouped under five different topics. These are paths, edges, districts, nodes and landmarks [5].

2.1 Paths

Paths within an urban space are the most important urban images under the control of city users. In Centre Pompidou, Paris, it can be seen how strong and definite the paths and the connection between the city and city gap on the scale of urban space. Paths turn urban space into a good public space and are one of the most important images in terms of its perceptibility and availability.

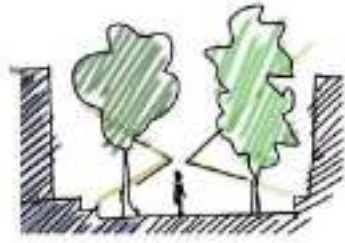


Figure 1. Landscape and Environment Relation In Urban Space



Figure 2. Centre Pompidou Relation with City, and Paths

As seen in the Centre Pompidou, the urban space is connected by paths around the city; the pedestrian path running through the urban space shown with double dashed lines is limited with trees to separate human flow, resulting in a channel bypassing the square. (Figure 2-3)



Figure 3. Separation of Centre Pompidou Square with a Pedestrian Road in a Permeable Way

Similarly, the urban relations at the Covent Garden, London is guaranteed by key paths connecting on both sides. This urban gap has become an important social area where city users meet. This reflects the role of Lynch's concepts of availability and readability of urban spaces in creating a quality environment. (Figure 4)



Figure 4. Covent Garden (Yellow Filtered Area)

At the historical urban space Plaça Nova, one of the key squares and social spaces in Barcelona, connection with the city is ensured with paths of different qualities and angles linked to the square. Unlike others, more number of pedestrian paths and channels reaching the square feed the urban space. (Figure 5)

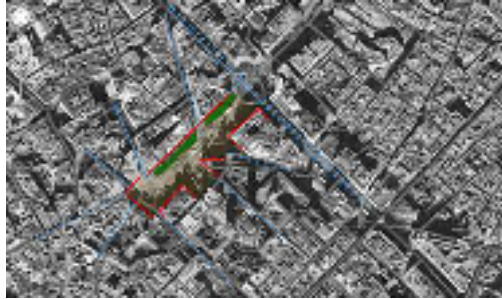


Figure 5. Plaça Nova (Barcelona)

At Plaça Nova the urban pedestrian flow is not associated with the square like Centre Pompidou; instead it is separated by trees and connected to the vehicle road. As seen here these urban spaces used extensively with clear accessibility and easy readability prefer separating the pedestrian flow from the urban gap. The busy pedestrian paths reaching the square on the south west create a sub square in the area. This intensifies the square space and the images perceived.

2.2 Edges

Edges are linear elements that are not used like transportation axes by the observers. They serve as a border between two areas and divide the continuity linearly. According to Lynch [6], edges usually serve as connecting points joining two areas with passages at some points. Such edge elements are important for many users to find direction. The paths, the edges are also important formations for city users. Edges may be encountered as definitive elements for spaces in squares. (Figure 4, 5 areas in red)

2.3 Districts

Districts are perceived as two dimensional. They constitute the large scale parts of urban spaces. City users feel that they enter inside these areas psychologically. Districts are defined with common characteristics. They are easy to identify when you are inside of them. If the area can be seen from outside, it can be used for external references districts and walls can also be edges and borders. A good urban space requires less but perceivable districts. (Figure 6-7)

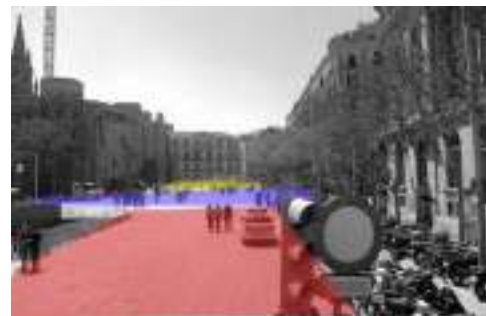
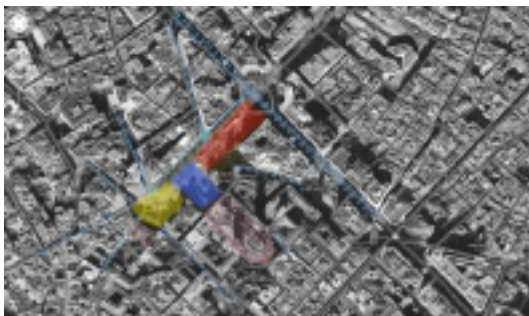


Figure 6-7. Districts within the Plaça Nova City Square

2.4 Nodes

Nodes are busy focus points used by the user to enter the urban space or when going from one point to another. According to Lynch, nodes include corner activities or areas combining an enclosed space are areas with more extensive physical characteristics or usage.

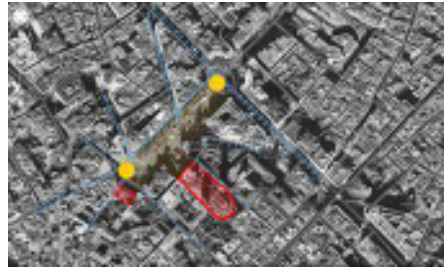


Figure 8. Praça Nova Connection and Nodes.



Figure 9. Connection and Nodes Connected to Urban Space at Centre Pompidou Square

Since the nodes serve as areas joining the city square when they are connected to it, they can be called the "focus point" and, depending on the strength of such focus points, areas point to a meeting space by creating an area within the urban space. (Figure 8-9)

2.5 Landmarks

Signal elements are important point references. They are different from others. They serve as a reference to external users; they cannot be perceived internally; and they are physical elements that can be defined easily. They are strong formations defining the city square and identifying the components of the city square. Many landmarks are placed higher than the small scale elements used in images; they can usually be seen from many angles and at distance. (Figure 10)

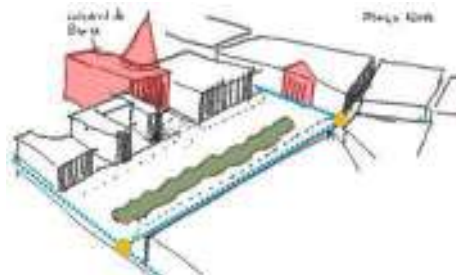


Figure 10. Cathedral de Barcelona, the highest building in the surroundings of Praça Nova, and Casa de L'ardica which is positioned vertical to the square

As seen in Figure 10, landmarks define two areas within the urban gap. Cathedral de Barcelona creates a sub area by withdrawing from the gap. It is seen that the images helping the space to be perceived are very simple and easily accessible.

At Covent Garden there is a landmark that defines the urban space and is perceivable from anywhere (St. Paul Church). On the other hand, the space is confined by the historical market building. Situated on the right and left side facing one another, it enables the user to read the space easily. (Figure 11) The church is seen right at the start of the roads connected to the area and it is the main element that defines the square.

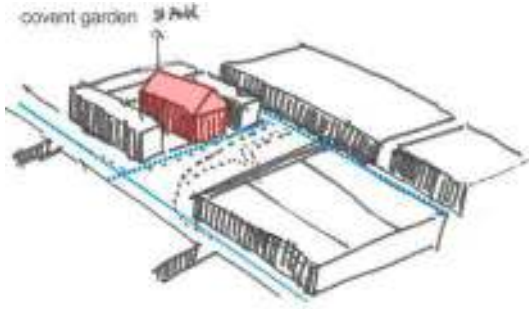


Figure 11. Covent Garden. The St. Paul Church shown in red is the signal of urban space.



Figure 12. Centre Pompidou

The landmark at the Pompidou Square for both the square and city is Pompidou Cultural Center. It turns the area in front into a social & cultural event venue and becomes a feature that defines many qualities of the urban area in the environment with the building scale, materials used and colors. (Figure 12)

3 BURSA ORHANGAZI SQUARE AND ITS IMMEDIATE SURROUNDINGS

CONCLUSIONS

Orhangazi Square within the Hanlar site in the district of Osman Gazi adopted different forms of usage during the historical period and it was introduced to the urban life after its arrangement as a city square. The square is the only outdoor area at the historical city center of Bursa. The area where the square is located is surrounded and shaped by the structures built during the Ottoman era. The palace street was expanded during the Ottoman era by interventions of Ahmet Vefik Pasha, which today forms the Atatürk Avenue line that confines the Orhangazi Square. During the period from the 19th century to the second half of the 20th century, various buildings were situated at the square.



Figure 13. Orhangazi Square and Hanlar Site

The site, which was an outdoor area surrounded by complex buildings during the era of Sultan Orhan and lost its outdoor features as it was occupied by building with different functions from gas stations to police stations from the mid-19th century to 1980s, was transformed after being completed based on the project of Arolatlar into an outdoor area intended to serve as a social meeting point where people get rest while passing and Bursa takes a breath.[7] (Figure 13-14)



Figure 14. Readability of Orhangazi Square based on city images (current)

4 ORHANGAZI SQUARE CURRENT CONDITION, CITY COMPONENTS AND NEW SQUARE ARRANGING PROJECT

The design produced as part of the Orhangazi Square and Its Surroundings Urban Design Project initiated in 2011 by Bursa Metropolitan Municipality was readdressed using the five different city elements of the urban image created by Lynch.

Orhangazi Square is an urban space surrounded by the examples of structures from the early Ottoman early era, mainly the Ulucami (Grand Mosque). Orhangazi Square has witnessed any different purposes of use during certain periods. Currently the Orhangazi urban area is an important gap in its immediate vicinity. Looking at the positions of the structures at the Orhangazi Square, it is observed that they are not facing the gap intended to be used as an urban space. Therefore, the urban components are different from the squares and urban spaces above. There is a defined gap between the area and early period historical structures due to the Atatürk Avenue on the south, a key city arterial road with heavy traffic.

Data used in identifying the city images in the Orhangazi Square are abundant. The impact of the topography showing frequent changes at short distance is highlighted. In the square there are "monumental trees" which are as old as the structures there. The square-facing side of Kozahan, one of the main structures at the center of the space, is the its rear front with only a small portion perceived as height. Ulucami, which is a landmark that can be perceived from many points across the city, is perceived less from the elevation of the square due to irregular green space in the square.

4.1 Paths

Paths have an important role for the current state of Orhangazi Square. The pedestrian paths which are fed heavily by the commercial area in the vicinity reach the square. However, the paths within the square have become complicated due to irregularly planted landscape elements, trees and seating elements. This makes perception by the use difficult and weakens the space images in the mind of urbanites. (Figure 15)



Figure 15. Paths and Crossroads.



Figure 16. Orhangazi Square Interior Crossroads

4.2 Edges

The area confined near the landscape elements used and trees planted in the Orhangazi Square in fact resulted in certain edges. Crossroads in the space are formed around the edges created by such green areas. These are secondary edges. Primary edges are created by the historical structures defining the square. (Figure 16)

The proposed project defined clearly the roads and edges which are formed based on the current circulation axis of pedestrians. For increased space readability and accessibility to sub spaces, the roads and edges are ensured to be positioned clearly around the activity area. (Figure 17)



Figure 17. Orhangazi Square Proposed Project Paths and Edges

4.3 Districts

Districts within the context of Orhangazi Square can be defined as historical buildings for public use in their surroundings. Ulucami with its own mass area of use, Orhangazi Mosque, City Hall and Kozahan outside the square are an area on their own and their exterior use is a primary degree of border.(Figure 19)



Figure 18. Orhan Gazi square focus points



Figure 19. Districts formed within the square in the proposed project

4.4 Nodes

Nodes are points where intersections or certain characteristics are concentrated. Individuals may also use such points. However, even though they are conceptually small points for the urban image, they can be large squares, expanded linear areas or large sites covering the entire central area if considered at a larger scale [8]. The user has to make a decision with increased attention at the sites with nodes. They can perceive the elements in their surroundings much more clearly.

Definition of nodes in Orhangazi Square does not require strong physical forms. The nodes must be catchy. For Orhangazi Square its connection with Atatürk Avenue creates a strong node. This is the point offering the individuals the largest perspective of the square. Individual may decide where to go after this point. The intense woodland in the square prevents clear crossroads to be formed between nodes. Therefore, it is harder to remember and perceive the nodes. The pool element covering a large area at the center of square has become an important focus point within the urban space. The pool element is an important image for this square.

The proposed project removes the focus point nature of the pool at the center of the square, increasing the outdoor space. Focus points are created by strengthening the road convergences with fountains and seating elements where monumental trees are located and focus points are highlight for perceptibility from other points. (Figure 20)



Figure 20. Orhangazi Square proposed nodes.

4.5 Landmarks

Landmarks are point references perceived as external elements by the observers. These are elements with varying scales. Ulucami in the Orhangazi Square can be considered as a unique example in its immediate vicinity with its minaret and its own height and domes with similar sizes. Since Ulucami is located at the highest elevation of Hanlar Site and due to its perceptibility of the structure, together with its minaret, from the site, it is important as a the primary sign. However, this landmark in the square is not as strong as the Cathedral de Barcelona in Plaça Nova or the Pompidou Cultural Center in Centre Pompidou. This is related to the positions of the buildings in the Orhangazi Square.

The current condition of Orhangazi square demonstrates the frequent entry points of users to the square. This square can be defined as an area where people take a breath on the north of the area with heavy trade activities in the Hanlar site to the south of the square. There are two key structures which are definitive for this gap and can be perceived from the immediate vicinity. These are Ulucami, which is the most definite one, and the Orhangazi Mosque. (Figure 21)

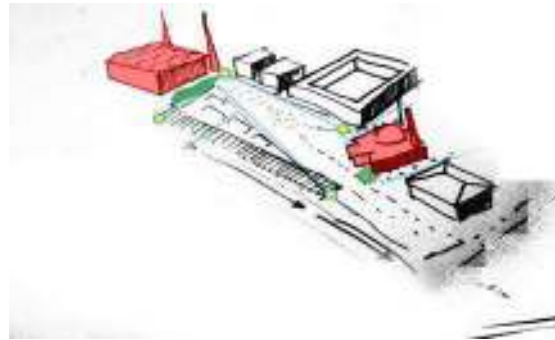


Figure 21. Ulucami and Orhangazi Mosque, the primary signs in the square

Orhangazi urban space gets a little bit complicated as it is separated into urban images. The quality of the form as discussed by Lynch as an important feature of urban environment design is highlighted here. A large terrace was built in front of Tayyare Cultural Center in Orhangazi City Square by using the topography of the top elevation, and this terrace is connected to the square on the south east. This is one of the most important focus points of the square and an important image for the individual user. From the point we look to the square on a different elevation at this terrace, it is hard to perceive the structures due to key structures such as the City Hall and Orhangazi Mosque. The weakness of the connections between the focus and nodal points in the square and the intense flora affect the quality of the form negatively.(Figure 22-23)

According to Lynch [9], it is also necessary to consider other categories that directly relate to the design while creating the urban space form and determining urban components.

1. Singularity or formal background visibility: clear borders and edges, surface forms
2. Form simplicity: precision and simplicity of the geometrically visible form.
3. Continuity: continuity of a border or surface
4. Dominance: perception of a common set within the urban space as a part of the whole.
(for example forming a whole part by urban habitation areas with little terracing)
5. Clarity of joint: Clearly visible joints and splices
6. Directional differentiation.
7. Visual scope

8. Motion Awareness
9. Time series.
10. Names and Meanings



Figure 22-23. Views of the new square

The purpose in the new project, which has been handled together with all these determinant sub-categories, is to include a design setup that puts forward the sustainability of the urban gap in a historical context.

5 CONCLUSION

- Orhangazi Urban Square is an urban gap, where any kinds of architectural samples that belong to the period from the 14th century to 20th century and that is intensively used by people also in today. This intensively used space of the city is in a location that is used for the inhabitants for spending long hours and has a heavy circulation and also in the start, entry and exit corridor of the commercial events used intensively in the north. Different purposes of use have been tried for the square depending on economic and social changes throughout the historical process and a continuous transformation had taken place. These utilizations that have been transformed in history have never had the nature of an urban social area. In fact, this space had been a gap that remained in the perimeter of the rear walls of the inns and religious buildings serving to the commercial mobility. While the city had a flow from the north to south direction throughout the history, passing of a fast and intensive main connection such as Atatürk Avenue today at the south of the square, has changed direction of use of the urban region. In other words, the gate of the Hanlar area under current situation has become the Orhangazi Square and the edge of Atatürk Avenue that goes along the square.
- It is necessary to ensure utility and a quality environment for the individuals, clearly perceived images just like we see at Plaça Nova in Barcelona or Centre Pompidou, strong availability like in Covent Garden, in the Square. While the transportation in Orhangazi Square is ensured though numerous channels, when we handle the issue in terms of the integrity of the space, it is seen that the usability of the square in within the context of spending time there or forming a social event concept, is weak.
- The proposed project briefly aims the urban environment to be perceived by the individual at the urban space at the level that must be in a qualified urban square. For an easy perception of the urban square, it is necessary to distribute the components of urban images within the frame of simplicity. In this design, Orhangazi urban space is not a square but a different utilization of an urban gap. It will undergo a transformation as the starting point of commercial mobility that has continued for centuries and developing transportation facilities. However, the element and historical continuity that have formed the urban gap, will always be in the memories of the urban people.

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CONTEMPORARY DESIGN IN THE REHABILITATION OF VAULTED MASONRY STRUCTURES

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Keywords: Historic Environment, Masonry Vaults, Contemporary Rehabilitation

Abstract

Introduction:

The paper continues the previous researches on historical masonry buildings that are vaulted masonry structures respectively. The study deals with a contemporary way of approaching the designing process for the rehabilitation of historical sites and buildings focusing on vaulted masonry structures.

Developments:

Certainly, in addition to the general concepts and criteria that may arise, each type of historic building raises specific issues. Thus, vaulted masonry structures display some specific problems that appear during the rehabilitation process. These concern the following aspects to be considered: (1) Damages of the masonry due to its age and/or environmental conditions; (2) Possible structural deficiencies or damages; (3) Functional changes are often required; (4) The demand to preserve the authenticity of the building; (5) The fundamental requirement of structural reliability (resistance and stability, serviceability, durability and maintenance).

Remarks and Conclusion:

The established principles and way of action will be exemplified by a case study: a vaulted masonry structure with Bohemian vaults dating from the Baroque period placed in an interesting historic environment .

The study shows the possible occurrence of conflicts between the aspects listed above, as well as the realities and requirements, and discusses variants of solution and proper approach for a modern design.

1 INTRODUCTION

It is amazing how much has changed throughout history in the attitude towards the preservation and renewal of urban and rural context, respectively. Nero had burned Rome, and therefore it had to be rebuilt. Much later, famous architects of the Baroque era have restructured the same city while preserving the ancient heritage. This fact has had a decisive impact on the future development of Rome, of the beautiful Rome of today. In the 19th century, interventions have become much tougher. Paris was largely demolished and it has developed into the eclectic city that we all admire today. Then, in terms of urban planning, roughly the same happened in Vienna and Budapest. And we admire these cities too. Only in the 20th century people began to protect a part of the built heritage, perceiving increasingly clear their cultural, but also practical value. In this atmosphere favorable for the preservation of historical buildings, the Communist regime in Romania reinvented and perfected the demolition of towns and villages. Many centres of cities, whole villages, numerous historic buildings and sites have fallen victim to this practice. Others were saved due exclusively to the human factor: professionals with knowledge and conscience.

Fortunately, nowadays, the approach to preserving historical heritage has totally changed all around the world, attempting to save the cultural value in terms of objective necessity of change and development of built spaces. But this goal is not easy to achieve. I wonder which is the correct "modus operandi"? One has to follow certain principles that have already been accepted, to act with responsibility, professionalism and even talent, to have a certain mobility in adopting solutions, expectations of society and so on. The fact that someone is trying to resemble a modern tower building to the nearest church tower is not necessarily enlightening. Well, for all these reasons, and also others, discussions should be maintained between stakeholders.

In this regard, the paper tries to emphasize the specific design issues for the rehabilitation of historical sites and buildings, especially vaulted masonry structures, respecting the historic value, but also meeting the contemporary requirements.

2 ABOUT VAULTED MASONRY STRUCTURES

2.1 Description and classification

Vaulted masonry structures were frequently used in the Baroque era in the 17th and 18th centuries and also in the Eclectic era of the 19th century. Different types of masonry vaults – supported by masonry walls and/or pillars – were used for covering basements and ground level spaces. The usual types we meet are: cylindrical (barrel) vaults, cross- (groined) vaults and elliptical (Bohemian) vaults built with different techniques of weaving bricks [1]: cooper's mode, in circular layer, in swallow-tail. Figure 1 shows schematically the three weaving techniques of the Bohemian vault.

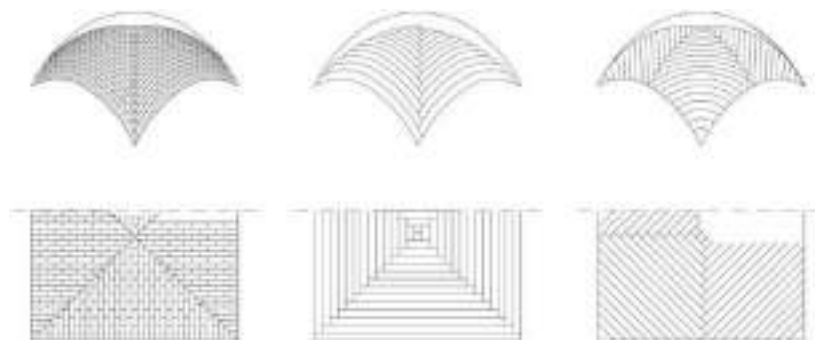


Figure 1: Bohemian vault built in different modes of weaving

The widely used and most effective way of weaving proved to be that in swallow-tail. A detail for a Bohemian vault is shown in Figure 2.



Figure 2: Swallow-tail technique of waving bricks for a Bohemian vault

2.2 About the materials of masonry structures

The constitutive materials of masonry vaults, walls and pillars of old historical buildings are very different depending on the epoch and place they were built [2]. Consequently, the geometrical, physical and mechanical properties of the materials (brick and mortar) can be different from case to case. From the epoch and place (Central and Central Eastern Europe) we are talking about, the materials often used were: full bricks of various dimensions (150 x 80 x 50, 200 x 100 x 55, 300 x 150 x 65 etc.) and lime based structural mortar. The hydraulic additives often used were pozzolana or trass, also brick powder and cement. The bed joints are usually of a thickness between 10-30 mm. According to our investigations related by real cases, but also in accordance with other researches, the mechanical and physical characteristics of the masonry depend on many parameters, such as the quality of brick and mortar, the thickness of the mortar bed joints, the type of connection of the bricks and not least the actual technical state of the masonry structure.

The foundations and sometimes also the elevations were usually made of cobble and rubble stone without any mortar for connecting or with low-resistant mortars of lime or/and clay.

2.3 Specific deficiencies and damages

The characteristic deficiencies and damages are those related to the specific structural behaviour of the masonry vaults, like static behavior under symmetrical and asymmetrical loading as well as mechanical-physical-chemical characteristics of the masonry, put in certain environmental conditions. Certainly, under vertical loading, the vaults are mainly working by compression, corresponding to the mechanical properties of the masonry. Any phenomenon disturbing this compressive state of stress could be dangerous for the structural resistance and stability of the masonry vaults. In this order, earthquake loading represents a natural hazard. In order to decrease the sensibility of the structure to horizontal loading, it is advantageous to increase the dead load – within the limits of compressive strength, of course – which can balance the undesirable effects of asymmetrical loads. Many other natural or man-made deficiencies could lead to major structural damages. From the point of view of their origin, they can be classified as: errors of structural design and/or inadequate transformations; differentiated settlements of foundations; lateral displacement of the supports (wall, column) caused by their insufficient stiffness, respectively the lack of horizontal binding; unfavorable environmental

conditions; extra-loading by earthquake. The lack of horizontal waterproofing at the base of the vertical supporting structure (walls and columns) is also to be mentioned, as this can cause water to penetrate into the masonry by capillarity, causing the well known damaging effects.

3 THE SUBJECT OF THE CASE STUDY

It is a historical site around the Castle Wesselényi in Jibou, Romania, built during the 18th century, consisting of the castle itself, a large horse stable and other outbuildings, surrounded by an English park [3]. The castle was built by Count Miklós Wesselényi (in the place of an existing mansion) between 1771 and 1809. It is the largest Baroque castle (but also with classical signs) in Transylvania (Figure 3).



Figure 3: Castle Wesselényi, Jibou, Romania

The horse stable was built in 1755 in a purest Baroque style. The stable, which once housed 28 horses, covers an area of 15.35 x 32.90 m (Figure 4).



Figure 4: The horse stable near the castle

It is covered with Bohemian masonry vaults, which rest on the exterior masonry walls and interior masonry pillars (Figure 5). The arrangement of the English garden around the castle was started in 1796.

After the World War II, this entire built site was nationalized, but, surprisingly, it has received a relatively happy treatment. The castle was used as a school, the horse stable (with some modifications) as a dining room and kitchen, and the English garden, through a miraculous effort by the locals became a botanical garden hosting a center of biological research.

The whole site described above is registered now as a historic monument (code: SJ-II-a-A-05075).



Figure 5: Horse stable - Interior view

Today, except for the botanical garden that is well managed and cared for, the historic buildings on the site require restoration/rehabilitation interventions. The castle was returned to the heirs of the former owners and awaits its fate. Botanical garden's and stable's owner (Biological Research Centre) wants to rehabilitate the latter in order to create a cultural space (for museum, exhibition etc.). This is the building with the vaulted masonry structure on which we are focusing now.

4 PRINCIPLES OF INTERVENTION ON HISTORICAL BUILDINGS AND SITES AND ADAPTATION TO THE MODERN DEMANDS

4.1 Basic principles of rehabilitation of historical buildings

Besides the general demands concerning functionality as well as structural reliability (resistance and stability, serviceability, durability and maintenance), the rehabilitation process has to respond to the specific requirements of authenticity. In this regard, the rehabilitation solution has to respect the architectural style, the proportions, the look and the atmosphere of the building or site. The structural interventions have to assure compatibility with the original structure in the following: repairing and strengthening techniques, repairing materials (physical and chemical compatibilities) and structural reliability.

The basic principles concerning the restoration of historic monuments are laid down in the Venice Charter: the restoration of monuments must have recourse to all the sciences and techniques which can contribute to the study and safeguarding of the architectural heritage; respect for the original material; any extra work which is indispensable, must be distinct from the architectural composition and must bear a contemporary stamp; where traditional techniques prove inadequate, the consolidation of a monument can be achieved by the use of any modern technique for conservation and construction, the efficacy of which has been shown by scientific data and proved by experience; the valid contributions of all periods to the building of a monument must be respected; replacements of missing parts must be integrated harmoniously with the whole, but, at the same time, must be distinguishable from the original.

Structural interventions also have to respect these guiding principles. With regard to the correctness of a strengthening intervention, it is not easy to make a right judgment. There are so many criteria to be taken into account, like structural conformation, the quality of materials put in work, details of architectural appearing etc., and the actual technical state can be so dif-

ferent that every case has to be studied substantially. However, one can point out the necessary proceedings regarding structural interventions on historic buildings: (1) to establish the different stages of the construction; (2) to evaluate the deficiencies and damages; (3) to determine the technical state for every part of the building in support of the rehabilitation decision; (4) to conduct a multidisciplinary research in order to establish an accurate diagnosis; (5) to conduct a complex study on finding variants of appropriate rehabilitation solutions.

It is recommended to maintain as much as possible the original structural form and the original architectural signs. The consolidation material and technique have to be consistent with the original ones. It is recommended to apply reversible solutions to allow space for further interventions.

4.2 Rehabilitation of historical buildings and sites meeting contemporary requirements

At first, a building or built environment may suffer different changes imposed by functional or other necessities that can be the enlargement of an activity, total change of a function, urban modernization etc. Otherwise, the modification can be provoked due to the dominating new tendencies in the art of building and/or the challenges represented by discoveries and innovations in the field of science and technique. At last but not least, the intervention can appear as necessary because of the continuous degradation of the buildings i.e. ageing or violent destruction (explosions, terrorism, wars etc.).

4.2.1 Intervention on historical sites meeting contemporary requirements

In the case of interventions on sites and, generally, on built environment there are many ways to proceed: (1) total or partial demolition of the site and reconstruction; (2) largely maintaining the existing situation and making local changes.

The first variant is rarely used today and much less for historic buildings and sites. In the second case, the interventions are most often implantations of new constructions.

Some designers are tempted to imitate, in one way or other, the surrounding buildings in the name of harmony with the environment. The approach can be successful or not. It depends on the existing perceptions of reality and the talent of the designer, but his creation is limited anyway.

Another option can be the implantation of new constructions, their architecture following up to day trends and using modern techniques. They can be successfully integrated into the surrounding environment. But how is it possible? Well, either by the harmony created, or, on the contrary, by the novelty and originality, which do not overshadow, but rather highlight the beauty of the historic environment. This latter case is comparable to the situation where a modern and refined object or décor is placed in an air-old historic room.

Of course, in the case of large-scale engineering and art works (bridges, highways etc.) the most advanced engineering solutions must be accepted as such. Most often these do not bother, but rather complete or protect the built area, even the historical one.

4.2.2 Case study example: Castle Wesselényi site

The rehabilitation of the English park around the Castle Wesselényi began in the seventies. The transformation of the Park into a Botanical Garden (after being confiscated and became state property) and its connection to a new biological research center lasted many years, and it continues even today. The approach is commendable in all respects: cultural, scientific and social. A handful of people have saved a valuable cultural heritage object. The rehabilitation was conducted with professionalism: what survived was saved, what was destroyed has been repaired or remade. Furthermore, over time, the botanical garden was expanded, adding it new

sectors (ornamental, paleontological, aquarium complex, Japanese garden etc.). Some images of the actual botanical garden are presented in the following photos (Figures 6 and 7).



Figure 6: The garden in front of the Castle



Figure 7: Autumnal view of the botanical garden

In addition to the existing greenhouse, some new and modern ones were built. This is an example of implantation of new modern structures. It corresponds to the purpose and fits well into the surrounding space (Figures 8 and 9).



Figure 8: The new greenhouses



Figure 9: Interior view

4.2.3 Rehabilitation of historical buildings meeting contemporary requirements

All interventions on a historical building have to be performed very carefully. As we mentioned before, besides the general demands concerning functionality as well as structural reliability, the rehabilitation process has to respond to specific requirements regarding authenticity.

Actual elements of the authenticity of a historical construction could refer to its fitting into the surrounding environment, general composition of the building, organization of the interior space, external aspect and proportions, architectural details and ornaments, structural conformation, structural elements and details, materials and technologies to putting into work. In our opinion, the most difficult problem for rehabilitation is the structural intervention.

Structural interventions have to assure structural compatibility with the original structure. It is recommended to keep the original structural form as much as possible while performing the necessary repairs and strengthening. Modified or new structural elements should not disturb the architectural appearance and the aesthetics of the building. The repairing or strengthening materials should be compatible with the original ones, both from physical and chemical point of view. They should have, at least, the same degree of durability as the original ones. In order to perform a correct intervention, one has to take into account the different stages of the construction, each with its own style representing a certain epoch that should be respected [4].

These basic principles of preserving authenticity often come in conflict with the real needs of the functional development of the construction and the fundamental requirements of reliability that have to be fulfilled. In these cases, it is necessary to put in balance all objective data and scientific arguments. In order to preserve the signs of authenticity of the historical construction (as much as possible), while assuring the structural reliability, the rehabilitation decision on the structural interventions could be a compromise. Much more, sometimes, the necessary functional improvement of an old building implies adding new blocks, preserving the structural and architectural authenticity of the original one. The added block should not be an imitation. It can be a modern building (using modern structures, materials and technologies), which integrates into the existing construction in an effective and harmonious manner.

The above presented principles and real possibilities of preserving authenticity of historical buildings during their rehabilitation can be exemplified on case studies of structural strengthening [5]. These can be classified gradually, in increasing order, depending on the degree of intervention: (1) structural intervention for retrofitting the bearing capacity of a structure or structural element, preserving the entire original structure; (2) structural strengthening by

modifying the original structure with compatible structural elements, which consist of additional elements that do not essentially alter the static behavior of the structure (such as supplementary tie-rods for masonry arches and vaults); (3) indirect strengthening: maintaining the original structure, but, due to its weakness or very poor technical condition, it will be discharged from an important part of the vertical load by an additional bearing system.

Moreover, sometimes, old buildings that disappeared at some time in history (a) or others, which were destroyed recently due to violence (b), are reconstructed by imitating the original ones. These are very special cases.

In the first case, the root cause of action is the personal or collective pride. For example: a medieval castle rebuilt only on the basis of documents and descriptions may be interesting, but it does not have a historical value and its cultural value is doubtful. In this case, the main reason of the action is behavioral and attitudinal (personal or collective).

In the second case, the reconstruction of the building, exactly as it was, is motivated by sentiments: feelings of anger, sorrow and suffering, but also ambition. This attitude can be explained, of course, by the desire to see once again the suddenly disappeared monumental construction. I remember very well the great debate in 2001 about the reconstruction of the Mostar Bridge. Additional strong arguments in this very case were the remaining original parts of the bridge ends.

4.2.4 Case study example: rehabilitation of the Horse Stable

As it was presented before, the horse stable was built in 1755 in a Baroque style. It is covered with Bohemian masonry vaults. The vertical supporting structure consists of perimeter masonry walls and interior masonry pillars.

The design process is ongoing. Until now, a technical expertise has been made in order to investigate the technical state of the main supporting structure and to propose solutions for repairs and strengthening on the basis of observed and measured deficiencies and damages, in conjunction with other special researches. In the following a summary of up-to-date researches and rehabilitation proposals are presented.

The required functional change can be performed easily because there is a generous interior space. Simply, some interior walls will be demolished thus regaining the original space of the stable. Also, some doors and windows will be remade in their original form (Figure 10).



Figure 10: Modified entrance door that will be remade

Currently, the roof of the building has nothing original, while it is in a poor technical condition and in certain areas some of its elements sit directly on the masonry vault as a result of former incorrect intervention (Figure 11). It will be changed and harmonized with the style of

the building. The supporting elements of the roof structure should be exclusively the bearing pillars and walls.



Figure 11: Locally loaded masonry vault

With regard to the structural deficiencies and damages some aspects have to be emphasized. No errors were found in the initial structural conception of the building. Moreover, above the marginal bearing arches of the vaults, both in the transverse and longitudinal directions, traces and even pieces of old wrought iron tie-rods anchored in the outer walls (Figure 12) have been discovered. More pieces of transverse tie rods have been found inside. It was found an end of a longitudinal tie-rod embedded in the exterior masonry wall. The study suggests the reworking of the tie-rod system, obviously with modern techniques, after the vaults have been repaired.



Figure 12: External end of transverse tie-rod

The technical condition of the existing masonry is generally poor. The supporting masonry pillars have areas with brittle and degraded material. The external bearing brick walls (sometimes also containing pieces of stone) and lime mortar or clay are highly damaged (Figure 13). These have cracks, fractures and detached bricks.

Although the technical condition of the masonry is pretty poor, the idea of strengthening the pillars and walls by covering with reinforced concrete (even using pozzolanic cement) was rejected for both.



Figure 13: Damaged brick wall

Calculations show that the pillars should be strengthened not only because of the degradation observed (see Figure 5), but also because the beneficiary wishes to transform the attic space into a usable one, which means increasing the load on the pillars. The idea is to preserve the original masonry structure and strengthening it in such a manner that the permeability to water vapors will not be affected. Thus, the recommended strengthening proposal is a modern one using the Brutt Saver system. It consists of confining the pillars with transverse BS reinforcement accompanied by the necessary connecting bars. After repairing masonry, the route for the reinforcement is prepared by excavating narrow grooves along its trajectories. The BS reinforcement (special steel spirals) is placed and anchored using a special fixing mortar.

A similar method of repairing and strengthening is proposed for the walls. In this very case, the restoration of the masonry walls is a complex issue and it requires hard work. In the most affected and large areas of the wall, with detachment and replacement of material, an additional measure of anchoring masonry components with Brutt Saver spiral bars is also proposed.

In general, the technical state of the vaults masonry is better than that found in columns and walls. This allows keeping them almost totally in their original form.

Some of the vaults and arches present fissures and cracks (Figure 14).



Figure 14: Cracks in the masonry vault and arch

For their restoration, the traditional method of repair will be used. The existing plaster will be removed. Cracks and fissures will be cleaned of mortar with compressed air and water jet. After introducing some hardwood wedges in the cracks, they will be injected with a special mortar.

In exceptional cases (vaults affected by moisture or in case of deviation from its original geometry) after removing the plaster, decisions will be made in function of the situation found. Decisions can go until partial or complete demolition and reconstruction of the vault in its original form.

5 CONCLUSIONS

- Human perception of built environment development is influenced by many objective and subjective factors as well: location, cultural tradition, historical memory, individual and collective attitudes, feelings, aspirations, knowledge, talent etc. For this reason, regarding current interventions on the built environment, it's impossible to issue prescriptions.
- Agreements on criteria and principles can be established that may possibly be taken into account, but you can never put a stop to the creative spirit.
- For the new design in historic environment, the above findings remain generally valid.
- Of course, concerning the rehabilitation of historic buildings, the watchword is authenticity. But this requirement should not be considered rigidly. It must be combined with social and functional requirements, as well as with the demand of structural reliability.
- In practice, the approach and practical course of action is, most often, a compromise – if it is happy – useful and acceptable. Saving and developing cultural values is the most important idea in this context.

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