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AND URBAN DESIGN CONFERENCE**

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# **PRESERVATION OF LOCAL FEATURES OF HISTORICAL SETTLEMENTS DURING GLOBALIZATION:**

**ELIF ÖZLEM ORAL AYDIN**

## **ABSTRACT**

As a result of globalization, all historical settlements are confronted with two opposite options. On the one hand, historical settlements should transfer their assets and traditions to future generations and on the other hand they should facilitate their residents' daily life while developing tourism to vitalize the local economy. "Preservation and Development" issues are the main dilemma of the historic settlements. It has not yet known how the protection of local cultural values conflicts with the forces of globalization. Though protecting cultural diversity at all over the world is the most convenient way to prevent to "become same" during globalization.

Protecting the cultural diversity can be achieved by investigating the main spatial components that constitute the identity of each historic settlement and preserving them in layers. Today's preservation tools such as "Adaptive Reuse, Reuse", "Cultural Routes", "Site Management" help exhibiting of these spatial components. But these tools are not integrated with each other in terms of sustainability yet. Sustainable planning plays significant role in inspiring and instructing during positive rehabilitation of historic spaces and settlements. Sustainable planning is implemented in conjunction with sustainable design and incorporates environmental, economical, cultural and social sustainability. Increasingly, preservation of cultural heritage is seen as an important component of sustainability. Heritage conservation will play a vital role in settlements' economic success and in preservation of local identities and culture.

The paper aims to determine the possible measures for the preservation of local features of historic settlements during defining the global criteria for sustainable rural/city/region planning in the future. The problems encountered during the preservation of historical settlements with local features are increasing day by day with the globalization. Elimination of these problems seems to be achieved by preparing the inventory of local spatial components, providing preservation and / or

survival of these components with a common understanding across the world using the preservation tools “reuse – adaptive reuse - cultural routes - site management” in an integrated manner, protecting of local building material reserves, educating craftsmen to employ in restoration applications with traditional construction techniques, increasing professional courses related to preservation in curriculum of architecture and planning undergraduate and master programs, dissemination of activities raising awareness about preservation in society.

It is becoming increasingly accepted that sustainability depends on adopting a holistic or integrated approach to reaching a certain goal. The preservation tools have to be studied and developed in an integrated manner with a common understanding across the world for holistic sustainability of historic settlements.

**Keywords:** Historic Settlements, Globalization, Culture, Sustainable Planning, Preservation

### INTRODUCTION:

In recent 50 years globalization is continuing with improvements that facilitate daily life and with major changes in surrounding environment. As a result of globalization and fast developing technology, the changing socio-economic conditions constantly begin to effect the formation of spaces and settlements all over the world. This situation often leads to face the fact that all historical settlements are confronted with two opposite options. On the one hand, historical settlements should transfer their assets and traditions to future generations and on the other hand they should facilitate their residents’ daily life while developing tourism to vitalize the local economy. Difficult problems faced by historical cities was first brought to agenda by the Kyoto Declaration in 1987, organized by the League of Historic Cities. In the declaration, the following text was written: *“In historical cities with several hundred years, or even several thousands of years of history behind them, there is a marked trends towards the destruction of extremely important historical and cultural properties in the name of modernization and development. As a result, this has implanted in the hearts of the world’s citizens a distrust and an anxiety towards civilization as a whole. We feel obligated to identify problems to be tackled by the whole of mankind and methods and policies for their solution with the twenty-first century firmly in view”* and it was revealed that methods and policies should be improved for the issue (Kyoto Declaration in 1987). With the passage of more than 30 years since the founding of the League of Historic Cities LHC, the World Conference of Historical Cities has promoted borderless and constructive dialogue among historical cities under the theme of “Preservation and Development of the Historical Cities”.

Sustainable planning seems to be the most effective method to keep these rapid changes under control with minimal environmental damage. Sustainable planning plays significant role in inspiring and instructing during positive rehabilitation of historic spaces and settlements. Sustainable planning is implemented in conjunction with sustainable design and incorporates environmental, economical, cultural and social sustainability. Increasingly, preservation of cultural heritage is seen as an important component of sustainability. Heritage conservation will play a vital role in settlements’ economic success and in preservation of local identities and culture (Kayihan Sevinç and Aydın, 2017).

It is becoming increasingly accepted that sustainability depends on adopting a holistic or integrated approach to reaching a certain goal. The paper aims to determine the possible measures for the preservation of local features of historic settlements during defining the global criteria for sustainable rural/city/region planning in the future.

### **THE EFFECTS OF GLOBALIZATION ON LOCAL FEATURES OF HISTORICAL SETTLEMENTS:**

The phenomenon of globalization has defined as the „acceleration and intensification of economic interaction among the people, companies, and governments of different nations“ by Globalization 101 internet resource of Levin Institute. Most studies of globalization tend to focus on changes occurring in the economic and political spheres. However, globalization causes also changes in many fields. For example, It has not yet known how the protection of local cultural values conflicts with the forces of globalization. Many of the questions raised pertaining to cultural issues are very new (*Organization of Globalization101*). Culture is the whole of a society’s lifestyle. Culture consists of a society’s material and spiritual values, talents and skills, arts and traditions, usually varies depending on the potentialities of the geography and using technology. One of the important powers for the emergence, growth, development or disappearance of a society is culture (*Meydan Yildiz, 2018*). Protecting cultural diversity all over the world is the most convenient way to prevent to „become same“ during globalization.

The historic settlements which are formed by societies in accordance with their own culture, are defined as cultural heritage components today. Settlements have shown a continuous development as a product of various needs of people in the historical process. In this process of development, settlements have been one of the most important factors shaping the future of humanity with the accumulation of culture. Together with globalization, which is the result of developments in technology and communication, there is an economic, social, political and cultural transformation in settlements. The effects of the globalization process on settlements will be best understood through the historical settlements in the world. Globalization has a long history. The trade of products developed by the culture created and still creates an interaction around the world in the past and today. Sericulture, is first known universal culture, improved and expanded by training and practice. The Silk Road, which used to connect Asia and Europe, is an outcome of this culture. The legendary road created a lively commercial and cultural development at its stopping points (*Aydın, 2007*). It allowed many people from many different empires and lands the opportunity to trade commodities, to transfer cultures, and to meet different religions. Many things were influenced by the people who travelled on the Silk Road. In particular, architecture, was greatly influenced by the trade of commodities and ideas throughout the Silk Road. The emergence of new building types, the transfer of construction techniques and building ornamentation styles during this interaction relation are still investigated by architectural historians (*Duran and Işıktaş, 2017*).

It will be possible to observe the effects of today’s globalization on architecture from the historic settlements. However, in the globalization process of today’s age, the future of the historical settlements is more threatened than the global

interactions in the past ages. Industrial Revolution in nineteenth century leads today's process. The Industrial Revolution, which began in Europe in the nineteenth century, affected the architectural production. This effect has led to the emergence of new building types, on the other hand, the new space and form production concept. Depending on these, many types of buildings used in past have remained non-functional. These non-functional buildings have become important problems of historical settlements. Since the first half of the twentieth century, solutions have been sought for these abandoned and unused fields of historical settlements. Some are destroyed and transformed to new settlements, some are reused via re-functionalizing.

In the twentieth century building production, the use of new building materials and construction methods such as reinforced concrete and so on has enabled the construction of quick structures with wide open/high structures. The quick and new construction techniques that emerged in the late nineteenth century and since have been preferred for the construction of building types needed for the globalization. This situation gradually eliminates local construction techniques. Therefore, the number of craftsmen and masters who shape traditional materials such as stone and wood etc. is decreasing day by day. Traditional construction techniques are abandoned. This situation also brings problems in the preservation/restoration of historic settlements which bear local features. Moreover, the widespread use of industrial building materials reduces the use of local building materials. The fundamental problem in the restoration of historical monuments is to provide of traditional building materials. The natural building material resources are under the pressure due to the formation of new settlements and industrial areas (Aydın İpekçi and Aydın, 2017).

Until twentieth century the buildings were constructed as a reflection of the local traditions, with the availability of the local materials and constructions, and mostly important it is built by the local people, local builders. With the globalization, the problems encountered during the preservation of historical settlements with many local features such as planning and facade arrangement, material and construction techniques are also increasing day by day. These encountered problems are listed below:

- The raising of non-functional local buildings due to new architectural and urban needs
- Transformation of abandoned historic settlements into neglected and unsafe problematic districts.
- Due to the increasing population, the abandoned historical settlements remain under pressure of restructuring process
- The abandonment of traditional construction techniques with the expansion of quick and new construction techniques preferred by globalization
- Decrease of masters and craftsmen who know traditional construction techniques
- The widespread use of industrial building materials reduces the use of local building materials
- Due to the fact that natural building material resources are under construction pressure, it is difficult to provide local building materials in restoration applications.

### **THE IMPORTANCE OF SPATIAL COMPONENTS OF HISTORIC SETTLEMENTS:**

Architecture in general is a reflection of humankind's values. The connection between the architecture and the society, creates the settlements. The societies lived in a settlement throughout history constitutes the identity of the settlement. This is why local features and the historic layers of a settlement are so unique and fascinating. Every layer produces its own vocabulary. Via this dictionary, each settlement creates its own identity.

The main spatial component is constituting the identity of each settlement should be investigated and preserved in layers. These spatial components and the historical, formal, sociological connection between them constitute the identity components of settlements. Determining the spatial components considering the history of settlements is important in terms of transferring the real identity of the historic settlements to future generations. Since an existing building can sometimes be more enlightening about the historic settlement than lots of books. The transfer of local features of historic settlements to future generations will be able to succeed by investigating the existing historical identity of the settlement and the developments that force this identity to change.

In the recent years, changes due to globalization have reached the dimension threatening the texture of many historical settlements. Recently, the factors that threaten the spatial components of historic settlements can be removed within the help of preservation tools such as "Cultural Routes" and "Site Management" and these spatial components can be exhibited. It is appropriate to develop holistic rehabilitation approaches for suchlike settlements within the framework of strategies to highlight the components of historical settlement identity. The identification of the main spatial components that should be exhibited in historic environments is a prerequisite for the selection of appropriate preservation tools. The preservation tools have to be studied and developed in an integrated manner with a common understanding across the world for holistic sustainability of historic settlements.

### **PRESERVATION TOOLS FOR IDENTITY COMPONENTS OF HISTORIC SETTLEMENTS:**

The issue of how to achieve a „balance“ between preservation and development in planning discussions have begun with the globalization. Discussions assert that the „balance“ between preservation and development in planning can be provided via paying attention to "environmental sustainability", "economic vitality", "transfer of cultural diversity to next generations" and "social coherence" (Riddell, 2004). The organic relationship between man and nature requires the development in an ecological manner. This kind of development needs sustainable planning. In recent years, many systems have been developed for assessment of sustainable plans that seem to be the most effective way for a „balance“ between preservation and development in planning. Urban sustainability assessment systems known from the literature are listed as: "Indicator or index-oriented frameworks, Sustainability rating systems, Principle-based frameworks, Spatial analysis and urban form, Multi-criteria decision making, Urban metabolism, Eco-efficiency assessment, Impact assessment, Asset-based framework, Urban carrying capacity". Researchers also assert that sustainability assessment needs to be designed in an integrative

approach that can match the integrative nature of the science. Accordingly urban sustainability assessment systems have to consider also “spatial, chronological and logical” dimensions as well (Cohen, 2017). Such kind of assessment systems should be developed to cover not only cities but all kind of settlements. In order to be successful, the field of application of sustainability should be spread to worldwide and adopted by the whole world with a holistic or integrated approach. During defining the global criteria and assesment systems for sustainable rural/city/region planning, the preservation tools for identity components of historic settlements have to be determined. The text deals with the preservation tools which are valid in the world.

Buildings have negative effect upon environmental values during their life cycles. The life cycle of a building is composed of production of building materials, transport of building materials, construction phase, using phase and demolishing phase (Figure 1). Each phase may cause environmental problems (Esin, Coşgun, and Aydın, 2007).

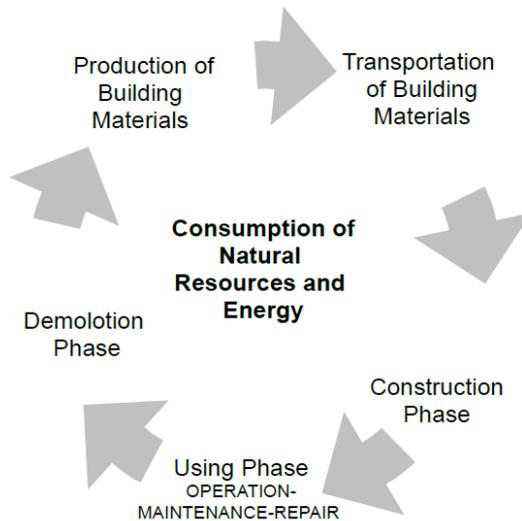


Figure 1. Diagram of Building Life Cycle (Esin, Coşgun, and Aydın, 2007.)

The most basic way to reduce negative environmental impacts of buildings is to extend using phase of the buildings as long as possible. Extension of duration of usage of the buildings has a great importance in terms of reducing energy and natural resource consumption and preventing environmental pollution. From this point of view, it seems that preservation of buildings which have cultural and heritage value and adaptive reuse studies to extend the usage phase of such buildings are sustainable approaches which have a positive impact on the natural environment (Kayıhan and Aydın, 2017). Preservation phenomenon is a naturally effective form of sustainability. Many of traditional buildings which have historical and cultural value are built from natural and local materials suitable for the location and the conditions of the time. The existing samples display that environmental issues are taken into consideration with a rational approach during their planning and construction. Historic Preservation and Sustainability Report in 2011 remarks

that historic buildings are the greenest buildings that used for generations with their durable material (*Historic Preservation and Sustainability Report , 2011*).

While each of sustainable architecture and historical heritage has its own set of criteria, there are common criteria shared by these two fields. The common criteria can be listed as follows (*Kayıhan and Aydın, 2017*);

- Embodied Energy And Reuse Of Existing Resources:

Historical buildings have caused consumption of both energy and natural resources in serious amounts during their construction. Both green building and heritage preservation advocates agree that, the natural resources and energy used for building construction are wasted as a result of the destruction of historic buildings. Many components of historic buildings represent the tangible status of the intensive embodied energy. In many cases, the effective life of many of the materials used in historical buildings is much longer than the life of most materials used in modern buildings. By reusing, renovating and adapting historical buildings to today's needs, today's society can be able to effectively reuse the energy and resource expenditures of past generations, can also minimize the use of energy and materials and reduce waste production.

- Conservation of Resources:

While the resources used in the production of many historical buildings were cheap and abundant in the conditions of those days, they have either been completely consumed or increased in their prices over time. In addition, the energy and labor costs required for building materials and structure production have increased rapidly throughout generations. From a broad perspective, green building advocates and historic conservationists acknowledge that existing buildings represent a significant investment of resources and these investments should not be overlooked only because of the building's age or deterioration.

- Preservation of Regional And Natural Cultural Heritage:

Regional architecture is an important fact in the history and cultural accumulation of countries. Both green building advocates and historic conservationists believe that the importance of the regional architecture should be accepted and considered at new structures' architectural design and positioning phases to be built in residential and central areas. Historical buildings are located in the center of cities and cultural facilities. Reinvestment in these areas can help to reduce suburban expansion, protect local economies and reduce environmental and health-related costs of transport by encouraging accessible communities.

- Preservation Stimulates Local and State Economies:

Numerous heritage preservation projects conducted until today have provided significant financial benefits at both the local and regional level. Heritage preservation has brought a new breath to evershrinking urban areas, increased interest to the urban life, created significant opportunities for the collection of tax receipts by providing financial resources and professional support to restore urban neighborhoods and nurturing the development of small and medium-sized businesses.

- Adapting Existing Historic Structures To Current Societal Needs:

Heritage preservationists have been advocating adaptable reuse of historically significant structures for years. Reuse encourages the survive of a historically valuable structure for many years and ensures the continuity of protection and

maintenance. Adaptive reuse is supported by green building advocates as it provides extraordinary opportunities for architectural and engineering creativity, without consuming existing energy and resource investments.

These topics related to energy conservation, ecology, preservation, economy, social life have to taken account during sustainable planning. As understood from the topics the reuse of historic buildings has long been an important and effective historic preservation tool. It initially developed as a method of protecting historically significant buildings from demolition. The Urban Land Institute defines rehabilitation as “a variety of repairs or alterations to an existing building that allow it to serve contemporary uses while preserving features of the past.” (Lloyd, 1990). Reuse and Adaptive reuse are important components of rehabilitation. At present, since “sustainable architecture” begins to be defined as “to avoid constructing new buildings, if not necessary” reuse and adaptive reuse become more preferable. (Görgülü, T. 2019).

Cultural Routes are another preservation tool for historic settlements. The first definition of a heritage route was developed at the meeting of United Nations of Education, Science and Culture Organization UNESCO and international Committee on Monuments and Sites ICOMOS experts in 1994, Madrid. The concept was introduced as a heritage route is based on the continuity in space and time that can be explained by dynamics of movement. Furthermore, it refers to a whole and highlights exchanges and dialogue between regions and countries. According to the report prepared after this meeting; “A heritage route is composed of tangible elements of which the cultural significance comes from exchanges and a multi-dimensional dialogue across countries or regions, and that illustrate the interaction of movement, along the route, in space and time.” (*Routes as Part of Our Cultural Heritage Report on the Meeting of Experts, 1994*).

They can be defined as a system constituted by various individual historic and/or natural assets, as it is stated in the ICOMOS Charter on Cultural Routes, 2008 (*ICOMOS Charter on Cultural Routes, 2008*): “The consideration of cultural routes as a new concept or category does not conflict nor overlap with other categories or types of cultural properties — monuments, cities, cultural landscapes, industrial heritage, etc.— that may exist within the orbit of a given Cultural Route. It simply includes them within a joint system which enhances their significance.”

Through areas rich in cultural and natural heritage, planning routes and networks at regional scale could be used as an effective tool for presenting and sustaining multivalent character of the place, and leading economic sectors which have effect on heritage. With respect to their thematic aspects, cultural routes existing today can be analyzed in two groups; (a) transportation corridors used in a period of history for a specific purpose and (b) itineraries which do not belong to past with its physical presence, but defined today by revaluation of cultural heritage and natural landscape along them (Karataş, 2011).

The fact that cultural routes take place in the virtual world, which covers a large part of the communication network of today's world, also enables a participatory environment that allows feedback. The presentation of cultural routes in virtual environment is gaining importance every day. The samples of online sites such as the European Industrial Heritage Routes, the European Cultural Routes Institute, and the Great Himalayan Trails are by rich route diversity and strong infrastructure.

These sites are supported with interactive maps as well as the access network they contain. Cultural routes, as a presentation practice of cultural heritage, often remain on a regional scale, and the world-scale relations cannot be exhibited consistently due to different management approaches. Sericulture, first known universal culture, and its outcome “the Silk Route “between east and west cannot be exhibited as a holistic cultural route in the world yet.

Another preservation tool is the Site Management Plans for World Heritage Sites. The General Conference of the UNESCO meeting in Paris from 17<sup>th</sup> October to 21<sup>st</sup> November 1972, at its seventeenth session, adopted the international treaty called the *“Convention concerning the Protection of World Cultural and Natural Heritage in order to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be outstanding value to humanity”* (World Heritage Sites, 2019). All World Heritage Sites must be able to make a clear case for Outstanding Universal Value in order to be inscribed on the World Heritage List. UNESCO’s stated mission is to contribute to peace and security by promoting collaboration between nations through education, science and cultural understanding. World Heritage Sites are ideally placed to contribute to this mission and Site Management Plan has been led by these principles. As of 2018, there are 1092 sites inscribed on the World Heritage List: 845 cultural, 209 natural, and 38 mixed properties. The number of World Heritage Sites increase each year during General Committee meetings. Only countries that have signed the Convention, pledging to protect their natural and cultural heritage, can submit nomination proposals for properties on their territory to be considered for inclusion on the World Heritage List. Those nominated sites that meet the criteria for inscription are included in the List by the World Heritage Committee, the main body in charge of the implementation of the Convention, based on the evaluation reports prepared by the Advisory Bodies, ICOMOS and International Union for Conservation of Nature (World Heritage Sites, 2019). The International Committee on Monuments and Sites (ICOMOS), the International Centre for the Study and Restoration of Cultural Property (ICCROM) and the International Union for Conservation of Nature (IUCN) are the advisory bodies produce guidance and develop policy on World Heritage issues. The countries that have signed the Convention promised to promote, interpret and protect World Heritage Sites and their Outstanding Universal Value and to transmit them on to future generations. The UNESCO Operational Guidelines for the Implementation of the World Heritage Convention state that *“each nominated property should have an appropriate management plan or other documented management system which must specify how the Outstanding Universal Value of a property should be preserved, preferably through participatory means”* (UNESCO Operational Guidelines for the Implementation of the World Heritage Convention, 2019). The need for an appropriate and robust management system is vital for the protection and development of World Heritage Sites. A management plan is obviously targeted at managing over the long-term a site that remains entirely in situ, but also partially excavated sites and what there of remains, as well as the removed artefacts (UNESCO Operational Guidelines for the Implementation of the World Heritage Convention, 2019).

The tools “Adaptive Reuse, Reuse”, “Cultural Routes”, “Site Management” which help to preserve cultural diversity have not yet been integrated with each other. For

holistic sustainability of historic settlements and the assessment of sustainability of these settlements, the preservation tools have to be studied and developed in a global strategy.

**Conclusion:**

As a step of preservation, it is important to analyze the historical settlements with scientific methods and to introduce with proper preservation methods. During selecting the proper method the best important point to consider is to transfer the local features of historic settlements to future generations. If the proper methods cannot be determined during the preservation of local features for each settlement, the similar settlements increase. The transfer of local features of historic settlements to future generations will be successful by investigating the existing historical and cultural identity of the settlement and the developments that force this identity to change.

Sustainable planning plays significant role in inspiring and instructing during rehabilitation of historic spaces and settlements. Sustainable planning is implemented in conjunction with sustainable design and incorporates environmental, economical, cultural and social sustainability. Increasingly, preservation of cultural heritage is seen as an important component of sustainability. Heritage conservation will play a vital role in settlements' economic success and in preservation of local identities and culture. Today's preservation tools such as "Adaptive Reuse, Reuse", "Cultural Routes", "Site Management" help exhibiting of these spatial components. But these tools are not integrated with each other in terms of sustainability yet.

The historical settlements were built as a reflection of the local traditions, with the availability of the local needs and constructions, and mostly important it is built by the local people, local builders. It is appropriate to develop preservation approaches for suchlike settlements within the framework of global strategies to highlight the spatial components of historical settlement. The problems encountered during the preservation of historical settlements with local features are increasing day by day with the globalization. Elimination of these problems seems to be achieved by;

- Preparing the inventory of local spatial components,
- Providing preservation and/or survival of these components with a common understanding across the world in terms of sustainability,
- Using the preservation tools "reuse – adaptive reuse - cultural routes - site management" in an integrated manner,
- Protecting of local building material reserves,
- Educating craftsmans to employ in historic building restorations,
- Increasing professional courses related to preservation in curriculum of architecture and planning undergraduate and master programs,
- Dissemination of activities raising awareness about preservation in society.

For holistic sustainability of historic settlements and the assessment of sustainability of these settlements, the preservation tools have to be studied and developed. It is impossible to sustain the cultural diversity and to preserve the natural resources, if Cultural Assets Conservation Boards, Planners, Conservators, International networks do not give priority to the relationships between architecture/planning – culture and architecture/planning – sustainability in global

strategy.

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# NEW PERSPECTIVES TOWARDS SOCIAL ACCEPTABILITY OF EARTH-CONSTRUCTED BUILDINGS

**GERHARD BOSMAN**

Efforts in the preservation of earth built heritage and the promotion of contemporary earth construction by UNESCO-Chair members have overcome many challenges the last two decades. However, reservations about the relevance of earth as building material still prove to be the biggest challenge to date. The Earth Unit has established itself within a tertiary institution to address all aspects of earth architecture in South Africa through teaching, training and research. The Earth Unit celebrates 23 years of training and teaching efforts and small-scale buildings completed. The approach of many institutions in the promotion of earth construction as a discipline is mainly driven from a technical and design base. Although this is the best way to deal with misconceptions and reservations, a direct approach from a social scientific and philosophic stance is equally important to understand and address negative attitudes associate with earth as building material in contemporary built environments. This can help to develop a planning strategy for new projects in settlements and cities. This study will identify 'Orphic' ideas, attitudes and phenomena, synonymous with 'ecologically-sensitive' approaches. Orphic attitudes will be opposed to 'Promethean' attitudes that spread via the historical domination of Christianity, science, technology, capitalism and attitudes that provide ideological impetus for ecologically problematic actions. The dominance of the Promethean has resulted in the steadily growing ecological crises in settlements and cities. The migration patterns and upward social mobility of city dwellers influence personal values. This effects their attitudes and behaviour towards the natural landscape and the built environment. Consideration of the broad notions of Promethean and Orphic attitudes helps to reveal the bigger picture often blurred while strategizing promotion efforts in favour of private and public contemporary earth-constructed buildings.



# **FUTURE OF THE CULTURAL LANDSCAPES: CASE OF ALANYA**

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## **Abstract**

The 21st century brings about rapidly changing and transforming landscapes. Therefore, the traces of the preceding landscapes that are embedded in the altering urban landscapes of today are up to destruction and neglect. Regarding their notable characteristics, they need to be revealed and enhanced by the cultural landscape sensitive development strategies.

Focusing on the sustainability of the multilayered landscapes, this study attempts to develop a palimpsest reading on a case study area. By scrutinizing the diversified layers of the cultural landscapes that are existing throughout the centuries to decades, this study undertakes to interpret the creative place-making process of the past cultures to ensure a sustainable future carrying esteem to them. In this context, this study handles Alanya as a historical Mediterranean coastal city bearing prosperous cultural landscape character areas.

This study establishes a four-phase evaluation process for the historical coastal city of Alanya. The first phase is to comply with data from aerial photographs, historical maps, old photographs, and the literature readings. The second phase involves the determination of the spatiotemporal parameters that are specific to the study area. Thus, the third phase focuses on revealing the spatiotemporal projection of cultural landscapes while the final phase introduces a palimpsest reading on the area as a step to forwarding major development strategies.

Based on the palimpsest reading, this study highlights the importance of developing sustainable strategies for the future of the cultural landscape character areas not just only for the benefit of the Alanya city but for the other historical coastal cities.

**Keywords:** Landscape character areas, Alanya, historical coastal city.

## Introduction

With embracing various cultures over centuries, Alanya is a significant historical coastal city with distinctive natural and cultural features. The city is located on the south coast of Turkey in the Mediterranean.

In the 21st century, the cultural landscape of Alanya has been altered constantly with the population growth and tourism especially by the impact of the summer season activities. Unfortunately, the preceding landscapes with notable characteristics are left to destruction and neglect.

However, the diverse layers of the cultural landscapes have accomplished to exist throughout the centuries up to today. In order to develop sustainable strategies for the future of the cultural landscapes of the historical coastal city of Alanya, these diversified layers of the cultural landscape and the creative place-making process of the past cultures should be examined precisely. Thus this study attempts to interpret the creative place-making process of the preceding cultures and enhance it by the cultural landscape sensitive development strategies carrying esteem to them.

Creative-placemaking is currently one of the main objectives of spatial design studies to show the intention to engage in ongoing art studies. The creative-placemaking concept deals with local activities such as art and cultural values in order to strengthen the community (Flood & Redaelli, 2016).

Alanya has always been a prosperous city which possesses many tangible and intangible values. These tangible and intangible values are the key components of the cultural landscapes of Alanya. The cultural landscapes of the city of Alanya have undergone constant changes throughout the centuries to decades. By delving into the tangible and intangible characteristics of the Alanya, the change occurring in the cultural landscape can be revealed.

As taking into the consideration the definition of the cultural landscape is *"combined works of nature and of man"* (UNESCO World Heritage Centre, 2017, paragraph 47), the urgent necessity to put forward a new definition of the cultural landscape in the context of change for the Alanya has emerged. In order to put forward a new definition, the cultural landscape of Alanya has to be defined and evaluated by assessing the existence of the tangible and intangible values together with an integration of multilayered character areas of the landscape.

Swanwick and LUC (2002) defines landscape character areas as the unique individual geographical areas even holding vernacular landscapes in which landscape types occur. They share generic characteristics with other areas of the same type but also have their own particular multilayered identity. Thus, landscape character areas hold tangible and intangible features even regarded as heritage.

*"Cultural heritage is the sign and the testimony of the existence, identity and continuity of the humankind, communities and the cultural groups constituting the communities. Tangible and intangible cultural heritage consist of historical-documental, aesthetical-artistic, symbolical, social, economical, religious and spiritual and in fact political values. The transmission of the cultural heritage, which is a nonrenewable resource, to the future generations by identifying with the concept of the "custody" which has a significant value for our community with all the embodied values is a communal responsibility"* (ICOMOS, 2013a).

Hence, this study claims that a sustainable future can be ensured by revealing

the tangible and intangible layers of the landscape character areas and revering the cultural heritages in order to integrate them to the new transforming cultural landscapes.

### Materials and Methods

Focusing on the sustainability of the multilayered landscapes, this study attempts to develop a palimpsest reading on a case study area. By scrutinizing the diversified layers of the cultural landscapes that are existing throughout the centuries to decades, this study undertakes to read and to interpret the creative place-making process of the past cultures to ensure a sustainable future carrying esteem to them.

In this context, this study handles Alanya as a historical Mediterranean coastal city bearing prosperous cultural landscape character areas. It focuses to reveal the data from the old aerial photographs, historical maps, old photographs, historical paintings and literature search. Hence, this study applied specific spatiotemporal parameters on the obtained data in order to explore the notable characteristics of the historical coastal city of Alanya.

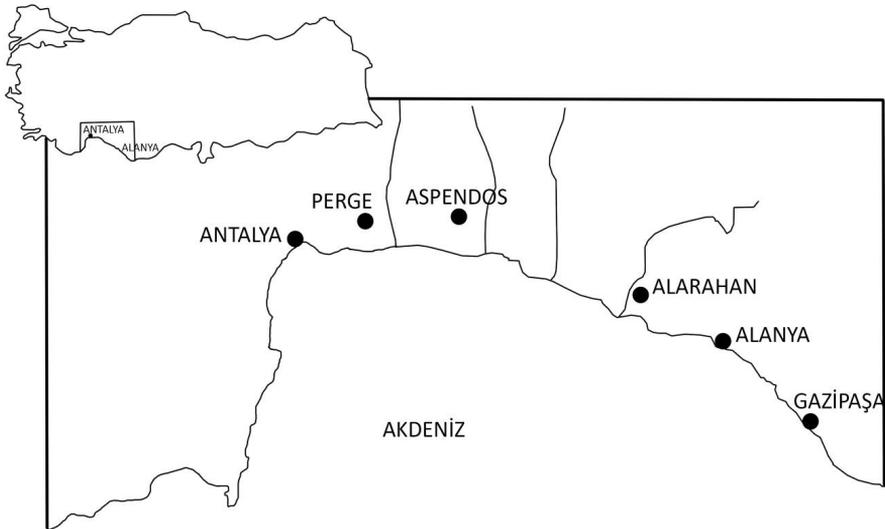


Figure 1. Turkey's Mediterranean coast nearby Antalya and Alanya (Redford, 2008, p.21)

As a city that is surrounded by the Mediterranean sea getting the Taurus mountain behind, Alanya has been the homeland of different cultures throughout history due to its strategic location. Within the city, the peninsula of Alanya stands as one of the distinct cultural landscapes of Alanya with its natural and historical characteristics.



Figure 2. The peninsula of Alanya and surroundings (Castle of Alanya, n.d.)

Some of the further natural and cultural landscapes of Alanya stand as Damlataş cave, Dim cave, Damlataş beach, Cleopatra beach, Gedevet plateau, Türктаş plateau, Alara river and Dim river. In 2017 in order to bind neglected landscapes a cable car stretching to the Alanya castle from the Damlataş beach has been built.



Figure 3. View from the cable car (Author, 2017)

The old city of Alanya with 6.0 kilometers of walls is a 2.500-year old settlement that had names through history such as *Alaiya*, *Caneloro*, *Candelorus*, *Candel(l)orum*, *Canelorus*, *Kalon (Kalliston)*, *Oros*, stands on the peninsula of Alanya (ICOMOS/CIVVIH Mediterranean Sub-Committee, 2014). Tanyeli (1987) has defined the development phases of the fortress and the surrounding urban area from the

Hellenistic age until the Seljuk Period. The historic city of Alanya which is developed on the remnants of the Hellenistic and Byzantine periods have reached the peak of the militaristic, coastal and city culture during the early 13th century of Anatolian Seljuk period (ICOMOS, 2013b).

Castle and its features were established between 623 H. And 629 H. in a six-year period. Red tower (Kızıl Kule) is the core of the Alanya castle (Konyalı, 1946).

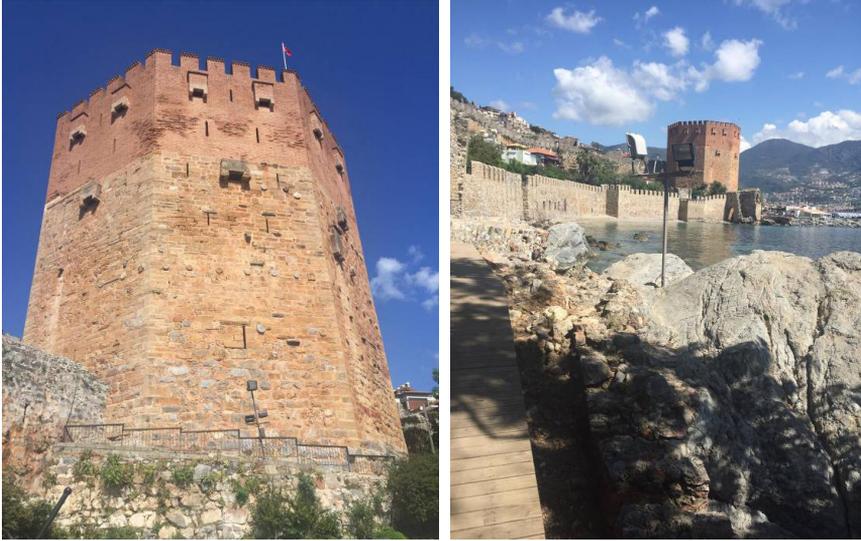


Figure 4. Red Tower (Kızıl Kule) and the sea ramparts (Author, 2019)

Red tower (Kızıl Kule) was built in 623 H. 1226 M. Sultan Alaaddin Keykubad has first established the land walls and ramparts of the Alanya castle in 623 H. 1226 M. and then the last rampart of the Ehmedek in 624 H. 1226 M. In 625 H. 1227 M. by completing the parts between the Red Tower (Kızıl Kule) and shipyard (tersane) including the ramparts, shipyard, and tower, the east sea part of the castle is confined (Konyalı, 1946, p.149). The historic city of Alanya has been submitted to the tentative list of UNESCO on 25/02/2000 (UNESCO World Heritage Centre, 2000).



Figure 5. Red Tower (Kızilkule) and surroundings (Kızilkule, n.d.)

Today the characteristics reflecting the last periods on the city of Alanya are still visible for the most in the peninsula to a large extent. However, the other elements of the cultural landscape of Alanya have begun to dissipate with the extension of the city to the fringes.

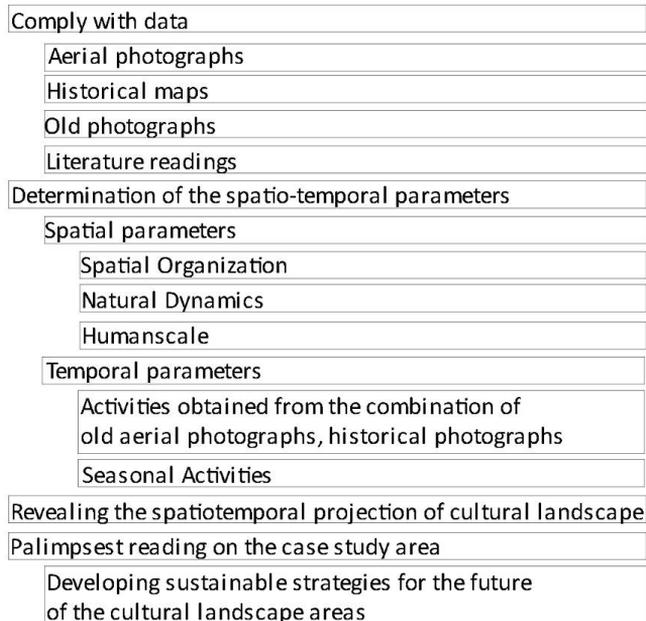


Figure 6. Four-phased evaluation process for the case study area

This study handles a four-phased evaluation process for the historical coastal city of Alanya. The first phase is to comply with data from aerial photographs, historical maps dating different years, old photographs, and the literature readings.

The second phase involves the determination of the spatiotemporal parameters that are specific to the case study area. 3 major parameters are defined under the spatial parameters as spatial organization, natural dynamics and humanscale. 2 major parameters are defined under the temporal parameters as activities obtained from the combination of old aerial photographs, historical photographs and seasonal activities.

Thus, the third phase focuses on revealing the spatiotemporal projection of cultural landscapes of Alanya.

The final phase introduces a palimpsest reading on the area as a step to forwarding major development strategies.

### Results and Discussion

Parameter of spatial organization gives us insight about the interpretation of the landscape during the different time periods. Early time periods point to the core position of the peninsula of Alanya mostly disregarding the hinterland of Alanya.

Evliya Çelebi refers to the traces of the incompleted ditches that were dug in order to transform the castle of Alanya into an island (Çelebi, 1896, p.148).

The transformation of the old city on the peninsula of Alanya should be evaluated in relation to the requirements of that time. Nevertheless, sets forth the interpretation of the landscape mostly related to the primal use of landscape such as sheltering and defense.

Up to the Seljuk period the old city has preserved its significance as the main settlement area due to its location and topography. Then, several gardens with walls have built in the Alanya's hinterland as existed in other primary cities during the Seljuk period. Up to today, the fragments of these several gardens have lasted (Redford, 2000).

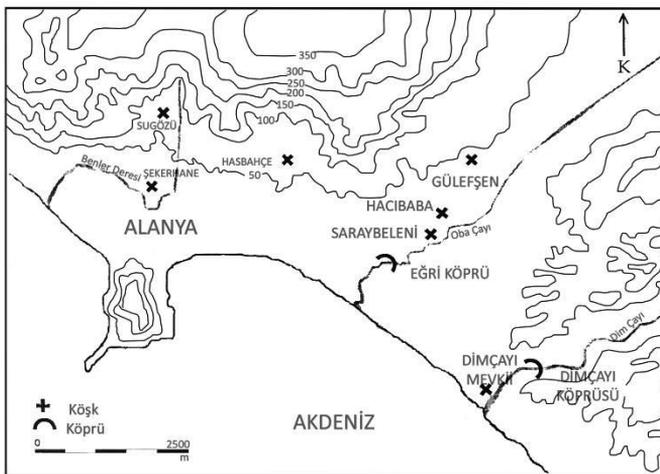


Figure 7. The map of Alanya and its surroundings that demonstrating the area with topographical importance and the Seljuk gardens (Redford, 2008, p.41)

Redford (2008) states that the construction of garden belts and plots surrounding Alanya can be interpreted as essentiality and responsibility of the Seljuks' interest in the soil. This responsibility was revealed in the entrance of hunting grounds, appealing scenery and hinterland of the cities or intercity gateways for security requirements. Seljuk gardens as informal gardens were managed by the horse-borne elite and had generated the power of the sultan as the sole ruler with the organization of the built and natural environment (Redford, 2000). Contrary to the primary use of landscape the various interpretations of the landscape mostly by the Sultan and elites have been presented. Landscapes were defined for the hunting proposes, entertainment proposes, passive proposes and politic proposes. At the same time the Seljuk Sultan, elites and locals sustained their lives on the peninsula of Alanya. Especially, locals had adapted themselves to the constraints of steep slopes and developed their own way of landscape. As Konyalı (1946) states that the city of Alaiyye had built upon the steep slope that extends from the north to the south. Due to the thin soil, houses were adjacent and overlapped. Every house had a mortar cistern stored with rainwater. The lower house's roof acted as the terrace, promenade and the laundry room of the upper house. According to Kuban (1982, p.42), identification of the Seljuk art is critical as Anadolu Seljuk art shouldn't be interpreted as a palatial one but as a community art incorporating the requests of the palace and the creativity of the public.

The Kaleiçi part of the city is the first settlement of the city, the isolated life there has proceeded for ages. At the end of the 19th century, due the population growth and dense settlement the locals in the Kaleiçi had moved to the plain. In Republican period settlements have been centralized outside the ramparts (Kültür ve Turizm Bakanlığı, 1984).

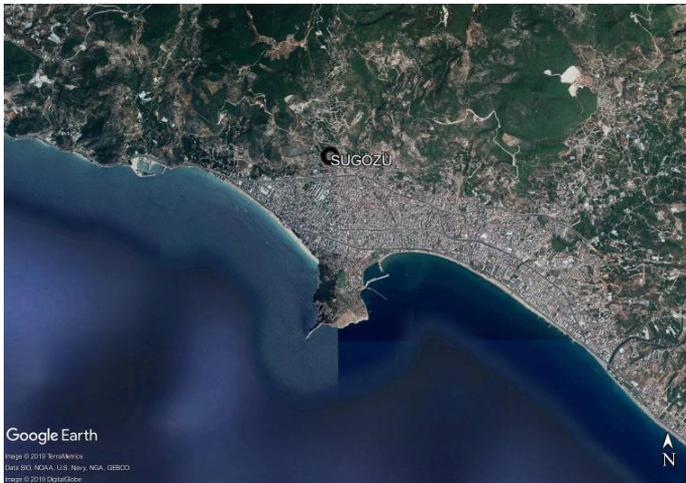


Figure 8. The map of Alanya and its surroundings (Google Earth, 2018)

Kocakuşak (1992, p.36) states that in 1992, Alanya was divided into 13 quarters. And 76% of these 13 quarters have developed inside the coastal plain. Old houses of Alanya between the cultivated area and gardens have replaced with concrete jungle (Kocakuşak, 1992, p.36). As it can be seen in figure 8, up to today the coastal

plain of Alanya has been exploited by a larger percentage due to the massive increase in the population growth and tourism.



Figure 9. The view of Alanya (Author, 2019)

Literature readings has showed the relations between the natural dynamics, cultural landscape and the given names of the quarters (toponyms) of the Alanya.

In 1992, Alanya was divided into 9 quarters as Hisarici, Tophane, Carsı, Kadipasa, Sekerhane, Hasbahce, Sugozu, Kellermuarı and Tepe (Yetkin, 2002, p.23).

The listed quarters below in the table 1 with the exemption of Kızlarpınarı quarter and Hacet quarter are the old quarters of the Alanya. This shows us that the names that were given to the quarters was and still is an important parameter that reflecting the different characteristics of natural dynamics and cultural landscape of the city of Alanya.

Quarters	Characteristics
Hasbahce Quarter	Palace, Sultan, Garden
Tepe Quarter	High, Hill
Sugozu Quarter	Water, Mill
Kızlarpınarı Quarter	Fount, Water, Girls filling water
Gullerpınarı (Kellermuarı) Quarter	Fount, Healing water
Hacet Quarter	Resting, Freshen
Carsı Quarter	Bazaar
Sekerhane Quarter	Hunting, Sugarcane
Hisarici Quarter	Castle, Ramparts, Inside
Tophane Quarter	Tower

Table 1. The names of the quarters of the Alanya and their characteristics (based on Yetkin, 2002, pp.23-31)

The hard and soft characteristic elements are important parameters that are displaying the spatiotemporal projection of the cultural landscape of Alanya. Data

revealed from the historical maps starting from the 1513 (Piri Reis Map) and old photographs of the old city of Alanya dating back to different years have showed the dominant continuity of the hard landscape elements such as the castle, red tower, land and sea ramparts. They have been maintained to an extent today except that the upper part of the Tophane district with the ruins of the houses.

*“The two residential quarters in the property, Tophane and Hisariçi, formerly places of a compact urban fabric, consist today of a dispersed ensemble of more recent houses from the 19th and early 20th centuries. These houses present a diversity of architectural forms and many different types of construction materials. These two quarters still form a residential area, but sparsely populated. The Greek quarter has been left abandoned since the organised departure of this community in the 1920s.”* (ICOMOS, 2013b).

The notes of Alanya castle conservation and development plan dated 1996 and the 1/500 scale Alanya castle conversation oriented zoning dated 1999 which are obtained from Alanya Municipality and Cultural and Social Affairs have contributed to find out the ongoing studies about the management of the cultural landscape of Alanya. Because the Alanya castle conservation and development plan dating back to 1996 has proposed the protection of the ruined area on the upper part of the Tophane district and to convert it into an Archeological Park. One of the other characteristic hard landscape elements are the cisterns. In the Alanya castle conservation and development plan (1996) it has been revealed that only a few of these cisterns were used for their original purpose, the others were abandoned or become septic pits. Thus, the necessity of the evaluation of the cisterns unveiled. In the 1/500 scale Alanya castle conversation oriented zoning study dating back to 1999, the interventions specific to the vegetation structure and rock structure have been specified.

“The temporal parameter examining the activities that are obtained from the old aerial photographs and the old photographs” has provided the comparison between different time periods. The old aerial photographs dating 1953, 1986 are obtained from the General Directorate of Mapping. They have revealed the altering usage of the landscape. In 1953 the old city of Alanya was used for settlement purposes, while the plateau in the hinterland of the old city of Alanya was filled the agricultural plots. There were houses adjacent to the coast and the other houses with gardens were scattered inside the Alanya. Up to 1986 agricultural plots were lessened and commenced to fill with the newly built houses and new transportation networks. By the impact of the emerging seaside houses, the coastline started to examine alterations. With the tourism boom in the 1985s, the agricultural plots were transformed into the residencials and hotels. The coastline had changed drastically.

Seasonal activities are important parameters reflecting the temporal continuity in the Alanya. The locals in Alanya migrate to the plateaus starting from the month of June and to return from the plateaus in the month of november.

### **Conclusion**

This study is a step to reveal the cultural landscape of Alanya possessing many tangible and intangible values. Based on this study further studies examining the layers of the cultural landscape will be conducted.

Focusing on the sustainability of the multilayered landscapes, this study attempts to develop a palimpsest reading on a case study area. By scrutinizing the diversified layers of the cultural landscapes that are existing throughout the centuries to decades, this study undertakes to interpret the creative place-making process of the past cultures to ensure a sustainable future carrying esteem to them.

In the 21st century, the cultural landscape of Alanya has been altered constantly with the population growth and tourism. The traces of the preceding landscapes that are embedded in the altering urban landscapes of today are up to destruction and neglect. Regarding their notable characteristics, they need to be revealed for the development of sustainable strategies. This study highlights the importance of developing sustainable strategies for the future of the cultural landscape character areas not just only for the benefit of the Alanya city but for the other historical coastal cities.

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# URBAN-RURAL GRADIENT: DECIPHERING ITS SEMANTIC LABYRINTH

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**JAN BOGAERT**

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The magnitude and speed of anthropogenic influence on the earth during the last decades is an unprecedented event. In 2008, for the first time in history of humanity, the world's urban residents exceeded in number the rural population. However, if we observe urban growth by region, Latin America crossed this threshold during the seventies and in 2014 it already had 79.5% of its population living in cities. While this tendency is still increasing, the cities' growth pattern has been strongly transformed through the emergence of megacities or metropolitan regions. In this context, defining a clear border is becoming more complex and the traditional binary conception of rural versus urban has become obsolete.

Due to the hybrid condition of these new territorial configurations (neither urban nor rural), an extraordinary collection of terms and concepts are currently used to describe them. Periphery, periurban, suburban or rurban areas, are some of the concepts frequently used to refer this territory. These terms are in some cases occupied with ambiguity or as synonyms to describe this area as a unique notion but, in other cases, are used as terminology that seeks to capture the most outstanding features of these new and diverse geographies. Since many of the semantic definitions are strongly associated to their geographic place of origin, important distinctions can appear when a term-concept is used in different geographical and social realities. For example, the concept of suburb (originated in the mid-nineteenth century in the United States) has acquired a completely different sense in a Latin-American context: while in the US a suburb is a territory shaped by the migration of a middle class in search of idealized residential areas with nature, promoted by new access to private transport and with isolated and low density houses with a front yard, on the other hand, in Latin-America a suburb is also a residential area but mainly characterized by informality and precariousness, with lack of infrastructure and services (Frediani, 2009; Hiernaux & Lindón, 2004; Serrano, 2017). The contributions of Latin American studies have been built on the demand for recognition of their reality as different from the European or North American ones.

In order to precisely understand what happens in this interstitial territory,

this contribution aims at establishing new precisions about the most recurrent terms-concepts used in the literature to describe the urban-rural gradient in a Latin-American context. As a methodology, a Citation Frequency Index has been calculated from 64 scientific articles and –specifically- in 598 quotes. Through it, the most outstanding attributes for each concept have been identified and systematized, developing a sort of catalog that clarifies and visualizes these new territorial realities in a technical and scientific language.

A total of 50 attributes were identified and organized in 8 categories: Morphology, Functionality, Dynamics, Demography, Social and/or Cultural Conditions, Politics, Environment and Economics. From these, morphology (20%) and function (29%) showed to be the most recurrent and relevant characteristics used to describe a territory. In this sense, mapping both spatial configuration and functional characteristics (services, road infrastructure, public transport, mobility patterns, land uses, etc.), is fundamental to have a comprehensive understanding of any territory.

Finally and based on these results, it seems essential to perform new empirical studies in the urban-rural gradient in order to verify and validate these theoretical-symbolic notions in specific territories. However, this exercise of classification represents a first theoretical finding for Latin-American realities and an applicable conceptual proposal that can be useful, as a guide, for understanding the contemporary patterns of urbanization in other realities.

# IN THE SHADOW OF NEPTUN... IDENTITY OF GDANSK

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## **Abstract**

Gdansk is a multidimensional city where one can find Polish, German, Hanseatic, and Dutch traditions. This is the place where, more than twenty years ago, the process of democratic changes began. This is the place where the revolutions of 1989 started. It is impossible to understand the phenomenon of Gdansk's identity without considering a specific place in a particular historical and cultural context, as well as without studying carefully the inhabitants' subjective attitude to this concept. Here one may ask the following questions: Does the spirit of this place foster the development of a new community? Was it possible for this spirit to be reborn out from the ruins of the city? Does the collective memory hidden between streets, walls, churches, museums constitute a cultural bridge between the past and the present thanks to which the newcomers from the past could build their identity?

Undoubtedly, Gdansk is a fascinating city which is a very interesting object of research for historians, sociologists, and cultural anthropologists. What is special about Gdansk is its coastal location, a stunning landscape, a mix of influences from Germany and Poland, a past as well as recent tragic history of this place. Present-day Gdansk is still developing. It is also trying to combine two contradictory trends. On the one hand, the city of Gdansk wants to build its own, still disintegrated, identity, but on the other hand, it has the metropolitan ambitions, so it is constantly going through globalization processes.

The aim of my presentation is to display the relationship between the multiculturalism of the inhabitants of Gdansk and their subjective and emotional view of the urban space. Moreover, I would like to reconstruct a disintegrated identity of the inhabitants of Gdansk in the context of historical and social events in the 20th and 21st centuries.

**Key word:** Gdańsk, identity, city, urban space **Word Count:** 3449

## **Introduction:**

In Greek mythology, Neptune, or Poseidon, is one of the strongest gods. He rules over seven oceans and his kingdom lays in the depths of seas. He is immortal and his power is unlimited. Neptune is also a capricious god. According to the legend about the Neptune Fountain (built in 1618), which is located in the centre of the Main City of Gdansk: "When, after long preparations, the fountain set up to celebrate the expected visit of King Władysław IV was finally activated, the joy reigned in the city. Whoever was alive, rushed to the Artus Court to admire the beautiful work. The inhabitants liked the fountain so much that they started throwing coins into its water - some of them even gold ones. Grateful Neptune made a miracle - water turned into a shimmering golden vodka with an unusual taste. The greedy owners of

the Gdańsk taverns soon knew about it and started to transport the liquor to their cellars by using barrels. The joy lasted until late at night, and the innkeepers rubbed their hands and already calculated inwardly their future earnings. On the next day, each of them rushed once again to the basement to delight their eyes with the view of the thick barrels and try the taste of magic vodka. But the barrels were filled with clean water only. Only the modest and noble owner of <Pod Łososiem> inn (Inn of the Salmon) had not cherished the sea god's beverage and was rewarded royally. He found golden vodka in all kegs in his basement, which, from now, on became the speciality of the Inn of the Salmon (Januszajtis 2012, pp. 57-58). This legend symbolises the values that Gdańsk is described as and the character attributed to the city in history - humility towards the sea, self-composure and nobility. In this article I will try to present elements of urban space describing Gdansk and historical events that took place in its area. I will try to answer the following question: What symbols and values can be used to describe Gdańsk in history and what symbols and values can be used today?

### **Public space of the Main City**

When we walk around the Main City of Gdansk, we enter into a dialogue with the history of the city, with its space. "The public space of streets, squares and buildings is a system of urban interiors (urban and architectural), which unites us all with the possibility of meeting. Every one of us, every person, who passes through the streets of the Main Town, who stops in its restaurants, tetras, churches, is a part of this meeting. The creation of a dense network of human meetings is the social sense of public space. The Main City reflects this sense in its urban form: for a network of human meetings it builds a network of urban streets and squares, urban public buildings, urban tenement houses, which on their ground floors offer passers-by cafés, restaurants, galleries and shops. Urban buildings, objects and streets, like people, have architectural conversations in urban spaces. In these conversations stories are created, arranged like films in sequences of successive images. How often in the Main City architecture creates its incredible reverse films: here it is not the image that moves in front of a motionless spectator, but the opposite - it is the spectator that moves in motionlessly built images (Dominiczak 2014, p. 267). The uniqueness of the public space of the Main City of Gdańsk results from several reasons. Firstly, because of the history of the city itself until 1939 and, secondly, because of the events after 1945. During the interwar period, Gdansk was a German city located in Poland. On the basis of the 1918 Treaty of Versailles. (points 100 through 109 of the Treaty) Gdańsk was granted the status of the Free City and was sovereign against both Poland and Germany. At the same time, it secured Poland's access to the sea and enabled the development of foreign trade. In the commentary on the provisions of the Treaty of Versailles, we read: "Poland has the right and obligation to substitute Gdańsk in international relations. The Polish State, on behalf of Gdańsk, concludes all international agreements and treaties. Before that, however, the Polish Government should have had carried out so-called consultation with the Senate of the Free City. The only exception to this rule is the substitution of Gdańsk before the Council of the League of Nations. Cases brought before the Council of the League of Nations are handled by Gdańsk without the intermediation of Poland. The consequence of the substitution of the

Free City in international relations by Poland is the protection of its citizens abroad. This protection is primarily exercised by Polish consulates. It also results from the right of the representation of Gdańsk by Poland that "exequatur" towards foreign consuls to hold office in Gdańsk is granted by the President of the Republic of Poland in agreement with the Senate of the Free City" (Zawirowski 1939, p. III).

This period is called the "golden age" of the city and the adjacent areas - Kashubia, called the Little Switzerland. Gdansk prospered and developed extremely rapidly in economic terms. This process resulted, among other things, from the proximity of the sea and the extremely fertile area of the Vistula riverbed, which is adjacent to the city. Coastal tourism was also developing in Gdańsk - Germans travel to the city for holiday, recreation and health purposes. The Main City - the most representative area of Gdansk offers its visitors a number of restaurants, guesthouses, post offices and service establishments (tailor, hairdresser or casino).

At the same time Gdańsk is described as a mystical and symbolic city. Oliver Lowe describes Gdańsk as a multi-page book that requires extraordinary concentration, knowledge of many languages and narration. In a very picturesque way, the historian describes his journey through Gdańsk: "[...] only after a long walk along the sea shore will you return in the evening [...] and take the novel by Günter Grass or Stefan Chwin in your hand, you will fully realise what depths this city hides. When the next day you enter the tower of Saint Mary's Church and look at the space stretching between the blue waters of the Baltic Sea and green Żuławy [...] to the very centre of the history - the city of contrasts, the city of overlapping epochs, layers, symbols and stories" [Loew 2013, p. 12].

After 1946, Gdańsk was completely destroyed.

As a result of war activities carried out during the World War II, Gdańsk was completely destroyed in 1946. More than 80% of the city was in ruins. Only about 5% of the buildings preserved in their entirety. The architects and conservators responsible for the reconstruction of the Main City did not postulate a full reconstruction, being aware of an unrealistic nature of such postulates. The street network as well as the shape and decoration of the facade of the tenement houses were to be restored, and the interiors were to be redesigned according to modern standards. Similarly, outbuildings filling the plots of land tightly before the war were written off. Final decisions on the form of the reconstruction were made only when in 1947 Gdańsk was entered into the register of monuments as a whole, within the fortifications of modern age, and when a year later a spatial development plan for the city centre, commonly known as the "Zachwatowicz Plan", was prepared. The plan assumed the reconstruction of the urban development, but only for the area of the Main City. The Old City and the Old Suburbs were to be given new buildings, while retaining the existing monumental buildings. In fact, the reconstruction started in the southern part of the Main City and ended practically on Szeroka Street, significant fragments of which are only a parody of the form of old tenement houses (Gawlicki 2012; Fredrich 2015, Stankiewicz 1959, 1979). Stankiewicz writes that "it is regrettable to say that during the reconstruction of the Main City, reliable conservatorial considerations must have led to meanderings of compromises between the so-called socio-economic and financial effects, between spectacular effects and, above all, the convenience of many people involved in the reconstruction" (Stankiewicz 1979).

### Myth of multiculturalism in Gdańsk

After 1989, the concept of multicultural Gdańsk was born, “[...] there is a picture of Gdańsk as a future united Europe in miniature. At this point, there are significant changes in the memory structure of the place. The myth of Gdańsk as a multicultural city appears, which, to this day, is the dominant myth organising Gdańsk’s memory, strongly promoted for various reasons [...]. Emphas that Gdańsk always heads towards Poland in order to become independent from Germany, as was the case during the communist era, is definitely being put on the back burner. This case is no longer emphasised. It becomes much more important to emphasise that Gdańsk was a city of harmonious coexistence of many common nations, as well as a safe haven for religious dissidents (Chowin 2010, pp. 28-29). Historian P. O. Loew, at the same time, denies the multiculturalism of the city’s inhabitants. “This is a relatively new myth and was created when former national narratives began to lose their power and when supranational communities were being formed. However, one element known from the narrative about the Polish nature of Gdańsk was created. It concerns the reduction of the participation of Germans in this history by emphasising, wherever possible, the influence of other nations on the city. [...] The functions that such declarations of local multiculturalism have to fulfil are obvious. The local liberal elites wanted to escape from both the narrative of German nature and the narrative of Polish nature propagated especially under the communist regime. They seek to create a new continuity of local existence that matches the European image - in accordance with the requirements of political correctness, primitive here and now and the need to create a new local identity” (Loew 2016, pp. 68-69). The myth of multiculturalism is not the only one referring to the history of Gdańsk after 1945. After the androgenic German population had left Gdańsk, its place was taken by Polish citizens, who did not know the history and culture of the city. The character of Gdańsk and Gdansk nature had to be created from scratch, which became the main goal of the then People’s Republic of Poland regime. “Thus, the links between the city and Poland have been emphasised; the dark period of Teutonic rule, marked by violence, was contrasted with the era when the city, endowed with privileges of Polish kings, grew both materially and spiritually, on the basis of its relationship with Poland; Polish eagles were recalled in Gdańsk monuments; finally, the German cultural tradition of the city was relativised” (Fredrich 2014, p. 181).

The myth of multiculturalism in Gdańsk has several interpretations. Writers such as Günter Grass, Stefan Chwin or Paweł Huelle nostalgically recall the German culture of Gdańsk. Stefan Chwin in *A Short History of a Joke* describes in an autobiographical way the search for the true post-war identity of Gdańsk. The protagonists, when walking through the streets of the destroyed city, find German references, wondering what it will be like when Gdańsk becomes Polish. The myth of the multiculturalism of Gdańsk is for the writer a return to a better reality. “In Poland - he writes - after the terrible epoch of wars and deportations that led to the destruction of minorities - multiculturalism has been so far above all a literary vision, a memory of the borderland past, and thus a more nostalgic myth of the old world and perhaps a premonition of a world that is only just to be created, rather than a reality” (Chwin 1997, p. 170).

### Gdansk Memorial Space

Gdańsk can be considered as unique in comparison to other Polish cities in terms of geographical location (city - port), history (Danzing, Free City of Gdansk and then as the City of Freedom), multiculturalism of its inhabitants (caused by a series of migratory waves and sailors) and architecture (architectural competition in 1906 and the merger of three cities after World War II: The Free City of Gdańsk, Wrzeszcz and Oliwa, followed by the creation of a metropolis by combining it with Sopot and Gdynia). Orham Pamuk interprets the contemporary city as a palimpsest - this very catchy contemporary figure proves how it changed in the 20th century approach to history. Nineteenth-century myths of the city were static. The twentieth-century - they remain in constant motion, which reveals the "palimpsest character" of the urban space. In this sense, Gdańsk, which consists of consecutive layers of text, often multilingual and from different cultures, takes on a new dimension. Deeper entering into the history of the city is the discovery of its complexity, the "palimpsest character" (Pamuk 2016). In the "palimpsest" city, the layer of symbols becomes only a surface underneath which other symbols, blurred, pierce. In this way, an awareness of the historical entanglement of symbols in politics is being created. The Nobel Prize winner's description seems to perfectly reflect the memory space of Gdańsk, which is one of the main elements describing the relations between the symbolic space of the city and its usable space. The "Pearl of the Tri-City", as it is often called in various tourist guides, has a structure of spatial division into areas of the Main City (historical and most representative), shipyard, industrial, "bedroom" and tourist (beaches, squares, hotels, etc.) areas. It seems that the historical memory spreads from the city centre to the city centre, with an intensification in the centre. In the "bedroom" areas it transforms into a private memory. At the same time, the need for national and patriotic symbols (defence of Westerplatte, Solidarity, the European Solidarity Centre or the Museum of the Second World War) is strongly emphasised. "The vitality of the national symbolism of the city and its significance leads to the continuous strengthening of the symbolic domain, because the symbolic reign of certain specific values in a given area is not subject to freezing - this is a kind of process in which key ideas are constantly updated. The most important is the way of using ideas, giving them new forms, emphasising their content in the space. Therefore, the construction of the European Solidarity Centre and the Museum of the Second World War (although it is a project of supra-national significance) should be seen as another step towards strengthening the symbolic rule in Gdańsk" (Michałowski 2011, p. 231).

### Summary

The question about the identity of Gdańsk is connected with the question about *genius loci*<sup>1</sup>, i.e. about its guardian spirit. In research on the specificity of this unique city, these are the values determining its character and diversity in relation to other *poleis* of our country. The most important building element of Gdańsk is its architecture, described by the term "Gdańsk Taste". It can be seen on various

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1 *Genius loci* (Latin. the "guardian spirit of the place") - the spirit or demon ...who owns or takes care of a place. According to Roman mythology a caring power, something that makes a space unique (also often presented there in the form of a serpent). Guardian spirits of places or individuals are also commonly found in other beliefs (also in those Slavic whether Christian).

billboards, advertising spots, as well as on the websites of travel agencies and the City Hall. These are the special monuments around which the feelings and sentiments of Gdańsk residents concentrate, such as the Neptune fountain, the Main City Hall, the Church of the Blessed Virgin Mary, Artus Court, remembering the Westerplatte defense, the Three Crosses at the Gdańsk Shipyard and the monument to Jan III Sobieski - a former place of rallies and anti-communist demonstrations. It should be noted, however, that the majority of residents, although they identify themselves with most of these places, have a fragmented and fragmented knowledge about them.

Another element describing the identity of Gdańsk is its rich and dramatic history. The events of World War II, then the events of 1946 and the time of communism created the image of the city as a anchor of freedom and individuality. Not without significance was also the maritime economy with its shipbuilding industry and commercial ports. Gdańsk had access to "riches" unattainable for other areas of the country.

"Against the background of the country, Gdańsk is also distinguished by its political profile - [...] points to the decisive domination of groups with solidarity and independence roots. It should be remembered that Gdańsk was the cradle of the liberation uprisings, the city from which free trade unions grew up, liberal circles connected with the *Political Review* or conservative circles gathered around the Young Poland movement. The leading figures of political life in Poland are connected with Gdańsk. No wonder, then, that a certain myth about Gdańsk as a city of priorities such as solidarity, autonomy and self-governance has taken root in the consciousness of the citizens of Gdańsk [Załęska, Tobis 2011, p. 128].

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# EMERGENCE OF A NEW URBAN METABOLISM WATERFRONTS OF ISTANBUL BETWEEN 1839 AND 1923

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## Abstract

This paper tries to examine the transformations of the waterfronts within the world-historical context of the late 19th and early 20th century, as well as concomitant economic and socio-ecological transformations in the geography of Istanbul. In particular, transformation of waterfronts will be exploring with the lens of urban political ecology considering the period from the Constitutional reforms (Tanzimat-1839) to the establishment of the Republic of Turkey (1923). It is possible to see urbanization as a continuous transformation process in various scale that is organized within social and physical channels or metabolic networks; I try to find specific metabolic networks and relations that were resulted with emergence of a new urban metabolism in Istanbul at this period. I claim that the Tanzimat Era had been witnessed particular coexistence of metabolic networks which can be exercised throughout the transformations of the waterfronts of Istanbul. In this study, I am looking out for the relations, contradictions, and uneven landscapes of regularization attempts through the waterfronts and the infrastructural developments in socio-ecological manner. Furthermore, this study aims to contribute and enhance the interdisciplinary approach for the urban studies of the late Ottoman period of İstanbul.

Key words: Urban political ecology, urban metabolism, Tanzimat Era, İstanbul, Waterfronts, Infrastructural developments

## Introduction

In recent years, interest in urban space has increased by taking into account social networks, flow of materials & ecosystems which are tools for exercising the complex relationship between socio-ecological issues and urban metabolism (Swyngedouw & Heynen, 2003; Gandy, 2004; Kaika, 2005; Swyngedouw, 2009; Batty, 2013; Ferrao and Fernandez, 2013; Chrysoulakis, Anselmo, and Moors, 2015). Instead of using the binary arguments such as domination of nature, therefore, increasing number of scholar hold the much more complex process of the 'production of nature' (Smith, 1984). In the discipline of geography, Swyngedouw added 'urban' to 'political ecology' context in 1996 (Kaika, 2005, p.5). Thereafter the urban political ecology concept was reviewed in a progress report by Roger Keil (2005) for a type of restoration of the urban theory, based on considering the city as an ecological system (Short & Short, 2008). As Harvey (1996) has identified,

a complex network of 'relation to nature', 'processes of production', 'technology', 'daily life' and 'social relations' means that, urban political ecology is based upon a more dialectical and critical understanding than existing urban theory. Heynen, Kaika, and Swyngedouw (2006) have shown in their book, 'In the Nature of Cities', how environment and society should be seen through relational dialectics. In short, the urban political ecology context reveals that we cannot address urban problems without understanding and addressing environmental problems. This study<sup>1</sup> claims that İstanbul renders the signal flare of a continuous effort for creating a modern urban metabolism in the second half of the nineteenth century and early twentieth century concerning its history. Add to this, it tries to exercise the urban metabolism by looking beyond the limits of input-output calculations in an urbanized landscape as well as to explore new perspectives of the future imaginations -in the perspective of urban political ecology- for the livable urban landscapes. I argue that the Tanzimat Era had been witnessed particular coexistence of metabolic networks which can be exercised throughout the transformations of the waterfronts of İstanbul. The paper is focusing on flows of land, water and disease as specific metabolic networks that help to understand transformations of İstanbul's waterfronts. This study states that the historical rhythm of urban metabolism, embedded in the urban pattern of growth, has momentous impact on future networks of flows and programs in the urbanization process. Uneven development of a capitalist production of nature and its metabolic character began in the 19th century for İstanbul, would affect the 21st century's İstanbul. This study tries to offer a new way of understanding the conflicts about modern period of İstanbul in case of shifting socio-ecological relations. At this point, focusing on the deep structure and metabolic route of İstanbul seen as a useful tool for understanding the production of nature as space throughout its socio - ecological history. 'Every city has a deep structure or enduring context' that premise used by Anne Whiston Spirn (1984, p.12) for defining an ecological urbanism and a livable cities debate.

I argued that, the waterfront landscapes of İstanbul especially Bosphorus and Golden Horn act as significant catalysts for understanding the shifting urban metabolism of the city, and defines a metabolic route, deep structure and enduring context of the city for understanding the past and creating a relational will to change the relations of production of nature as space in the future of İstanbul. Especially the efforts for creating the modern urban water metabolism which is intertwined with the sewage system, great fires, epidemic, and access to the fresh water, recreational habits, and transportation have been momentous impact particularly on reshaping waterfronts of İstanbul and urban form. On one hand, the streams in the city were redesigning by channeling or filling and covered for making new road routes; on the other hand, the very first water companies were established at the spring waters of Bosphorus in the late 19th century. Water and wastewater had to be managed, controlled and rechanneled for keeping the urbanized landscape's expansion continuous. Furthermore, first grand scale projects -like coastal land reclamation- had been proposed, particularly at the waterfronts of İstanbul at this period too.

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1 This study based on a search for my dissertation, entitled as 'Reading Urban Metabolism of İstanbul: Transformation of Waterfronts between 1839 and 2019' at METU, Department of Architecture, supervised by Prof. Dr. Güven Arif Sargin. I have been working on it since 2014.

Classical reading of İstanbul's late 19th century and early 20th century has been limited to see administrative and constructional developments (which concerned controlling the construction, structural features of the new buildings, street width, pavement details, expropriation, infrastructure) as the rules of 'western minded' legislations, as well as ethnic-religious differentiation of urban pattern were the basic characters of the city as Zeynep Çelik (1984, 1986), Bernard Lewis (1993), Erik j. Zürcher (2002), Şükrü Hanioglu (2008), İlber Ortaylı (1985, 2010), and Murat Gül (2009) argued. Moreover, Çelik (1984, pp. 87-91) argued that in general terms regularization attempts for building, infrastructure, sanitary and construction in the city of İstanbul, with the hands of bureaucracy, have strong similarities with the context of the acts and laws of European countries such as England, Italy, France, and Prussia within the same period<sup>2</sup>. The First World War between 1914 and 1918 heavily influenced the political, socio-ecological and economic life in the world wide. Famine, poverty, unhealthy environments and epidemics strongly related with the rhythm of the production of nature as space and evolution of socio-ecological relations in that period. Relational climate of socio-ecological conditions and socio-economic landscapes are equally important for this study.

Concerning the Little Ice Age in the 16th and 17th centuries and decline in agricultural products in the geographical context of Anatolia, the historians William J. Griswold (1981, 1993) and Sam White (2011) argued that Celali Revolt and following political crises climate stemmed from the ecologic problems of Little Ice Age. Moreover, after declining the effects of the Little Ice Age period in the 18th century and in 19th century in Anatolia, wide public segments in the Ottoman Empire could move to lower lands and coastal area again and it affected the integration with the capitalist world via increasing commercial agriculture too (İnal, 2011; Orbay, 2007). Furthermore, we can explore that the reason why waterfronts of Bosphorus was being chosen for the first time as the location of summer residences from 16th century for people of the Palace, as well as for a permanent residency at the second half of the 19th century. Additionally, how they had been settled permanently in the context of socio-ecological forces such as diseases, and climatic conditions. On the grounds that in summer times northern winds were cooling the Bosphorus' waterfront lines at that period, and the difference of the temperature between the "İstanbul" and Bosphorus were caused the habitation preferences in summers which is explained in details in terms of climate change and freezing period of the Black Sea Region by Tchihatchef (2000) in his exemplary book. On the other hand, regarding 17th century we can learn from the voyager's diaries that waterfronts of Bosphorus with its healthy environments and fresh airs served as an important location for Europeans and ambassador's family to protect them from plague disease, which was especially spread in hot summer periods widely in the city (İrez and Aksu, 1992).

In addition to the climatic conditions, socio-economic landscape of Ottoman's which did not have the characteristics such as 'large scale, urban, factory production, mechanized factory output', and quite the contrary 'labor-intensive, small scale, as well as household based and rural' aspects had been observed still widely in 19th century and in the beginning of the 20th century (Pamuk 2009, pp. 9; Köksal, 2005,

2 The six main acts developed that influenced İstanbul's urban form in the years of 1848, 1858, 1863, 1875, 1877, and 1882. For detailed explanations see Çelik, Z. (1984) pp. 87-91.

p. 14). Although, the Tersane-i Âmire, Feshane-i Âmire, Tophane-i Âmire in Golden Horn (Haliç) and an iron foundry as well as some cotton and wool factories were located from the Yedikule to Küçükçekmece waterfronts in 19th century, economic historian Pamuk (2009) explains the characteristics of the era in Ottoman Empire with the term: 'de-industrialization'. Even if there is no industrial revolution in İstanbul in that period, we can see the premise of an 'industrial discipline' and the new relationship with nature for the sake of production of nature as space via the ongoing 'service revolution' of municipal administrative bodies that we will explain in detail. The first Municipality in İstanbul (Şehremaneti) was established in 1854 in İstanbul, and projected not only to design the image of the city like western counterparts, but also attempt to change production of nature as space radically. The shift in administrative body and production of nature have been controversial topics. The important reason is the uneven character of capitalist geography. Besides, Melosi (2005) mentions about the attempts of a service revolution with a shift in experience from individual to the civic / public makes the 19th century special, stating that:

'Several scholars have argued that, along with the rise of laissez-faire capitalism, the nineteenth century also experienced a kind of 'municipal socialism', that is, a demand for services provided by the city rather than the individual. Although some scholars have exaggerated the range and quantity of services provided by this municipal socialism, the needs of the large, heterogeneous industrial city did force a rethinking ways in which those needs could be met.' (p.9)

Like the heterogeneous industrial city mentioned above, besides all of these revolutionary efforts, first environmental problems, indispensable awareness and uneven landscapes could be seen in İstanbul. Işın (2001, pp.209) argued that first signs of environmental pollution had been seen on the waterfronts of Haliç, probably related with its being a location for factories and production facilities with an increasing preferences. Add to this, he tells that the environmental awareness had been an issue via Tanzimat reforms, and was represented by the organizations of municipalities in 19th century too.

In these lights and preliminary evidences, relational climate within the climax of the Tanzimat Reforms in Ottoman historical-geographical context, I try to focus and explore emergence of a new urban metabolism and evolution of (the uneven) urban landscapes in the capital city-İstanbul via following the transformations of urban waterfronts. In short, this study tries to examine the transformation of İstanbul's waterfront under the alternating metabolic flows of the land, water and disease. Now, firstly, we start with the flows of land under the property rights, and its possible reflections through the waterfronts of İstanbul.

### **Flows of Land**

In the Ottoman period, before the reforms of Tanzimat the land and water resources could not be bought or sold and were secured as non-commodity. Concerning Tanzimat period, property rights have been symbolized the most important aspect about the division and alienation human from nature as space in the landscape of İstanbul. The edict and ongoing legislations (for example Land Code of 1858 - *Arazi Kanunname-i Hümayunu*) were provided the guarantee of

property rights like land property in favor of individuals for the first time within the state, without separation Muslim and non-Muslim subjects under the laws. These reforms especially can be seen in the field of municipal organizations in İstanbul, Çelik (1984, p.56) argued that they created an extensive city-building program including drainage system.

First of all, European Markets and merchants gravitated towards the city of İstanbul by increasing monetization. Secondly, European merchants could have or rent a property in İstanbul, and these were began to change the pattern of waterfront landscape and recreational activities after Tanzimat. For a brief example, concerning spatial relationship of these reforms in the historical records that gave way to have property via infilling throughout the sea, change the fabric of the waterfronts for instance by summer housing. Particularly for the family of new class of bureaucrats and family of Sultan's moreover, ambassadors' and bureaucrats' marine mansions at the Bosphorus took permissions for recreational privilege at nights on a daily basis (1877, Ottoman Archive)<sup>3</sup>. Many summer-palaces and waterfront residences (*yalis*), which had been used by the widening administrative body, can be seen at the Bosphorus from the 18<sup>th</sup> century to 20<sup>th</sup> century. For instance, in 1848, first stone construction palace was Beykoz Summer-Palace. Mostly the Ottoman Pasha's, embassies like the the British Summer Embassy in Tarabya (Figure 1) and people of palace had their summer palace or waterfront residence throughout the Bosphorus.



Figure 1. The British Summer Embassy in Tarabya before it was destroyed by fire, XIX. Century.

Atasoy, N., 2007. *Photographs from the Yıldız Palace Albums, Souvenir of İstanbul*. Akkök Publications.

Under the reign of Abdülmecid, the Palace of Baltalimanı was built and located on this area by Damat Ferid Paşa who was an important figure for Tanzimat Reforms. The region which had been a bay area of the streams called Kanlıkavak and Baltalimanı until the Selim III, and filled through years (Eldem, 1976, 1979). The evolution of nature as space -from a bay area to a waterfront palace- and the transformation of usage -from civic to private- can be seen here as a brief example in the late Ottoman period at this historical-geographical context which

3 1877, Ottoman Archive - BOA (Başbakanlık Osmanlı Arşivi) Hariciye, HR. SYS. 1233, 19, M-31-05-1877.

was located at the waterfront of the Bosphorus. Not only waterfront residences were the significant attempts for production of nature as space, but also coastal land reclamations could be seen legally at the waterfronts in this era. We can observe the explanations about the law case about coastal land reclamation, in the Government Ottoman Archive. To clarify, in the foreign affairs (Hariciye, Ottoman Archive) records, it is explained that any land reclamation without license along the Golden Horn, Dersaadet (İstanbul) and Bosphorus will be suited and punished according to laws in 1908 (Ottoman Archive)<sup>4</sup>. In 1920, near Serviburnu and Sütlüce a foreign company (American Standart Oil) was getting a permission paper for using the landfill as a coal yard area via the application of the land reclamation (1920, Ottoman Archive)<sup>5</sup>. Furthermore, foreign relationships gave way to the acceleration of the marine products trade from the Marmara Sea and the Bosphorus such as fish import (1892, Ottoman Archive)<sup>6</sup>. Add to this, the waterfronts of İstanbul in 19th century served as a market place where the goods like seafood, vegetables and supplies sold directly from sea or boats along the embankments and quays. The waterfront palace of Mümtaz Efendi that was located at the waterfront line of Bebek was an example of fruitful days of İstanbul concerning sea foods (Figure 2).

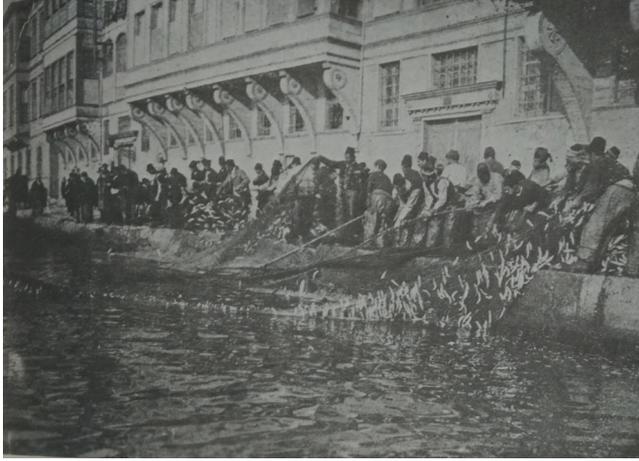


Figure 2. Waterfront line of the Bebek, Mümtaz Efendi Yalısı.  
Genim, M. S., 2012. *Constantiniye'den İstanbul'a XIX. Yüzyıl Ortalarından XX. Yüzyıla Boğaziçi'nin Anadolu Yakası Fotoğrafları III*. Suna ve İnan Kırac Vakfı.

All these examples in the archives show that vivid alterations on the waterfronts of Bosphorus especially exercised by foreign companies and bureaucrats after Tanzimat with the help of increasing relations with the west and socio-ecological

4 1908, Ottoman Archive - BOA (Başbakanlık Osmanlı Arşivi) Dahiliye, DH. MKT. 2694, 39, H-4-12-1326.

5 1920, Ottoman Archive - BOA (Başbakanlık Osmanlı Arşivi) Dahiliye, DH. UMVM. 102, 5, H-25-01-1339

6 1892, Ottoman Archive - BOA (Başbakanlık Osmanlı Arşivi) Hariciye, HR. SFR. 04. 341, 116, M-15-11-1892.

conditions. If we carry on with the coastal lines, Çelik (1986, p.73) argues that 'the idea of coordinating operations to regularize the waterfront -in physical manner and not individually, as a whole-'was first proposed in 1879. Before this year, embankments and quays had only been fixed under certain conditions and urgency about harbor. And, ferries anchored in the sea and passengers as well as goods were carried to the lands by small boats. At this period many attempts can be seen from both urban municipality and foreign entrepreneur like engineers who had companies in İstanbul. For instance, concerning 19th century Gavand was the first one who proposed grand scale land reclamation project related with an extensive plan in 1874 (Erinç, 1968, p.50). Çelik (1986) explains about the land reclamation proposal of Gavand from Yedikule to Topkapı Palace, she stated that:

'Eugene Henri Gavand, the French engineer, proposed the widening of the embankments along the Sea of Marmara and he suggested building an embankment 2-760 meter long form Yedikule in the west to the Topkapı Palace Gardens in the east. His ambitions, but unrealized scheme was part of an even more grandiose plan, which included extensive subway system for İstanbul and Galata.' (p. 74)

Two centuries later, the dream of Gavand would be real with the Yenikapı Coastal Land Reclamation project exercised by the Ministry of Environment and City Spatial Planning Head Office and İstanbul Metropolitan Municipality on 518.000 (total project area: 715.000) square meter land on the North Marmara Sea between 2012 and 2015.

Moreover, in the 19th century İstanbul, building process was usually seen in Galata and Pera (Çelik, 1984, p.44) across the Golden Horn shore (Kasımpaşa was the densest neighborhood). Eyüp outside the walls on the Golden Horn as the largest settlement, also on the Sea of Marmara Yedikule, Bakırköy (Macrikeyu), and Yeşilköy (Ayastefanos) as well as on the Bosphorus Tophane and Fındıklı were the densest neighborhoods between 1839 and 1923. The significant point is that not the ordinary neighborhoods, but the prestigious parts (Dersaadet Belediye Kanunu, 1877, Dustur, IV, 530; Çelik, 1984, p. 91) such as commercial and harbor districts of the city especially under the influence of the strict rules of construction method, material, infrastructural rules (plumbing, centralized gas lighting, road repairing etc.), sanitary service which were to maintain public health and wealth as well as prevent damages of fires. For a brief example, streets of Pera were important at that time and streets were grouped in İstanbul about their 'importance', 'betterment' and they were cleaning by different frequents (Mazak & Güldal, 2011, p.64). The rise of new neighborhoods such as Maçka, Teşvikiye, Pangaltı and concomitant highway connections was strictly related to imperial residences particularly Dolmabahçe and summer residences of bureaucrats that were settled along the Bosphorus can be given (Çelik, 1984).

For another example of altered metabolic flows we can look gas lighting which was developed earlier Pera, and the area of the Six District than the İstanbul peninsula (Çelik, 1984, p.104; Köse, 2011, p.437). The first gashouse was established for the service of Dolmabahçe Palace, after 1856 it served for the neighborhood of Pera. After gas lighting, very first usage of electricity in İstanbul was begin after the establishment of the power plant in Silahtarağa on the Northern part of the Golden Horn in 1913. Firstly, electricity could be used only for transportation in

tramways and some private initiatives were established (Toprak Z. 1993, p. 478). After this period, privileged parts for using electricity were both sides of Golden Horn waterfront lines and village of Bosphorus (Müller-Wiener, W., 1992).

Concerning historical records for the first time in Ottoman history people began to connect their body directly with the sea in the 17th century (Evren, 2000, pp.13-14). Besides, sea baths through the waterfronts of İstanbul began to appear in the beginning of the 18th century. Especially, in the late 19th century European physicians advised taking sea bath and sun as a curative activity for health. Moreover, people of İstanbul could use waterfronts for sea-bathing only after 'controlled' and 'regularized' under the certain rules of a particular socio-ecological and economic agenda. Moreover, giving permission for the -permanent and private sea baths- along the waterfronts means property rights in favor of individuals, not for public interest. Furthermore, we know from archives that taking fee for "public" sea-baths' entrance (Evren, 2010, pp.30-31), and disciplining civil life through the waterfronts of İstanbul mean that regularize who use these places and decide which practices forbidden strictly in a socio-ecological manner.

To sum up, administrative transformation, socio-ecological conditions, property rights, increasing population of İstanbul, shifting regime of production and concomitant extended geography of new urbanized areas such as along the Pera, Şişli, Ortaköy, Bosphorus, northern part of Golden Horn changed the waterfront landscape, infrastructure, and daily life reciprocally. Now, we will see new problem in the 19th century: Flows of Water in İstanbul. They had been important socio-ecological catalyst that needed to take into consideration in case of the attempts for re-construction the urban landscape as well as its effective means of emerging the new urban metabolism of İstanbul in the context of late 19th century.

### **New Problem: Flows of Water**

İstanbul had been a lucky geographical context according to fresh water supplies through centuries. Waterways, open cisterns, subterranean cisterns, reservoirs, aqueduct, fountains, springs, lakes has been the part of the water system in İstanbul dating from Roman, Byzantine and Ottoman periods. Problems about fresh water in İstanbul had begun with the population growth caused new demands about watering in the new quarters after Tanzimat period. Moreover, the accompanying increase in waste disposal into the water basins, as well as contamination of fresh water basins resulted with the widespread cholera diseases which will be discussed in details in the following part.

In the nineteenth century, the hills on both sides of the Bosphorus were important basins for springs. Spring waters conveyed with to the water levels for leveling or/and pipes to the break pressure tanks (maslak) and finally reached a palace or a fountain. Actually, transportation routes and intends of conveyed waters were designed for meeting the needs of the palaces (of Sultan's, Paşha's and bureaucrats etc.) in case of fresh water. Fountains were done for charity works for common people. On the other hand in the 19th century fresh water had been reached via transportation by 'saka' (water carrier) (Figure.3) who was carried waters from fountains to the houses of common people's neighbors and controlled by Şehreminlik. Municipal affairs, which will affect the infrastructural landscapes of İstanbul, has been started at the second half of the 19th century.



Figure 3. Saka – Water Carrier, G. Berggren.

Mintzuri, H., 1998. *İstanbul Anıları 1897- 1940*. Tarih Vakfı Yurt Yayınları, p. 104.

Establishing the first water company (Terkos Water Company) was a turning point which was claimed to use scientific technology & hygienic methods for collecting and bottling water was a turning point for the metabolism of İstanbul. The aqueducts damaged before were repaired between 1860 and 1865. In 1863, the engineer M. Gaitan d'Ostoya published a report about waters which was called 'Altıncı Dairede Sular; Yokluğu ve Çareleri' (Waters in 6th District, Lack of Water and Remedies). The paper includes information about the water systems for providing fresh waters to the city, streams, artesian wells, wells and water drainage (Oğuz, 1998). Supplying fresh water through water basins by pump stations and water distribution lines. The Terkos Water Company in 1870s and 1880s and they were the proposal of Eugene Haussmann (Çelik, 1984, p.96; Yıldırım, 1994, p.19). The company's importance came also from its serving for Dolmabahçe Palace and the Yıldız Palace. The Terkos Pump Station and İstanbul Water Company has been first and significant infrastructural developments.

Fresh water sources like Çıçır, Hünkar and Kestane had been also used for recreational facilities in İstanbul until they were channeled, controlled or urbanized as Kaika (2015) argued about this new relation of nature and city, stated below:

'It signaled the moment when nature's water could be controlled and channeled at man's will and announced a new relationship between nature and the city... However, the same process that liberated the city from the constraints posed by lack of water also signaled the city's perpetual dependency on the production of (new) nature in order to sustain its life, its form, and its metabolism. Now water not only could, but also had to be tamed, managed, channeled, and redirected in order to sustain the city's growth and expansion over space and in time'(p.95).

While exercising metabolism of the urbanization practices of fresh water in late 19th century's geographical context, interesting discussions start at this point for

emphasizing the shift in the materialized context after WWI. According to Kaika (2015, p. 284) in regard to the railroad investments in Athens, funded by Western countries, the colonial powers of 19th century, fresh water infrastructure did not get priority in their capital investments until the end of WWI. For instance, the city of Athens could not find a Western investment for bringing fresh water concerning population growth and increasing demand until the end of WWI (Kaika, 2015). Besides, the city of İstanbul watered by a company with Western capital investment concerning supplying water to Pera and Bosphorus villages like Beşiktaş via the establishment of secondary pump stations like Feriköy Pump Station.

### **Flows of Disease**

Trying to grasp diseases and public health issues in Ottoman history through interdisciplinary approach is a quite new concept and hard to tackle with it in urban studies concerning İstanbul. White is a history scholar, whose work is (2010) trying to transcend disciplinary boundaries about diseases in Ottoman history with the help of new insights in environmental history. White's (2010) work about the spread of diseases in the geography of Ottoman Empire and relations of socio-ecologic conditions in the period of Little Ice Age is important regarding epidemics and environmental conditions gives us significant insights. These insights important for the context of urban political ecology of disease in İstanbul for this study, White (2010) stated that:

'... We now have a far better sense of the interaction among disease mortality and such phenomena as weather, prices, nutrition, and urbanization as well as the various official policies and social conditions that tended to either exacerbate or alleviate such crises' (p.552).

The widespread vault sewages were built as an infrastructural development which was direct relationship on public health and Cholera disease after the legislation about urban structuring (Turuk ve Ebniye Nizamnamesi). Concerning medicine and public health care in the Ottoman Empire, nineteenth century was important. Concerning preventive medicine, first institution was proposed with the quarantine office in İstinye in 1831 (İhsanoğlu, 2002, p.504). Furthermore, the first health care management (Beynelminel Sıhhiye Meclisi) established in 1839. Ottoman Government was made the 1888 Regulation about health of waters and established quarantines at the waterfronts.

All of these epidemics that were threatened the public health and resulted with widespread loss of lives have intricate relationship with the unequal development and socio-ecological conditions of the city. Inadequate hygiene conditions was nourished due to lack of sewerage system which was came to the city very late as well as unevenly implemented. Fountains and bathhouse could be seen at the Bosphorus related with the supply of fresh water. If you need to open, we can say that establishing sewerage along the Bosphorus, which was important as much as providing fresh-water, was much before the part of İstanbul Peninsula (Çelik, 1984, p.99). Moreover, inadequate quality of fresh water was observed in the 1890's İstanbul for public usage (Yıldırım, 1994, p.17). Decline in hygienic conditions and sewage of dwellers intervene fresh water sources resulted with loss of lives by epidemics. Preventive conditions and regularizations could not function properly at the entire urban landscape of İstanbul.

## Epilogue

Concerning İstanbul; on the one hand, one can lost in the marvel of İstanbul' greatness with the countless ships along the waterfronts, crowd of a great city, intense blue of Bosphorus, many beautiful species of fish and birds through the waterfronts, walking along the Grande Rue de Pera or Büyükdere Promenade, enjoying fresh water and gas lighting in the nights, sea baths in summer, green environments on the top of the beautiful hills, feeling the day in a recreation spot, developing economy with foreign relations and the first capitalist pioneers; on the other hand, one can lost in the chaotic and shocking environment of an overcrowded city with the city's first boom in 1840's, frequent unavoidable (!) great fires of İstanbul, dead-end streets, burned sites in every corner, sewage of neighborhoods intervene the fresh water bends, dirty streets, decline in hygienic conditions, cholera disease with loss of many lives, inadequate access of fresh water, decline of economy with the result of de-industrialization, and the unfeeling isolation of palace people and its environments with the rest. Literally, these two sides of the coin are possible at the same time like many other cities in the Europe and the World between 1839 and 1923. Besides, latter socio-ecological landscapes of the city of one side of the coin is not so much told and exercise in urban theory regarding the period for this study in which I try to problematized and exercised. On the contrary the 'westernized' developments have been told so far, not the uneven geographies of this environment. At this point, the perspective of urban political ecology, and its deeper concern for -who wins and losses in the uneven landscapes of particular socio-ecological relationship- can help us.

This study tries to offers a different reading and further insights about the waterfront transformation in İstanbul by considering lively metabolism of the city by taking both inner lands and the shore as a dialectical continuum. Moreover, this tendency can give us the knowledge of socio-ecological insights and changes of the ideology of nature such as how was the metabolism of the city's ecosystem function and uneven production of nature at that period briefly. For instance while some fancy parts of the city enjoy with the fresh water, sea-baths, street lightening at nights, highway connections, clean environments and public parks (regularizations); the other parts where the common people live could not effort to reach them. And the reason why some parts of the city has chosen for new attempts for 'regularization' can be explained by imperial living location (Dolmabahçe and The Yıldız Palace), and the privilege position of palace people and bureaucrats as well as huge effort to sustain power of the Palace and its environment. We cannot talk about literally a 'public good' concern and 'right to the city' context at that period in modern manner. In this study, it is believed that all the attempts which influence the transformational regularizations of the city were neither totally for the sake of public good, nor the obsession for westernization.

First vision of a grand-scale land reclamation project could be seen between Yedikule and Topkapı area at this paper, which will be radically influenced future projections of waterfront landscape of İstanbul in 21st century. We have witnessed the transformation from many bay areas – as recreational spaces- to private spaces such as waterfront palaces, and from stream lines to the road lines. Concerning urban political ecology context it can be said that, very first production of nature as space by urbanizing nature in the capitalist mode of production under uneven

conditions can be seen in this period. I argued in this study that common places, re-distribution of natural resources and cataclysmic events as well as residential areas had been the subject to the preliminary insights of the uneven production of nature as space and the shifting metabolism in the 19th century. Shortly, I argued in this paper that common places, re-distribution of natural resources and cataclysmic events as well as property relations had been the subject to the preliminary insights of the class-based differences and the shifting urban metabolism in İstanbul, in the 19th century.

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# THE ANCIENT ATTIC LANDSCAPE, AS REVEALED BY THE ATHENIAN AGORA

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**Keywords:** landscape archeology; ancient architecture; ancient Greece; Agora of Athens; remains;

## Abstract

**Problem statement/ Motivation:** This paper investigates the relation among the buildings of the Athenian Agora and their connection with the surrounding natural environment. In particular, the paper questions how the design of the administrative, philosophical, educational, social, cultural and economic center of the city set its relationship with its contemporary settlement and the "Attic landscape", and traces the evolution of this relationship in the current environment of Athenian metropolis. The original thinking behind the design is investigated by means of the theories exposed in two major works, Vincent Scully's "The Earth, the Temple, and the Gods: Greek Sacred Architecture" and Constantinos Doxiadis' "Architectural Space in Ancient Greece".

**Approach/ Methodology:** The Agora of Athens, in contrast to other ancient public settlements, has no fortification and is practically delimited by topographical and natural elements combined with buildings. This will noticeably affect the approach, as the above-mentioned theories are deeply formulated and based on topographical elements and spots on the trace of the fortification. Graphic material, combined with theoretical elements is used to investigate whether the theories are applied in the example of the Athenian Agora or not, and photographic material in collages allows evaluating whether the contemporary Athenian environment permits the modern visitor to realize the relation of the buildings with the landscape and the city of its time.

**Results/ Feasibility:** The material reveals that the theories can be potentially perceived in the original plans of three phases/periods of the Agora. The collages and photographs allow a thorough investigation of the relations among the remains, as they are preserved, as well as the topography. Additionally, they permit

a new understanding of the way the modern urban fabric, as it has been formulated through the years, interferes to this relation. The results of the paper aim to serve as a tool of understanding modern cities through their historical remains, as well as a model of creating the base/starting point to compose a pilot proposal that describes a holistic approach of the ancient -Greek- world, and the -Attic- landscape, through the experience of archaeological sites.

### **How the ancient Athenian remains “rebuild” the ancient Attic landscape in the eye of the modern visitor**

This paper is part of a wide-ranging investigation on the ways in which the natural landscape has affected the design of the ancient Greek public spaces, such as the sites of worship, questioning whether their integration in today’s urban fabric makes it possible to perceive this relation nowadays. Two major theoretical works, Vincent Scully’s and Constantinos Doxiadis’ theories, argue that the design of the ancient Greek temples did not only concern the planning of the building itself, but was also deeply linked to the surrounding landscape and they serve as the starting point to detect certain analogies and correlations that can be traced nowadays in the integration of the remains into the Athenian urban fabric. Three emblematical archeological spaces of the Attica region were chosen as case studies, due to their natural and functional characteristics. This paper focuses on the case of the complex of the Agora of Athens.

#### **Theoretical Works**

##### *Vincent Scully’s theory*

We will then describe American historian Vincent Scully’s theory on the way in which the ancient Greek temples and generally the spaces of worship fit into the natural landscape that surrounds them. It is developed in his book “The Earth, the Temple, and the Gods: Greek Sacred Architecture”, published in 1962. According to Scully, the mysterious divine presence is nowhere more clear than in its temple, where a unique union of natural and human occurs. That is why Scully studies the architecture of the temples through the religion that inspired them—a concept for which ancient Greeks did not use such a general word.

Everything started with the Earth, “The mother of all beings, the oldest of all... the mother of the gods and the wife of the starry sky” (Stevenson Smith, 1958, p.227) as was attributed by ancient Greeks and other ancient civilizations.

During Stone Age the basic religious worship was referred to the Earth as a mother and as a source of food and survival, especially of the herbivorous animals, on which depended the human presence on earth. Thus, the deep caves and holes in the body of the big goddess Earth were considered sacred places thus first sanctuaries were housed there. The holy herbivorous animals were painted on the cave walls so their image would be purified by the great mother. The cave paintings reveal respect and admiration for the animal, and hunting becomes a ritual. Herbivorous animals - apart from the horse - generally have horns, this characteristic becomes a sacred symbol of worship. The course through the passages of the cave that seem like a labyrinth was part of a wider ritual, a dance inside an architecture made by nature itself. The sculptures of female figures found in the caves depict mother earth, and are full of curves with the Mount of Venus well formed (Scully, 1962,

p.10). In the same way, the earth, the topography, the caves and the formations were understood as symbols on the body of the great mother that gave place for her children to exist, survive, live.

### **The landscape and the temple, the temple and the landscape**

As a result of a religious tradition that did not treat the earth simply as an image, but as the true motivating power that gives physical presence and form to the forces that define the world, the prehistoric Greeks considered some natural elements or their combinations sacred. So they identified them with certain gods or considered them their incarnations. It is noted that various buildings in general are located and interrelated in such a way as to reinforce, develop, complete or even oppose to natural elements (Scully, 1962, p. 1-9) .

So Scully argues that the temples have a particular sculptural power. They reside their surrounding environment exclusively with their external presence, creating a wider, complete environment with an externality that automatically renders them no-buildings thus “non-architectural elements,” repetitive forms, so harmonic and perfect that seem detached from the issues of everyday life. This happens due to the fact that temples were not meant to house man, but the image of God, who is immortal and therefore clearly differentiated from man and this god cannot be confined to an interior. Its glamor spreads to the wider landscape. The sanctity of the place, however, is not due to the temple. Instead, it was the deeper reason for choosing this place, as this deity already existed there as a natural force. The temple is the sculptural incarnation of the divine substance, as imagined by man, and expressed in nature. The landscape is stable, but as new volumes are built over time, the meanings change, grow, become clearer and more complete. Consequently, the word “design” is potentially too specific and static at the same time to describe such a dynamic of continuous evolution.

Both of them together, the temple and the landscape, are the basic ingredients of ancient Greek devotional architecture (Scully, 1962, p.1-9).

### **The symbols of the great goddess and their expression in the landscape**

The ancient Greeks retained some of their oldest traditions of their faith, from the Stone Age, in some moment of the history, the primordial emotions coexist in harmony with the liberated thinking. Since the Bronze Age (especially after 2000 B.C.) there are detected specific characteristics related to the construction:



Photo: Scully, Vincent, 1960

An enclosed valley that creates the feeling of enclosure by the Earth, as a child in the hug of the mother, a return to the goddess and a sense of return to the original matrix, and a sense of regeneration.

A conical shaped hill that is considered to be the maternal form of the earth.

A mountain with two peaks. Its characteristics may give different sculptural dynamics and point to different images: horns, the symbol of energetic powers, raised arms or wings, the mount of Venus or even two breasts. The V-shaped slit is related with the female sex in the statues of the goddess during the Stone Era. (Scully, 1962, p.11-16)

Because of their topography, these landscapes were considered closer to the center of life and power. The worship of the goddess had to do with the peace and domination of the earth's rhythms in human life and not with aggressive human behaviors, so for instance the Minoan palaces were lowly built and with no fortification, while the symbols of the great Mother were on hills. (Scully, 1962, .25-27)The aggressive male nature had a secondary role - the man was a lover and a son, but not a god. In the following years, though, when the male deities start competing the Divine Mother, their sanctuaries tend to take the place of her sanctuaries, so the beliefs of the primitive years can still be perceived in later sanctuaries like for example those of Zeus. (Scully, 1962, .36-40)

#### **Konstantinos Doxiadis' theory**

The Greek architect and urbanist Constantinos Doxiadis in his doctoral dissertation that was presented in Germany in 1937, carefully studied a total of 29 excavated places of worship in the ancient, classical and Hellenistic period (7th -1st century BC), located in Greece and the coasts of Asia Minor, and concluded that they were governed by exactly the same rules. Therefore, he argues that the ancient Greeks had developed a general strategy, a system of spatial organization and urban planning, based on the vision and human perception, rather than in geometrical relations. According to Doxiadis the landscape design in ancient Greece is based on a polar coordinates system, referred to the viewpoint of the visitor, that he called

“advantageous viewing point”: the first and most important position from where it is possible to supervise the space in its entirety. It is usually located in the main entrance, the propylon.

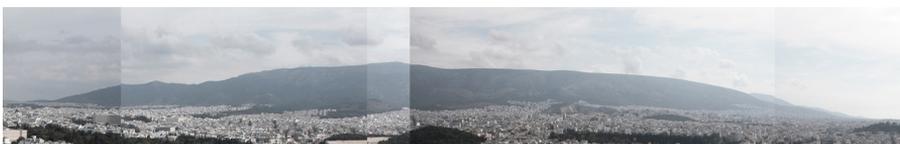
The general principles of the system he describes are the following:

1. ¼ of the building are visible from the Advantageous Viewing Point (AVP)
2. Important buildings are entirely visible by the AVP or not visible at all.
3. The location of buildings is determined by the angles and distances from the “vantage viewing point”, based on simple geometric proportions
4. A viewing field, often at the center of the overall, is left unbuilt and open to the surrounding natural environment. pointing to the direction the visitor should follow: the “sacred way”. In most cases it is directed to the sunrise or sunset, or in a specific direction defined by the local tradition.
5. The straight lines that define the corners of the buildings form angles, the top being the “advantageous viewing point”.

“Space is always divided harmoniously”. Relations between buildings are as simple as possible. The design is anthropocentric, It is a “space made of man for man”. The visitor is free to follow his own path: no infrastructure. The system presents variations on the advantageous viewing point, the grades of the angles, being divided in ten or twelve parts, the distances of the buildings, with combinations that reflect beliefs, knowledge and theories about the universe, the gods, the time, the world, the infinity and the religious practices. For example, the numbers 10 and 12 are important in religious, spiritual and mathematical beliefs, thus the geometry that is constructed in space divides angles and distances by these numbers. (Doxiadis, 1972)

### **The Attic landscape, as described by Vincent Scully**

The Attic Horizon is defined by the “horn-shape” mountain of Parnitha in the North, and the mountain of Hymettus in the East, the most important among the holy mountains of Attica, forming a wide-open pair of horns in the North. The strong cone-shape hill of Lycabettus is right on the axis of Hymettus horns and plays a dominant role in the Attica valley, which together with the sacred hill of Acropolis, Philopappou make part of the 7 hills that interrupt the Attic valley. Near the “horns” of Hymettus, there are excavated Hellenistic and Roman remains, and in the middle of the slit stands a large, natural column-shape rock, creating a contrast image. At the West, the Sacred Road (Iera Odos) in Greek, leads to Eleusis, where the mysteries of the goddess of fertility of the earth and of life after death, Demetra, took place. The sanctuary of Eleusis is built opposite the double-top mountain of the island of Salamis, and to the east of the hills of Kerata, which, as their name implies, has also the shape of horns (Kerata means horns in greek). To the north, the view opens to the twin hills of Megara, where the temple of goddess Demetra was later built (Scully, 1962, p.27-30).



### The Agora of Athens

The Agora was the administrative, philosophical, educational, social, cultural and economic center of the city of Athens. Many graves have been excavated in the area, and during the Geometric, Archaic and Classical period the area was intensively constructed. The Ancient Agora was crossed by the Panathenaean street, that was walked by the great procession for Panatheneia, a celebration established by Peisistratos that was happening the third year of each Olympiad.

The history of Agora during the years that are mentioned in the above described theories, is divided in three main periods, during which the complex consists of the following erected buildings and structures:

1<sup>st</sup> period: 5th century B.C.

- the temple of Hephaestus
- the Old and New Parliament
- the Stoa of Zeus
- the Royal Stoa
- the Tholos
- the Strategeion
- the altar of Twelve Gods and Eschara
- the court of Iliaia
- the North Stoa
- the Court (Dikasterion)
- the Orchestra

2<sup>nd</sup> period: 4th and 3<sup>rd</sup> century B.C. New buildings that were erected during this period are:

- the square peristyle on the north-eastern side
- the temple of Apollo Patroos
- the monument of the eponymous Heroes, in front of the Parliament.

3<sup>rd</sup> period: 2nd century B.C. During this period, the Agora changes a lot.

The Middle Stoa is built on the south, while the Iliaia court and the North Stoa are connected in one big building. To the east, the Stoa of Attalos and the Vima are built, and to the west the Metroon in the place that before was the Vouleuterion. The monument of the Eponymous Heroes grows and on the hill of Agoraios Kolonos appears the sanctuary of Ouranian Aphrodite and the Armory, next to the Temple of Hephaestus. (American School of classical studies in Athens, 1962)

In 267 AD, the Agora was completely destroyed by the Heroules invasion, while the new fortification of the city leaves the whole complex outside. During Byzantine times, the functioning of the ancient sanctuaries and the philosophical schools ceased. From the 5th or 7th AD century until 1835, the temple of Hephaestus was converted and functioned as an orthodox church. With the Ottoman occupation, the city expands over the Agora, but the Panathenean street remains and is being used. In 1869 the electric railway is inaugurated, and it passes over a part of the Agora. In 1931 the part of the settlement that covers the Agora is demolished and the excavations and restorations begin. In 1950, a dense planting is done in the area, as it remains today, by the American School of Classical Studies, using endemic plants.

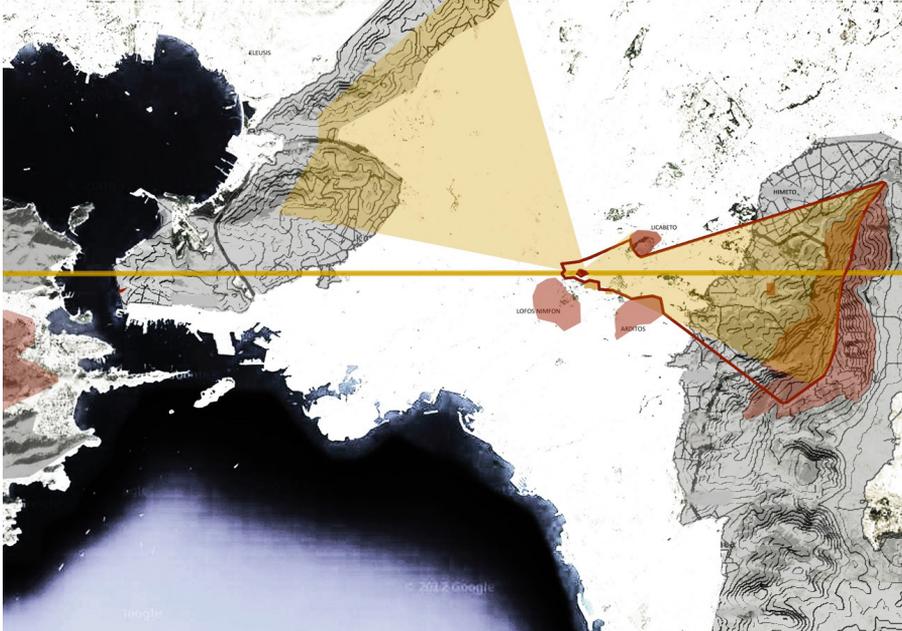
## The particular application of the above theories to the Ancient Agora of Athens

*Vincent Scully's theory applied to the Agora*



Plan background/base: Travlos, Ioannis, 1960

The Ancient Agora seems to be surrounded by a multitude of symbols of the Goddess. Several buildings are oriented towards the sacred horns of mountain Hymettus, which are however only visible from the hill of Agoraios Kolonos. There is a visual connection with the Acropolis and the Parthenon from the middle of the Panathenian Street, but also from other spots, as well as with the hill of the Nymphs. From the southern part, which is somewhat elevated, the view to the modern city is framed by the horn-shape mountain of Dhekelia. As seen in the plans, the buildings of the Agora are built around the perimeter of the complex, at least in the periods we are studying, creating, together with the hill Agoraios Kolonos, a protective cavity, that was enclosing the wooden Orchestra and the altar of the Twelve Gods, which is oriented axially to the Sacred Rock of Acropolis, specifically to the Parthenon.



The temple of Hephaestus was accessed by stairs or ramps, on the eastern side, in a way to give a far and wide viewing angle to the North and the Agora complex. The inside and the outside are treated as a whole, a movement from light to darkness and vice versa, such as the labyrinthine path that we encounter in the caves, into the body of the holy Mother Earth. The pilgrim is invited to enter, to pay his respects to the deities, and by going out to gaze upon the city that is under their protection. To the south the temple is oriented to the Acropolis, where the gods are enthroned, and to the North-East, to the Lycabettus hill. The axis of the temple passes in the middle of the two peaks of mountain Hymettus, whose shape frames the view to the East. Thus, the basin of the city seems to be stretched out in a cavity, protected by the earth.

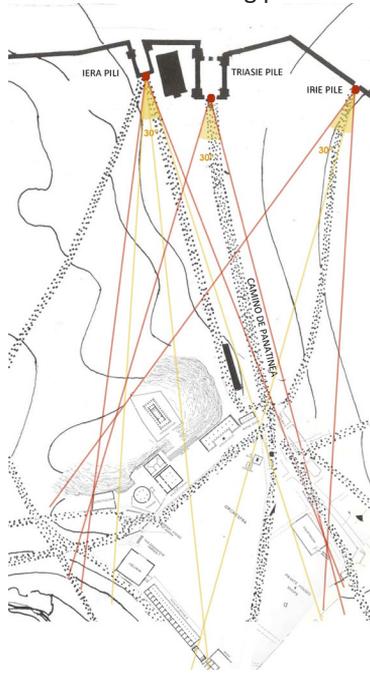
The temple was oriented and built to be seen by the front or in perspective by an angle view from low, as according to Scully, if viewed from any other aspect, the sense of its proportions is unpleasant: its columns are thin in relation to its high entablature, while the whole is filled with untreated contrasts. The eastern part overlooks the complex (Scully, 1962).

### **Konstantinos Doxiadis' theory applied to the Agora**

The Agora was not among the archeological spaces that were investigated by Doxiadis. The geometric and analogical relations according to Constantine Doxiadis' theory will be explored in the three historical periods that were described above and on two different scales: a big one, from the fortification gates, about 300 m away, and a small one, only in the complex. In the case of the Agora there is no fortification, so the Advantageous Viewing Points were initially sought. This was done by identifying access points and looking for specific relations. The following elements and geometrical relations functioned as well as a confirmation of the points' attributes. They were searched during the first period and kept steady.

1<sup>st</sup> period: 5th century B.C.

By the fortification gates: The entrance of this period is by the Holy Gate, the Thriasiai Gates and the Iries Gates. By all gates, the length of the complex extends into a view angle of  $30^\circ = 180^\circ / 6$ . Buildings are seen entirely or not at all, and when they are side by side, their edges touch. The Southwest side of the Strategeion is right on the line that connects it to the Viewing point of the Holy Gate.



Plan background/base: Travlos, Ioannis, 1960

In the complex: Advantageous Viewing Points:

Point A: Marking the longitudinal axis of symmetry of the Temple of Hephaestus (a) it intersects the Panathenean Street in its middle, and where exactly passes the axis of the street in front of the court building (b).

Point B: At the access to the Court street (Dikasterion). Indeed, b is vertical to a.

Point C: The point where Panathenean Street meets the street that comes from Dipylon, with line d parallel to line b and c parallel to a.

Angles and fields of view:

Point A: The rectangular triangle ABC is created, with c vertical to b.

The corner of the altar of Twelve gods towards Panathenean street, is on the side AC of triangle ABC.  $ag = az = bi = 36^\circ = 180^\circ / 5$ ,  $be = 60^\circ$  and  $bz = 45^\circ$ .

The street marked by the line z is related with the hill of Agoraios Kolonos. The axis of Panathenean Street gives unobstructed view of the Acropolis.

Point B: Line z passes through the middle of the altar and the circular construction in the middle of the Stoa of Zeus, and almost by H3.  $cz' = 18^\circ = 180^\circ / 10$ . The boundary of the temple, therefore, coincides with the Stoa of Zeus (lines z and h), as it is higher. Panathenean Street is an unobstructed view axis towards the Acropolis

The altar is oriented to point C, while its axis  $e'$  crosses it and intersects line  $\alpha$  at the point where the Orchestra was placed.  $de' = 36^\circ = 360^\circ / 10$

The corner H3 of Hephaestus temple is related to the northwest corner Z' of the Stoa of Zeus, which is seen behind, on a slightly higher level. The temple, along with its enclosure, is seen within an angle of view of  $30^\circ$

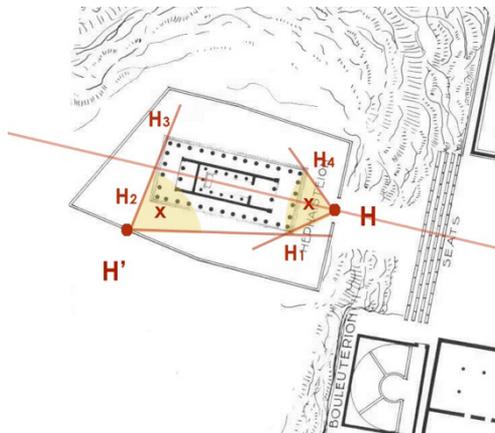
Line  $a'$ , parallel to  $a$ , intersects  $a$  in point E, exactly on the axis of Panathenean Street.

$$CEC' = 18^\circ = 180^\circ / 10, \quad CEI2 = 30^\circ$$

From point  $C'$ , the projection of C on the line  $a$ , the following relations are perceived: angle  $CC'G = GC'I4 = BC'A = 36^\circ = 360^\circ / 10$

From point  $C'$  the temple appears in a  $30^\circ$  angle

Point  $E'$  is the projection of E on line  $d$ . An isosceles right triangle  $CE'E$ , where  $AE'$  is its height.

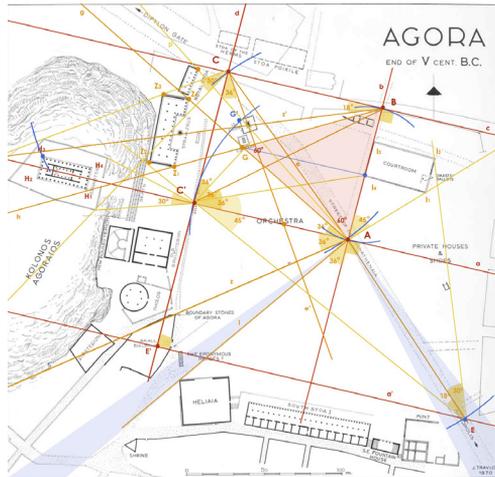


Plan background/base: Travlos, Ioannis, 1960

Distances and axes: The equatorial triangle  $ABG$  is formed, with corners the two points of view and the western corner of Eschara, where the straight lines  $g$  and  $m$  intersect.  $CA = AE''$ ,  $AG' = AC'$ ,  $AI4 = I4B = 42m$  and  $GI4$  is the height of the  $ABG$  triangle,  $AC = CH2$

The line that connects  $A$  to the north-eastern corner of the Royal Stoa, passes by the center of the altar.

Temple of Hephaestus: The temple has two entrances this period, an east and a south. The east is centrally located in its longitudinal axis. From the two entrances, the temple appears in field of view  $H1HH4 = H3H'H1$ .



Plan background/base: Travlos, Ioannis, 1960

2<sup>nd</sup> period: 4<sup>th</sup> and 3<sup>rd</sup> century B.C.

By the fortification gates:

Due to the location of the new elements, the views from the gates do not change significantly.

In the complex:

Angles and fields of view: Point A is located on the diagonal D1D3, and therefore bisects the angle of field of view D2DD4, and  $D1AD4 = 36^\circ = 360^\circ/10$ .

The temple of Apollo appears in an angle of view of  $90^\circ = 90^\circ/10$ .

Point B is on the diagonal D2D4, which bisects the viewing angle  $D1BD3 = 60^\circ$ .

From point C: The northern side of the building is on the straight CD1 - which connects it to point C.

$D2CD3 = D2E'D4 = 25^\circ$  and  $D2C'D4 = D1ED3 = 30^\circ$

The temple of Apollo Patroos reduces the scope of field of view from here to  $30^\circ$ .

Distances and axes:

$AC' = AD1 = AG = AK$ ,  $C'H3 = C'H2 = C'D3$ ,  $E'D3 = E'G'$

The axis of the square building passes exactly between the altar of the Twelve Gods and Eschara.

The points C', P (southwest corner of the temple of Apollo Patroos) and H4 are in the same line p, so from C' the temple of Hephaestus is seen in the same line with the one of Apollo Patroos.



Plan background/base: Travlos, Ioannis, 1960

3<sup>rd</sup> period: 2nd century B.C.

By the fortification gates:

From the Holy Gate, the entire complex appears again in angle of view of  $30^\circ$ .

However, from the Thriasia and the Ierian Gates, the angle increases to  $36^\circ$ .

In the complex:

Angles and fields of view:

Point A: The Stoa of Attalos is seen in a  $105^\circ$  angle range, separated by line a (passing through the Vima) to two corners of  $45^\circ$  and  $60^\circ$

$CR'P = 30^\circ$ , while RP passes from the north-eastern corner (G) of the altar.

Point B: The field of view of the Stoa of Attalos is a  $45^\circ$  angle, and its western side is related to the center of Vima.

Point C: The field of view for the Stoa of Attalos is  $30^\circ$ , while the line CR divides it into two angles of  $20^\circ$  and  $10^\circ$ , in a 2:1 ratio. The angles of view to the Middle Stoa is  $50^\circ$ , passing by the sides of the altar of Twelve Gods, while the line g -axial of the altar- divides it into two angles of  $30^\circ$  and  $20^\circ$  in a 3:2 ratio.

$$dg' + g'e + er = 30^\circ + 20^\circ + 10^\circ = 60^\circ.$$

The equilateral triangle CRS is formed. Point S is in the street that passes in front of the Mitroon, and is the first point of full view of the complex, when accessed from southwest.

From this new point, we observe the following: BS' is the bisectrix of GC'P, hence  $GS'B = BS'R = 60^\circ / 2 = 30^\circ = 180^\circ / 6$ , while  $RS'S = 15^\circ = 30^\circ / 2$

From C', the field of view of the Stoa of Attalos is  $45^\circ$  and starts exactly at the edge of the Middle Stoa.

Distances and axes:

The Stoa of Attalos and the Middle Stoa form a right angle.

The Vima is constructed on the line a- axis of symmetry of the Temple of Hephaestus.

The axis of the Vima with an east-west orientation passes through the monument

to the Eponymous Heroes and the Vims in front of the Mitroon, located at R ; its point of intersection with line d.

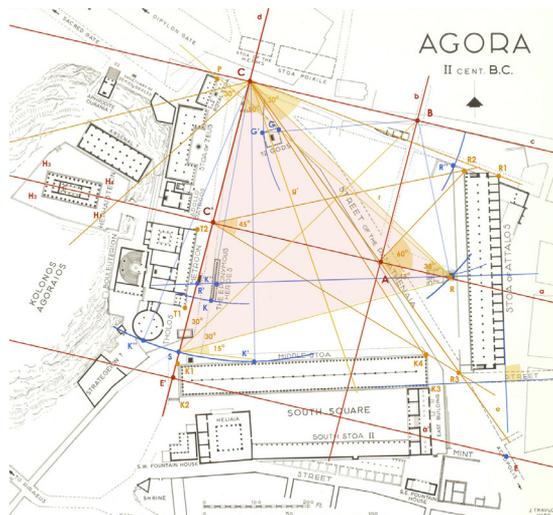
$$CR = CS = CK = CK'', \quad CA = CK = CR'', \quad BG = BR$$

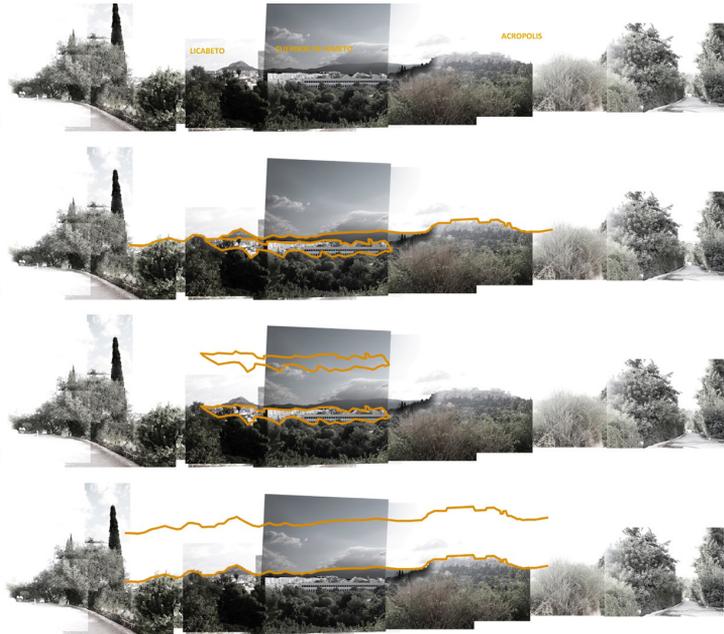
**How are the above theories perceived in the current state of the Agora in modern Athens**



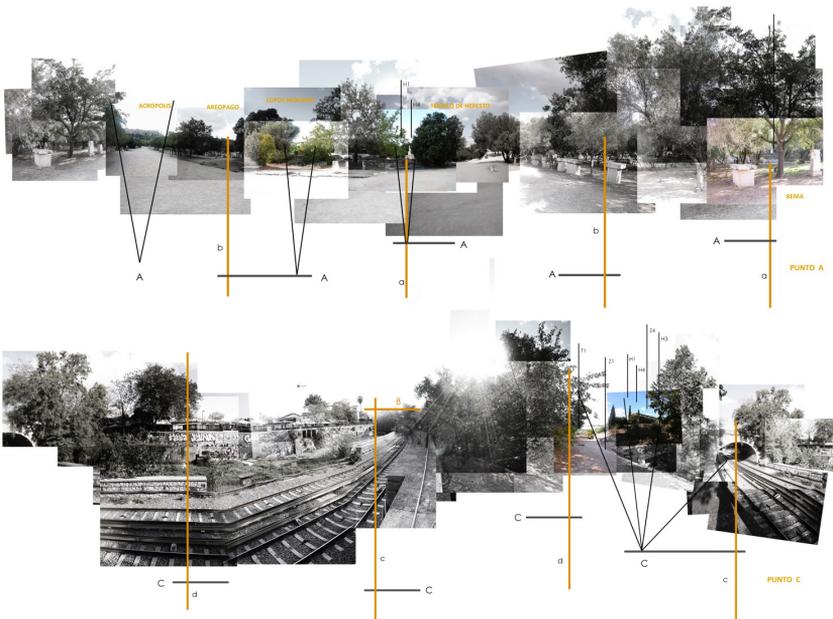
Vincent Scully's theory, as perceived in the current state of the Agora

Apart from very few exceptions, as the temple of Hephaestus and the Stoa of Attalos that was reconstructed, entire buildings are not conserved, except from foundations, maybe some low walls, and some parts that were found and restored, such as statues and columns mostly. So it is hard to really understand the relations in third dimension. Access to the temple is by the eastern side, as in antiquity, but today, unlike in antiquity, it is at both sides. The view of the city, protected by the mountains and hills that surrounds it, continues to exist, despite the size of the new city that has change dramatically, as obvious. The Agora itself seems protected in its cavity. The views towards Lycabettus, Acropolis and Hymettos, with the horn-tains on the axis of the temple, remain, from the temple and from many spots of the Agora, but in some cases they are blocked by the dense vegetation. General senses and large scale relations with the surrounding landscape, can be perceived today.

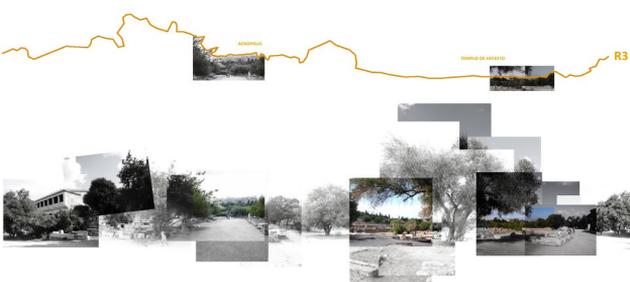
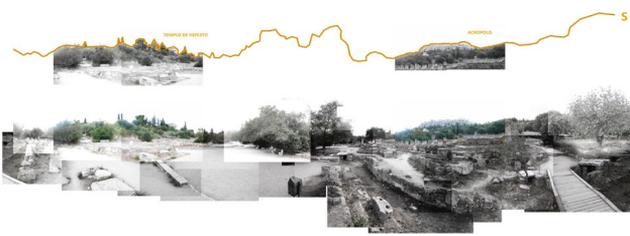
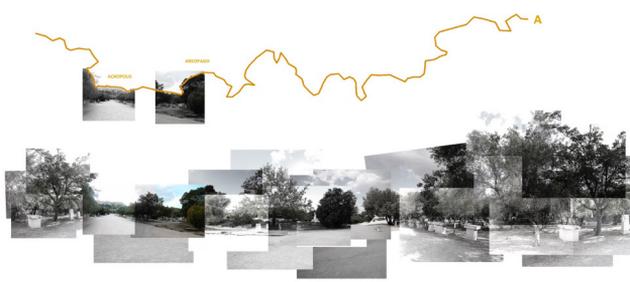




*Konstantinos Doxiadis' theory, as perceived in the current state of the Agora*



[ La señalización de los puntos es según el mapa de la teoría de Diosdado, al final del capítulo 13.3 ]



Due to the nature of the place and the study and the methodology that was followed to investigate whether Doxiadis' theory was applied on the complex of Agora, even the finding of the AVPs could be a criteria to realize the evolution of the situation. As almost nothing is saved apart from foundations and the dense vegetation is higher than the foundations, it is really hard to perceive this theory that is so deeply related to the boundaries of the buildings. The fortification of the temple of Hephaestus is not conserved neither. Moreover, new buildings were built after the periods of study, and some of their parts are conserved, like the Agrippas Odeion.

Point A was identified by the Panathenean Street, which is still the main axis of movement in the Agora, the temple of Hephaestus helps us to determine the axis a, and the Vima

The altar of Twelve Gods and the Eschara are not visible. The buildings, in front of the hill of Agoraios Kolonos, are not visible due to the vegetation and the Agrippas Odeion (built later).

The long views, as we said, have been preserved but mainly due to the fact that there is nothing left but foundations and there are not high constructions in the surrounding area. Thus, the view of the Acropolis is unobstructed via the Panathenaic Street and the Areios Pagos is also seen.

Point B is somewhere on the current train lines, and the closest approach point was just outside the Agora, at Adrianou Street. Next to the lines, the foundations of the Poikilli Stoa and the Hermes Stoa, together with the Stoa of Attalos, are the buildings that helped to locate the spot.

The Temple of Hephaestus and the foundations of the buildings in front of Agoraios Kolonos are not visible due to the high pines and the railway wall. In the background can be seen the Acropolis and the hill of the Nymphs.

Point C is calculated as being behind the bridge, and by the Stoa of Zeus.

From here, the foundations of Apollo Patroos and the temple of Hephaestus are still visible. The altar of Twelve Gods is not, as a big part is today in the railway space. From C', the temple, the monument of eponymous Heroes, the Mitroon and Apollo Patroos are visible, but not the Stoa of Attalos, because of the vegetation.

From point E' The foundations of Iliaia and Middle Stoa, the Stoa of Attalos and the temple of Hephaestus are visible.

## Results

The graphic material -created according to the theoretical sources and in situ research- leads to the conclusion that the buildings of the Ancient Athenian Agora complex are deeply linked to the surrounding environment, and that there are geometrical relations among the buildings that reveal an underlying internal design.

It is most likely that the wisdom of ancient Hellenic civilization has ensured profound awareness to use both systems/ theories in combination. Starting the construction of the devotional complexes from a much larger scale that reached the horizon, and proceeding with clarity and rules to the smaller scales, without ignoring any element. In such a culture, with the philosophical, geometric and mathematical knowledge and evolution we know, randomness is likely impossible, in an architecture whose own body aims to be the divine presence on earth, thus physical elements, which are viewed as divine incarnations, can only be taken

into account. In order to combine the existing landscape with human creation, geometric, philosophical and aesthetic rules to produce buildings that still are architectural archetypes worldwide, it is obvious that ancient greek thought can only be characterized by a complexity that is maybe difficult to comprehend by the modern observer and investigator.

Thus, together with the rest of the cases investigated, It is concluded that the Attic landscape and topography are deeply related to the design of ancient Greek architecture of worship, though the contemporary Athenian environment dramatically affects the perception of this relation among the buildings and between the buildings and the landscape, in the eyes of the modern visitor. The complexity of the urban fabric makes it difficult to perceive and imagine how the topographical elements once affected the construction. It is necessary to consider a design process that will achieve as a first step the regeneration of the experience of the ancient landscape, in order to make it possible for the modern visitor to truly understand and experience this strong link between ancient remains and surrounding landscape, thus to experience an ambient and discover a world, rather than just see stones.

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# CONSTRUCTION AND RESTORATION OF GREEK ORTHODOX CHURCHES IN ISTANBUL IN THE 19<sup>TH</sup> CENTURY

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## **Abstract**

Istanbul with its privileged position has been home to many communities throughout its long history. Different ethnic groups have lived together, thus creating a remarkable architectural diversity. Periodic maintenance and basic restorations have been undergone with the concern of sustaining the use of structures. Through those restorations, architectural diversity was kept and left to future generations. The Greek Orthodox community, the major part of the non-Muslim population was perceived as the historical heritor of the Byzantine Empire. Their churches could survive with the restoration works, and sometimes reconstructions. Until the Tanzimat Reform Era, construction of new churches was legally forbidden; only the existing churches could be repaired or reconstructed according to the Ottoman regulations. In the 19<sup>th</sup> century, there were many social, economic, and political reforms in the Ottoman Empire. The actions towards the equality and freedom of the non-Muslim communities were taken during this period. The Tanzimat Edict issued in 1839 stated that the minorities living in the Empire would be given equal rights with the Muslims and it granted an important assurance for those groups. With the 1855 Vienna Protocol, new rights and privileges were granted to the non-Muslim community. In 1856, with the Islahat Edict, which reinforced the Tanzimat Edict, everyone was free in religious belief, worship and education. The Greek community, which had a significant role in the Ottoman Empire's international diplomacy became more important in the 19<sup>th</sup> century. These political and legal reforms affected architectural and urban organizations and provided privileges for the restoration and reconstruction of churches. In the new spatial formations of the changing city, the majority of Greek Orthodox churches, whose existence dates back to earlier periods, were reconstructed or restored in the 19<sup>th</sup> century. In this study, the construction and restoration processes of the Greek Orthodox churches in Istanbul in the 19<sup>th</sup> century will be analyzed in the light of archival documents and

constructional activities of the non-Muslim structures will be studied. This study will also attempt to clarify the understanding of architectural conservation in the Ottoman Empire in the 19<sup>th</sup> century.

**Keywords:** Greek Orthodox Church, 19<sup>th</sup> Century, Istanbul, restoration, construction.

### **Greek Orthodox Community in Istanbul**

The majority of the population was Greek before the conquest, in 1453, of multi-layered Istanbul. It is known that after the conquest, Sultan Mehmet II settled the non-Muslims from Anatolia and Balkans to Istanbul (Mantran, 1991, p.45). The communities settled in the city as groups where they came from and gave the origins' names to their new neighborhoods (Mantran, 1986, p.46). The immigrants were settled either by the sea or by inland depending on their lifestyles. Golden Horn was the first choice for the seaside settlement. The craftsmen and professionals settled in the city center whereas others in the surrounding villages (Karaca, 2006, p.24).

The Greek Orthodox community, which had a long existence in Istanbul's privileged position, had settled in various parts of the city. In addition to the Golden Horn, they settled in Kumkapı (Kontoskàlion) and Samatya (Psamatheia) districts. Greek Orthodox communities had been living close to the churches. In 1602, Hagios Georgios Church in Fener (Phanar) became the patriarchate center and that increased the significance of the district. Other than Fener district, the Greeks had been feeling more comfortable in their churches that worship with their religion (Michaud and Poujoulat, 2014, p.65). As Greek Orthodox communities were familiar with many European languages, they used to work as translators in the government. Their positions in the government resulted in an aristocrat group that was called as Phanariotes (Demirağ, 2002, p.17). However, in the 18<sup>th</sup> century, some of Phanariotes left Fener and settled by the Bosphorus shore, like, Arnavutköy (Mega Revma), Tarabya (Theràpia), Büyükdere (Vathys Kòlpos) and Yeniköy (Neohorion). Wealthy Phanariotes were moved to Pera (Tekeli, 2012, p.538).

Orthodox population in Istanbul increased in the 19<sup>th</sup> century. This is due to the loss of land in the Balkans, the Caucasus and Russia, and the participation of the communities such as Romanian and Bulgarians in the Ottoman lands even though their ethnic origin is not Greek. During the second half of the 19<sup>th</sup> century, the largest concentration of Christian inhabitants, Greeks, lived on the opposite side of the Golden Horn such as an old Genoese quarter of Galata and its extension over the heights of the European Pera. The districts of Fener, Cibali, Balat, Ayvansaray (Xyloporta) and Hasköy (Pikridio) on the other side of the Golden Horn were important coastal areas of the city, which had predominant Greek Orthodox population. Other Greek Orthodox districts were Kumkapı on the coast of the Sea of Marmara, Yenikapı (Vlanga) and Samatya, as well as neighborhoods close to gates Edirnekapı, Eğrikapı, Topkapı and Belgradkapı a little further inland. Outside the Byzantine walls, down the Marmara shore, through Bakırköy (Makrichori) and Yeşilköy (San Stefano), there were substantial Greek communities. The population census in 1885 showed that most of the Greeks have been living together with

Muslims. It is known that they lived in Beyazıt, Fatih, Çarşamba, Beşiktaş, Beyoğlu, Dolmabahçe, Üsküdar, Şişli, Kurtuluş, Kadıköy and Bosphorus villages (Karakuyu and Kara, 2010, pp.301-302).

After the independence of Greece, Tanzimat and Islahat Edicts, Greek Orthodox communities became more visible in the Ottoman Empire. The financial strength of the Greek community expanded, as did their social status and political influence. Istanbul, at least up to the end of the 19<sup>th</sup> century, was not just the capital of the Greeks in the Empire; it was also the national center of all Greeks. Many Greek-Ottoman citizens became successful in social and financial life so they had been appointed to significant administrative positions. They gained the confidence of the government; they acted as a mediator in business relations with European. Some of them became more popular by acting as merchant bankers. In addition, cultural life was formed within the wealthy and active Greek community. The community started to behave like a newly formed bourgeois class, the book publishing accelerated, and the theaters began to be staged. During this period, there were more than 80 churches and 500 holy springs (Eruzun, 1994, pp.365-366). After the 1870s, Greek communities have begun to institutionalize. This institutionalization process was carried out in line with the practices implemented in previous periods. During the Tanzimat period, with the centralization of the government, communities started to lose their administrative and financial freedom, which led them to focus on education, charity and religion affairs. Their concentration in those affairs resulted in institutionalization. When a nationalist movement began to claim rights over the Greek population of the Patriarchate, the area of education, charity and religion strengthened the ties of the Greeks with the Patriarchate (Gavraoğlu and Kanner, 2010, p.18). The Greek Orthodox communities, which developed themselves with trade, banks, professional units, crafts, education, philanthropy and politics, played an important role in the development of these areas in the Ottoman capital. In this period, there were also changes in the urban areas of Istanbul, and there was architectural independence for the non-Muslim population with new regulations. Because of this architectural freedom, Greek architects' activities increased in the city (Şenyurt, 2002, p.7). They were not only acting as project architects but also acting as contractors. This shows that they had economic power in the field of construction and were involved in the construction of large-scale state projects (Şenyurt, 2002, p.15). In addition to government structures, Greek architects had a say in constructing their own community buildings, such as churches and schools that were remarkable in the city. For example, during the reign of Sultan Abdulhamit II, Vasilaki Kalfa who was a palace architect, also constructed Taksim Hagia Triada Church, Ioakimion High School for Girls and Zappeion High School for Girls for his community (Şenyurt, 2002, pp.58-65). Moreover, as Vasilaki Kalfa, Istefan Kalfa who constructed the Dolmabahçe Bezmialem Valide Sultan Mosque and Ortaköy Mosque, also constructed Heybeliada Hagia Triada Monastery and Church and Heybeliada Hagios Nikola Church (Şenyurt, 2002, p.48). Besides these, according to *Annuaire Oriental* between 1880 and 1930, there were more than 200 architects in Istanbul. P. Fotiades K. Kyriakides, A. Neokosmos Yenidounia, D. Vasiliades, G. Couloulhros, P. Kampanakis, E. Ladopoulos were the most popular of those architects. They found out new building types, invested in the construction sector and actively contributed to the modernization and image of the city of

Istanbul (Colonas, 2000, pp.376-377).

### **Construction and Restoration of Greek Orthodox Churches**

After the conquest of Istanbul, considering the settlement layout of the city, it is clearly seen that all communities got together around their religious structures (Schneider, 1952, p.44). The Greek communities were also settled around existing churches and they kept up their worship and cultural belief in churches. Greek Orthodox churches, which were existing in Istanbul since the 16<sup>th</sup> century, continued until the Tanzimat Era, either by the reconstruction on the Byzantine ruins or by periodic maintenance (Karaca, 2006, p.364). Therefore, churches were shaped as a simple basilica with Ottoman restrictions (Karaca, 2006, p.363). They were surrounded by high walls that concealed the building (Tsilenis, 2012, p.110).

After the conquest of Istanbul, Sultan Mehmet II made a debt agreement with the leader of the Greek Orthodox community Georgios Skolarios Gennadios II. In this agreement, it was stated that their churches would not be touched or converted into a mosque. They would continue to do their religious rituals and worship as before. In consideration of those, the non-Muslims would not construct new churches and bell towers (Alemdar, 2012, p.26). If any place was conquered with peace in the Ottoman law, churches and similar places of worship would be kept and repaired. It was only possible to reconstruct the churches, which were completely destroyed, in their original size and features. However, it was impossible to construct new churches. First, they had to get permission from the sultan; they could only repair the places of worship with the Sultan's edicts. Before getting permission for the repair of the church, estimates were prepared to understand whether the building was existing. After the repair, a second estimate was prepared to understand whether new elements were added to the building and it was compared with the first one. At the time of restoration, the church had to remain in its original shape. The materials could not be changed, the garden could not be enlarged and additions were not permitted (Soykan, 2000, pp.147-149). Before the Tanzimat Edict, the symbolic signs, ornamentations and cross shapes could not be used on the church walls, and a dome could not be constructed (Karaca, 2008, p.40). Any land that was owned by the church could not be sold and bought. If any foundation building was devastated and the trustee did not repair and pay the taxes to the state, these places were given to anyone else. If the trustee repairs and pays the taxes, they were able to continue using it. Same rules were applied for the land of charitable foundations (Alemdar, 2012, p.32). Before the Tanzimat Edict, the churches, which were neglected for a long time, had a danger of collapse due to the environmental conditions. Then they were repaired comprehensively. For the restoration process in this period, first Shayk al-Islam gave permission before the sultan (Şenyurt, 2012, p.71). During the restorations, materials of the previous building were reused. It was not possible to add windows or doors. If the church was reconstructed before the Tanzimat Edict, all dimensions had to be the same as it was indicated by the Ottoman administrator. All façades and sizes had to be controlled by the attendants (Şenyurt, 2012, p.13). Due to political and social conditions, there were cases in which repairs could not be processed until the church and community structures collapsed and the buildings were in danger of collapse. According to this, the restoration or reconstruction of more than one church was sometimes

indicated by a single document in order to meet the demands of the patriarchs (Şenyurt, 2012, p.30).

After the developments started with the Westernization movements, there have been improvements in the regulations concerning the construction of a new church and the restoration of the churches with the Tanzimat Edict. During the reign of Sultan Mahmut II (1808-1839), the ban on the Christians to build a new church was abolished and changed on the necessity of the Sultan's edict for repairs (Alemdar, 2012, p.77). The process that began to change after the Tanzimat has become apparent with the Vienna Protocol of 1855. With this protocol, non-Muslims also gained new rights for the restoration of their buildings and the construction of new places of worship. Non-Muslims would have been able to repair their sanctuaries without permission, and even to build new churches in areas where there were many Christians. However, in spite of this notification, it was stated that a license should have been obtained from the Sublime Porte for repair and new construction with a Hatt-ı Hümayun dated March 4, 1856 (Madran, 2002, pp.33-34). In the nineteenth century, the most important document governing the conditions under which the congregation institutions of non-Muslims, such as churches and schools, were to be built or repaired was the Islahat Edict. Construction activities of the congregation buildings corresponded to the second half of the 19<sup>th</sup> century, while the Ottoman Empire aimed to control these architectural activities with regulations. The location of the building to be constructed or repaired was determined according to the conditions such as the Greek population, the plan of the building, the dimensions of the building, amount of taxes to be paid and the construction costs (Özil, 2010, p.28). After the Tanzimat, it was necessary to show that there was a need for a church to be built, the land was a property or can be converted into a property, it was not close to the holy places of another religion, the planned construction does not go beyond the reported dimensions and qualities, and the funds for the construction or restoration should not have been obtained from the public (Şenyurt, 2012, p.90). The first step in the construction and restoration processes of the Greek Orthodox churches was to get a license from the government. The church trustee, if any, or the patriarch together with the community, used to ask for this license. In the license applications, details such as type of intervention, the need for it, the place where the church will be constructed, type of buildings nearby, owners of the lands around, number of doors and windows, and the dimensions should have been listed. The second step was the survey to determine whether the restoration or construction was really needed. After completing the survey, the results were being presented to the Sultan with a covering letter. Then Sultan added the manuscript indicating that the registration of the request was permitted (Alemdar, 2012, pp.44-59). Applications for the restoration of churches were generally deemed appropriate, and it was not deemed necessary to take a fatwa for minor changes, such as tile transfer, plastering, and renewal of glass frame and coatings. The structures that were insufficient compared to their community size were considered to be expanded and the structures that were considered to be suitable for expansion were also a subject (Alemdar, 2012, p.34).

The social life that was a result of the westernization period in the Ottoman Empire and the social system that was a result of the Tanzimat and Islahat Edicts influenced the lifestyles of the Greek Orthodox communities. These developments

affected architectural activities and there were changes compared to previous years. At the beginning of the 19<sup>th</sup> century, important developments were started in Greek Orthodox communities' architectural activities. During this period, attempts to repair and reconstruct churches increased. After the Islahat Edict, due to the abolition of the restrictions, new churches were constructed in many regions of the city with different plan schemes, construction techniques, ornamentation and stylistic features (Karaca, 2006, pp.364-365). Before the Islahat Edict in 1856, it was unacceptable to construct a dome, which was considered as a privilege of Muslim's places of worship. In previous periods, architectural features, plan schemes and building materials of churches were very similar to each other and the churches were simple in character. After the changes in the 19<sup>th</sup> century, the dimension of churches was extended and the ornaments were started to be seen on the façades and churches got an eclectic style.

### **Cases on Restoration and Construction Process of Greek Orthodox Churches in Istanbul**

Most of the Greek Orthodox churches in bad condition at the beginning of the 19<sup>th</sup> century. Therefore, it is known that most of the 96 churches in Istanbul that survived have been restored or reconstructed in this century (Figure 1). However, the political and social changes from the beginning of the 19<sup>th</sup> century to the last era of the Ottoman Empire affected the construction and restoration of the churches. How those changes have affected the architecture of the city are primarily observed on the structures, while the administrative and technical details are being examined with the help of archival documents.

Especially in 1830 and the following years, the construction activity of the churches increased. One of the reasons was the damages due to the reaction to the Greek Independence in the 1820s. These damages caused to collapse the roofs or walls of churches that could not be repaired for a long time due to financial reasons. After Greece became an independent state, the maintenance of the Greek churches in the Ottoman lands became more difficult due to the financial problems (Şenyurt, 2012, p.54). Sultan Mahmut II allowed the Greeks who left the city due to the Greek rebellion in 1821 to return their homes and repair their churches. Under the changing circumstances of the period, some grand viziers supported the construction and repair of churches (Karaca, 2008, p.50).

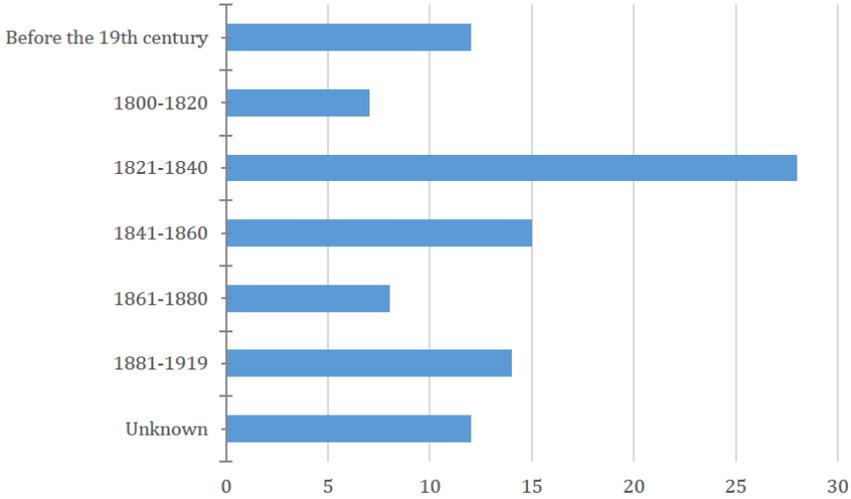


Figure 1. Construction years of the Greek Orthodox churches in Istanbul.

When we look at the distribution of the Greek Orthodox churches in the central districts of Istanbul today, it is seen that they are mostly in the district of Fatih (Figure 2). The reason behind this is the boundaries of the Byzantine walls were the most crowded part of Istanbul as the central settlement throughout history. The second highly distributed region is the Adalar (Prince's Islands), where the monasteries were located. The Bosphorus villages and the Beyoğlu district are the other settlements with Greek Orthodox churches.

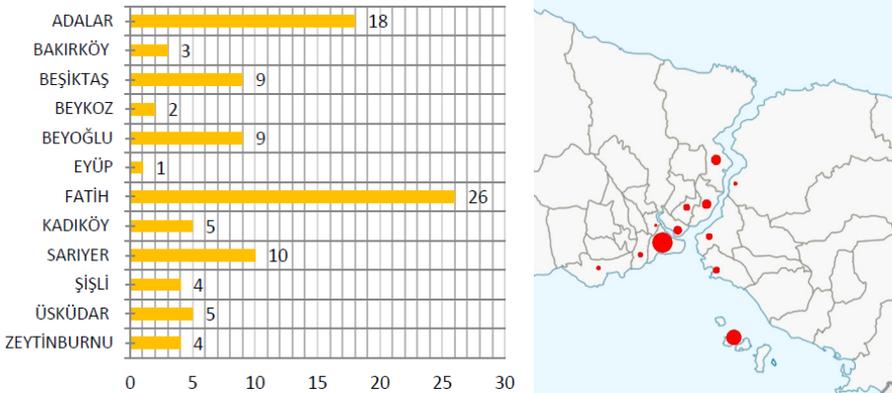


Figure 2. Distribution of the Greek Orthodox churches in Istanbul.

The churches that were constructed at the beginning of the century were the examples of simple, unpretentious, plan scheme like basilica as mentioned before (Figure 3). While these examples were not taken into consideration much in urban areas, the changes affected the architectural style of the Greek Orthodox churches and their position in the city. Construction activities of churches increased and the construction of monumental structures in the districts where non-Muslims lived

intensively started. In addition, bell towers were added to some existing churches. These construction activities, which affected Istanbul's urban outlook in the Westernization movements of the Ottoman Empire, are important indicators of the history of architecture. The changing process started to affect not only the scale of the buildings but also architectural styles as revivalist and eclectic styles for the Greek Orthodox churches.



Figure 3. Büyükdere Hagia Paraskevi Church (Sönmez Pulat, 2014)

With new construction regulations, the Greek Orthodox Churches were started to be constructed with a dome. Kurtuluş Hagios Athanasios Church (1855-1858) is the first example of basilica with a dome and eclectic style with Byzantine revivalism, neo-classic pediments, neo-baroque bell towers, orientalist arches and vaults (Şarлак, 2010, p.82). Taksim Hagia Triada Church (1876-1879) is another example of eclectic style with neo-Romanesque pediments on the east and west façades, neo-gothic rose windows, neoclassic and neo-baroque bell towers and cross plan scheme in square with a dome on it (Şarлак, 2010, p.84) (Figure 4). Besides these two, Kumkapı Hagia Kiryaki (1893-1895), Kumkapı Panagia Elpida (1895), Dolapdere Panagia Evangelistria (1877-1893), Beyoğlu Hagioi Konstantinos and Eleni (1856-1861), Arnavutköy Taksiarhes (1896-1899), Tarabya Hagia Paraskevi (1868), Kadıköy Hagia Triada (1905), Şişli Metamorphosis (1888), Feriköy Hagioi Dodeka Apostoloi (1868), Arnavutköy Prophetes Elias (1869), Kuzguncuk Hagios Panteleimon (1890), Burgazada İoannes Prodromos (1899), Samatya Hagios Georgios (Kyparissa) (1834), Ayakapı Hagios Nikolaos (1837), Kadıköy Hagia Euphemia (1830) churches are other examples of Greek Orthodox churches with a dome (Şarлак, 2010, p.92). Most of these buildings are the structures of the second half of the 19<sup>th</sup> century after the Islahat Edict. In addition to their domed structure, these structures reflect the effects of the architectural styles of the period.



Figure 4. Taksim Hagia Triada Church (Sönmez Pulat, 2018)

Most of the archival documents, which are important indicators of these changes and transformations in architecture, show that licenses were only obtained for repair or reconstruction. Some of these documents also include drawings about the interventions. The permission of repair or reconstruction of the non-Muslims buildings were arranged according to the construction of state structures. Reconstruction could be possible if the existing church was totally burned or needed more interventions for the restoration process. In this situation, it was impossible to add a new structure or space to the church and expand the building. Moreover, due to the financial requirements, old building materials had to be reused (Şenyurt, 2012, p.31).

For example, the drawings prepared in 1849 show the repair of Yeniköy Hagios Georgios Metokhion Church (Figure 5). Although there is a similarity between architectural plans of the church and basilica style, there are differences on structural system, spaces of windows and doors (Figure 6). According to the inscription of the church, the building was reconstructed on 1 May 1851 by the banker family Zarifi (Karaca, 2008, p.450, Şarlak, 2010, p.92). It shows that after getting the license for repair, the church was reconstructed on the same place and dimension with differences on architectural plan.

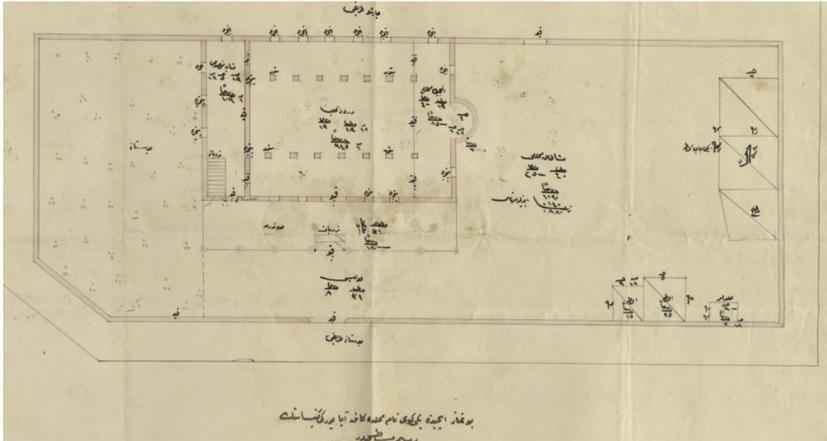


Figure 5. The drawing about repair of Yeniköy Hagios Georgios Metokhion Church in 1849 (BOA. A.)MKT. 228-53)

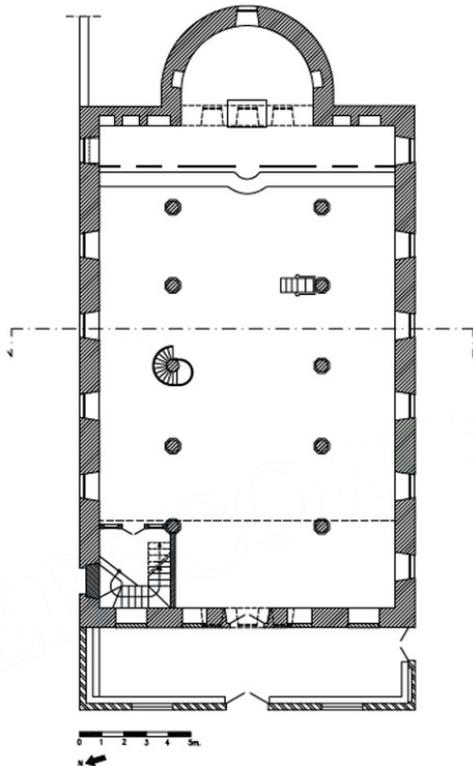


Figure 6. Current plan of Yeniköy Hagios Georgios Metokhion Church (Karaca, 2008, p.455)

The Heybeliada Hagios Georgios Metokhion church which was constructed as a monastery between 1583-1593 during the Ottoman Empire, was damaged by a fire on 14 April 1881 (Türker, 2008, p.53). The drawing includes the plan and façade

of the church for repair after the fire (Figure 7). Although it was not shown in the drawing, it is thought that small lead coating dome was constructed in this period. The church was reopened on 23 April 1882 after the repair (Türker, 2008, p.53).

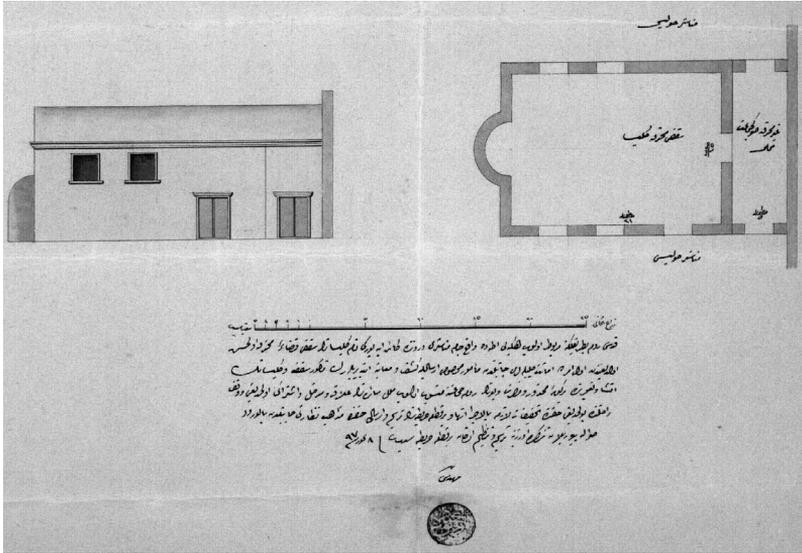


Figure 7. The drawing of repair of Heybeliada Hagios Georgios Church in 1881 (BOA.İ.DH.835-67208)

Kadıköy Hagios Ignatios Cemetery Church that was constructed in 1895 in Kadıköy Greek Orthodox Cemetery has an archival document dating from 1894 (Aleksandru, 1996, p.66). According to the drawing, despite the small dimension of the church, it has a cross plan with a dome and a neo-classical style with pediment as seen in other examples of the period (Figure 8). The current church is not exactly the same with the drawing, but it also has a dome (Figure 9). Although this church, which is in the cemetery, does not have much effect in urban outlook, it is noteworthy that the architectural features of the period were being displayed.

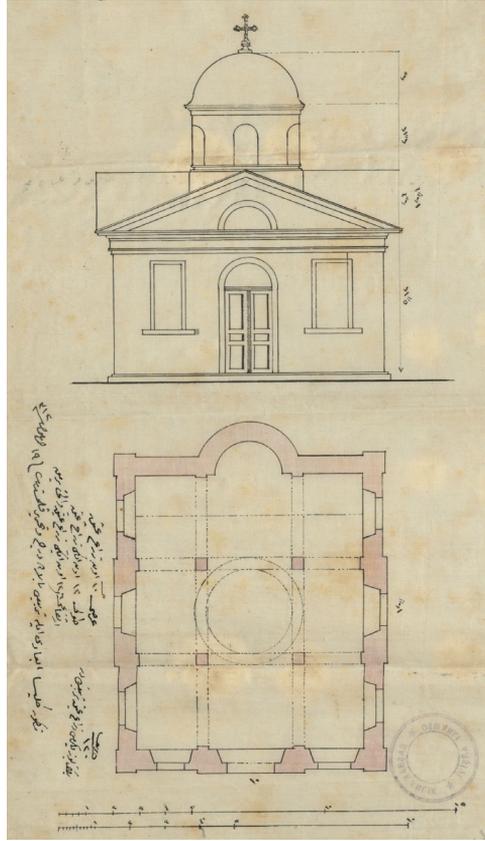


Figure 8. The drawings of the construction of Kadıköy Hagios Ignatios Church in 1894 (BOA.ŞD.2672-38)



Figure 9. Kadıköy Hagios Ignatios Cemetery Church (Sönmez Pulat, 2018)

Yenikapı Hagioi Theodoroi Church whose history dates back to older times, was constructed in 1830 according to its inscription (Karaca, 2008, p.145). There is a drawing in a document, which was prepared in 1897. The drawing shows that a wooden bell tower was replaced with a masonry one. In the drawing, there are two bell towers. Nevertheless, there is only one bell tower today (Figure 10). This bell tower indicated the location of the church in urban scale despite the surrounding high wall and buildings. Another important detail of the archival document is that only the intervened part of the construction is drawn. (Figure 11).



Figure 10. Bell tower of Yenikapı Hagioi Theodoroi Church (Sönmez Pulat, 2018)

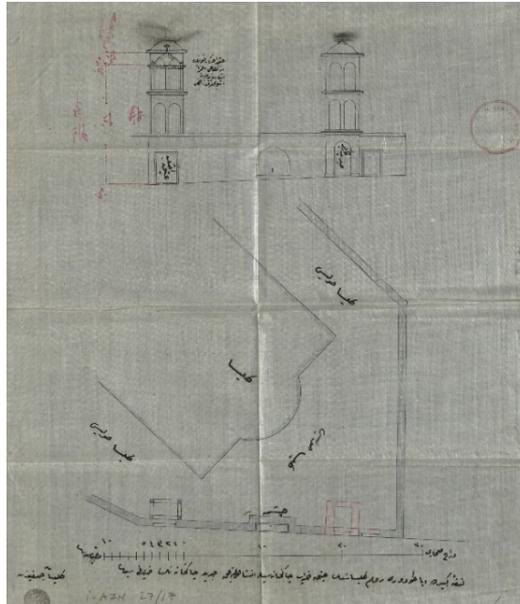


Figure 11. The drawing of Yenikapı Hagioi Theodoroi Church in 1897 (BOA.İ.AZN.27-17)

According to its inscription, the current structure of Samatya Hagios Konstantinos and Hagia Helene Church was built in 1805 even though the history of the church dates back to the 15<sup>th</sup> century. Another inscription of the church shows that the bell tower was constructed in 1903, while Sultan Abdülhamit II and Patriarch Ioakim III were on duty (Karaca, 2008, pp.195-196). The wooden bell tower and the new masonry one, with its plan and façade, are shown in the drawings (Figure 12).

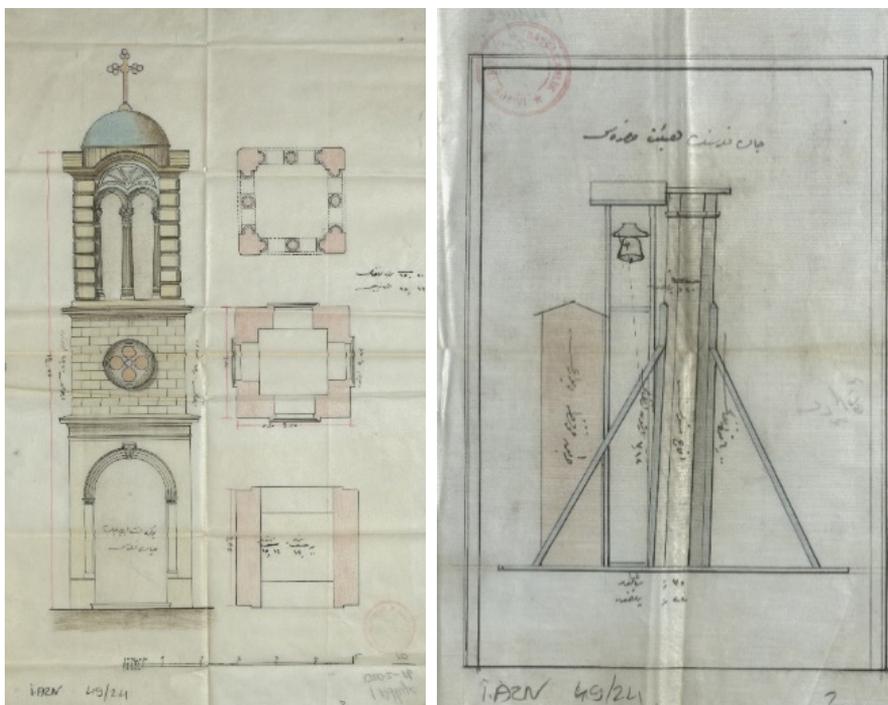


Figure 12. The drawings of the bell tower of Samatya Hagios Konstantinos and Hagia Helene Church in 1903 (BOA.İ.AZN.49-24)

Kuzguncuk Hagios Panteleimon Church whose history dates back to older times, was constructed in 1890-1892 by architect Nikolaos Zikos (Şarлак, 2010, p.75). There is a drawing of construction of the masonry bell tower in 1910. According to the drawing location of bell tower is shown in the site plan, view of façades and plan shapes are remarked (Figure 13). Even though the date of construction of bell tower and church were much close to each other, there are differences between the architectural styles. While the church has plain façade with Greek cross plan scheme, the bell tower has an eclectic style with floral ornamentation and relief of column on façade. The bell tower, which is the most influential architectural element in the perception of the church even today, created a significant change in the physical surrounding of the city when it was built.

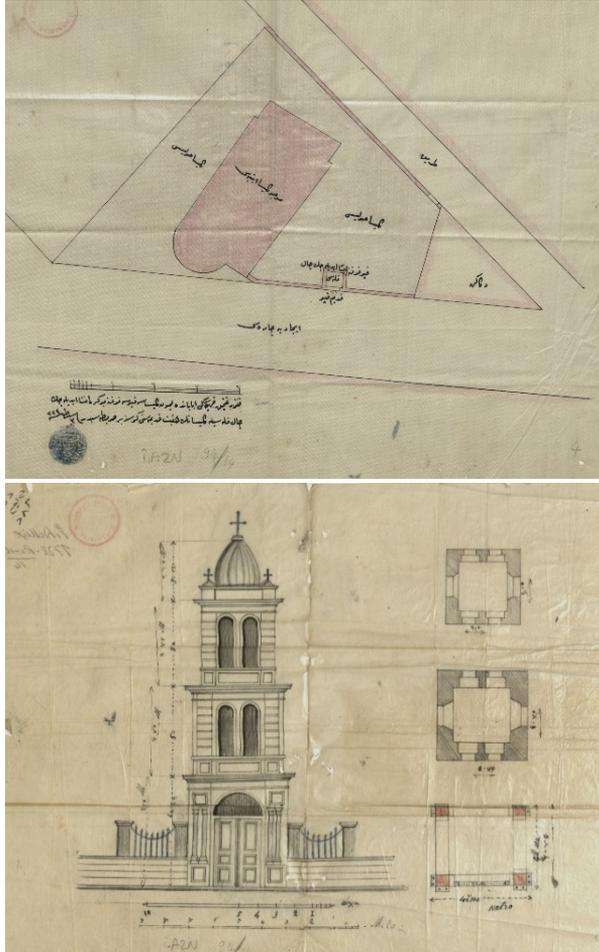


Figure 13. The drawings of bell tower of Kuzguncuk Hagios Panteleimon Church in 1903 (BOA.İ.AZN. 94-14)

The drawings of archival documents do not indicate all details of interventions. Some of the drawings shows only the intervention area of the building. The most important issue was the scale of the building. Therefore, the drawings have scale lines.

### Conclusion

The social, economic and political changes in the Ottoman Empire in the 19th century, also affected the architecture and urbanization. Changes in the construction activities of non-Muslim buildings have been seen, along with some legal arrangements. In the 19<sup>th</sup> century, Greek Orthodox churches that were damaged and repaired due to fire, earthquakes and inappropriate materials were conserved within the rules determined by the Ottoman Empire. The change of those rules due to some political developments were also reflected in the construction and restoration processes of the buildings. The architectural and urban

changes can be identified from the records of the period, archival documents and observations on structures. According to the archival documents, which conveyed important data about these processes, only written permissions were taken, and sometimes survey drawings were prepared. These drawings, which are prepared according to the intervention to be made, are important in terms of reflecting the architectural drawing techniques, architectural styles, conservation understanding of the period and architectural history, although in some cases they have not been fully implemented. These archival documents give information about previous conservation techniques while shedding light on the future interventions.

The Greeks are one of the earliest ethnic groups to have inhabited the area of Istanbul. One of the cultural heritage assets of multi-layered Istanbul is Greek Orthodox churches. The vast majority of the Greek Orthodox churches in Istanbul that could survive are 19<sup>th</sup> century structures. These structures owe their survival to extensive repairs and sometimes to reconstructions. Towards the end of the century, there have been differences in the scale and architectural styles of the Greek Orthodox churches within the city. Before the Tanzimat Era, the churches had a plain structure and were isolated from their close setting. After the changing rules, they have turned into architecturally expressive, freer in plan typology, ornamentation and structures that communicate with the environment. The changes of settlement of the Greek Orthodox community in city and the abolition of some legal restrictions had striking effects on the physical appearance of Istanbul. In this study, how the Greek Orthodox churches affected the changes in the physical appearance of Istanbul have been studied through the archival documents, valuable evidences of past repair and construction activities.

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# IN SEARCH OF A SYSTEM - THROUGH BEHAVIOURAL PERCEPTION OF AN URBAN STREET: HAWKING, BUYING & TRAVELLING

SAYANTANI SAHA

Environmental perception and human behaviour helps us in understanding the nature of urban spaces that we use. Sense of place depends on how users are using and defining it with their psychology. Nowadays, it has been seen that there are different types of encroachments of street vendors on the both sides of a main busy streets in country like India. We could see that every activity which are termed as 'encroachments' actually enriches the surrounding neighbourhoods and they have become a necessary part of life activities. Basically, the activities happening are 'Hawking' of different articles/foods/necessities and people are buying & travelling within the busy schedule of the street along. It is obvious that these activities on both side of the streets create pandemonium among the users. Thus, if we could find the components of these activities of hawking, buying & travelling in a busy street and frame a 'System' out of it, then may be changing, mixing and shifting of its components could make the system more flexible, smarter, which in turn can reduce the nuisances created by it more effectively. Since, the 'hawking system' is not an official stuff, though if we could just arrange its related activities, 'sub-systems' and components, it could serve the other activities of the streets in a little more hassle-free way, tending towards a smart solution. The whole point is dependent on the behaviour of the users at the time of the activities happening on a particular space. There is a question, "how people will react if their regular behaviour practice changes, will it be good to them or not?" Sometimes change in behaviour makes their activities easier, it is just the arrangement of what they want instantly, what their behavioural perceptions while doing the activities are or what they tend to. This paper will focus on how environmental perception, behaviour and understanding of a system can make the hawking and buying activities effective and smart up to an extent within a busy street.



# **CIVIL STRUCTURE SURFACE CRACK DETECTION USING MORPHOLOGICAL IMAGE PROCESSING**

**HAROON RASHID  
CEM DİREKOĞLU  
CANRAS BATUNLU**

Buildings lose their original shape due to deterioration. There is a need for monitoring structure surface cracks during the life span of concrete structures so that we can plan for future appropriate rehabilitation. Due to various realworld conditions for example shadows and lighting it is challenging to detect the crack and its severity. In this paper, we propose a method to detect the cracks on buildings using morphological image processing. We also calculate the length and orientation of the crack. The captured image is processed by a sequence of operations such as median filtering, Bottomhat filtering, thresholding, and thinning. Finally, the binary thin image is used to calculate the length and orientation of the crack.

This research uses Bottom-hat filtering technology which will sharp the image and minimize the high levels of surface texture. The proposed approach is implemented in Matlab software, and results show that the proposed work is effective.



# INVESTIGATION OF HOT-DRY DESIGN PARAMETERS IN SETTLEMENT: THE CASE OF GAZIANTEP

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## **Abstract**

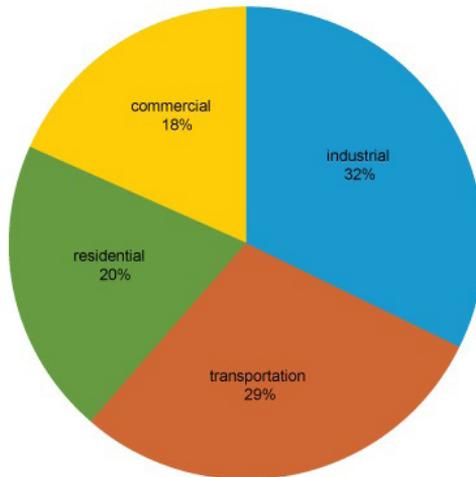
Climate change is an important problems faced on a global scale. Environmental problems are experienced in the global environment due to reasons such as population growth, rapid urbanization, and increase in energy use. It has increased the need for suitable and implementable planning and design approaches to address these environmental problems and to reduce the impact on cities. The local climatic characteristics played a significant role in the process of designing the physical environment. The inclusion of the characteristics of the natural and built environment in planning processes improves the living conditions and brings about a balanced growth. Considering the city, comfort and climate as a whole, we need to talk about climatic factors such as precipitation, sun effect, humidity and wind. If planning and design play the role of cities correctly, many climatic factors such as precipitation, sun effect, humidity and wind can be controlled. In this study, at first hot-dry climate of the five climatic zones in Turkey is selected and planning and design parameters for hot-dry climate it is determined by examining the literature in details. Gaziantep's traditional settlement and its settlement within the scope of ecological city project are examined comparatively within the framework of hot-dry climate parameters. As result, it is aimed to develop solutions to create a more prepared urban environment against the effects of environmental problems on a global scale.

**Keywords:** *design parameters, hot-dry climate region, traditional settlement, ecologic city project, Gaziantep.*

## 1. Introduction

Global warming problem experienced all over the world can be identified as increase in greenhouse gas emissions from human activities. The largest share of global warming is CO<sub>2</sub> emissions by % 55 percent from burning of fossil fuels. The reduction of CO<sub>2</sub> emissions requires the use of fossil resources and this requires the efficient and effective use of energy. Increasing the use of renewable and clean energies and effective energy use can help solve global warming and climate change.

When the sectoral distribution of world energy consumption is examined, it is noteworthy that transportation and housing sector has an important share. Considering the transportation and housing sector, land use, land form spatial decisions have an important share in energy consumption and thus emission (Figure 1.) For these reasons, the relationship between environment, energy and urban planning should be evaluated and energy integrated planning concept should be adopted in spatial planning and design. Integral and well-organized urban form, land use decisions, space organization, energy integrated urban planning in housing area planning will be able to reduce energy efficiency and emission release.



**Figure 1.** Shares of total energy consumption by the end-use sectors  
(Source: [https://www.eia.gov/energyexplained/index.php?page=us\\_energy\\_use](https://www.eia.gov/energyexplained/index.php?page=us_energy_use))

In order to cope with global warming and climate change, it is necessary to evaluate the built environment's interaction with the natural environment and natural resources and to integrate the built environment in the adaptation process to climate change. At this point, it is important that the built environment can be produced and sustained as compatible with the natural environment, climate-balanced and resistant.

In order to cope with the climate change problem, energy production and consumption should be carried out in a controlled manner. Considering the relationship between energy and space, it is important to utilize passive energy systems especially in planning and design of urban form. In the framework of planning discipline, energy integrated planning should be adopted. The integration between the scales from the micro scale to the macro scale, from the single building

scale to the neighborhood and the city scale, and the energy integrated planning concept should be adopted and implemented. With an energy efficient planning approach, local planning and design and planning approach compatible with the local climate should be developed from one building scale to city and country scale.

Parameters and factors rely on the site and building design and are important in terms of energy conservation and climatic comfort. These effects can be investigated under two groups: physical environment parameters, and design and construction parameters. Investigated physical design parameters are topography, climate, solar radiation, temperature, humidity, and wind. Investigated design parameters are; layout effects on the built-up area, orientation, location, building form, distance between buildings, building envelope and insulation, and natural ventilation.

In this study, hot-dry climate design parameters were investigated in residential areas as a result of a detailed literature research. In the next stage, the traditional settlement texture and ecological plan study of the province of Gaziantep were investigated. In the last stage, the traditional settlement pattern and ecological plan scheme were evaluated according to hot-dry design parameters.

## **2. Hot-Dry Design Parameters**

In order to benefit from the cooling effect of the wind in the hot dry climate zone, dominant wind direction is preferred. In general, the building is shaped as entrance, intermediate floor and upper floor and with the help of thick stone walls to reduce the effect of heat, small windows and high ceiling heights are preferred to ensure air circulation. Design and planning parameters of hot dry climate zone is investigated in details and tabulated in Table 1. according to these.

Table 1: Design and Planning parameters of Hot-Dry Climate Regions

Cities	Adiyaman, Batman, Diyarbakır, Gaziantep, Kahramanmaraş, Kilis, Mardin, Siirt, Şırnak, Şanlıurfa.
Aim	Avoid head increment in hot period. By means of increasing heat loss, decreasing solar radiation and increase evaporation.
Settlement Pattern	The lower parts of hills that face east and South must be selected for a between wind effect.
	The patterns must be thick and compact to form shadow from protection to sun effect. The pedestrain walkways must be shadowed by buildings.
	Settlement pattern should have a dense and frequent settlement pattern.
	Main roads and roads should be designed to increase natural ventilation by taking into account prevail wind direction.
Building Design	Dense and thick buildings must be design with courtyards
	Building should be designed in an adjacent structure to reduce solar radiation.
	Building must have low story
	To create a shade area bay window (cumba) should be used.
	Spaces around the courtyard must be in the east-west and north-south directions.
	The depth of the space can be increased to reduce the hot effect.
	Iwan-style (eyvan) structures should be designed to provide protection against the effects of the sun in the hot summer periods and to provide protection against the effects of wind in winter.
In order to ensure thermal comfort, the minimum and minimum floor area of the western and southern facades must be the maximum of the building depth.	
Orientation	The balance orientation is 25°-35° from south and east
	Optimum orientation is 18° from south, good orientation is 0° south to -40° southeast, acceptable orientation is 8° southwest -50° southeast.
Open Space	To create shade areas there should be a close relationship between residential areas and open spaces
	Narrow and high walled streets should be planned in order to increase the wind effect and reduce the sun effect.
	Open spaces should be designed frequently and in small sizes as they provide air circulation
Form	Optimum building size ratio 1:1,3
Planting and Landscape	Broadleaf and deciduous trees should be preferred to create shade areas.
	Planting must be applied in the courtyards and areas close to the buildings.
	Winding plants should be preferred to prevent heat loss in the facade and to keep dust from the air.
	Pools and water elements can be used to increase humidity
Facades and Openings	Facades of buildings must be narrow.
Materials	White colors can be used in buildings to reflect sun light.
	The materials used due to climatic factors vary. Natural and sustainable materials with conversion should be preferred. Basalt, limestone, adobe, stones should be used; In order to provide reinforcement in the structure, wood material with recycling should be used.

**Source:** This table is formed by compiled of the studies; Olgyay 1973, Ayan 1985, Ovalı 2009, Givoni 1998, Tookuç 2005, Karaca 2008, Owens 1986, Deringöl 2015, Oruç E 2017.

### 3. Case: Gaziantep

Gaziantep locates in South-East part of Turkey. Surrounded by Adana, Sanliurfa, Kahramanmaras and Hatay, such as the intersection of cultural and economic focus is a province (Figure 2). The region, where the civilizations, such as Mesopotamia and the Mediterranean were born, led the history of civilization with the fact that the historical Silk Road was on the route.

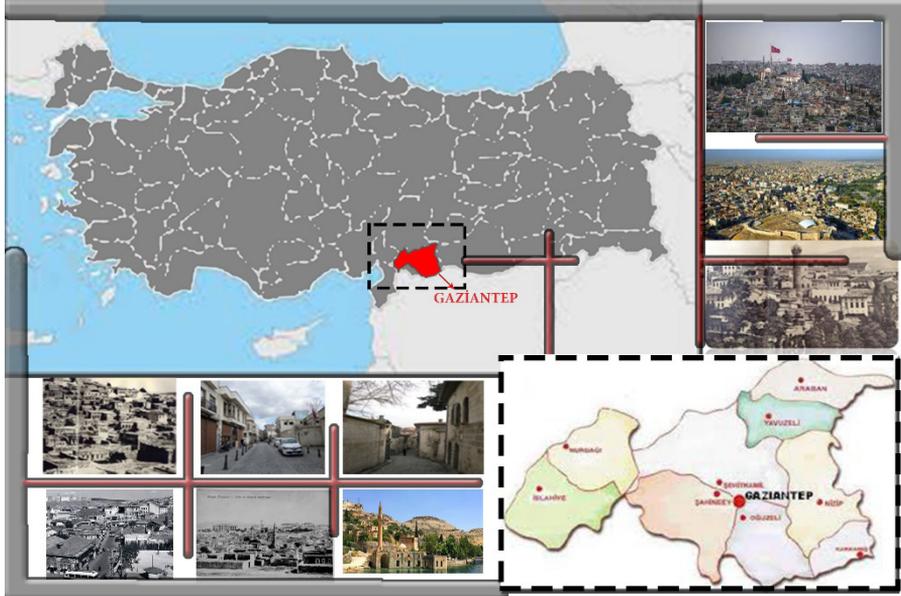


Figure 2. Location of Gaziantep

Hot-dry climate is prevailing in the area and winters are cold and rainy, summers are dry and very hot. In the hot-dry climate type; summer season is hot and dry, winter is cold, solar radiation density values are more than other climates, daytime temperature is high, night temperature is low, cloudiness is low, humidity is low, summer-winter, day-night temperature difference much and summer-winter radiation amount and more. According to the long-term data in the Gaziantep region, the prevailing wind direction is west and north-west. (Gaziantep Temiz Hava Eylem Planı 2016-2019).

#### 3.1. Traditional Settlement of Gaziantep

The city of Gaziantep is characterized by the topography, climate and urban texture of the region. The local texture of the region includes narrow and non-linear rich perspective streets compatible with the climate, the upper floors with windows on top of the deaf lower floor walls, the adjacent building structure, generally consist of two-storey stone buildings with a courtyard surrounded by high walls to protect from cold in summer and winter.

### 3.1.1. Orientation of the building

As the dominant wind was west-northwest, the western and northwest facades of the buildings were not opened or semi-opened, or the narrow facade of the building was opened in the direction of the prevailing wind or the building direction (45°) was aimed to be protected from the prevailing wind in winter. For this reason, construction is generally directed towards the south. Due to the fact that the weather is generally hot and sunny, special arrangements were made outside the building; Keeping the streets narrow, the buildings and courtyard walls on both sides of the street were shaded on the street at all hours of the day.

In traditional Gaziantep city, houses are usually directed to the south, while in some houses one of the two buildings around the courtyard faces the north (poyraz house) and the other one faces the south (the Qiblah house). Poyraz house is used in summer and spring months because it takes the sun. The south-facing Qibla house is preferred for winter seasons because it has plenty of sunshine.

### 3.1.2. Building Design and Space Organization

The narrow street, high and thick walled traditional architecture does not enter the streets except for the middle of the day. Thick stone or mudbrick walls slowly absorb the temperature during the night and minimize the temperature difference between day and night.

The outer door that connects to the street is first entered into the courtyard (Hayat) surrounded by high walls. Hayat-Life name is given to this courtyard area as the daily life in summer is lived here. There are living units and service spaces in the courtyard and stairways providing access to the upper floor. At the same time, the courtyard is located on the southern facade and includes water elements (pool, fountain, well), plants and trees that provide a cooling effect in the summer.

Eyvan-Iwan is a space that has three closed sides and covered and directly related to the courtyard. The Eyvan's, which are usually higher than the courtyard elevation, are the main unit forming the plan together with the rooms on both sides. The façade faces the south and is used as a semi-open seating area on the hot days because it has an open space.

Buildings and spaces generally have a rectangular and compact form. The short edge of the rectangle faces the street where the windows are scarce, and the long side of the windows face the courtyard.

Buildings are positioned based on one or two boundaries of the parcel. One or two of the facades are connected to the adjacent wall for reducing heat loss and for effective use of the parcel.

### 3.1.3. Natural Ventilation and Solar Control

Since the dominant wind direction is west-northwest, there are uninterrupted streets in the north-south direction. It is noteworthy that the streets that were interrupted in the east-west direction were designed to protect from the wind in winter. Narrow streets ranging from 2 to 6 meters provide natural ventilation and acceleration of the effect of the wind.

The cradle or broken roof and canopies can be extended up to 40-50 cm from the building surface, allowing both the cold air to reach the courtyard and all the spaces, while reducing the temperature felt by shading the narrow streets.

### 3.1.4. Landscape and Planting

In Gaziantep houses, landscaping is done with plants that open leaves in the summer and shed their leaves in winter. In this way, the sun's rays are prevented from falling on the building shell in summer and the building surface is prevented from overheating. In the courtyard, the effect of the temperature felt by the tree and water elements (pool, fountain, well) was tried to be reduced.

### 3.1.5. Openings

Windows; room, basement, roof, bird windows are classified. Room windows are arched, rectangular. Basement and roof windows are for ventilation and bird windows are used for both light and ventilation purposes.

The lower floors have a deaf wall, and the upper floors have narrow long lattice windows opening onto the street. The windows facing the courtyard were opened at 80-90 cm width and 50% at regular intervals. There is a wooden cover in the windows to protect from heat and cold. Doors widths between 1 and 1.20 m and between 2.00 and 2.25 m.

### 3.1.6. Material

The structures were made by using stone material, which is the local material. The ground floor walls are 45-60 cm thick stone wall.

## 4. Ecologic Based Plan of Gaziantep; Ecological Urban Design Guide for Building

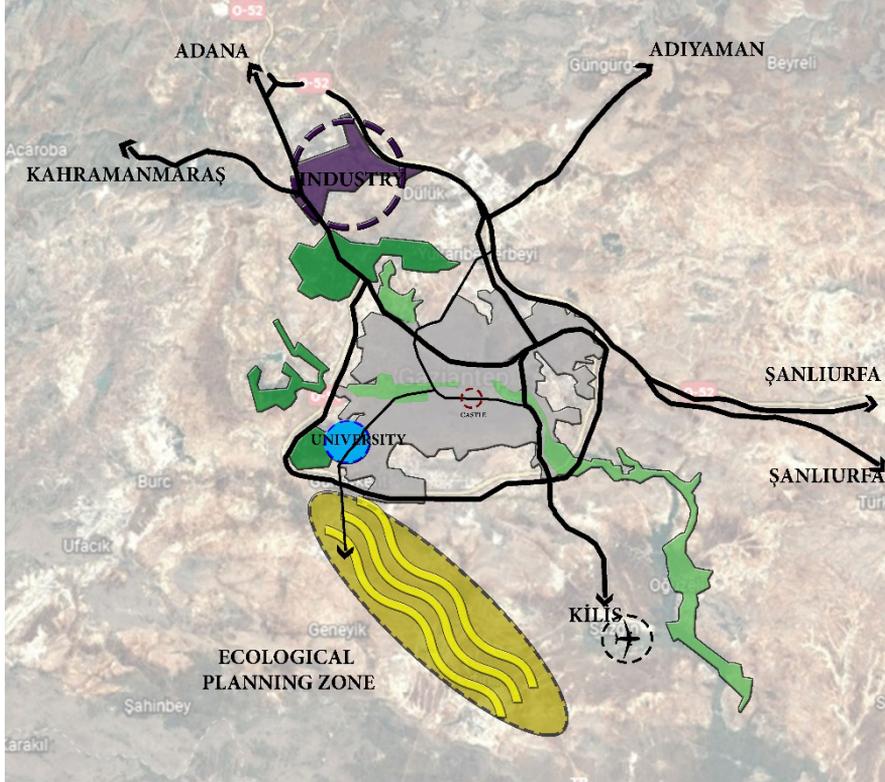
1/15000 scaled Gaziantep-Kilis Road and Surrounding Vision Plan (Figure 3) was developed prioritizing the conservation of ecological values and formed according to the principles of sustainable settlement. Within the framework of Vision Plan, covering the southern part of the city of Gaziantep and covering the area of about 3200 hectares was approved at 2010 (Gaziantep Kilis Yolu Yapılaşmaya Yönelik Ekolojik Kentsel Tasarım Rehberi 2013). Within the framework of the objectives of the vision plan, subprojects were prepared and it was aimed to ensure the sustainability of the plan and the promoter and precursor role of the municipality, as well as the plans of private and public sector representatives, central government, NGOs, international institutions and funds and local people.

In accordance with the Vision Plan, a 1/5000 scale Master Plan was prepared and approved in 2011. Ecological Urban Design Guide has been prepared in order to guide the implementation process of the 1/1000 scaled implementation plans prepared in accordance with the Master Plan. Ecological Urban Design Guide consist of the guiding role and the components of ecological settlement tissue. Ecological Urban Design Guide was developed with an Ecological Urban Design Guide for Buildings that considers the spatial, economic and social dynamics as a whole in the design of an ecologically sensitive settlement.

As the Ecologic Based Plan suggests low density from the settlements around it, the plan is revised due to the concerns of the investors that the costs will increase and the incentive system defined in the ecological guide is complicated for the sectors producing structures. The revised plan was approved in 2015 (Gaziantep Kilis ve Yolu Çevresi Ekolojik Tabanlı Revizyon Uygulama İmar Planı Plan Açıklama Raporu, 2015). Initially low and medium density construction proposed; while it

is a plan that contains ecological design criteria, it is filed with the cancellation of revision plan due to the loss of these features after revision. According to the information obtained by the authors, the lawsuit proceedings are still pending.

As the lawsuit proceedings are still pending, in this study, it is aimed to examine and evaluate initially proposed the Ecological Urban Design Guide for Buildings work within the framework building and building block design criteria.



**Figure 3.** 1/15.000 Scaled Gaziantep-Kilis Road and Surrounding Vision Plan

#### **4.1. Ecological Urban Design Guide for Building; Building and Building Block**

It is aimed to create a sustainable urban form that encourages the use of an integrated public transport system that promotes pedestrian and bicycle use, and provides a sustainable development of the environment in harmony with the local climate and culture.

Building and building block, urban transportation systems (roads and squares), open and green areas, urban image and social life are the subtitles of the title Ecological Settlement that is a section of Ecological Urban Design Guide for Buildings. This study focuses on the building block design criteria of this guide.

Parameters and factors rely on the site and building design and are important from the points of view energy conservation and climatic comfort. These effects can be investigated under two groups: physical environment parameters, and design and construction parameters. Ecological Urban Design Guide for Building's building block design criteria put forth within the framework physical environment and construction parameters.

#### 4.1.1. Orientation

Direction of the building should be solved as a combination of factors such as utilization and protection from the sun rays and wind, adaptation to topographic conditions, vista, privacy. Besides the building should be positioned appropriately according to the prevailing wind direction. If these conditions are sustained an Incentive System is used to support sustainability. There are some general properties that must be taken into account from orientation perspective.

- Eastern and western facades take less solar radiation in the winter and more in the summer rather than the southern facade.
- Solar irradiation is difficult to control in the south-east and southwest-facing fronts, and in summer high solar radiation takes place and less in the winter than the south facade.
- In climatic conditions with a higher heating load, the northern wall should be deafened, the southern facade windows (using low-heat glass) and the south-facing dormer windows should be enriched with the sun gain especially in north regions.
- Although it is difficult to control the sun on the eastern and western facades, it is used as the basic principle of the design in order to make solar control in the glassed areas on the facades and to form a wider facade on the east-west axis of the building.

Heat losses in winter and heat gains in summer should be minimized in buildings that for spaces should be orientated appropriately, and open and shaded spaces should be formed. The determined optimum orientation is south 18° east; good orientation is south 3° to 37° east; acceptable orientation is south 8° and west south 50° east for buildings (Figure 4.)

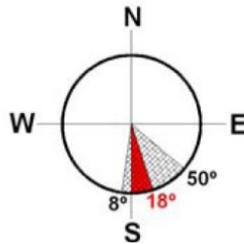


Figure 4. Appropriate land direction

#### 4.1.2. Building Design and Space Organization

The general typology should consist of courtyard, pooled, heat-storing building elements, small windows on the exterior facade and large gaps with shaded interior space. In the hot-dry climate zone, the most suitable building form in terms of environmental comfort is the building form with a courtyard. Buildings with a large character, courtyard and courtyard facing spaces should be preferred.

In the hottest period, compact, horizontally spread low-rise buildings should be located, preventing sunlight on vertical and horizontal surfaces. Providing comfortable spaces in the building areas of the courtyard buildings, especially in the courtyard and on the courtyard side; depends on the creation of shaded areas in these regions. These shaded areas control the micro-air inside the yard, reducing

the cooling load.

In the land selection of buildings in the design of the building blocks; should be able to define the formation of semi-public spaces in the middle of the block and the contours of the building block. In this way, the perimeter of the building block will increase with the integration of the public space and the semi-public space in the middle of the building block.

An incentive is given to the buildings with multi-storey if a chimney effected airing system is sustained besides using yards with low storeys. The ratio of the yards to building should be between 1.5H and 3.00H. Also some cooling elements should be design inside the yards. It is useful to propose semi-open areas frequently used in traditional architecture (iwan, portico, etc. eyvan, revak vb) in volume organization.

The places that are important as from functionality, the buildings with high need of heat and light, structures that should be kept warm, the most used places during the day must be oriented to the optimum direction (near the south and south direction) for increasing effectiveness. In order to benefit from the passive solar system, transparent covered, insulated, shutter-closure spaces (greenhouses, winter gardens, sunshades, etc.) should be arranged to contribute to the heating of the building.

The second important buildings as for funcionailty are less importants from heat and light, warehouses, wet surfaces can be placed in northern directions to sustain a barrier to the cold winter winds. Service volumes can be placed in the south, southwest and southeast for buffer zone purposes.

#### **4.1.3. Openings**

The large window openings on the south façade allow the solar radiation to penetrate, resulting in a large amount of heat gain and natural lighting in the winter.

- In the design of the windows, care should be taken to avoid natural lighting and the use of heating in cold periods and to prevent the sun from unwanted effects during hot periods. For this purpose, the proper orientation, the area of the glazed surfaces, the type and characteristics of the glass used, the shading and the solar control elements are important to ensure the energy control of the building. As solar control elements; sun breakers, wing walls, shutters, awnings, roller blinds, blinds and curtains, trees and so on are available
- In the typology of the courtyard, it should be designed as large openings shaded in the courtyard direction.
- Double glazing can be used in the windows with reflective exterior: used for solar control and heat preservation: heat absorbing (colored) glasses; Reflective glasses, low emissivity glass, selective permeable glasses, polyester film coatings, heat mirror glass, inert gas use in the space between glasses, smart glass.

#### **4.1.4. Distance between buildings**

Because of the use of wind effects in terms of passive air conditioning, the change in the direction of the prevailing wind direction of the building spaces should be of such a magnitude that it will affect the thermal performance of the building at the desired level.

When determining the distance between building, the intermediate hours outside the sunrise and sunset times should be taken into consideration in terms of terrain slope, direction, and settlement density. As the building space decreases, the external design wind speed also decreases.

#### 4.1.5. Natural Ventilation

The fact that Gaziantep province has a high altitude, the allocation of the streets in accordance with the topography makes it possible to benefit as much as possible from the breeze.

The cooling effect of wind, which is a very important comfort parameter in the hot-dry climate zone, is necessary to ensure the interior comfort of the building. The natural air conditioning and cooling are provided in the indoor space by taking the breeze wind through the openings on the building surface.

Placing windows on the opposite side of the façade towards the air intake direction will provide high-speed close-up air. To ensure an effective air circulation, openings should be designed on the side walls of the space in a cross formation. Buildings can also be ventilated by chimney effect.

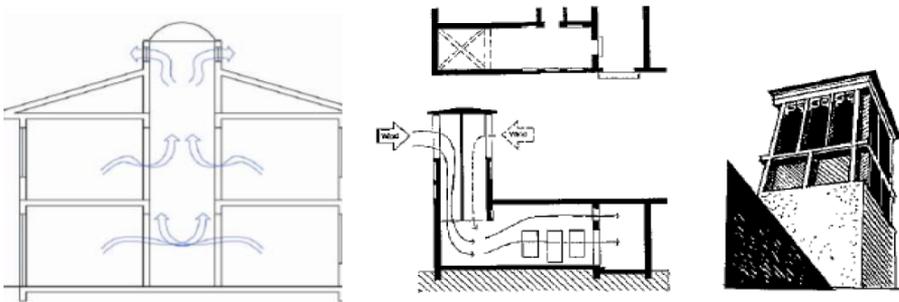


Figure 5: Natural ventilation with chimney effect

Wind chimneys can be used as a system used in building ventilation by pulling the wind into the building. Generally, the use of wind chimneys with solar chimneys allows the hot air inside the building to be taken out by passive methods (stack effect).

Solar chimneys can be used as a chimney with heated air rising principle on the building where sunlight can be heated. The air that is heated in the chimney causes the air to be sucked out. Wind chimney integrated systems are available.

#### 4.1.6. Building Envelope and Insulation

Due to the high temperature difference between day and night in summer, the structure which will provide thermal mass effect should be selected and a natural ventilation system should be provided to allow cooling of the structure. The exterior wall exterior surface must be color reflective, light color and form appropriate thermally insulated wall sections. The outer walls should be thick, adobe brick walls with high thermal storage capacity (providing thermal mass effect).

Extra points are given in the incentive system if gaps in the prevailing wind direction and in the opposite direction (window/door etc.) are designed, in the case of double-walled facade system application, green roof applications, design

of horizontal and vertical solar control elements that will prevent solar radiation in order to prevent heat gain in the summer on the outer walls and on the roof in order to prevent the heat gain in summer. The types of roofs, slope, direction, heat transfer resistance and exterior surface color, heat gains and losses should be considered in accordance with the climate character. Curved roofs should be directed towards the south, shaded, insulated and should be light-colored.

The use of a green roof is recommended for flat roofs that minimize the effect of solar radiation. Green roofs; By reducing the temperature effect and the difference in temperature on the roof surface, provides energy efficiency, creates a more balanced indoor air, performs water and heat insulation, absorbs emissions/noise and creates aesthetic and new uses.

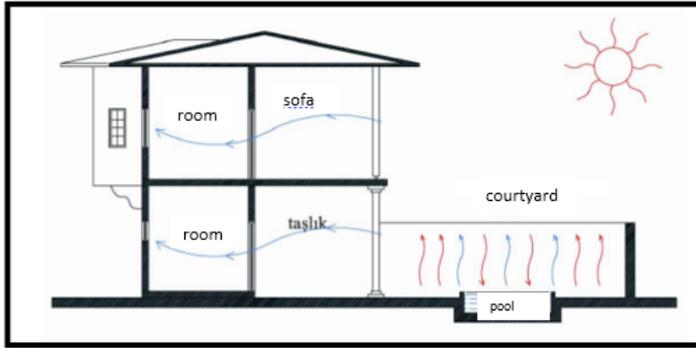
The surface covering materials and functional elements in the open spaces between the buildings (the walls in the resting corners, the divider board, the elements of the tools and equipment in the children's play areas, covering the pedestrian crossings, the bounding eaves and walls, billboards etc.) should be selected from the material that will not create the heat island effect.

#### **4.1.7. Landscape and Planting**

Green texture, especially due to climate effects, provides shading as a sun-shading on the building surfaces and on the streets. During the summer months, moisture-increasing designs (ponds, pools, etc.) should be carried out. Around a building / building block fully exposed to open-air conditions, tree buffer zones should be formed especially in the direction of dominant winds, in these regions always green leaves and deciduous seedlings and domestic tree species should be used in the direction of dominant wind. If possible, plant communities that direct the wind by moistening should be used. In addition, green elements should be used to create comfortable shaded areas for pedestrians.

The dominant wind damages of the area must be shielded and guided by vegetation or artificial fence and overlay structures to protect the open areas. This app is best done using evergreen coniferous trees and shrubs. Evergreen trees should be positioned in the north and northwest of the building to prevent heat losses as they prevent the cold winds from reaching the shore. The choice will be on trees that shed its leaf in the winter for the souther directions. Evergreen trees should never be used in these areas. These should be tall, tall and sparsely branched, broadly tufted and erected near the outer boundaries. The use of deciduous trees, which make a shadow in the summer and allow the sun rays to pass in the winter, is the simplest and basic control tool that can be applied. Deciduous trees, the sun's rays to reach the building in winter, the summer sun rays to protect the building; they should be positioned in the west, southwest, south and southeast of the building.

Trees planted in the courtyard with buildings in the courtyard will keep the courtyard shaded and cool in summer days. Trees planted in front of the southern facades of the houses prevent the building's surface from heating by breaking the sun's rays.



**Figure 6.** The movement of the cooling air by the evaporation of water into the interior.

Living walls can be planned to utilize green tissue, heat insulation, optimizing solar radiation and wind effects, and benefit from noise protection benefits.

### 5. Evaluation and Conclusion

Developing climate sensitive and energy integrated planning and settlement principles for different climate zones and establishing criteria are important. When the traditional residential and residential building block features of Gaziantep are examined; it is noteworthy that the settlement texture, orientation, structure and structure building block design characteristics are in compliance with hot dry climate parameters.

The aim and objectives of Gaziantep Ecologic Vision Plan and Ecological Urban Design Guide for Buildings are similar both hot-dry design parameters and traditional settlement features (Table 2 ). In the ecological plan, it is aimed to form a framework that is compatible with hot dry climate, ecological based, energy conservation. In line with the objectives and objectives set in the upper scale, urban design guide was developed in the sub-scale. The urban design guide is intended to give ideas and directions as a whole to the spatial, economic and social dynamics in designing an ecologically sensitive settlement. Without giving any restriction to the designer, general information and recommendations about the design have been tried to be given.

Although the urban design guide does not intend to provide detailed design parameters, it is important to suggest that the planning work created with the aim of ecological based urban development of a settlement with its own traditional texture, such as Gaziantep, should be structured within the framework of hot-dry climate parameters and traditional construction characteristics.

**Table 2.** Comparative Evaluation of Hot-Dry Region Parameters, Gaziantep Traditional Settlement and Ecologic Based Design.

Parameters	Hot-Dry Region Design Parameters	Gaziantep Traditional Design Parameters	Gaziantep Ecologic Based Plan Design Parameters
<b>Settlement pattern</b>	Dense, frequent, compact	Dense, frequent, compact	Compact, horizontally spread low-rise buildings
	Adjacent structure	Adjacent structure	Adjacent structure
	Narrow and high walled streets	Narrow and high walled streets	
	Street design considering the prevailing wind	Street design considering the prevailing wind	Street design considering the prevailing wind and solar gain
	Courtyards	Courtyards	Courtyards
<b>Building design</b>	Optimum building size ratio 1:1,3	Rectangle building shape	
	Low story building	2-3 stories building	Low story building
	To create a shade area bay window (cumba) should be used.	To create a shade area bay window (cumba) should be used.	
	Spaces around the courtyard must be in the east-west and north-south directions.	Generally south orientation, North oriented building ("Poyraz ev") for summer usage, South oriented building ("Kible ev") for winter usage.	A wider facade on the east-west
	Maksimum building depth to reduce hot effect		Courtyard facing spaces
<b>Openings</b>	Facades of buildings must be narrow.	Room windows are arched, rectangular	Large openings shaded in the courtyard direction.
		wooden cover in the windows to protect from heat and cold	Large openings south facade Double glazing can be used in the windows with reflective exterior
<b>Orientation</b>	25°-35° from south and east	Houses are usually directed to the south	optimum orientation is south 18° east; good orientation is south 3° to 37° east
<b>Natural Ventilation</b>	Narrow and high walled streets should be planned in order to increase the natural ventilation	Orientation of the streets according to the wind direction	Wind chimney and solar chimney Greenhouses and sun rooms
<b>Planting and Landscape</b>	Broadleaf and deciduous trees	Broadleaf and deciduous trees	Deciduous trees in winter should be used in the west, southwest, south, southeast of the building.
	Pools and water elements in courtyards	Pools and water elements in courtyards	Pools and water elements in courtyards
	Planting in courtyards	Planting in courtyards	Planting in courtyards
<b>Materials</b>	Basalt, limestone, adobe, stones.	Stones as local material	Stones as local material

The ecological based model conducted in the province of Gaziantep is an example for all cities, but also needs to be developed. In addition to all positive decisions, spatial organizations and relations with the whole city are inadequate. Ecological Urban Design Guide for Buildings could be detailed in terms of macroform of building block design, relationship between building blocks, energy-efficient relations with landscapes of buildings and buildings blocks etc. For this detailed determination, the traditional settlement texture of Gaziantep as an opportunity.

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# REDEFINING THE URBAN DEVELOPMENT OF HERITAGE SETTLEMENTS IN A SMART CITY

**SAYANTANI SAHA**

A smart city today is defined on certain values, more of which include a clean sustainable built form with good physical and digital connectivity producing ease in the lives of people. However, a city is a big area with record of growth during centuries containing various settlements and infrastructure built in different times reflecting the economic, technological, cultural, and social need and fashion issues of the society in the city. In the present transformation scenario in all cities of India through huge urbanization, a big question arises about what to do with such settlements that are old and very special and specific of certain group of people and their culture. Should they remain containing their identity and cultural legacy or be replaced with high-rise urban growth in tune with modern trend of development? In Kolkata, there are certain areas like Kumartuli (earthen image-makers' cluster), China Town at Tangra and Chhatawala Gali area at Tiretta Bazaar (Indian-Chinese people's clusters), Anglo-Indian settlement at Bow Barracks on Bow Street, etc. as few examples of special settlements. This paper would present a record of the ethnic, social, cultural, economic, environmental and urban design element values of the Chhatawala Gali area at Tiretta Bazaar and a discussion on the problems, and prospects of continuation of the cultural ethos of the area with needed restoration and modification and smart integration into the changing vibrancy of the urban image of Kolkata towards sustainability.



# **EVOLVING DESIGN STRATEGIES OF MULTIMODAL TRANSIT HUB AT MAJOR RAILWAY STATIONS IN INDIA: CASE STUDY ON HOWRAH RAILWAY TERMINAL**

**AVISHEK MUKHERJEE**

The countries belonging to global south are experiencing rapid growth in urban population and sprawl, lacking proper infrastructure and communication network to serve it. The age old transport facilities of these cities were constructed according to the then population. But due to lack of inadequate up-gradation and rapid population growth, these facilities are becoming unable to mitigate the increasing demands and the emerging need to introduce alternative modes and traffic systems are of utmost importance. The global south countries, such as India are developing Mass Rapid Transit System (MRTS) in mega cities to tie up different parts of adjacent urban agglomeration. The generated trips are being assigned among old transit modes such as, sub-urban trains, buses, taxis and other para transit modes and newly introduced MRTS. Modal split promotes the need of transfer of commuters between modes with efficient dispersal system and thus brings light on integration of alternative modes by means of transit hub and providing seamless interchange of commuters among them. But due to dense and organic urban fabric around major railway stations as well as terminals, bus terminals and other important transport nodes, inadequate land to design an efficient transport hub has become a challenging issue. This research aims at developing a holistic and methodological approach to derive the guidelines and strategies to design transit hub at major railway stations and terminals that would cope up with the increasing demands with time and provide continuous journey experience to the commuters. This research shall also define the scope of transit hubs to emerge as a centre of commercial development and create a new image of the city.



# **ENVIRONMENTAL PERCEPTION STUDY OF ORGANIZED AND UNORGANIZED COMMERCIAL ACTIVITIES ON A STRETCH OF NATIONAL HIGHWAY IN KOLKATA, INDIA**

**AVISHEK MUKHERJEE**

In Indian cities, any transport node that connects adjoining neighbourhoods to the central business district and rest of the city, has experienced some commercial development. A transport node in urban area, such as a bus terminus or mass rapid transit system station has experienced both organized and unorganized commercial developments around it. The commuters of the transport system feed the commercial developments as buyers. In between the change from mass transit modes to para transit modes the commuters want to buy things for their daily households. This necessity promotes the development of unorganized sellers, especially street vendors, around the transport nodes. These street vendors offer low-cost goods to commuters as well as form encroachments on footpath and carriageway. Several failed attempts have been made by civic authorities or government to remove these encroachments. But the presence of street vendors in a place is also wanted by the organized seller and buyer of the place. The organized sellers, unorganized sellers and buyers gets benefited by each other. They form a self-sufficient, holistic and stable system of commercial development. Due to this commercial development and large footfall the connectivity of the place with adjoining neighbourhoods also gets improved. Eventually, this place become an important transport node with commercial development leading to Transit Oriented Developments.



# UPGRADING COASTAL SLUMS THROUGH FLOATING ARCHITECTURE

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## **Abstract:**

Recent studies have indicated that over one billion people around the world live in shadow cities called slums, some of them are located along the coast. These informal settlements that have historically been regarded as a marginal, temporary and unworthy form of urban development suffer from poverty, overcrowded houses, polluted environment, lack of infrastructure, lack of education, poor economy, and high rate of crime and violence. In addition, coastal slums face another threatening problem which is the flood risk after the sea level rise due to the climatic change. Hence, all of this has led to social-spatial segregation and to low living conditions. This paper aims to produce design guidelines for upgrading the coastal slums through implementing floating architectural projects as an outside of the box solution. As a concentrated case study, the paper may envision the possibility to execute a floating building in Ouzai periphery, Beirut, Lebanon. It targets providing a center of awareness that can contribute in improving people's behavior, feelings, and well-being. In order to outline this hypothesis, the paper will depend on the field methodology through visiting the site, holding interviews with urban experts, and concluding the intended design guidelines. One of the most important conclusions is: improving the well-being of coastal slums' dwellers is possible through the maritime extension establishing simple modular units of floating architecture.

**Keywords:** Slums, Coastal Slums, Upgrading, Floating Architecture, Awareness.

### 1. Introduction

Through decades, rural inhabitants migrated in large numbers to urban areas searching for job opportunities. This has led, in the absence of federal and city-government guidance, control and organization, to the illegal settlement of these people in private and public lands in the suburbs of cities, forming areas called slums, where tenement conditions are very poor. And one of the important topics for caring of Health and Well-Being is in the spots of slums which are well known for their unhealthy environment and the spread of diseases. Over years, the place-person relationship was studied carefully to gentrify Man's life. Recently, due to quantitative and qualitative reasons, focusing on slums is increasing in order to ensure comfort, satisfaction and most importantly health in these squatter settlements. Environmental psychologists, urban planners and architects are broadly aware of their significant role in improving the environmental conditions of these sprawling cities, that endanger the well-being, safety and the morals of the slum dwellers. Last but not least, upgrading slums considers psychological and physical needs simultaneously in order to make the inhabited space healthier and more pleasant.

Rapid urbanization has brought alarming unmanageable, inevitable and persistent problems of slums in almost every city of the world. The characteristic features of the slum areas are substandard, dingy houses of high density and congestion, unhygienic environmental conditions, poverty, health hazards, economic and educational problems, lack of infrastructure, absence of green spaces, absence of basic amenities (e.g. water supply, drainage, sewerage and disposal of garbage), as shown in figures 1 & 2. Moreover, there are several squatter settlements around the world (e.g. Rio De Janeiro's favelas) that suffer from the soaring crime, insecurity and violence, as shown in figure 3. However, slum dwellers commonly grouse about unemployment, illiteracy, drug addiction and low mortality rates.

Furthermore, coastal slums - that contribute in blocking the sea view and polluting the coast - experience, in addition to the above-mentioned issues, a different sort of problems which is the increasing risks of floods arising due to the climate change.



Figure 1. Bad infrastructure in Mumbai  
Source: [lebbeuswoods.wordpress.com](http://lebbeuswoods.wordpress.com)



Figure 2. Diseases in South Africa  
Source: [www.sancta.org.za](http://www.sancta.org.za)



Figure 3. Killing in Rio de Janeiro  
Source: [www.telegraph.co.uk](http://www.telegraph.co.uk)

“This paper aims to produce design guidelines for developing the coastal slums through implementing a moving floating awareness center that contributes in improving people’s behavior, feelings and well-being”.

Secondary aims target:

- Defining the slums.
- Recognizing the literature review about the developments of coastal slums.
- Tackling the social, economic and health problems.

This research hypothesizes that initiating a moving floating awareness center will improve the living conditions in the informal settlement and will contribute in enhancing slum dwellers’ behavior, feelings and well-being.

This inquiry will be covering the main points or issues that will be analyzed in order to give a clearer perspective for the research which will be tackling and analyzing the problems of coastal slums. All the facts and references that will be used in this research will be referred to the last 20 years.

## 2. Literature Review:

Known as favelas in Brazil, Kijiji in Kenya, Jhopadpatti in India, gecekondu in Turkey, aashiwa’i in Egypt, barriadas in Peru, Kampung in Malaysia and Mudukku in

Sri Lanka. These different appellations of human settlements are synonyms of the English word slum (Riley, 2007), which is described in the dictionary of architecture and construction as “an area within a city characterized by deteriorated buildings, unsanitary conditions, and high population densities”. Almost all slum formation around the world originated from four types of rapid urban population (as shown in figure 4): rural-urban migration, natural growth, combination of natural and migratory growth or population displacement after conflicts or internal tussles (UN-Habitat, 2003, p.195). Another reason could be added to the slum development is the failure of governance (Cities Alliance, 2016).

Slums are not new. It's known that the evolution of most cities worldwide has been characterized by the “two-city” phenomenon, the first one is the home of abundance, opulence and institutions, while the other one is the home of wretchedness, indigence and often an array of criminal activities (Hermanson, 2016).

However, Mike Davis in his book “Planet of Slums” attributed the first definition of slum to a text from 1812 as a synonym of “criminal trade”, then revealed that the term “slum” wasn't used to indicate a place, but to describe a disadvantaged social condition. It was during the late 19th century when the “slum” was first related to the spatial definitions. Later on, the term has stopped from being used strictly to elaborate criminological meanings and became widely used to indicate a physical place (Arrigh, 2014). Since then, the nature of slums has evolved as a sequence of five urban planning and design paradigms, responding to urban problems throughout centuries. Concerning this era, the first paradigm was of “poor housing” as a respond to the rural homeless in the industrializing nations (De Castro Mazarro, 2016).

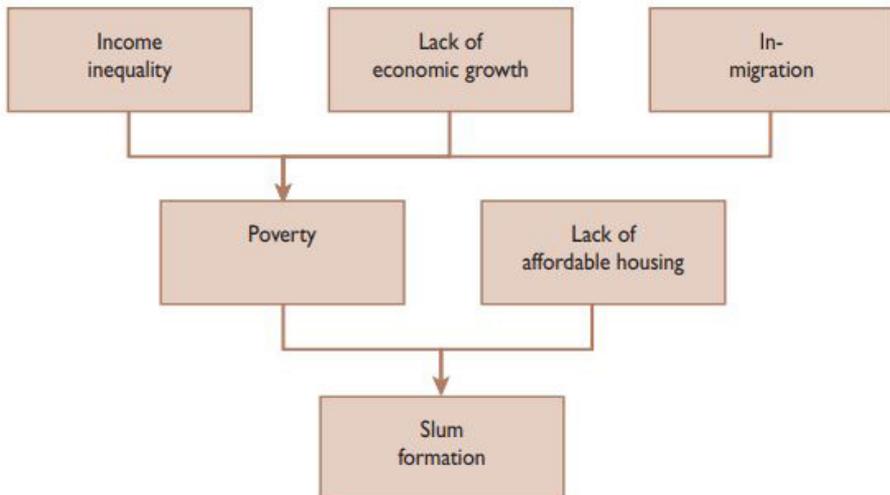


Figure 4. Slum Formation  
Source: (UN-Habitat, 2003)

As for the early 20th century, the squatter settlements have become a subject of great interest to study, that attracts many authors - like Patrick Geddes(planner),

Charles Abrams, Jacinta Prunty and Emmett Larkin – in order to tackle the parallel themes of urban growth and the soaring poverty in the slums (Arrigh, 2014). In the other hand, this century has witnessed the most important changes in the field of urban planning and design paradigms. Concerning the very beginning of the 20th century, the paradigm of the clearance programs or tearing slums down programs has taken place; until the interval between 1930s and 1960s, where it became a paradigm of urban redevelopment as a sort of response to the problem of blight. Few decades later, there was the fourth paradigm of self and mutual help housing from the 1960s till 1980s. Since the 1980s, it has been the paradigm of urban and integral upgrading. All these periods show how the sprawling cities have been an underlying problem to modernization that continued and evolved throughout the last century (De Castro Mazarro, 2016).

The next century was a turning point in the field of informal settlements, specifically in year 2000, when the United Nations Millennium Declaration pledged to set specific goals towards achieving “significant improvement in the lives of at least 100 million slum dwellers by the year 2020”. This historic declaration formally acknowledged the existence and need to ameliorate the lives of around 32% of the world’s urban population, living in places (figure 5) that are likely to become focal to this century’s most expensive health crisis (UN-Habitat, 2003). After three years, in 2003, UN-Habitat published the first systematic scientific report about this topic, under the title of “The Challenges of Slums”, which was of great value since it offered a comparative study of the problem on an international level. According to the above mentioned Declaration, by 2030, the number of slum dwellers is estimated to increase to about 2 billion (UN-Habitat, 2003).

In 2015, 193 countries at the United Nations Development Summit signed on to the 2030 Agenda that includes 17 Goals for Sustainable Development. The main purpose of agenda 2030 is to uproot poverty and fight inequality and injustice. Goal 11 within this Agenda focused on making cities and communities “... comprehensive, secure, resilient and sustainable” (Hermanson, 2016).

In the same year, 2015, UN-Habitat published again another report under the title of “Tracking Improvement in the Lives of Slum Dwellers”, concerned about enhancing living conditions of slum residents, putting forward the daily challenges faced by the residents of the settlements and stating the parameters of analysis while studying the aspects of life in squatter areas (PSUP Team Nairobi, 2015)

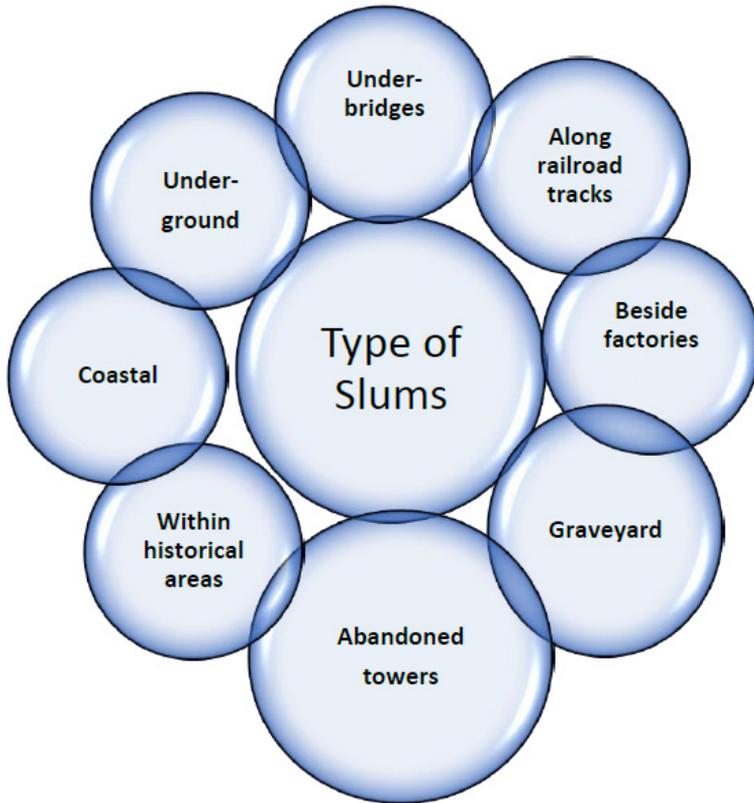


Figure 5. Type of slums  
Source: (M Ragrajio, Junio, 2003)

As for Slum Upgrading, Medellin in Colombia, as shown in figure 6, represents an excellent example of how an active cooperation with excluded communities can yield benefits for the communities themselves and for the greater city as well. Through its industrialization in the mid of 20th century, Medellin attracted an array of migrants who settled in informal areas. Insufficient jobs lead to initiating illegal drug trade and other illicit activity, such as “kidnap for ransom.” Relatively quickly, Medellin turned from an opulent city to the “murder capital”. In the early 1990’s, the national government developed a program to be implemented in Medellin and this initiative got supported by the private sector. The decision makers (local government) involved the residents in planning process, and one of the most visible improvements is the transportation system that links the informal settlements and the communities. Cable cars and escalators were used to let the dwellers reach their workplaces in the city and benefit from its services. In addition, a huge library was added, an open-air gym was installed, colored graffiti rippled along the walls and children had started to go to schools. Hence, this has contributed to the reduction of crime rate and to an increased resilience of the city as a whole. In Short, Medellin illustrates how a vision of inclusion made a remarkable comeback to this slum and made it more prosperous and vibrant (Hermanson, 2016).

Another example about the attempt of slum upgrading, is in Complexo Do Alemao, one of the Rio De Janeiro favelas, figure 7, where the cable car project was added as a step of following Medellin's lead. In Rio, the project failed completely because it was never the slum dwellers priority. Instead of enjoying security like in Medellin, this favela is always suffering from violence, crime, unemployment, poverty, sanitation problems...

Urban experts and planners across Latin America recognized that to plan better, cities must work simultaneously hence there must be a dialogue between communities and government and last but not least, models have to adapt with their own context (Dias Simpson, 2018).



Figure 6. Medellin, Colombia  
Source: [www.medellincitytours.com](http://www.medellincitytours.com)



Figure 7. Complexo Do Alemao, Rio De Janeiro favela  
Source: (Dias Simpson, 2018), [apolitical.co](http://apolitical.co)

On the other hand, coastal slums which are slums located alongside coasts and threatened by rising sea levels hence floods are recently experiencing a new approach in upgrading, the Floating architecture. This new concept is regarded as one of the most sustainable solutions in the coastal slums and it is gaining importance as a sustainable alternative around the waterside area.

In this section, Koen Olthuis, founder of Waterstudio.NL has adopted with his

team the “floating architecture principle” in gentrifying living conditions in coastal slums, saying that “a sustainable future lies beyond the waterfront”.

The first project about floating architecture in coastal slums is suggested by Waterstudio team in Korail, Dhaka, Bangladesh. The project is called City App, due to its concept: adding needed functions to the city as when adding needed applications to the phone. Waterstudio team has installed onto water mobile shipping containers of various functions (housing, health care, garbage collection, kitchen, sanitation, internet use). These structures that benefit people living in flood-ravaged shantytowns can be easily removed, causing no scars to the environment, as shown in figures 8,9 & 10. This approach aims to find flexible solutions when there are no free spaces on land (Waterstudio-nl, 2014).



Figure 8. Containers, City App  
Source: [www.waterstudio.nl](http://www.waterstudio.nl)



Figure 9. Green field, city app  
Source: [www.waterstudio.nl](http://www.waterstudio.nl)



Figure 10. Internet use, city app  
Source: [www.waterstudio.nl](http://www.waterstudio.nl)

Another example is the floating school in Makoko, Lagos, Nigeria (figures 11,12 & 13) done by the architect Kunlé Adeyemi who completed his prototype project for African regions that suffer from unpredictable sea rise level in 2013.

The main aim was to “generate sustainable, ecological, alternative building systems” for the Africa’s coastal regions (Frearson, 2016). Unfortunately, the school which became a symbol of hope for the deprived area and won several architectural awards collapsed in June 2016 due to a storm (Leibbrandt, 2014). Later on, Adeyemi exhibited his improved prototype of the school, called MFS II, at the Venice Architecture Biennale where he won the Biennale’s prestigious Silver Lion for the project (Leibbrandt, 2014).



Figure 11. Makoko school  
Source: [dezeen.com](http://dezeen.com)



Figure 12. Structure in Biennale  
Source: dezeen.com



Figure 13. The school before the collapse  
Source: dezeen.com

Based on this literature review, the research may conclude the following parameters of analysis as shown in table 1.

TABLE 1	Parameters of Analysis				
Green spaces	Insecurity	Education level	Inappropriate infrastructure	Capacity of residential units	Health conditions

Table 1. Parameters of Analysis

### 3. Methodology

This paper will study the informal settlements in Ouzai, Beirut, Lebanon. The research is of qualitative type, depending on analysis, searching in literature review, visiting the site and making interviews with decision makers in the field of architecture, urban planning and health.

#### Criteria of selection

Choosing Ouzai over other slums in Lebanon refers to several reasons. Mainly, Ouzai is not a traditional slum, it is the first image tourists will see when coming to Lebanon, due to its privilege location, settling along the beach yet reaching the airport. Moreover, it is well known for being a dilemma due to its complex situation (illegal settlements-political issues).

#### 3.1 Introducing the case study

Ouzai is a slum located in the south suburb of the Capital Beirut. It has a direct access to the beach and is surrounded by Jnah to the north, Ghobeiry and Borj El Barajneh to the east, and by Tohweetet El Ghadir and Beirut airport to the south.

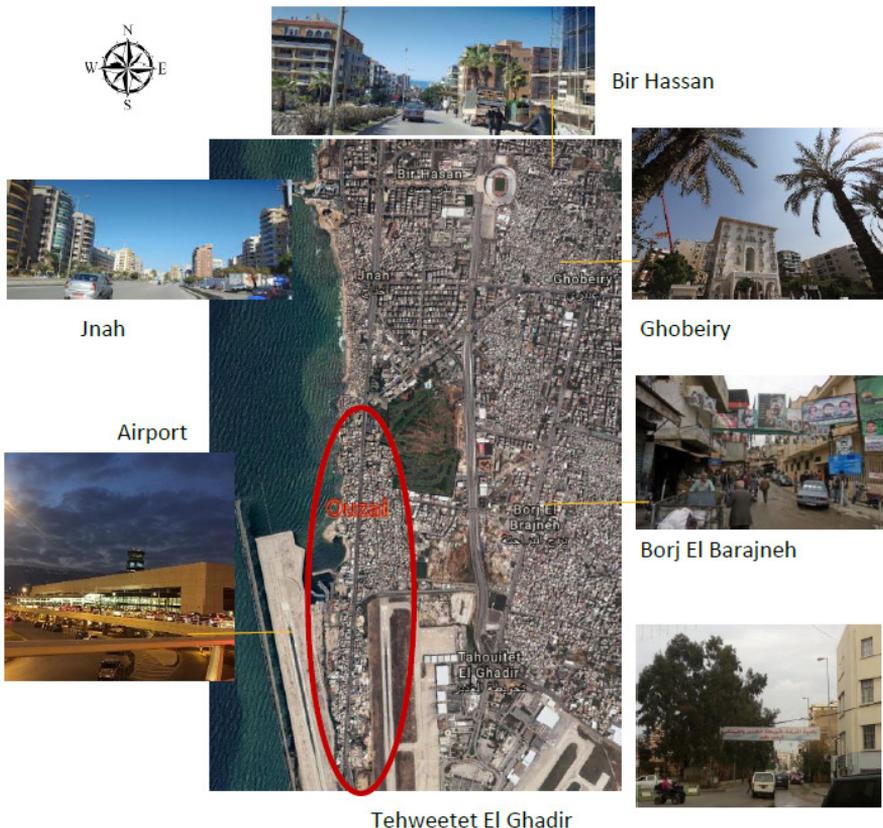


Figure 14. Ouzai surrounding  
Source: Google map



Figure 15. Defining the perimeter  
Source: (ETH Studio, 2009)

As for the historical overview, the so-called Ouzai was a large area of sands in 1920, as shown in figure 16 (Clerc-Huybrechts, Ifpo, 2008, p.21-38). During the early 1930's, resorts were installed in these sands that used to bear the title of "Saint-Simon" and "Saint-Michel" beaches, in this era (Ghanem, 2012). Shortly after the civil war in 1975, and the Israeli invasion of Lebanon in 1982, people started the relocation and settled illegally in Ouzai (ETH Studio, 2009), as shown in figures 17 & 18.

**Timeline (1920-2009)**



Figure 16. Ouzai map in 1962, Sands zone  
Source: (Clerc-Huybrechts, Ifpo, 2008, p.21-38)

**CRUCIAL LOCAL POPULATION SHIFTS**

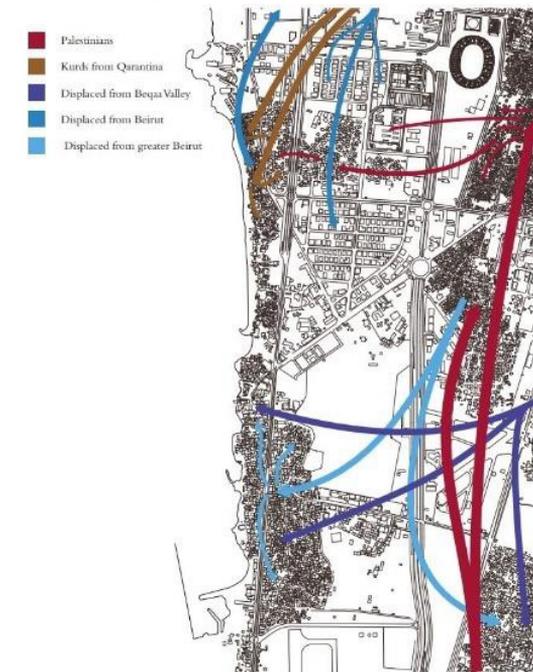


Figure 17. After 1975, Relocation  
Source: (ETH Studio, 2009)



Figure 18. Ouzai map in 2009  
Source: (ETH Studio, 2009)

Concerning the chosen site in Lebanon, several researchers were interested in studying the distinguished slum of Ouzai. Among these studies, the following statistics, shown in figures 19 & 20, concerning population, educational and economic levels show that Ouzai dwellers have basically reached primary and intermediate schools and mainly depend on shops and workshops for living (Jarmak, 2014).



Figure 19. Education Level in Ouzai  
Source: (Jarmak, 2014)

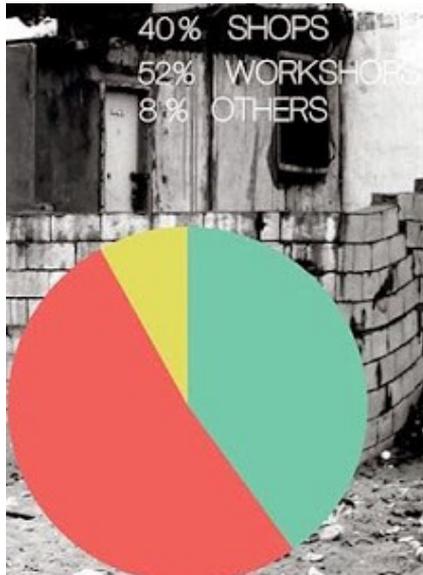


Figure 20. Percentage of Services  
Source: (Jarmak, 2014)

Main Typologies	A		B		C	
Sub Typology	Illegal Land Subdivision (Semi-informal areas)	Population	Illegal Occupied Land (Squatting areas)	Population	Foreign Refugees Camps (Hybrid areas)	Population
	A1 Inside city boundary	23000	B1 Inside city boundary	55000	C1 Palestinians	200000
	A1a Karam Elziatcon	4500	B1a Harsh Tabet	10000	C1a Mar Elias	
	A1b Hai Elsyniaan	6000	B1b Hai Elzahria	5000	C1b Shatilla	
	A1c ElNabhia	5000	B1c Harsh Elkateel	20000	C1c Sabra	
	A1d Harsh Rahal	3000	B1d Ber Hassan	20000	C1d Bourj El Barjneh	
	A1e Wata Almousautbeh	4500			C1e Jisr El Pasha	
					C1f Tal Elzafar	
	A2 Outside city boundary	126000	B2 Outside city boundary	96000	C2 Armenians	12000
	A2a Hi Elselem	120000	B2a Ouzai	60000	C2a Karantina	
A2b Elzaterihia	2500	B2b Elkely	6000	C2b Sanjak		
A2c Elrowaisat	2000	B2c Elamrosahia	5000	C3		
A2e Hai Elhean	1500	B2d Dakwanha	5000	Syriac	3000	
		B2e El Ramal	5000			
		B2f ElJounhia	15000			
<b>Total Population</b>	<b>149000</b>		<b>51000</b>		<b>215000</b>	

Table 2. Population in Ouzai  
Source: (M. Soliman, 2008, p.7)

### 3.2 Problems of the case study

Ouzai suffers from varied issues: lack of infrastructure (figure 21), lack of education, density (figure 25), insecurity, air pollution due to its proximity to the airport (figure 24) and Costa Brava (figure 22), water pollution and presence of chaotic electric cables. Moreover, it's highly relevant that due to the land reclamation, there are no green spaces (except the golf zone) within the slum. Furthermore, Ouzai is divided into 3 political areas (figure 23), each one is distinguished by its own political thinking, and this has a negative impact socially, since it keeps them away from each other. Last but not least, Ouzai represents a main artery to its surroundings yet it is still socially segregated from the high-class people.

Recently, Ouzville, a project of improving infrastructure and reviving streets by coloring murals has been established in Ouzai to embellish the first image that is seen by tourists from the plane while landing in Beirut Airport.



Figure 21. Infrastructure before/after Ouzville  
Source: Streetartunitedstates.com



Figure 22. Costa Brava Landfill  
Source: Ejatlas.org

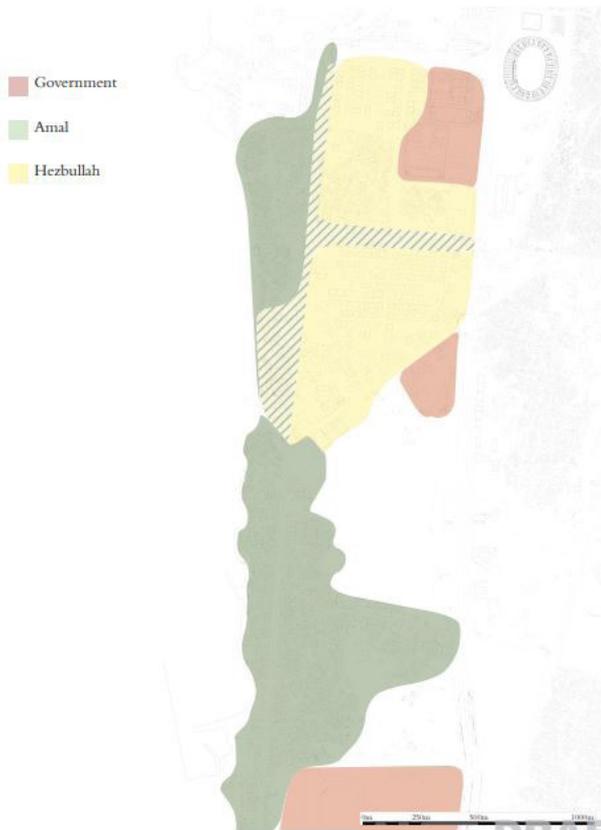


Figure 23. Political map  
Source: (ETH Studio, 2009)



Figure 24. Buildings near airport  
Source: lebanoninapicture.com



Figure 25. Overcrowded buildings  
Source: lynnsoubra.wordpress.com

### 3.3 Analyzing the parameters of Ouzai

The practical study will analyze six parameters mentioned in table.1.

#### 3.3.1 Green spaces

Due to the density, houses are compacted, roads are narrow, hence green spaces haven't found their way in this slum (except the golf zone and few tiny spots).

### 3.3.2 Insecurity

Based on articles, Ouzai comprises several people running away from the justice like drug dealers and shooters. In addition, Ouzai's proximity to beach make it exposed to sea rise.

### 3.3.3 Insufficient Education

According to figures 19-20, statistics have shown that few dwellers in Ouzai have reached the university, and this is directly related to their financial situation from a hand, and to the absence of schools, secondaries, vocational schools and universities in the area from the other hand.

### 3.3.4 Inappropriate infrastructure

Ouzville has improved the infrastructure in the impoverished area to some extent through paving the roads, coloring murals in the streets, but the housing conditions are still suffering from problems like leaking water (figure 26).

In addition to that, there are suspended chaotic electric cables as shown in figure 27.



Figure 26. Low housing conditions  
Source: Ouzville, twitter by Gino Raidy



Figure 27. Suspended and chaotic electric cables  
Source: Cheese.konbini.com

### 3.3.5 Capacity of residential units

Ouzai suffers from overcrowded population as shown in figures 28, 29 & 30.

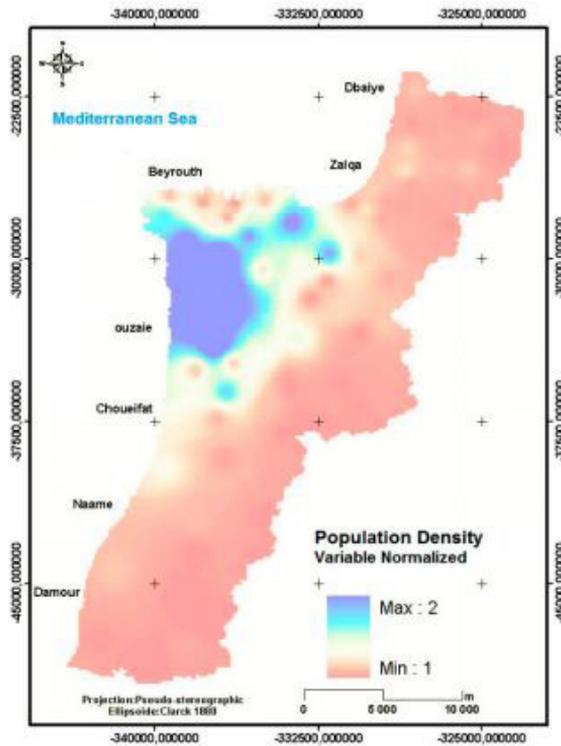


Figure 28. Population Density  
Source: (Faour, Mhaweij, 2016)



Figure 29. Congested House

Source: VOAnews.com



Figure 30. Overcrowded buildings

Source: Ouzville, twitter by Larissa Aoun

### 3.3.6 Health Conditions

Due to its proximity to the Costa Brava and the airport, toxic emissions from the landfill and the airplanes can be easily inhaled by Ouzai dwellers. Besides, sea water is polluted by sewage canals (J. Sabra, 2017, p. 61-71) and by scattered thrown trash like plastic garbage, as shown in figures 31 & 32.



Figure 31. Air Pollution  
Source: (J. Sabra, 2017, p. 61-71)



Figure 32. Water Pollution  
Source: (J. Sabra, 2017, p. 61-71)

### 3.4 Recognizing the sample

This inquiry will be based on collecting data from various sources using the inductive method. Later on, analyzing the collected information will be according to the analytical method. Besides, the paper will depend on field studies like visiting the site and holding interviews with several decision makers. (check the appendix)

The interviewees are female and male above 40 years old, in the domain of architecture, urban planning and health.

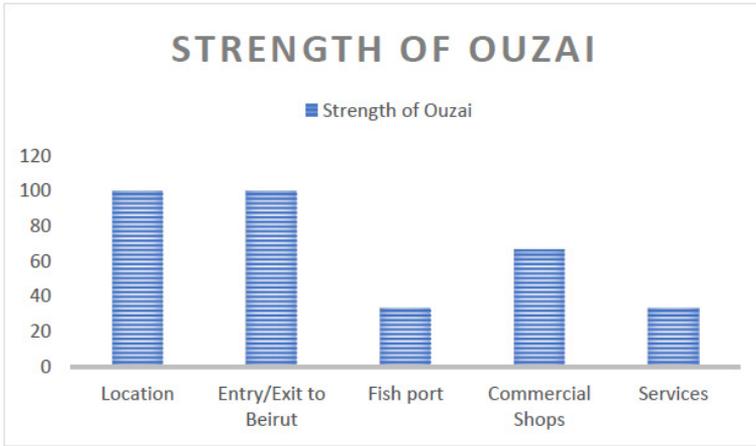
#### Questions:

- a-Ouzai is not a traditional slum, what are in your opinion its strength points?
- b- What are the weaknesses of Ouzai that should be taken into consideration during any gentrifying intervention?
- c- What are the main challenges of working in Ouzai?
- d- In spite of its strategic location, Ouzai lacks harmony with its surroundings (indirect surroundings like Verdun, Hamra), from your point of view what are the reasons of that?
- e- What is your vision about upgrading Ouzai in the upcoming decade?

### 4. Findings

The following charts are based on the sample group's answers which are decision makers in the fields of architecture, urbanism and health, who have a wide knowledge about Ouzai.

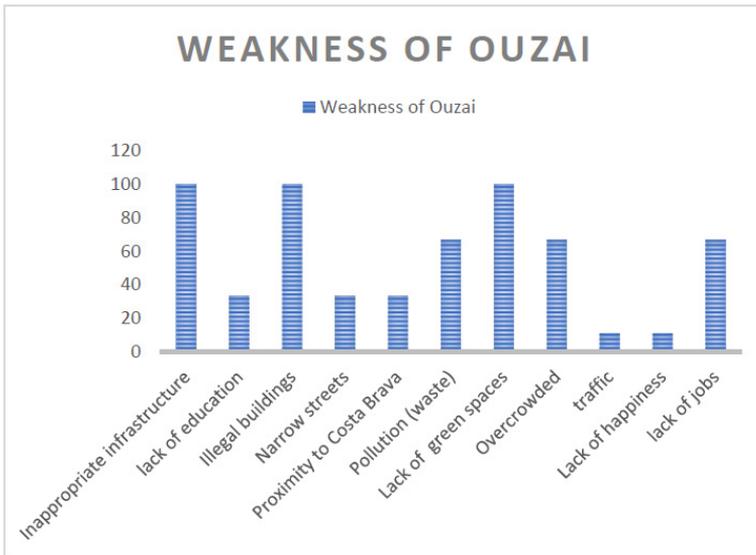
**Chart 1: answers of question a:** Ouzai is not a traditional slum, what are in your opinion its strength points?



Location includes: Proximity to airport, seashore and highway.

Services include: restaurants, Vehicles Registration Division in Ouzai...

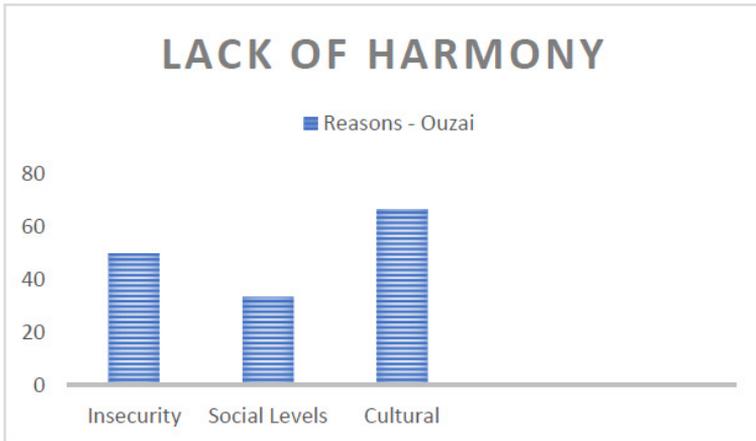
**Chart 2: answers of question b:** What are the weaknesses of Ouzai that should be taken into consideration during any gentrifying intervention?



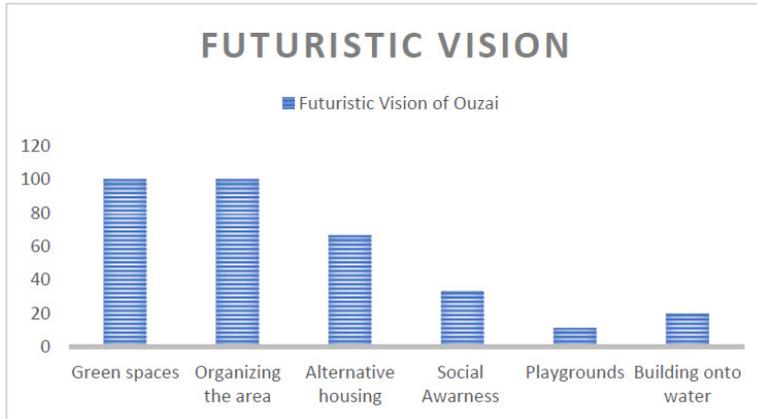
**Chart 3: answers of question c:** What are the main challenges of working in Ouzai?



**Chart 4: answers of question d:** In spite of its strategic location, Ouzai lacks harmony with its surroundings (indirect surroundings like Verdun, Hamra), from your point of view what are the reasons of that?



**Chart 5: answers of question e: What is your vision about upgrading Ouzai in the upcoming decade?**



## 5. Discussion

Based on the analysis of the findings, the paper produces design guidelines for developing the coastal slums through:

- a. Implementing green bridges and green areas will enhance the hygienic environment from a hand, and fortify the social bonds between coastal slums and their surroundings from the other hand.
- b. Outfitting a floating moving awareness center that mainly contains a sea trash collector and a multi-purpose room (audio-visual room+exhibition) will contribute to increasing awareness about healthy environment among residents from a side, and clearing sea water from the other side.
- c. Profiting from an existing abandoned building as a center to upcycle the collected plastic (from sea) and sell the upcycled products in the nearby shops will forbid the single use of plastic, hence enhancing the environment.
- d. Adding docks for fishing boats to boost fishing activity.
- e. Adding fish and food markets will provide job opportunities for slum dwellers.
- f. Implementing workshops and academies to improve dwellers' skills.
- g. Adding sports activities to provide respiratory spaces for slum youth.
- h. Adding constructed wetlands will allow to process sewage water naturally, without the use of any artificial method/technique, hence clearing sea water.

## 6. Conclusion

According to the issues raised in this study, it can be concluded that:

- Political challenges hinder slums' development.
- Participation of excluded communities within any upgrading process of slums will increase benefits.
- Strategies to promote a chosen slum have to adapt with its context.
- Residents' awareness is a key factor in slums' gentrification process.
- Whatever is thrown in the sea will find its way to the beach sooner or later, hence it will affect people' health.
- Floating architecture is a futuristic and sustainable vision in upgrading

coastal slums.

- Improving the well-being of coastal slums' dwellers is possible through the maritime extension establishing simple modular units of floating architecture.
- Greenery plays an important role on health and social levels.
- Slum location is important in adopting innovative ways for slum's gentrification.

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## Appendix

Decision makers are:

### -In the field of Urban Planning:

\*Dr. Elissar Abdel Samad, Doctor in Urban Planning and Director of Urban Planning Department in Shouf, Lebanon.

\*Dr. Atef Mcheimech, Doctor in Urban Planning and President of the Association of Architects in the Order of Engineers and Architects in Beirut, Lebanon.

**-In the field of Architecture:**

\* Architect Joseph Saad, Former President of the Association of Architects in the Order of Engineers and Architects in Beirut, Lebanon.

\*Architect Hady El Orm, Region Architect in the Department of Urban Planning in Shouf, Lebanon.

**-In the field of Health:**

\*Mr. Hasan Dirani, Head of the Health Unit in Ghobeiry Municipality. (Ouzai follows the authority of Ghobeiry Municipality).



# EGYPT' NEW CITIES POLICIES AS REFLECTIONS OF REGIMES' URBANISM

**AZZA ELEISHE**

Throughout history and in different locations and epochs, political powers and dictatorships have used city planning and specifically “New Cities / New Capitals” approaches to strengthen their regimes’ control over the land use and population’s access to housing, public space, as well as social and physical infrastructures on the one hand while projecting a progressive and revolutionary façade to the outside world and their own citizens.

During its modern era, Egypt has experienced different socio economic and political regimes which span from Nasser’s socialist system, followed by Sadat’s western free market capitalist policies and ending with the previous Mubarak’s and present El-Sisi’s Neo-liberal approaches. While Nasser’s ambitions materialized in a district within the capital Cairo, Sadat’s opted for planning specialized satellite cities’ outside of Cairo, Mubarak’s Housing and Planning ministry embarked in land speculation and luxurious “new expanses” mostly of closed gated communities for wealthy inhabitants, to end up with the current regime’s “New Administrative Capital|”. In 2015, the Egyptian government announced plans to construct a new capital city that would house all administrative and ministerial buildings and embassies, as well as twenty-one residential districts and twenty-five “dedicated districts”, besides parks, educational, medical and religious institutions, skyscrapers and monuments, hotels, solar energy farms, electric rail and a new international airport. In January 2019, President al-Sisi inaugurated the region’s largest cathedral and second-largest mega-mosque in the new administrative capital.

The proposed paper uses a critical historical analysis method to understand the politics of large-scale planning and engineering using Egypt’s modern planning development as an applied case study. The paper focuses on the present regime’s planning schemes as a clear prognosis of post-capitalist spaces, and the future of the government as corporate management of always-already militarized space. The case of the New Administrative Capital of Egypt should shed light on contemporary forms of authoritarianism, their governmentality and, perhaps even more importantly, lack thereof?



# CONNECTIVITY BETWEEN JEDDAH'S WATERFRONT AND THE URBAN STRUCTURE OF ADJACENT COASTAL AREAS TO PROMOTE PHYSICAL ACTIVITY

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## **Abstract**

With all the growing urbanization and significant extension, public health has risen as a primary focus of sustainable development. Our built environment can be a leading cause of disease; however, with the right design guidelines, the city can easily promote physical activity and physiological well-being. Recent studies have stated that connecting waterfronts with the urban structure of their adjacent cities contributes to revitalizing waterfront efficiency and supports physical activity along the waterfront. Accordingly, this reflects the importance of providing ready access to the waterfront by linking it to the city structure. Moreover, this action offers significant benefits for the socio-economic level of the city by providing a motivational anchor for developers to renovate the city's vacant properties. In addition, many social opportunities can be achieved as a result of these development actions. Recently, Jeddah had extensive ongoing urban development and a renovated waterfront connecting the shoreline. Accordingly, does the "connectivity" of the adjacent urban areas to Jeddah's waterfront support and promote physical activity? To answer this question, this research investigates the ability of the urban areas

attached to Jeddah's waterfront to link the city and the waterfront.

The results of this study revealed that tradition and culture have an obvious effect on the poor connectivity through the spread of private properties along most of the urban areas adjacent to Jeddah's waterfront. Besides, the physical component of these areas' urban structures presented an obstruction to supporting linkage with the waterfront. Thus, renovation plans to support physical activity on Jeddah's waterfront should aim to improve the connectivity of the attached urban area in parallel.

**Keywords:** Urban Connectivity; Jeddah Waterfront; Urban Structure; Physical Activity

**Word Count:** 3315

### **Introduction**

Today, cities are rediscovering the value of their rivers and lakes. Urban waterfronts represent environmental, aesthetic, economic, and social opportunities for cities (Hoyle, 2002). Lack of interesting design can make these spaces monotonous, which in turn can make them socially dysfunctional. This may lead to strained interaction between the people and these valuable areas. Moreover, in many metropolitan areas, inhabitants are isolated from these spaces of the city. This often generates unhealthy and unstable environments within the existing socio-economic systems (Rasal, 2012).

In this regard, this paper will examine the relationship between Jeddah's waterfront design and the adjacent urban structure of coastal urban areas, and how good connectivity between the two might affect the overall urban health of the city and increase levels of physical activity by bringing people back to the streets. To achieve this goal, the research will derive key principles to create connected urban areas with waterfronts from previous studies and similar cases.

The paper will analyze various urban coastal areas in Jeddah that have been selected with diversity in the urban structure. Each area will be described and analyzed according to the key principles derived in the earlier stage to determine whether or not the connectivity of these urban areas has a direct impact on this linkage. The sequence of the research study is illustrated in Figure 1.

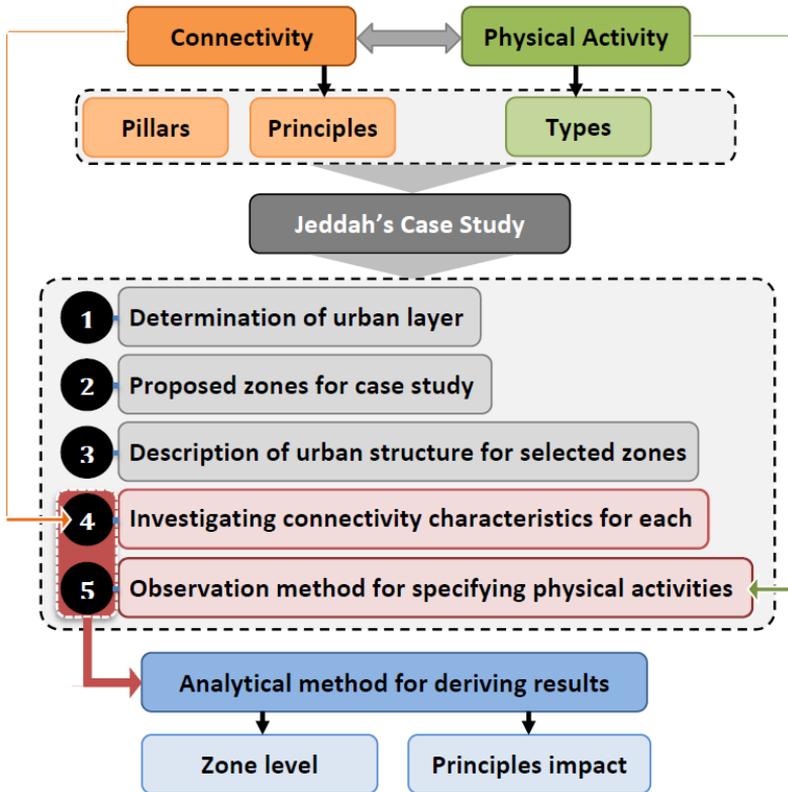


Figure 1. The sequence of the research study

### Principles of Urban Connectivity

Connectivity often refers to the number of links and the density of connected areas in any context; the more permeable an area appears on a map, with many intersections and short links and minimum dead ends, the more effective it is (Handy et al, 2003). Consequently, good connectivity encourages local trips for pedestrians rather than the use of cars because it provides easy access to important destinations by foot rather than by car.

According to Ewing, any urban area's connectivity depends on the different types of land use and activities that occur, such as mixed land use, street furniture, and existing human activity (Ewing, 2009). Other studies have proven a strong relationship between neighborhood connectivity and use of active transport or car dependence (LUTRAQ, 1997; Kopelman et al., 2007). Tomalty concluded that transportation and land-use planning have to work in harmony to achieve a broad-based vision, such as efficient use of existing facilities, livable city centers, and strong accessibility services (Tomalty, 2015). Figure 2 explains the direct relationship between urban connectivity and other factors that increase physical activity, such as walking and improve public health.

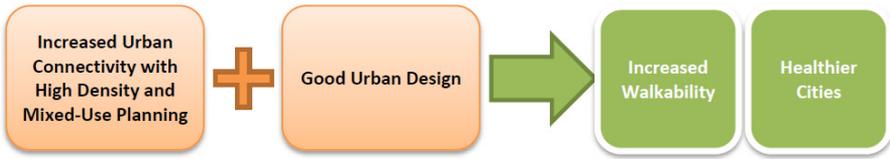


Figure 2. Effect of urban connectivity on public health

Many studies discuss the main principles needed to develop a well-connected fabric in our streets. In order to achieve good urban connectivity in the city’s urban fabric, three pillars should be achieved. Table 1 addresses these pillars with all the sub-items under each one (Sallis et al., 2006; Montgomery, 1998; Bentley, 1985).

Features of Urban Connectivity		Strong	Moderate	Weak
Activity	Diversity of Uses	Diversity of uses generates external activities and contributes to safety, leading to more people on the streets		
	Mixed-Use	Mixed-use buildings and spaces offer the perfect environment for various users at any time of day		
	Social Participation	Resident involvement ensures the use of public space will meet the community’s distinct needs		
	Local Economic Stimulus	Safe and attractive conditions foster walking and cycling, leading to easy access to local commerce		
Form	Human Scale	Human-scale constructions have a positive effect on people’s perception of public spaces		
	Open Spaces	Open spaces have the power to humanize cities and enhance well-being, attracting people to outdoor activities		
	Complete Streets	The Complete Streets concept is designed to ensure safe circulation of pedestrians, drivers, and cyclists		
	Active Facades	Connection between the ground level of buildings and the street creates more attractive spaces for people		
Visual Image	Local Identity	Public spaces/buildings should be designed for small businesses that characterize the neighborhood		
	Imageability and Legibility	Legibility and a strong visual image of the area stimulate interaction between people and spaces		
	Aesthetic Quality and Richness	Aesthetics of buildings/historical architecture work as a catalyst for outdoor walking activities		
	Lighting	Efficient and people-oriented lighting facilitates the occupancy of public spaces at night, enhancing safety		

Table 1. Features of urban connectivity (adapted from Sallis et al., 2006; Montgomery, 1998; Bentley, 1985)

### Physical Activity and Urban Environment

Recently, a majority of studies dealing with the relationship between the urban built environment and types of physical activity have strengthened physical activity’s relationship to public health in our cities (Boarnet et al., 2013; Wells et al., 2008; Litman, 2005; Cohen et al., 2007; Gehl, 1987; Cao et al., 2009). In his research, Koohsari highlighted the importance of collaboration between urban design and public health, and the importance of supporting environments that include different

types of physical activity (Koohsari et al., 2013). It is worth mentioning that creating an environment that promotes physical activity has become a priority for public health organizations worldwide (World Health Organization, 2010; Beaglehole, 2011).

Faskunger mentioned that it is not enough to know that practicing physical activity is healthy; people should be motivated by all means to realize that it is necessary in everyday life (Faskunger, 2013). According to Xiong, accessible open spaces should always be designed within an urban landscape that offers multiple uses to motivate physical activity (Xiong, 2007). Figure 3 presents different types of urban physical activity that will be observed later in the case study area. These selected types represent the most dominant activities occurring in urban spaces, whether necessary or optional.



Figure 3. Various types of physical activity in urban spaces

### Methodology

As mentioned before, the research will focus on Jeddah's waterfront. Figure 1 shows the urban layer determined for the study, including the waterfront and the adjacent urban areas, which will be exposed to examine connectivity. This urban layer falls between two main roads, Al-Malek Road and Al-Kournish Road, which link the selected layer to the city.

Of the determined urban layer, 10 zones have been chosen for the purpose of this study based on variance in their urban structure because this term is used to explore and express the connectivity of urban areas. The term urban structure demonstrates social and spatial systems of urban areas in terms of different arrangements of land uses and integrated spatial structures. It can be said that urban structure is mainly concerned with the arrangement of different properties and characteristics, such as connectivity and accessibility. Figure 4 shows the determined urban layer and the 10 zones chosen due to their urban structures.



Figure 4. Selected urban layer and urban structure zones

Moreover, selected zones will be, as mentioned above, different in their urban structures, which will help to investigate connectivity in different and multiple degrees. It will also allow the opportunity to perform a sensitive examination for each feature of connectivity via all selected zones.

These 10 selected zones will be shortlisted into the lowest number, as shown in Figure 5, by excluding zones that are attached to the most recently renovated part of Jeddah's waterfront. This enables investigation of factors other than being part of a successful waterfront promoting physical activity.

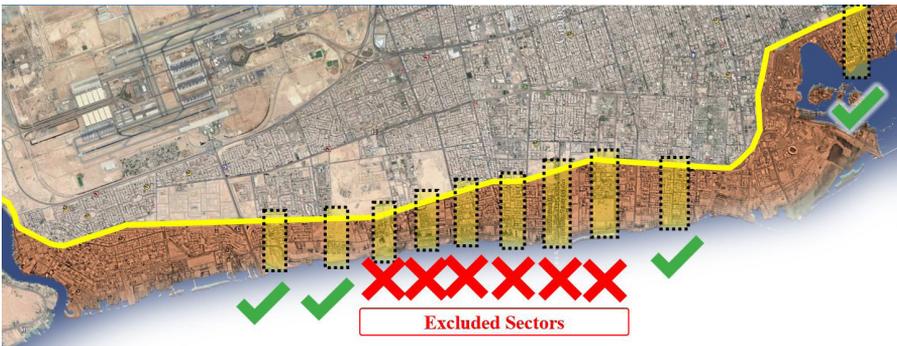


Figure 5. The excluded and the remaining selected zones

As shown in Figure 6, the remaining selected zones will be subjected to a descriptive method regarding their urban structure in terms of main characteristics, land use, hierarchy of network, type of property, open spaces, and illustrative urban images.

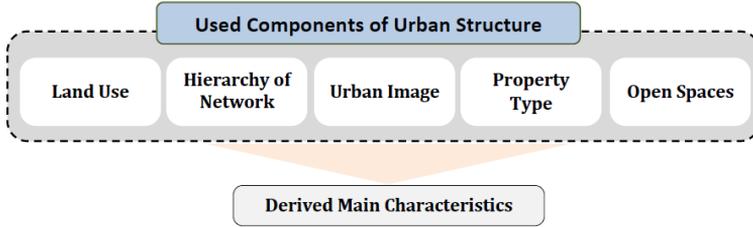


Figure 6. Methodology for analyzing the selected zones

The color key in Table 2 will be used to list and express different characteristics of the zones' urban structure.

Land Use		Residential
		Commercial
		Offices
		Medical
		Roads and Parks
		Vacant Lands
	<b>Hierarchy of Network</b>	
	Main Street	
		Secondary
		Minor
<b>Property types</b>		
	Public	
		Private
<b>Open Spaces</b>		
	Parks/Streets/Vacant	
		Built Areas

Table 2. Color keys used to describe urban structural features for selected zones

ZONE 1

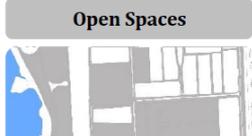
Main Characteristics	Land Use	Hierarchy of Network
<ul style="list-style-type: none"> <li>- Most of the area is vacant lands.</li> <li>- Grid pattern is shaping the urban structure of the zone.</li> <li>- Private and public property are almost equal.</li> <li>- Average height is 3 to 4 floors.</li> <li>- In between streets seem to be neglected and abandoned.</li> <li>- No realized identity can be observed in architectural styles of the built context.</li> <li>- No direct accessibility from the zone to the waterfront.</li> </ul>		
		
Urban Image		
		

Figure 7. The urban structural characteristics of Zone 1

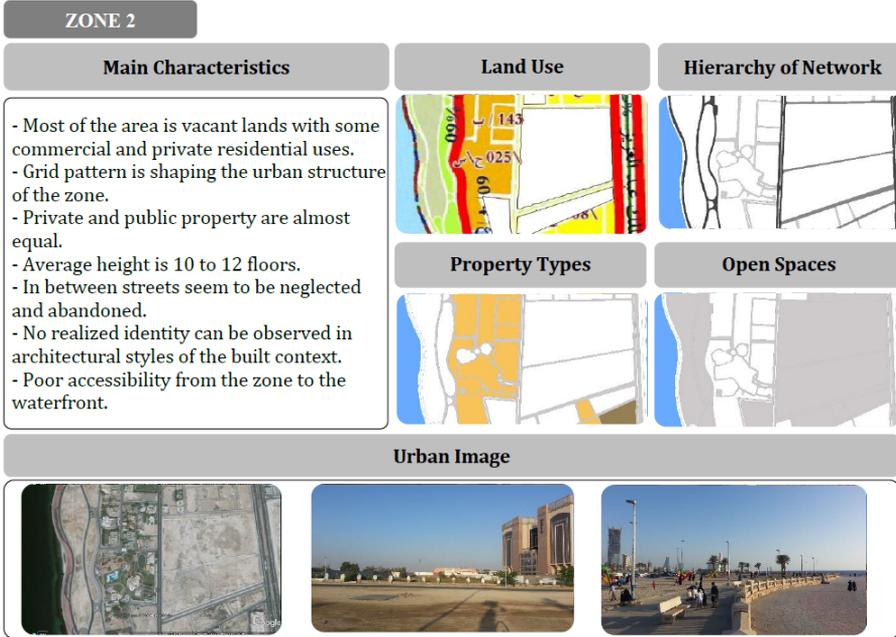


Figure 8. The urban structural characteristics of Zone 2

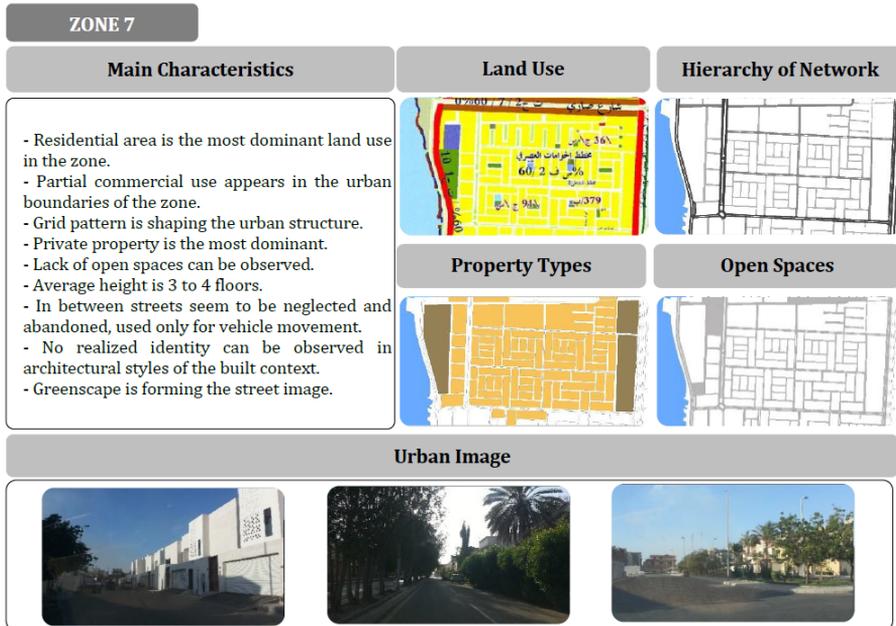


Figure 9. The urban structural characteristics of Zone 7

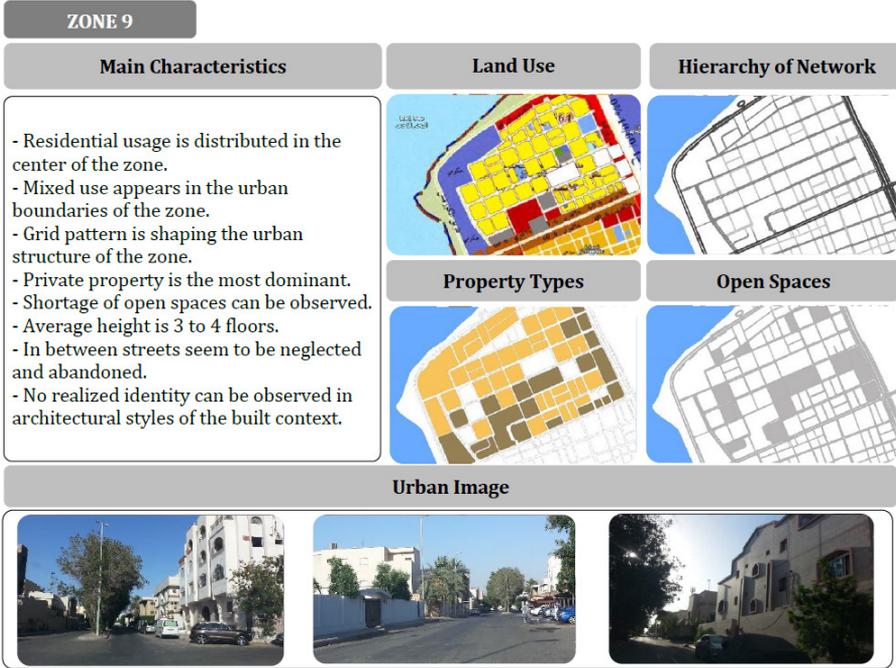


Figure 10. The urban structural characteristics of Zone 9

Afterward, an investigative study will be conducted in order to address the level of connectivity for each zone. The following table represents the results of the study using a scale of none, weak, and strong as an objective evaluation based on the previous description of each zone’s urban structure.

	Activity				Form				Visual Image			
	A1	A2	A3	A4	F1	F2	F3	F4	V1	V2	V3	V4
Zone 1	None	None	None	None	Strong	Weak	None	None	None	None	None	None
Zone 2	None	None	None	None	None	None	None	None	None	None	None	None
Zone 7	None	None	None	None	Strong	None	None	None	None	None	None	None
Zone 9	None	None	None	None	Strong	None	Strong	None	None	None	None	None

None ■      Weak ■      Strong ■

Table 3. Level of connectivity for each zone regarding main principles and features

An observation method (site visit) was conducted in each zone to realize and capture available/occurring physical activities according to type and range of occurrence. This study was performed during the best weather conditions in Jeddah each day (from 4:00 PM to 6:00 PM) and year (in March) using a scale of none, weak, and strong to express the level of occurrence, as shown in Figure 11.



Figure 11. Results of observation methods for capturing available/occurring physical activities in each zone

Analyzing the results of the two recent stages will help in examining the research hypothesis regarding the following:

1. The impact of sectors' connectivity on the existence of adjacent physical activities.
2. Features of connectivity that have embedded impacts on supporting physical activity on the attached waterfronts.

**Results:**

- More effort will be required to promote connectivity linking the urban layer attached to Jeddah's waterfront to the city.
- Renovation plans for physical activity on the waterfront should account for the need to develop the connectivity of the attached urban area in parallel.
- Availability of car parks adjacent to the waterfront resulted in different engagements alongside them, which reflects the low efficiency of pedestrianizing the connection to the city.
- The greater the connectivity of the attached urban zones, the more physical activities present.
- Regarding the case of Jeddah's waterfront, the density of physical activities is the most vulnerable aspect rather than its occurrence, or even its types.
- The urban structure needs more renovation plans that consider spatial and social performance to achieve an efficient connection to the city by reaching the human experience on the urban level.
- Physical characteristics of urban structure in investigated zones can be considered a key element in obstructing connectivity.

- Private property has a direct impact on minimizing livability of the adjacent urban layer.

Table 4 illustrates some recommendations that can improve the development plans for such an area. These recommendations are gleaned from the analytical study regarding the efficiency of connectivity principles.

Problem	Description	Recommendation
Urban Form	Lack of open spaces	<ul style="list-style-type: none"> <li>• Orienting further development of vacant lands toward a more accessible network and livable open spaces and parks.</li> </ul>
	Incomplete streets	
	Lack of active facades	<ul style="list-style-type: none"> <li>• Promoting commercial usage of the ground floor level to enhance social interaction.</li> </ul>
Culture	Spread of private property	<ul style="list-style-type: none"> <li>• Providing more public projects integrated into the urban structure.</li> </ul>
	Reliance on vehicles	<ul style="list-style-type: none"> <li>• Integrating parking areas within the urban structure of the attached zones.</li> </ul>
Urban Image	Low legibility	<ul style="list-style-type: none"> <li>• Supporting identical and aesthetic values in streetscape and architectural facades.</li> </ul>
	Confused identity	<ul style="list-style-type: none"> <li>• Considering human dimensions in renovation projects of these areas.</li> </ul>
Activity	Dominant residential use	<ul style="list-style-type: none"> <li>• Providing more mixed-use projects.</li> </ul>

Table 4. Concluded development recommendations regarding the efficiency of connectivity principles

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# CONTEMPORARY ARCHITECTURE AND HISTORICAL CONTEXT: A CASE STUDY OF CONTEMPORARY EUROPEAN BUILDINGS

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## **Abstract:**

This paper aims to discuss the topic of contemporary building interventions in the historical city centres of three main cities of Europe. The chosen projects are built in the old fabric that has extensive historical relevance encompassing the developments and built heritage that has been weaved together in the course of multiple centuries. All over the world cities are building contemporary architecture in the historical context as the planned urban regeneration, to promote the cities as strategic international branding for international community, to attract tourism, bring in investment and to promote the cultural heritage.

The following research focuses on finding the factors that can determine the integration of contemporary built projects into historical urban fabric, and to what degree the discussed case studies are specific to the site and the environment they are built into. The varied scale of the projects brings together multi-dimensional program of the schemes that include public facilities of open plaza and commercial activities. The study analyses the contextual responses in the specific context, different approaches used by the architects in the provided conditions and a review of the projects under the guidelines in the international charters and guidelines.

The discussed projects are Praca de Lisboa in Porto-Portugal, Metropol Parasol in Seville-Spain, and Bullring Shopping Centre in Birmingham-UK. Praca de Lisboa is a renewal of the public square that has a long history of holding market and the new built interventions combines the program of a public plaza, a shopping street and an underground parking area. Metropol Parasol is built in the public plaza that once served as a market place and then neglected as a parking space but the new intervention combines the public plaza with a revival of marketplace and an underground museum for the discovered archaeological remains on the site. Bullring Shopping centre is built on a historical site of market activity took place since 11<sup>th</sup> century. All three projects share a common point of commercial activity of holding a market on the site historically during the course of centuries. This

paper consists of four parts. 1). The definition of key terms and literature review. 2). A literature review of relevant international charters and principles to build a framework. 3.) A brief history of the context and project description 4. Review of the case studies and a conclusion to summarise the paper.

**Key words:** Urban Centres, Historical Cities, Architectural Interventions, Urban Renewal, Heritage Buildings, Contemporary Architecture.

### **1.Introduction:**

Historical architecture is part of our culture and heritage. Behind the spirit and soul of a built project and an architectural form, is the architectural expression that is reflected in its layers. Every project is built to serve a specific purpose and there is a historical value of the time it is built in. UNESCO defines heritage as *“our legacy from the past, what we live with today, and what we pass on to future generations”* (UNESCO, 2007). Understanding this notion, one comes to know that we inherit a place and learn from the achievements of the past, put in our share and then pass the knowledge on to the next generation. *“(…) Our cities would be experientially rich and meaningful if the places and spaces within them were not impositions but responses to the rich culture of the people within them”* (Deo, 2016, para 6). Every built project takes its influences from the tangible factors of the program, site, surroundings conditions but it is important to consider the intangible cultural influences to bring in a soul into the program and make it belong. As Jacquemet explains that heritage is not about preserving the past only but it is anchored in the contemporary world. *“Heritage is something very modern because it builds upon memories which are triggered by the contemporary environment we live in”* (Jacquemet, 2018, para. 10).

#### **1.1. Urban Historical Context & Contextual design:**

Historical Urban Context and sites provide an important insight into the past life style, building techniques and traditional and cultural values. The conservation of these traditional values in the context of conservation and revitalization of architectural heritage is in a sense the preservation of culture. *“The main goal of conservation is to enliven cultural properties by evaluating their architectural, historical, environmental, visual and aesthetic characteristics”* (Ipekoglu, 2005, P.386). *“The relationship between new architecture with its historical context is determined from the values assigned to the meaning of its heritage architecture and consequently its modern interpretation. It is the architect’s task to express architecturally his or her era and simultaneously get involved in a dialogue with the context, in which the architect builds”* (Demiri, 2013, p.44). Hence it is important to understand the values of the traditional context with the significance of heritage architecture to interpret them into the contemporary solutions and project proposals while dealing with historical urban fabric.

Context has multiple external elements that influence a design. These elements are physical and non-physical. Roads, buildings land contour are examples for physical elements, while non-physical elements are the weather condition, local culture, as well as political and financial constraints (ASAG, 2018). Hence the consideration of tangible and intangible aspects of the context have to be considered. *“Each city*

*is a context containing its own architectural language. It is also a living organism with a unique culture and a past, called a contextual history". It also has a future in which new buildings act as the threads, that weave the cities living traditions into new and whole fabric"* (Molaei & Mahdavi, 2011, p12). By definition, the idea of including by recognition or replication, the defining aspects of a local physical environment has been referred to as contextualism. (Cohen 1974). Contextualism originated from the desire to resolve problems of harmony with the historical environment and the placement of new buildings within historical surroundings (Cizgen 2012). Now there is much more focus on making an effort towards a design that echoes the architectural elements of its neighbours Paul Goldberger in an article for the Times archive discusses the notion of changing ideologies of architects that architects are following a philosophy where it may be better to be discreet than to be original. *"Whereas modern buildings once tended to be conceived as pure, abstract objects, independent of what was beside them, there is now much more attention paid to the notion of fitting a building into its architectural."* (Goldberger, 1981, Para 1).

### **1.2. Approaches for a new design:**

There are many recommendations and charters available that provide guidance for architects, planners and designers to design in historical urban fabric. *"New construction, such as an addition to a historic building, a separate building or an infill, is a contemporary intervention that will inevitably induce change in the urban environment. Whether that change will be positive or negative depends, to some extent, on the guidance available for applicants and evaluators who respectively submit and review new project proposals"* (Khalaf, 2015, p.77). These guidelines are available for the architects and designers that can help in different stages of the project. *"The new intervention project's success in historic context depends on the prior assessment and the designer's sensitivity toward the context, but it is not guaranteed. The context's prior assessment is supported and guided by the international instruments of conservation policies"* (Paun, 2016, p.196). Conservation policies have been developed over time in different formats that include recommendations, recommendations, declarations, charters, guidelines and other documents written by experts and conservationists of the historical environment. International conservation policies have improved over time with the attention paid to the issue of new construction by the concerned authorities and group of experts and now there are over 40 different charters and guidelines available in the online archives of ICOMOS and UNESCO that can be consulted while designing in the historical context. *"The degree of application and contrast in building features to achieve visual harmony is an issue that experts and public involving with it are concerned when discussing about new infill design in historical context. For designing in historical context, an important aspect is considering the contextual design approach"* (Sotoudeh & Abdullah, 2013, p.1286). While the contextual approach is preferred in international guidelines and international heritage charters, internationally many architects have the opposite point of view to this approach. German modernist Walter Gropius was against the contextual approach and supported this attitude, and kept a strong viewpoint against allowing the study of traditional architecture to influence the modern design (Collins 1965a).

He asserted that the study of the history of architecture makes no contribution towards the evolution of a contemporary theory of architecture. He also stated that, *“When the innocent beginner is introduced to the great achievements of the past, he may too easily be discouraged from trying to create for himself”* (Collins 1965b, pg.2). The strive towards achieving landmark buildings and iconic forms has become a phenomenon in star architecture. *“Landmarks become more easily identifiable, more significant, if they have an innovative form, if they contrast with their background, and if there is some prominence of spatial location”* (Barranha, 2009, p.7). Architects have tried to move away from the contextual approaches to show their signature style. Many a time while the projects have created international fame and they have brought success and fame for the countries they have been built in. Guggenheim Bilbao is the example of star architecture that has brought the new identity to a rundown industrial city and made it a global tourism destination (Moore, 2017). The statement from Rem Koolhaas has also been used as the defence against anti contextual approach *“As their protagonist Koolhaas ‘fuck context’ statement shows, architects, when they become agents of global neoliberalism, can ignore contextual concerns since the purpose of their pragmatism is to allow them to operate in different territories under contradictory political regimes and social conditions”* (Daglioglu, 2015, p.270). Hence, it can be said that where many architects are raising voice for the contextual approaches into the historical context there is also a resistance towards this approach by internationally acclaimed architects therefore this study becomes very important and critical to analyse the approaches used in the recent projects.

## **2. Research Methodology:**

The aim of this research is to study the contemporary architecture that has been introduced into a historical context having a valuable historical importance. Thus the case studies have been selected accordingly based on the following criteria.

1. All three examples are contemporary additions no older than two decades and built in the historical context of the significant cities.
2. All three buildings are from different European countries to study different approaches and design ideas from different countries. Different typologies and program of buildings have been discussed to draw knowledge from variety of projects.

A literature review has been carried out of the important international charters on the built heritage to analyse the selected case studies.

1. A qualitative study of the significant International charters, principles and resolutions has been carried out to highlight the significant points and topics. A literature review of these texts is conducted to summarise the important points.
2. Case studies have been analysed with an historical overview and the description of the contemporary addition into the historical context.
3. Projects then have been examined with the aspect of their historical importance. Selected case studies are then evaluated under the criteria developed from the international charters, recommendations and guidelines to come up with the conclusion.

### 3. Principles regarding new buildings in Historical context:

#### 3.1. International Charters and Recommendations:

The *Venice charter* is of international importance and influential document on conservation since 1964 as it deals with the historical heritage secondly because in the same congress UNESCO also proposed to *establish ICOMOS 'International Council on Monuments and Sites'*. It is a professional association that works for the conservation and protection of cultural heritage places around the world (Venice, 1964). A literature review of Venice charter and other important charters and resolutions is done for this paper and important points concerning the new additions in the historical context are highlighted and shown in Table 1. The other important charters include the *ICOMOS Budapest Resolution-Symposium* on the introduction of Contemporary Architecture into Ancient Groups of Buildings (Budapest, 1972), *Kazimierz Resolutions-Seminar on the integration of Modern Architecture in Old Surrounding* (Kazimierz, 1974), *Appleton Charter- Protection and Enhancement of the Built Environment* Published by ICOMOS (Appleton,1983), *Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas* Adopted by the 17th ICOMOS General Assembly (Valletta, 2011) and the *Burra Charter for places of cultural significance* adopted by ICOMOS Australia in 1998 and revised in 2013 (Burra 2013).

<b>Venice Charter</b> (1964)	<p><b>Article 6</b> - traditional settings must be kept, no new construction, demolition or modification which would alter the relations of mass and colour must be allowed.</p> <p><b>Article 9</b>- any extra work which is indispensable must be distinct from the architectural composition and must bear a contemporary stamp.</p> <p><b>Article 13</b>- additions cannot be allowed except in so far as they do not detract from the interesting parts of the building, traditional setting and relations to surrounding.</p>
<b>Budapest Resolution</b> (1972)	<p><b>Point 2</b>- contemporary architecture will fit itself into an ancient setting without affecting the structural and aesthetic qualities as far as due allowance is made for the appropriate use of mass, scale, rhythm and appearance.</p> <p><b>Point 3</b>- authenticity of monuments as a basic criteria and avoidance of imitation.</p>
<b>Kazimierz Resolution</b> (1974)	<ul style="list-style-type: none"> <li>• All human settlements, if they are to remain living entities, must adapt to changing circumstances The introduction of new elements into old surroundings is both feasible and, to the extent that it affords the opportunity of enriching the social, functional and aesthetic character of the existing fabric.</li> <li>• Introduction of new use must not destroy the physical structure of an area of historical or architectural value or vernacular interest. Modern architecture, making conscious use of present day techniques, must respect the structural, aesthetic, historical and social qualities of its old surroundings.</li> <li>• The careful design of the new and old must go together as parts of a comprehensive scheme for the rehabilitation of an area.</li> </ul>
<b>Appleton Charter</b> (1983)	<p><b>Setting:</b> Any element of the built environment is inseparable from the history to which it bears witness, and from the setting in which it occurs. Consequently, all interventions must deal with the whole as well as with the parts.</p> <p><b>Additions:</b> New volumes, materials and finishes may be required to satisfy new uses or requirements. They should echo contemporary ideas but respect and enhance the spirit of the original.</p>

<b>Valletta Principles (2011)</b>	<p><b>Principle 2.</b>the introduction of contemporary architectural elements must respect the values of the site and its setting. Basics of architectural interventions in spatial, visual, intangible and functional terms.it must be consistent with the spatial organization of the historic area and respectful of its traditional morphology.</p> <p><b>Principle 4.</b> contemporary architecture must be coherent with the existing spatial layout in historic towns. Contemporary architecture should find its expressions while respecting the scale of the site.</p>
<b>Burra Charter-1979 (Revised-2013)</b>	<p><b>Article 15.</b> Change may be necessary to retain cultural significance, but is undesirable where it reduces cultural significance. Changes that reduce cultural significance should be reversible. Demolition of significant fabric is not acceptable however minor demolition may be appropriate as part of conservation.</p> <p><b>Article 21.</b> adaptation is acceptable where it has minimum impact on the cultural significance and minimum changes to significant fabric.</p> <p><b>Article 22.</b> new work should be readily identifiable and respect and have minimum impact on the cultural significance of the place.</p>

Table 1: Highlighted points from the International charters.

### 3.2. Framework for Analysis:

A framework for the evaluation of the case studies has been developed from the important highlighted points in Table 1 to evaluate the three case studies. Following are the key points that will be looked while analysing the case studies. These key points have been selected as they are directly concerned with the introduction of the new building into the historical context.

- New building keeps the traditional settings.
- New building bear a contemporary stamp.
- Additions should not distract from traditional setting and relations to surrounding.
- New building should fit itself into an ancient surrounding.
- New building must not destroy the physical structure of an area.
- New building should respect the structural, aesthetic, historical and social qualities of its old surroundings.
- The careful design of the new and old must go together as parts of a comprehensive scheme.
- Contemporary architecture should find its expressions while respecting the scale of the site.
- Changes that reduce cultural significance should be reversible.
- New work should be readily identifiable.

### 4. Case Studies and Analysis:

The three case studies have been described with a (A). Literature review of historical background. (B). Project description. (C). An analysis of the project.

#### 4.1. Bullring Shopping Centre- Birmingham, UK:

Bullring Shopping Centre is located in Birmingham the second most populated city of United Kingdom. The second Bullring Shopping Centre opened after the demolition of the 1<sup>st</sup> Bullring, which was constructed on a site having a historical value of having a recorded market activity since 12<sup>th</sup> century. It is one of the busiest shopping centre of U.K in the heart of the Birmingham city.

#### 4.1.1. Historical Background:

Birmingham as a settlement dates from the Anglo-Saxon era indicating that Birmingham was established in the 6th or early 7th century as the primary settlement of an Anglian tribal grouping of that name (Leather,2001).

The city was first given the right to hold a market in 1166 in the area that is now known as the Bull Ring. Most of the market people were gathered close to the church walls and in special street today this still runs from the inner ring road (Chin, 2003). Halifax describes the importance of the St. Martin's Church in 17th century it was the only church in Birmingham which was a small town that developed and became second biggest city of UK. It was only in 1720, as the city population started to boom in the build up to the peak of the Industrial Revolution, that other churches were built and commissioned. According to historians probably there was a church here in 1166 when the charter for the bull ring was granted. By 1290, however the de Berminghams, Lords of the Manor, built a new church of red sandstone but as it was a soft material so by 1690 it deteriorated and to stop that church was covered in a three thick wide red brick layers, However, it did not stop the erosion, and in 1873 the church, apart from the previously restored tower, was completely rebuilt as we see it today (Halifax, 2015).In the figure 1 the church before the rebuilding can be seen and the figure 2 shows the church with its immediate surroundings in 1950.



Fig:1 Drawing by Thomas Hollins, (1811)

Fig:2 Picture dated: 1950

Fig:3 Market Hall before demolition

(18CB, 2012)

William Dargue describes the site of Bullring in the history of Birmingham, till the year 1731 the open space was trespassed initially by temporary stalls that were made permanent, that were later replaced by building. By the year 1801 Birmingham's Commissioner started buying the encroached houses and shops on the open space around the church and regularised the market activity, with the Bull Ring area cleared of encroachments and the relocating of the wholesale markets plans were made to build an indoor market hall. Figure 3 shows the market hall without its roof. Market hall was designed in a neo-classical style by Charles Edgar and built in 1835 imposing building, the principal entrances included tall round arches lined by large Doric columns. The hall around 365 feet long, 180 feet wide and 60 feet tall and it fitted 600 stalls, the roof was held from inside by the rows of thin cast-iron columns. The Market Hall was devastated in 1940 due to the bombing

but the walls remained standing until after the completion of new Bullring in the early 1960's (Dargue, 2008, Para.15).



Fig:4 Image dated  
12/1945

Fig:5 Image dated  
12/1999

Fig:6 Image dated  
12/2010

Google Earth images

In the figure 4 Left image taken in 1945 shows the area with the market hall and the open shopping area where the red line shows the outline of first bullring and the black line shows the current shopping center. In 1955, shops began to close down as the redevelopment of the area was proposed. Plans drawn up showed the creation of new roads and the demolition of old ones and all the buildings on the proposed site. Demolition began in the late-1950s beginning with the demolition of the old fish market. Construction for the Bullring started in 1961. The outdoor market area was opened in June 1962 and the new Bullring with 150 stalls opened in 1964, it provided 23 acres of air-conditioned shopping mall having 350,000 feet of retail trading space, declared the biggest indoor shopping mall outside of the USA. The shopping centre provided a mixture of traditional open-air market stalls and an indoor shopping area, but many people were unhappy as the old market was demolished and loss of historically significant fabric (Kennedy, 2004).



Fig: 7 Aerial View of the first Bullring  
shopping centre



Fig:8 Aerial View of the current Bullring  
complex

(Dargue, 2008)

The 1960s Bull Ring Centre had problems from the beginning and was very much a product of its era. First Bullring centre can be seen in the Figure 7. At the time of its opening it was considered the height of modernity, the public were also less inclined to use the subways and escalators, which stopped working regularly. Also, it did not age well and soon became generally regarded as an unfortunate example of 1960s Brutalist architecture, with its boxy grey concrete design and its isolation within ring roads connected only by pedestrian subways. It was, by the 1980s, much disliked by the public and contributed to the popular conception that Birmingham was a concrete jungle of shopping centres and motorways. (BBC,2003)

#### 4.1.2 Project Description:

Redevelopment plans for the Bullring started in 1980s, after multiple ideas the in 1987 the document called 'the people's plan' designed Chapman Taylor Architects for London and Edinburgh Trust (LET). The proposal was to demolish the shopping centre and to build a new mall but due to the pressure groups the plans were changed (Larkham 1996). After revised proposals in 1988 and 1995 the demolition of the old bullring centre began in 2000 and the new Bullring shopping centre designed by Benoy opened on 4<sup>th</sup> September 2003. Figure 8 shows the Aerial view of the development.

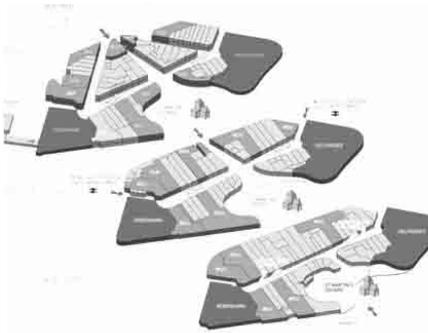


Fig: 9 Axo of Bullring layout

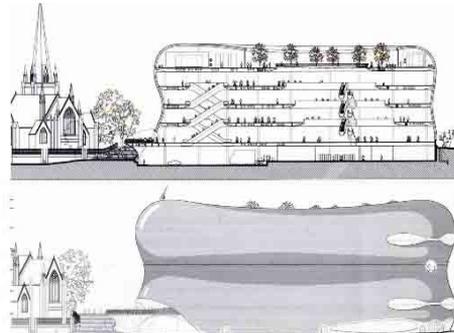


Fig: 10 Section/Elevation of Selfridges

(B&FCCA, 2007).

The Master plan of the Bullring Shopping Centre was planned and designed mainly by Benoy. It consists of the two main buildings divided between the east and west mall with a pedestrian walkway and connected by an underground passage surrounded by shops, it is also accessible from St Martin's Square. To cater for the larger crowds the doors of both wings from New Street can be removed, this feature also allows bigger exhibits to be brought inside the building. Walkways inside the shopping malls are covered by a glass roof known as the SkyPlane which covers 7,000 square metres and appears to have no visible means of support. The development also contains a landmark building housing a branch of Selfridges department store known as 'Selfridges Birmingham', design by the Future System. The building is covered in 15,000 shiny aluminium discs that can be illuminated (Dargue, 2008). "It is, says its developer, the Birmingham Alliance, 'Europe's largest

*retail-led regeneration project, representing an investment of over £1bn, providing 110,000 sq. m of new retail accommodation over three trading levels”* (Glancey, 2003, para 4). The Selfridges store was designed by Future systems. In figure 8 The highlighted part in axonometric of the project layout is the Selfridges store. *“The structure was honoured by the Royal Institute of British Architects, who said it was “clearly one of the most provocative of all the year’s submissions because of its uncompromising and unprecedented outward appearance”, built for a cost of £500 million - The shopping centre itself says the building is an “iconic symbol” that represents Birmingham - fit for a city with ambitions”* (BBC Birmingham, 2004, Para 7). The Bullring Shopping centre has been praised by experts for helping to revitalize the Birmingham’s city centre and, the project has been a success as a retail led urban regeneration.

#### **4.1.3. Project Analysis:**

According to the framework of analysis developed from the international charters, new building should keep the traditional setting, the Bullring Birmingham project does not keep the traditional settings as during the construction of the first Bullring major historical buildings including the market hall was demolished. Apart from the St. Martin’s church most of the surrounding fabric has been rebuilt as a part of the retail led urban regeneration program. Another point is that the new building should not destroy the physical structure of the area, both the master plans changed the urban fabric of the surroundings on a huge scale, it can easily be said that apart from the church almost the entire surrounding area has been redeveloped. In the figure 4, 5 and 6 the foot print of the first and the second bullring interventions can be seen. Most of the important buildings were demolished to build the first intervention, the second intervention has even a bigger footprint. The project bears a contemporary stamp with a contemporary language. In the Figure 7 St. Martin’s church can be seen with the first Bullring development while in Figure 8 the current state of the setting. The Selfridges department store designed by future system stands out and does not fit in with the new addition as a part of comprehensive scheme. Additions are of a huge scale and the only historically significant building of St. Martin’s church acts a monument which has been dealt in separation, where most of the fabric around it has a contemporary setting. New work is readily identifiable from the historical context as there is an extreme contrast between the St. Marin’s church and the new development. Contemporary architecture is successful as the project is considered a successful project in the urban renovation and the city of Birmingham has become the commercial hub, but the project overpowers the surrounding context.

#### **4.2 Praca De Lisboa- Porto, Portugal:**

Praca De Lisboa is located in the historical centre of Porto surrounded by the historical buildings of the Rectory building of University of Porto on west and Igreja e Clérigos on the south.



Fig:11 View of Market

Fig:12 Plan of historical Market  
(Archquiston, 2014)

Fig 13: View of the Market looking towards the church

#### 4.2.1. Historical background

The city of Oporto is built along the hillsides, the sloping hill side with gives multiple views as it opens up to the Douro river, it has an outstanding urban landscape with a 2,000-year history. Archaeological excavations have revealed human occupation in the city since the 8th century BC. Its continuous growth is linked to the sea and it is famous for its port activity the Romans gave it the name Portus, or port (UNESCO, 1996). It is a myth, associated with a medieval legend there was a chapel in honor of S. Michael. According to the legend while D. Afonso Henriques and D. Mafalda were returning from Coimbra in 1153 and, heading towards Guimaraes, the queen fell into a ditch in Olival. On this occasion king asked S. Michael, the Angel to help her and to thank him he built a chapel in his honour. (Uporto, n.d).



Fig: 14 Image dated 06/2007

Fig: 15 Image dated 11/2005

Google Earth Images.

Madureira describes that in 1672, the Reclhimento dos Anjo was built on this site, at the initiative of D. Helena Pereira with the support of the Bishop, the King and the City Council, to help women in need. From 1834 to 1839, the space was unused and was in a shattered state, waiting for a use. Shortly after the Civil War, the Porto Chamber decided to build a market. The reasons are due to the fact that the city of Porto was in a need of a market, due to the large fairs that were

happening all over the city and the space was required. Hence, the market place was proposed on the site of Reclhimento dos Anjos (Madureira, 2002) The Figure 11 and 13 shows the images of the market place. Elisabete Jesus points out that in 1832 the Reclhimento dos Anjos only housed old ladies and none of those for whom the house had been created. They were struggling at their expense with great difficulty, especially during the siege of Porto, when the last of them were left. The building then served as a military facilities and hospital. Finally, by decree of May 20, 1833, it was declared extinct and donated, with its assets, to the City Council, which had to sell them to pay the creditors the many debts that were contracted (Jesus, 2006). Praca de Lisboa also seems to be an extension of the garden of Cordoaria (Jardim da Cordoaria). It is located on the the south-west of the Praca de Llisboa and it was inaugurated in 1867. Igreja dos Clergios church built in 1763 is on the south side of the Praca de Lisboa as shown in the figure 16, and the Neo-classical rectory building of University of Porto is on the North-West side it can be seen in the figure 18.



Fig: 16 View towards Igreja e Clérigos

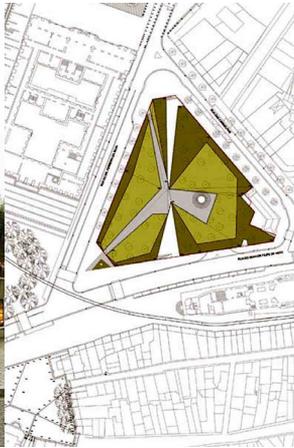


Fig: 17 Master plan



Fig: 18 View from Igreja e Clérigos tower

(Architizer, 2013)

Madureira points out that this specific site was chosen to build the market due to two reasons. Firstly, the available land was on the periphery of the city making it an ideal location secondly after the decree of the extinction of religious orders there was an opportunity to use the empty spaces and hence 'Mercado dos Anjos' was inaugurated in 1839, shortly after the demolition of the Reclhimento dos Anjo, that has been demolished after the authorization of the government two years earlier. The layout plan of the market can be seen in figure 12. Throughout time, from its opening until 1948 the market remained unchanged. Several years after it was first thought, that the conditions of the market functionally and hygienically are no longer feasible and hence it was demolished in 1948 (Madureira, 2012).

#### 4.2.2. Project Description:

In the figure 14 the plaza before intervention is shown where *“In the 1990s, the area had become an open square with peripheral galleries and commercial spaces known as the Clerigos Shopping. The centre did not have much success and it was permanently closed in 2006”* (Disup, 2013). In 2007, the city of Porto organised a very exclusive competition, large-scale urban renewal project of 5,000 square meters has been designed by Balonas & Menano Architects. The master plan can be seen in the figure 17, the intervention has a clear topographic expression with multiple inclined planes that houses three programmatic levels inside and under the green layer of the roof, planted with olive trees. In the middle of the complex is the commercial area as seen in the figure 16 that connects the Clérigos Tower through a single large route. The design is based on the public square that adapts to the city and the pedestrians and connects the program with the surroundings. The concept of a public garden and the semi covered commercial street that connects garden of Concordia towards south and praca Gomes Teixeira towards north that also marks entry to the rectory building of University of Porto. The commercial streets connect the praca Gomes Teixeira to the Igreja e Clérigos and frames the church while accessed from the north side. The scale of the building develops a rich dialogue with the surrounding, the architecture solution respects the important surrounding heritage by creating a dialogue with it and humbly fits in to the context.

#### 4.2.3. Project Analysis:

Analysing the project under the framework developed from the international charters. The project does not keep the traditional setting of the area the intervention has been proposed as an urban renewal for the whole site of old market place covering 5000 square meters. The new project bears a contemporary stamp and, revitalises the old spiritual feel of the place by creating a shopping street, reviving the concept of a marketplace and, also creates a public plaza. Another point is that the new building should not destroy the physical structure of the area, the new intervention fits in with the historical setting without blocking any view or clashing with the context, it fits itself into the surrounding context without destroying the physical structure of the site. Project is built to respect the views; it maximises the views of the surrounding context. While approaching from the north street connects praca Gomes Teixeira and the Igreja e Clérigos while framing its tower. The urban garden rises from ground and creates the upper level as a public garden and gives visual continuity to the garden of Cordoaria, the level changes are very subtle incorporating the multiple levels of the scheme without giving the overwhelming scales in height variations. The project successfully incorporates the parking garage in the underground that can be easily accessed from the slope of the road, the shopping street keeps the historical memory of the site alive and the public garden makes it a gathering space for the public. The contemporary addition goes with the surrounding context and does not distract the horizontality of the project and the anchoring factor that it rises from the ground makes it fit into the context. New work is readily identifiable from the historical context but it respects the surrounding context and creates a dialogue with it. Hence, contemporary architectural intervention successfully finds its expression while respecting the scale of the site.

### 4.3. Metropol Parasol Seville:

Metropol Parasol is built in the Plaza de la Encarnacion situated in historical centre in the city of Seville, Spain.

#### 4.3.1. Historical Discription:

This square is the built after the modifications carried out in the 16<sup>th</sup> century to the present day. Plaza gets its name from the Convent of the Encarnation which occupied the site. The present day square is the result of the city councils plan for demolition and expansion of the space, in 1587 city council bought several buildings located around the convent to proceed with the plan of creating a square (Bueno, 2006). At the beginning of the [19th century](#), during the French invasion, the Convent of the Encarnación was demolished, and a market of three streets covered with galleries was built in the centre. The only remaining part of the convent is the fountain that was used in the market square and it is still the part of the new square. Under the Metropol Parasol in the archaeological museum one can see the remains of the old convent (Berrocal, 2014).

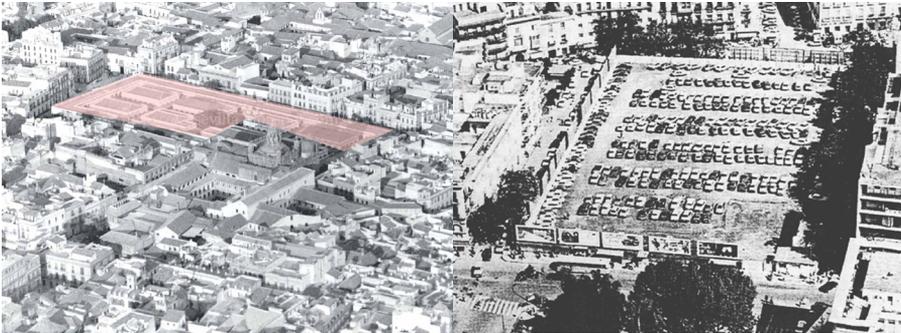


Fig: 19 View of the Market place

Fig: 20 View of the parking lot

(Esasevilla, 2010)

The old Market of Mercado de la Encarnación was built between 1833 and 1837, it occupied the site Plaza de la Encarnacion or the Metropol Seville. The market had many entrances, it was possible to access the market from all sides. The Aerial view of the old market can be seen in the figure 19. In the centre of the market there was a fountain, brought from the outer square where it had been resting since 1720. In 1948 the market was partially demolished to connect and enlarge the streets of Imagen and Larana, giving the plaza the shape and its current organisation. After this demolition the fountain was again moved, where it continues today. In 1973, due to the run-down state of the market the decision was taken to demolish the market completely. After the demolition the site was used as parking for many year as seen in Fig 20. After that it was abandoned for decades (Esasevilla, 2010).. The space then remained empty and unused protected by a solid barrier. In 1982, when renovation work began with a view to commercial reactivation of the zone, significant finds from the first century Roman Era put an end to the project and converted the square into an archaeological dig. The archaeological dig of the site could be seen in the Figure 21. This situation was very concerning for the local

businessmen of the historical, but in recent decades, the archaeological findings and the museum has become a major reference in the cultural roots of international tourism. (Bordas, 2012)

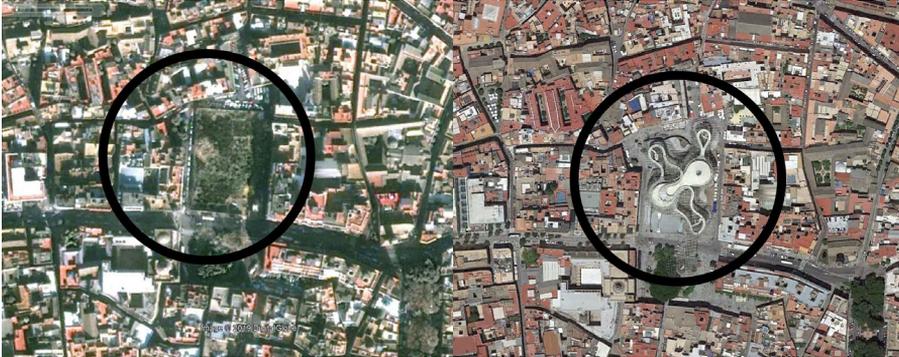


Fig: 21 Image dated:1/2001

Fig: 22 Image dated: 6/2018

Google Earth image

#### 4.3.2. Project Description:

In 2004, an international ideas competition was held by Seville city council to give this square a different structure and to constitute a meeting place. The German Jürgen Meyer was the winning architect with their project called Metropol Parasol. The rules of the competition were clear and aspiring. Besides enabling a complex programme of uses, which included a municipal market, an archaeological museum and a public square, it was also stipulated that the project had to constitute an architectural landmark with sufficient iconic impact to create a new tourist attraction. As described by Connor the scandalous mix of the tradition with the contemporary architecture and combination of the present to consider the future of the city and coming up with a unique union. Plaza de la Encarnación now as a urban plaza includes the Market of Abastos de la Encarnacion and underground museum El Antiquarium, inaugurated in December 2010, the market has 40 stalls of about 20 square meters each. There are greengrocers, butchers, grocers, fishmongers, coffee shop and even a jewellery store. Antiquarium, the underground museum space houses inside the first stones that the Romans placed in the Plaza de la Encarnación. The Antiquarium is covered by a hanging layer of glass throughout its space. In this museum the Roman remains of emperor Tiberius (30 AD) and the Islamic houses from the 12<sup>th</sup> and 13<sup>th</sup> centuries could also be seen which once occupied the site. (Connor, 2011).

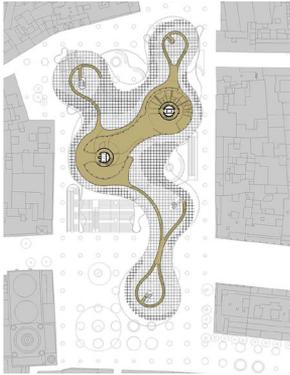


Fig: 23 Master Plan



Fig: 24



Fig: 25 Ariel view of Metropol Parasol

(EUMies, 2013)

The first level below the ground floor is designed accordingly so one can easily walk around the excavated Roman ruins in the museum. The second level or the street-level includes a large farmer's market along with a few cafes. The third level, a raised platform below the structure, is an open space where you can really take in the massive size of the structure and feel the scale of the design intervention. The fourth level is on the very top of the project where the architect has created a large panoramic deck to see the 360 degree views over the ancient city centre.

Shaney Hudson writing for BBC has criticized the intervention the historical city describing the importance, as the city offers visitors an implausible mix of architectural statements from different centuries and shaped by the over 1300 years of history, from Roman ruins to Moorish minarets, Baroque palaces to Renaissance churches. According to Hudson with the new intervention, city's architectural heritage has come under an obstruction, threatening Seville's UNESCO World Heritage status. The Metropol Parasol, a marketplace and a museum that has been built after the original intention of creating a parking lot was abandoned due to the discovery of Roman ruins, now preserved in the underground Antiquarium museum. Hudson thinks that despite much ordeal, the new addition of the Metropol parasol that looks like giant mushrooms and considered to be the world's largest wooden structure, has not quite settled into its neighbourhood (Hudson, 2012).

#### 4.3.3. Project Analysis

Analysing the project under the framework developed from the international charters. The project bears a contemporary stamp, it revitalises the historical character of the site by incorporating the underground museum to showcase the archaeological findings and reviving the idea of a market place that once existed on the site. Despite this the contemporary additions of the wooden structure of the urban plaza has been criticised heavily by the international critics, the contemporary intervention completely disregards the historically significant surrounding context. It also neglects another significant point of not destroying the physical character of the site, due to its scale and volume the attention is diverted from the surrounding

buildings and new intervention becomes the sole focus of the area. The project also blocks the views of the area and the respect for the views have been compromised. The form of the Metropol Parasol conflicts with the built fabric as seen in the figure 22 and figure 23, the new addition does not respect the traditional language of the surrounding buildings or the urban fabric. Additions of the contemporary projects distract from the traditional settings and there is an overwhelming presence of the new additions in the Urban Plaza. Metropol Parasol does not fit into the context but stands out and becomes an imposing structure. The physical structure the area has been compromised as the contemporary addition is in contradiction, structurally there are not similarities of language, aesthetics or character and design sits in complete contrast with the existing settings. The design of the project drastically contrasts from the rest of the city and it is off scale in comparison to the rest of the surroundings. The new work is readily identifiable from the surrounding context and the large wooden cantilevered structure has an overwhelming presence in the context.

### 5. Comparison and Discussion:

The three case studies have been reviewed with the historical significance, description of the project and a project analyses. Table 2 shows a comparison for the three case studies under the criteria defined from the International charters and principles.

Factors	Bullring Birmingham	Praca De Lisboa	Metropol Parasol
New building keeps the traditional settings.	✗	✗	✗
New addition bears a contemporary stamp.	✓	✓	✓
Additions should not distract from traditional setting and relations to surrounding.	✗	✓	✗
New building fits itself into an ancient surrounding.	✗	✓	✗
New building must not destroy the physical structure of the area.	✗	✓	✗
New building should respects the structural, aesthetic, historical and social qualities of its old surroundings.	✗	✓	✗
The careful design of the new and old must go together as parts of a comprehensive scheme.	✗	✓	✗
Contemporary architecture finds its expressions while respecting the scale of the site.	✗	✓	✗
Changes that reduce cultural significance are reversible.	✗	✓	✓
New work is readily identifiable	✓	✓	✓

Table 2: Evaluation under the framework developed from International charters and principles.

According to results from the Table 2: Praca de Lisboa is the most successful project, as it meets 9 out of 10 categories successfully. Praca de Lisboa includes the program of a shopping street, reviving the memory of the historical market place that was on the site for almost two centuries. The project also acts as an urban open plaza with its arrangement of the slanting planes that rise from the ground and acts as a singular plane, making it a space for public gathering and meeting, project also includes an underground parking plaza that fulfils the need of the area. Thus combining the three functions and becomes a successful contemporary integration in the context. Metropol Parasol meets 3 categories. This urban complex acts as a public plaza, it also incorporates an archaeological museum in the basement, a market place, restaurants and a viewing walkway that gives 360 degree views of the city. Though the project acts as an attraction and has successfully brought in a huge amount of tourists, the project however does not sit in harmony with the surrounding context. Bullring meets only 2 categories making it the least successful. Though it is considered a successful project due to its success as a retail led urban regeneration, that has given a new identity to the city of Birmingham, but it came at a big cost during the first and second proposal. The contemporary architecture and unconventional approaches have been both praised and criticised by the architectural critics, analysing the project under the framework developed from the international charters, project is not a successful integration it can be said that that the whole area has been redesigned keeping very little of the original fabric.

## **6. Conclusion:**

Historical context contains multiple layers of built heritage and achievements of previous generations. Significant cultural and heritage values are preserved in the built fabric, therefore it is not easy to design in the historical context. On the other hand, the contemporary additions in the city can give new identity to the area and, a well woven and integrated project that creates harmony can enhance the character of the area and, gives new identity to the region. Contemporary and iconic architecture plays an important role in enhancing and promoting the city's identity, we have seen the phenomena of major cities hiring influential architects and commissioning them to design major projects, to build an image for the city. There are many approaches while one deals with the historical context, but the appropriate design that respects the existing fabric while keeping a language of its own time should create a harmony between the new addition and the old fabric. International charters and recommendations on heritage can provide guidelines for the designers and planners. This paper provides a review of selected articles and a criterion to analyse the new design into a historical context. The three analysed case study buildings attempt to regenerate the historical, public and commercial activity using different design approaches. The three projects are successful in term of their primary functional and design goal bringing the identity to the cities but the appropriateness of the design is still in debate and this study can provide a base for the further research on the subject of appropriate design in the historical context.

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# ILLEGAL CONSTRUCTIONS IN SOCIALLY OWNED LAND IN KOSOVO – PRIZREN

**VENERA GOXHA**

Identification as a problem and treatment of the illegal use of land of socially owned property in Kosovo, with the focal point in Prizren, is the fundamental body-content of this study paper. The illegal use and exploitation of socially owned land in Kosovo, respectively the construction of residential, commercial and public buildings (non social property) on the socially owned land, is the core subject elaborated in this study. These constructions are considered illegal since they are performed on socially owned land, without any permit, previous approval, and license or similar and this topic hasn't been discussed or elaborated much in Kosovo. Land, on which the houses/buildings are constructed, at the cadastral official registers in Municipal Cadastral Offices, even today are registered as social ownership; actually, they are in the name of Socially Owned Enterprises (SOE). Consequently, the users of the land automatically are to be considered as illegal occupants, or illegal users of the property of social ownership.

The violence of war caused the destruction of public records about public and private rights to land and buildings, including the cadastral and court records and the archives of the enterprises that managed the socially owned land, apartments, and other assets. Property maps, cadastral books, possession lists, and transaction document archives, which comprise of the "authoritative" identification about who has what rights to what land and buildings, have been removed to Serbia. In addition, people avoided the formal transaction recording system and carried out transactions informally for several decades due to transaction taxes and the legal prohibition of transactions between Serbs and Albanians. Therefore, in general, the study represents the research of very complex problems of two interactive systems, the land use in the specific state of social ownership and construction of individual buildings in specific illegal status and social /economic implications as consequences.



# **SIMULATION STUDY ON THE EFFECT OF LANDSCAPE TREATMENTS ON THERMAL COMFORT IN OUTDOOR ENTERTAINMENT VENUES IN A HOT ARID CLIMATE**

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## **Abstract**

The demand for outdoor entertainment venues is proliferating as it is becoming a key feature in Cairo's mixed-use developments despite its hot arid climate. Due to the fact that outdoor spaces are thermally challenging, different strategies must be considered to help mitigate the microclimatic conditions in an attempt to enhance the thermal comfort of users.

This paper aims to analyze and compare the effect of using water surfaces, grass, or trees with grass as a bioclimatic landscape design strategy to enhance the thermal comfort of users in outdoor entertainment venues in New Cairo, Egypt. The study is simulation-based, where ENVI-met was used to model and simulate different scenarios. The start-up scenario represented the existing buildings of the selected entertainment venue with paving covering all the outdoor area of the venue. Then, we established a set of scenarios representing different percentages of either water surfaces, grass, or trees with grass. Simulations were run on a typical summer day using meteorological data for Cairo international airport. We calculated Predicted Mean Vote (PMV) for all the scenarios using BIOMET, a tool inside ENVI-met.

The results of the simulations pointed out that increasing the percentage of different treatments helped in enhancing thermal comfort level with varying effects. However, scenarios using different percentages of grass coverage always resulted in the highest, and worst, average PMV value of the outdoor area between the venues buildings compared to other treatments. Meanwhile, increasing water surfaces area showed better average PMV values than trees with grass only until the

60% coverage scenarios where trees with grass started to result in the best thermal comfort enhancement levels. We analyzed the simulations output using SPSS statistics software where we found statistical significance between the different.

Increasing the percentage of different treatments showed the best PMV improvement rate where the average drop in PMV values between different percentage scenarios reached 0.102 at 10:00 for grass, 0.287 also at 10:00 for trees with grass, and 0.289 at 12:00 for water surfaces. However, trees with grass recorded the highest average improvement rate of all scenarios throughout the day. The results of this study confirm results from previous studies and should support encouraging decision makers on developing nature based bioclimatic solutions for outdoor venues.

### **Keywords**

hot arid climate; landscape treatments; outdoor thermal comfort

### **Introduction**

The current rapid urban expansion in Egypt helped escalate the need for outdoor entertainment venues that are becoming a key feature in Cairo's mixed-use developments despite its hot arid climate. Taking into account the impact of urban heat island (UHI) effect and climate change on such urban areas, different strategies must be considered to help mitigate the microclimatic conditions in an attempt to enhance the users' thermal comfort (Aflaki et al., 2017; O'Malley et al., 2015; Salata et al., 2017; Santamouris et al., 2011; Yang et al., 2016). In hot climates in particular, the UHI effect makes the existence of thermally comfortable outdoor urban spaces critical, where it affects the users' health and quality of life (Brown et al., 2015; El-Husseiny and Kesseiba, 2012; Nasution and Zahrah, 2012).

According to recent studies (Aflaki et al., 2017; Jamei et al., 2016; Lu et al., 2017; Salata et al., 2017; Zhao and Fong, 2017), the extensive use of low albedo materials on different urban surfaces, the minimized use of permeable surfaces and vegetation, and the heat-trapping building blocks are partly responsible for the increasing UHI phenomenon and outdoor thermal discomfort. In this regard, several studies have revealed that designing climate-responsive urban outdoor spaces with efficient use of shading, greenery, water bodies, high albedo surfaces, as well as the urban morphology characteristics, has the potential to mitigate the microclimatic conditions and provide thermally comfortable environments with less vulnerability to heat stress (Barakat et al., 2017; Berkovic et al., 2012; Coccolo et al., 2018; Elnabawi et al., 2016; Setaih et al., 2013; Toudert, 2005; Zhao and Fong, 2017).

Many studies have pointed out that using urban greenery and vegetation as a bioclimatic urban strategy has one of the strongest impacts on the surrounding environment and the users' outdoor thermal comfort compared to other strategies (Akbari et al., 2001; Coccolo et al., 2018; Karakounos et al., 2018; Manteghi et al., 2016; Perini and Magliocco, 2014). For hot climates, shade trees strongly affect the urban microclimate where they minimize the heat storage of exposed surfaces creating "cool island effect". Other studies (Barakat et al., 2017; Saaroni and Ziv, 2003) showed that the integration of water surfaces with vegetation resulted in better modifications to outdoor thermal comfort than using only vegetation where

evaporation helps moisturize the air. Added to that, water is characterized by its high heat capacity and low solar reflectance.

The effects of different landscape treatments on thermal comfort can be evaluated by using environmental modelling and simulation software. In case of testing and comparing different scenarios, simulation-based studies are very effective, where using such predictive software as ENVI-met allows researchers to edit the settings of an urban environment easier than in-situ modifications (Chen and Ng, 2012). Recently, many indices, such as Predicted Mean Vote (PMV), have been developed to evaluate outdoor thermal comfort condition. PMV model was originally developed by Professor Povl Ole Fanger in 1967 for indoor spaces where he used a seven-point thermal sensation scale where 0 represents the thermal neutral comfort value (Fanger, 1967). Later, PMV model was adapted for outdoor climates by Jendritzky and Nübler in 1981 (Jendritzky and Nübler, 1981).

### Methods and Tools

In order to achieve the study's aim, exploring the effect of specific landscape treatments on outdoor thermal comfort, a simulation-based approach was adopted. ENVI-met V. 4.3.2 was to model and simulate the different proposed scenarios.

### Study Area

For this research, a representative case in a relatively affluent and new urban area was selected. It is located to the west in the western end of New Cairo (30°01'01"N, 31°24'44"E) with total area of around 45,000 m<sup>2</sup> (see Figure 1). The evaluated area is a mixed- use development which houses both commercial and administrative functions. The building heights are between 1 to 7 floors. The selection of this exact development was based on the high percentage of outdoor area, where it reaches around 54% of the whole site. This outdoor area is used as an outdoor entertainment venue which hosts a variety of activities.



Figure 1. Location of the study area in New Cairo, Egypt  
(Source: Google Earth)

According the Köppen climate classification system, Egypt is classified within group B and subgroup BWh "arid with hot climate" where the annual temperature exceeds 18°C (Kottek et al., 2006). The 30-year meteorological data obtained by World Meteorological Organization (WMO)'s station located in Cairo International Airport (30°07'48"N 31°24'00"E) shows that June and July are the hottest months (WMO, 2018). However, July was recorded to have the highest mean daily temperature, as shown in Figure 2. Therefore, simulations were run on the first of

July, representing an extreme summer day.

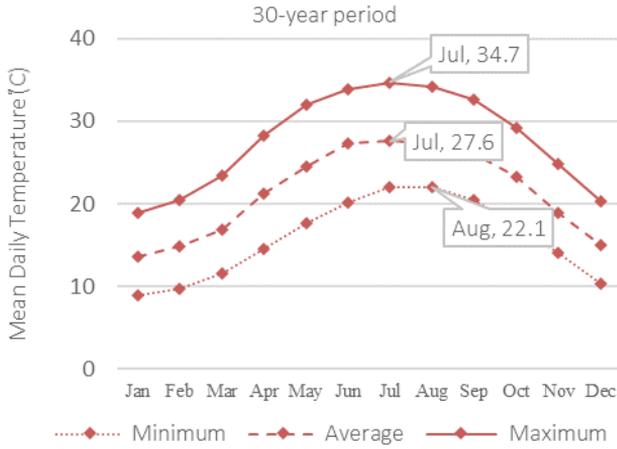


Figure 2. WMO's climatological data for Cairo, Egypt (WMO, 2018)

### ENVI-met Simulations

In order to evaluate human thermal comfort within different scenarios, a predicting software is the most suitable to simulate the microclimatic conditions for different urban built environments. The 3D non-hydrostatic model ENVI-met 4.3.2 was applied to carry out these simulations ("ENVI\_MET – Decoding Urban Nature,"). ENVI-met's model uses detailed soil properties and takes into consideration the evapotranspiration and shading from vegetation. Table 1 shows the simulation input data for the selected date, the first of July, representing the extreme summer day in Egypt. The simulation time is 8:00 to 23:00 according to the selected development's opening hours. However, we only carried out the output analysis starting from 10:00 to 22:00, leaving two hours for simulation initialization and one hour for finalization.

The area of the site was resembled in the ENVI-met model on a grid of 98\*98\*22 cells with the resolution of 2.5m\*2.5m\*2m. The model's boundary total height is 80 meters, generated using a telescoping factor of 20% starting after 24 meters, which is almost as tall as the highest building in the model. The base case shown in Figure 3 represents the development's existing buildings where basalt tiles pavement, the prevailing pavement material, covers the entire outdoor area.

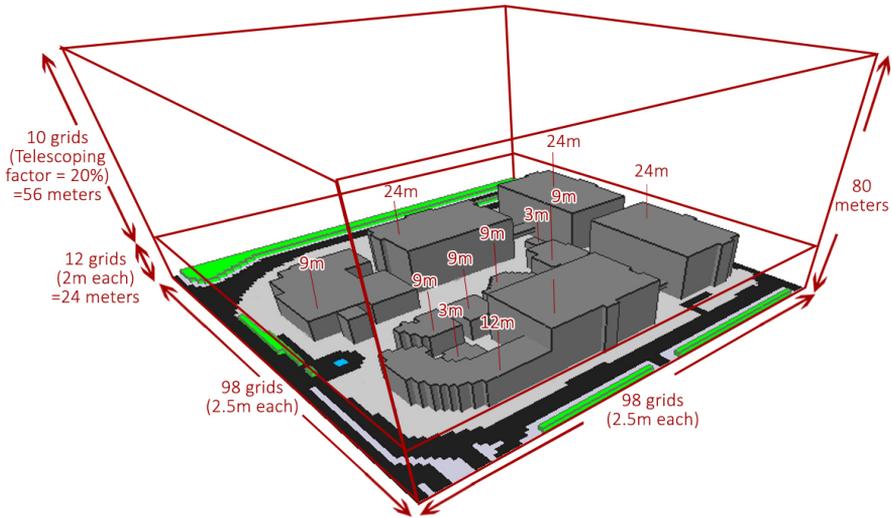


Figure 3. ENVI-met’s 3D view of the study area’s base case model (Source: Author)

General Simulation Settings		
Parameter	Input Value	Notes
Start time (hh:mm)	08:00	-
Total simulation time (h)	15	-
Initial Meteorological Conditions		
Parameter	Input Value	Notes
Atmosphere Temperature (°C)	22.9	-
Wind speed (m/s)	3	at 10 meters height
Wind direction (degrees)	310	0: N, 90: E, 180: S, 270: W
Relative Humidity (%)	86	in 2 meters
Specific Humidity (g/kg)	15.24	in 2500 meters
Roughness length	0.1	-

Table 1: ENVI-met’s simulation settings

Receptor points are located on a 7\*10 grid with a spacing of 12.5m\*15m (see Figure 4). This grid covers the central outdoor area of the development. However, only the output of 38 receptor points was used, as the remaining receptors were

not usable as they lied inside buildings.

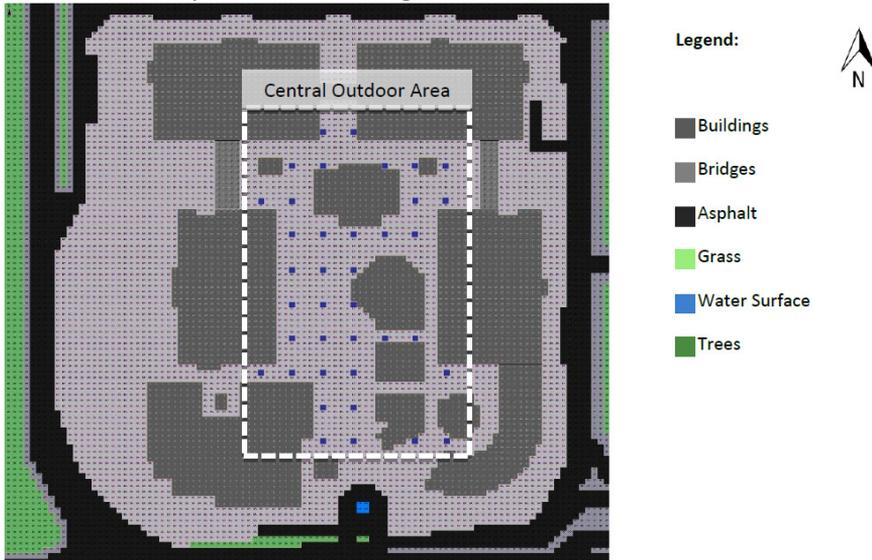


Figure 4. Base case ENVI-met model with receptor points  
(Source: Author)

### Proposed Scenarios

Our aim was to simulate the effect of replacing the existing land basalt surfaces with other softer materials, including water or grass surface coverage. We developed a simple layout that included single-cell wide, 2.5 meters, hard-paved pathways surrounding all the buildings, while the remaining outdoor space representing 80% of the total outdoor area is allocated to one of the aforementioned soft materials. In order to vary the percentage of soft materials, we increased the width of the paved pathways, such that the remaining soft areas represented 60%, 40%, or 20% of the total outdoor area (see figure 5).

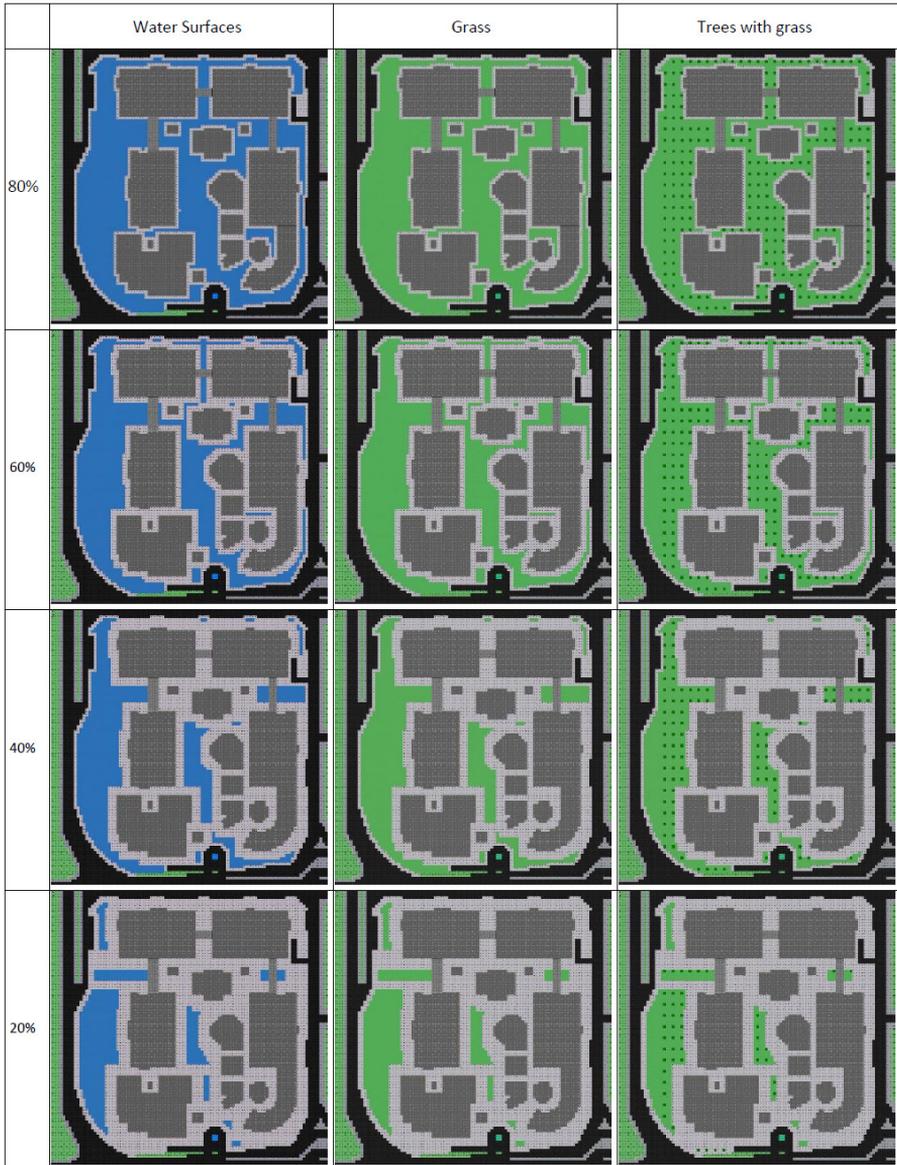


Figure 5. Proposed scenarios ENVI-met models  
(Source: Author)

Seeking more trials for PMV improvement, the grass scenarios were used as a base for a third option of treatments, also shown in Figure 5, where trees are placed on the grass covered areas. For these scenarios, a fast growing deciduous tree was selected for more shading during summer and sun exposure during winter. The selected tree reaches a height of 8 to 15 meters at maturity and a spread of up to 12 meters. This tree is also heat and drought tolerant with a relatively moderate need of water (“World Agroforestry Centre | agroforestry database 4.0,”). The

positioning of the trees is on a grid covering the whole site with 7.5 meters spacing in x-direction and 10 meters in y-direction. However, trees located on non-grass areas were removed.

In order to evaluate human thermal comfort, a tool inside ENVI-met, BIOMET v1.5, was used to calculate PMV values for the different proposed scenarios. BIOMET uses the extended Fanger's thermal comfort model based on the energy balance equation to calculate PMV values. Then, BIOMET's output was entered as input data for SPSS statistics version 17.0.0, a software package used for statistical analysis, to assess the statistical significance of the results using paired samples t-test.

### Results and Discussion

In this section, we discuss and quantify the effect of the different landscape treatments on human thermal comfort using the PMV index. As a base case, a scenario representing full coverage of basalt tiles pavement was simulated. The simulation's output was then used to compute the PMV values using BIOMET. BIOMET's results were filtered to represent the central area of the map as shown in Figure 4, excluding the cells hosting buildings, where the minimum, average, and maximum PMV values of these cells were calculated throughout the simulation hours. The results were concluded to show that most of the day hours lie within the 'extreme' or 'strong heat stress' range on the PMV index. Less vulnerability to heat stress was recorded starting from 18:00 where human thermal comfort moves to the 'moderate' and 'slight heat stress' range. The highest average PMV value was recorded at the peak hour 14:00, as labelled in Figure 6. For further statistical analysis, we selected the recorded peak hour to carry out paired samples t-test for the receptor points output.

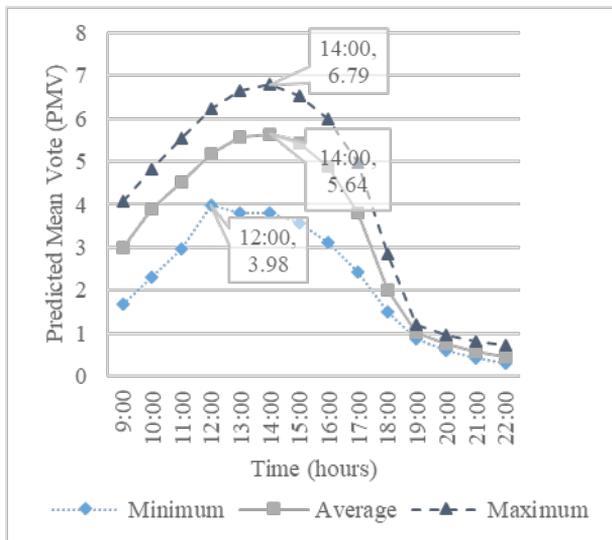


Figure 6. Simulated base case PMV values  
(Source: Author)

**PMV Analysis**

In order to analyze BIOMET’s PMV results, the average PMV values for the central outdoor area was calculated throughout the simulation hours for different scenario. In water surfaces scenarios, increasing the treatment’s coverage showed the best PMV improvement rate at 12:00 where the average drop between every two consequent scenarios reached 0.289. However, that drop did not help the comfort conditions leave the ‘extreme heat stress’ range as shown in Figure 7. The output also showed relatively stable relation between water surfaces area and PMV values where the drop in PMV values between different scenarios was maintained along the simulation hours, but with descending effect. The average drop in PMV values reached its minimum at 22:00 where the change in PMV values did not descended to 0.055 but comfort levels kept improving towards lesser heat stresses along the evening hours anyway.

In case of grass scenarios, the highest average drop in PMV values between every two consequent scenarios was recorded at 10:00 where it reached 0.103. Adding grass showed a gradually decreasing effect on PMV values throughout the day (see Figure 7). However, the effect of using grass was relatively weak compared to the water surfaces scenarios where it showed negative effect on PMV values starting at 20:00. The results showed an average increase in PMV values between different scenarios of 0.003 towards higher heat stress.

Among the proposed landscape treatments, adding trees had one of the strongest positive effects on human thermal comfort during the day hours due to its shading. Comparing the three treatments indicated that trees with grass scenarios have better ability in improving human thermal comfort levels as opposed to water surfaces or grass scenarios where the highest average drop in PMV values between every two consequent scenarios reached its maximum of 0.287 at 10:00. This major drop was maintained to be the highest between the different treatments only until 18:00 where it diminished to 0.050. Also, the impact of using trees with grass inverted to have a negative effect on PMV values at 20:00 and 22:00.

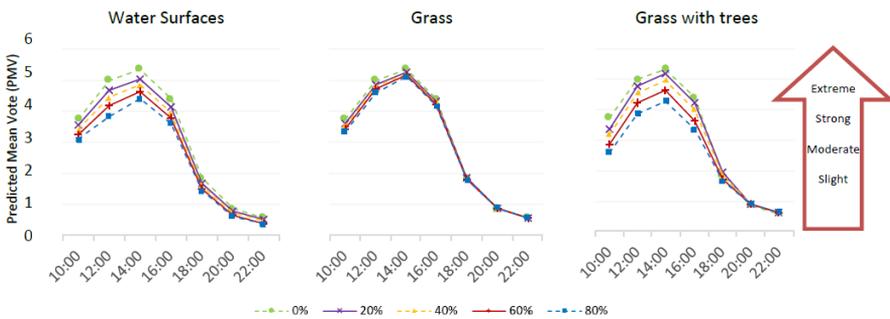


Figure 7. Simulated PMV average values throughout the simulation hours (Source: Author)

In order to quantify the effect of the different landscape treatments on human thermal comfort, we ran paired samples t-test for PMV of the 38 receptor points at 14:00 as shown in Table 2. The results showed a statistically significant drop in PMV values between different coverage scenarios of all the treatments. However, water

surfaces scenarios showed the highest eta squared ( $r^2$ ) values among the different treatments.

Pairs	Mean Difference			Standard Deviation (SD)			t-statistic (t)			Significance (p)			Eta squared ( $r^2$ )		
	Water	Grass	Trees	Water	Grass	Trees	Water	Grass	Trees	Water	Grass	Trees	Water	Grass	Trees
00% 20%	.303	.074	.146	.056	.051	.179	33.283	9.010	5.022	.000	.000	.000	0.97	0.69	0.41
20% 40%	.197	.040	.207	.036	.031	.152	33.682	8.062	8.382	.000	.000	.000	0.97	0.64	0.66
40% 60%	.192	.063	.388	.033	.061	.234	36.023	6.407	10.207	.000	.000	.000	0.97	0.53	0.74
60% 80%	.222	.040	.353	.035	.039	.225	38.555	6.258	9.685	.000	.000	.000	0.98	0.51	0.72

Table 2. Paired samples t-test for PMV values

### Conclusion

In summary, the importance of water surfaces and greenery using either grass or trees with grass was proven via simulations under hot arid climates. It was concluded that the use of soft materials within the outdoor area helps improving PMV values with varying effects. The use of grass surfaces resulted in the slightest improvement in PMV values where the maximum effect did not exceed a drop of 0.140. on the other hand, the strongest improvement appeared in trees with grass scenarios where the maximum effect reached a drop of 0.373 in PMV values. Despite these improvements, PMV did not leave the “extreme” or “strong heat stress” ranges during the morning hours.

The higher PMV improvement when using shade trees than water surfaces, and water surfaces than grass, corporates with the results of previous studies. The findings of this study are limited to hot arid climates and not to be generalized for other climatic conditions.

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