

Quantifying the City's Identity a Morphological Analysis of the Historic Rue Rosette

Salma.S. El - Essawy
Faculty of Engineering,
Arab Academy for Science and Technology.
Alexandria, Egypt.

Assistant Prof. Adham M. Hany Abulnour ¹,
Dr. Magdi Wasfi Wissa ²
Faculty of Engineering,
Arab Academy for Science and Technology.
Alexandria, Egypt.

Abstract— Historic cores often include buildings of national and international heritage significance. However, the value of historic centers lies in their intact urban morphology, formed by buildings, streets and open spaces. Among urban elements, streets are considered the most important in giving the city its identity. Streets represent a significant percent of public spaces. They play a key role with their connection, cohesion and coherence. They also help in improving the relation between humans and the environment. This research investigates architectural and urban identities in historic contexts, especially in Rue Rosette in Alexandria (now Fouad Street). The value of this Street's identity is defined by the collective sum of its buildings rather than the monumentality of a single one or a landmark. This is the reason why the study resorted to analyzing street identity at the aesthetic level based on Ching's five ordering principles of design. This includes quantitatively measuring the change in the urban identity of the Street through the past century by applying an architectural survey on 52 selected buildings. The survey followed a study of the political, social, economic and cultural factors that affected the history and development of the City and the formation of the Street.

Keywords— Component; : Identity, Architectural Heritage, Morphology, Aesthetics.

I. INTRODUCTION

A nation's identity is defined by its heritage, which is passed down from one generation to another (Prentice, 1994). It is mainly through conservation of heritage buildings that we can pass on to future generations what is currently identified as culturally significant. This is difficult to achieve when the management of heritage assets is not fully adopted either by the government or other entities, but is also ignored and left to deteriorate intentionally or out of ignorance, lack of maintenance or natural conditions.

Many cities have quarters that confer on them a sense of place and identity through the historic and cultural associations they provide. They are often an integral part of the city's charm and appeal, and their visual and functional qualities are important elements of the city's image and identity (Tiesdell et al., 1996).

Constantly-changing and renewed cities lose their readability by time. Thus, the perception of the city and its citizens' feeling of belonging are damaged. It then becomes harder to preserve the cultural and historical values, monumental buildings, examples of civil architecture, places with special characteristics, culture and city identity, which

together give it meaning and worth. However, the architectural values formed during each period of time are the alternate reflection of national identity and make up an important part of the city's identity. These values are the cultural assets that express the unique personality of a place (Delanty et al., 2002).

The research illustrates the history of Alexandria and investigates its unique European architectural style that formed its outstanding historic identity. This is accomplished by discussing the reasons behind the cosmopolitanism of the Alexandrian community. The paper also investigates the loss of identity of one of the most important streets in Alexandria, Fouad Street, part of the historic Canopic Way. The chosen case study is characterized by its remarkable history and significant buildings, which create the identity of the Street. However, the main aim of the research is to study the change in the Street identity during the last century and the changes that took place in its architecture.

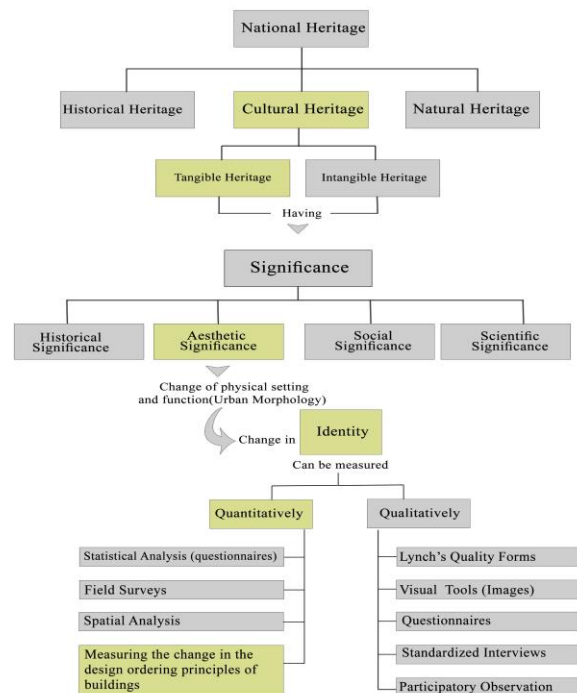


Fig.1. The high lightened zones representing the scope of the Research (Researcher, 2017)

II. PROBLEM DEFINITION

With rapid economic growth, most cities experience uncontrolled development resulting in decay that especially affects historic cores. Unique spaces within the city such as monuments as well as streets and settlement arrangement are destroyed by the construction of high-rise buildings and the lack of maintenance. As a result, the urban identity of that city is harmed (Perşembe, 2011).

The past century witnessed unprecedented changes including globalization, rapid and uncontrolled development, demographic changes, and economic pressures. Such factors directly impacted the urban environment and hindered the preservation of its historic part (Getty, 2009).

The loss of the sense of meaning of a place and attachment to it result in the inability to feel, practice and recall experiences. This happens when a building or a space is changed or transformed or when its use or function change. The loss of association, desegregation and detachment (e.g. relocation to new housing and a new community) also weakens place attachment.



Fig.2. Uncontrolled development and deterioration of buildings in the historic City Center (Researcher, 2017)

The problem has however been the absence of a comprehensive and relatively objective system for recording and representing the new developments and changes that happen in historic city centers. This leads to difficulties in tracing the original pattern and measuring the changes both quantitatively and qualitatively.

III. LITERATURE REVIEW

A. Understanding Identity

Identity is “the distinguishing character or condition of a person or a thing”. Identity is also defined as “the extent to which a person can recognize or recall a place as being distinct from other places” (Lynch, 1981). There is a broader context to the concept of identity. It is a common term in social sciences. It has been used to describe the “uniqueness” of a person or a thing from various perspectives and for various purposes. Examples include personal, political, ethnic, social and place identities.

Identity is one of the most crucial issues of human knowledge. It has been studied and analyzed by various thinkers through time. Every space and place is a source of identity. It also gives identity to those groups living in or using it (Rabbani, 2002). However, the concepts of identity from an architectural and urbanization point of view are complementary in two cases. First, creating memory and associations for people and second, achieving distinction and independence from other things. So, identification can be seen as a process that uses both objectivity and subjectivity (Pakzad, 1996).

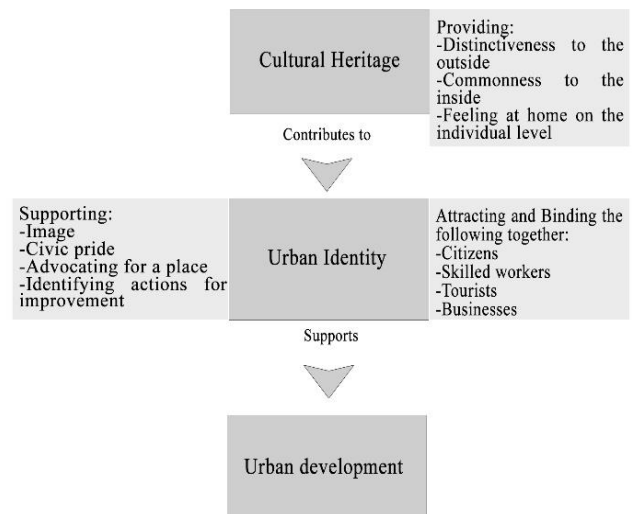


Fig.3. The role of cultural heritage in contributing to the identity of urban contexts and their development (Scheffler et al., 2007)

The focus of urban design research is to investigate the importance of the identity theories in order to examine the impact of the built and natural environments on identity at different scales. This is viewed as a result of a holistic and reciprocal interaction between people and their physical environment.

B. Urban Identity

Urban identity can be defined as the process of interaction between people and places, where humans describe themselves in terms of belonging to a specific place (Hidalgo and Hernandez, 2001). The idea of urban identity has a more common name in physical planning, social culture, and the environment. It has been described as the "uniqueness" of space design and function from the perspectives of place, ethnic, and social identities.

Historical cities usually have a significant identity that needs to be preserved. It encompasses an archive that reflects the memories of the urban dweller. Historical and cultural heritage creates the core value of urban identity. Therefore, cultural and historical backgrounds create memory of the city so that people can feel a sense of belonging to it.



Fig.4. Manhattan Avenue a national historic district with a significant identity, famous for its brownstone, brick row houses and over raised basements in the Queen Anne, Romanesque, and Neo-Grec styles in Harlem, New York City. (Bonafide, 1991)

C. Architectural Identity

There are certain main categories under which architectural identity can be classified: aesthetics, function, historical and urban context, human impact and representation. Architecture is part of the concept of identity, as such, the impact of changes in buildings and places on communities are critical to maintain this identity. Architectural identity is a cultural phenomenon that can help integrate the progression of social life into a dialogue between past and the future (Humeyra, 2012).

Architectural identity is not only determined by architects, but also by many other local factors shared by the community in the formation and design process. These factors include the socio-cultural interpretation of the built form by local people in addition to the built environment’s contextual conditions.

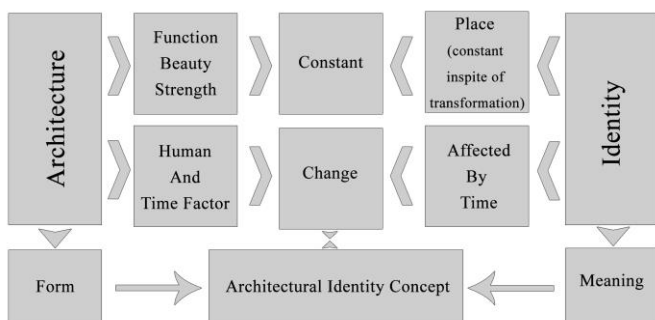


Fig.5. The relation between identity and architecture (Source: Samir, 2014, edited by the researcher)

Figure (5) illustrates the relationship between identity and architecture. Time and space are the two main points of reference used in architecture to form identity. Time is

connected to history while space is connected to geography. Time is associated with the concept of tradition and appears rooted in the past, while space provides the physical construction assets that reflect the contextual background of identity. However, the claim today is to make designs according to global perspective with little to no consideration to local values and identity.

Regarding the dimension of time, identity has both fixed and dynamic aspects. If identity only had fixed architecture, it would have had a consistent continuation throughout history. (Torabi, 2013) Architectural identity has had both fixed and dynamic aspects in each historical period, similar to human identity. There has always been a continuous change in both throughout time. What people perceive first are the actions and events provided by the form and pattern of the physical environment. Then, characteristics of shape, levels and forms grab people’s attention and are perceived (Motalebi, 2006).

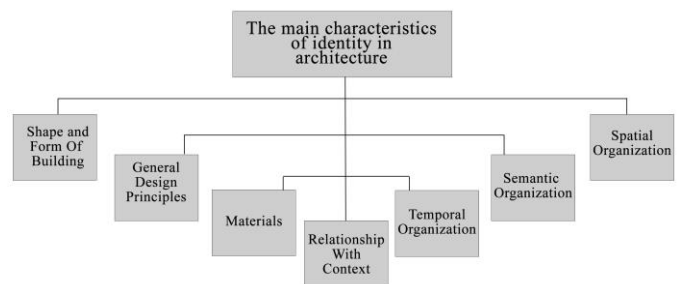


Fig.6. The main characteristics of architectural identity (Source: Torabi, 2013, edited by the researcher)

Many factors can affect the process of creating an architectural identity, Figure (6) illustrates them.

In the process of economic and cultural globalization, place identity emerges as a central concern for both scholars and people. Specific aspects of urban morphology, such as built heritage and the innovative design of space, may contribute to place identity in cities (Gaspodini, 2001). In the context of built heritage, urban morphology can promote national identity. Even traditions strengthen the appearance of certain areas in a city.

D. Urban Morphology

Urban morphology is the study of the appearance of a city. It is a combination of physical description, gradual formation, and the interaction between the components of the urban tissue. It defines specific compounds and urban places, such as streets, squares, and other public spaces.

Morphology is the science that investigates the form, shape, external structures, and arrangement of matter (Madanipour, 1996). Urban morphology is divided between several fields of knowledge. Its theoretical aspects are related to urban geography, history, and architecture.

Studying urban morphology aims at understanding the image of the historic context and its spatial structure by analyzing the various patterns of its constituents and its development throughout the years. This study involves identifying land use, building structure, plot patterns, and street patterns (Conzen,

1960). According to Carmona (2003), the analysis of physical forms focuses on street patterns, plot patterns, and building patterns by comparing cartographic sources and historical maps. In 1993, Kropf reported a convenient method to recognize the process of character development of an urban area. This method consists of the study of a city's most sustainable aspect, the physical one, to build a general image of its character. One of those physical aspects is the aesthetic value of buildings.

E. The Aesthetic Value

The aesthetics of the past are appreciated for their own sake. Old buildings and towns are valued because they are intrinsically beautiful 'antique' or simply because they are old and scarce. Nevertheless, Lynch (1972) warns of the 'dogma about the intrinsic goodness of old things'. Given the blandness of much of the contemporary architecture, historic buildings are often more interesting than 'post-industrial' offices, houses and shopping centers.

Historic buildings and areas have picturesque qualities; they are redolent of a period of genuine craftsmanship and individuality that has been lost in modern industrialized building products and systems of construction. The old city exemplifies human scale, care, richness and diversity that are lacking in the modern, plastic, machine-made city with its repetitive components and large scale projects (Appleyard, 1979).

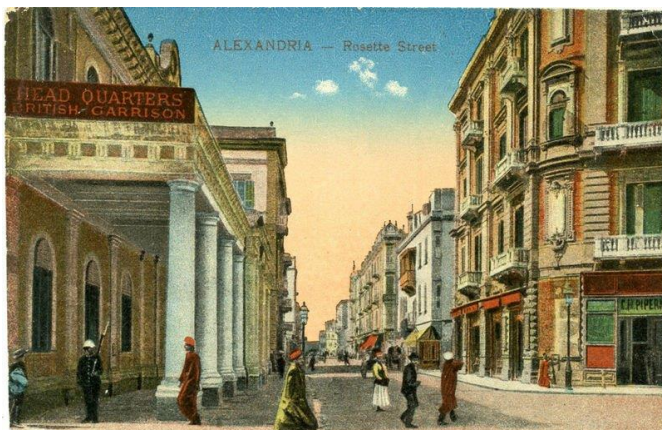


Fig.7 The English Caracole and Alice de Zogheb & Adriatica apartment building on Fouad Street (Alexandria 1900 Facebook page)

F. The Need For Image And Identity

Iconic streets that reflect a lasting image and an established sense of place are an essential component of urban cities. They take on the role of telling the story of the area and the larger region it represents. They attract people, business and commerce which makes them the most suitable venues for the public.

Iconic streets are distinguished from other streets by their scale and character. In today's world of mass-produced products and culture, a street with a special identity stands out in its ability to contribute to the community's need to recognize and celebrate its own distinct historic, social and cultural heritage, and the context of its natural environmental.

G. Methods of Quantifying and Qualifying Identity

There is a variety of methods that have been used in previous investigations in urban, heritage and other topics to measure a place's identity. They aim to survey people's perception and feelings of a place. These methods include comparative studies, quantitative questionnaires (Lewicka, 2008) and (Lewicka, 2010) and visual tools such as images (Salesses et al., 2013).

Baum (2008) distinguishes between spatial aspects (e.g. location, building patterns and quality of open spaces), functional aspects (e.g. accessibility, uses, private and public spaces), social and atmospheric aspects (e.g. identity, history, atmosphere). All can be used in a mixed method approach. While the spatial analysis is executed based on methods from planning and geography, an empirical analysis uses qualitative and quantitative methods.

Ujang (2012) uses a mix of qualitative and quantitative data (field surveys and interviews). In this case, data is collected from users of the shopping street to assess attachment and place identity. On the other hand, Ellingsen (2010) focuses on qualitative methods and different kinds of interviews, in his study of territoriality of different ethnic groups in Kathmandu. Field surveying is also one method used by Schmitt (2011), who analyzed and compared different World Heritage sites for his work on global cultural governance. His methodology is comprised of qualitative interviews, participatory observation, surveys and document analysis. In his study on discourses of regional identity in Finland, Paasi (2013) relied on the analysis of strategic regional plans and expert interviews (Urban Concepts of Collective Memory, Identity and Place Attachment, 2017).

IV. SIGNIFICANCE AND LOGIC OF THE STUDY

Identity can be the result of different factors. Each area creates its own identity according to a common feature shared by its buildings. For example, the economic factor plays an important role in shaping new Dubai. Its dominant urban features include skyscrapers in commercial city centers, multi-story residential buildings, large shopping malls, wide boulevards, an extensive network of highways, and sprawling new suburbs. While Beirut's identity is the result of political factors. Conflicts over urban spaces caused by the civil war have contributed to the politics of reconstruction.

This research tries to reach a quantifiable indicator to measure the change of identity in Fouad Street. It emphasizes the fact that historic landmarks play a powerful role in constructing urban identity, with each building revealing unique architectural characteristics. Nevertheless, the repetition of design elements is what defines the identity of the Street rather than the monumentality of a single building. The street identity in this case is a result of the sum of these buildings.

In street sections, the quadrangular blocks with their small orderly plots, and apartment block typology in eclectic architectural style, with their richly detailed façades, create a strong linear area and a predominant city center scale that is both impressive and suitable for the administrative role of the Street. A smaller number of sections, similar in form but more

prominent due to the existence of shops on the ground floor, indicate a commercial identity. Yet, in other sections, the façades of the villa typology, with a rich front garden and metal fence details, create a notable local character. (El Semellawy, 2011).

On the other hand, new developments lack locally appropriate architectural and contextual qualities that influence the urban image. Furthermore, as the research reveals, the perception of urban identity changes in time. It appears that there are opportunities to regain and/or enhance identity through various strategies. These include urban design strategies that highly depend on the specific context of the area.

Therefore, the study indicates that Ching's five ordering principles are present in the buildings selected by the study. As such, in order to quantify the aesthetic aspect, an analysis of the five principles is applied to each of these buildings.

V. RESEARCH METHODOLOGY

The research uses a Historical-Analytical methodology applied on the case study.

The paper includes literature review covering the architectural and urban identity of historic city centers, their importance, and the different factors shaping them. Also included is the identification of the influence of globalization on the identity of these places. The review also discusses urban morphology and changes in the historic urban context.

The research then investigates different methods of quantifying identity through descriptive means using theoretical documents. It proceeds to use an analytical methodology to examine the aesthetic identity of one of the most remarkable streets in Alexandria, to collect data from the foundation of the City until the beginning of the twentieth century and to apply visual analysis in order to measure the change in Ching's ordering principles on the buildings of said Street.

VI. AIMS AND OBJECTIVES

This paper aims at preserving the identity of historic centers by improving the quality of new buildings added to them and achieving a change of use of their old buildings without diminishing their identity and cultural value. It does so by focusing on the case study of Fouad Street, based on a comprehensive analysis of the area. The study tracks the Street's urban morphology through history, studying the socio-cultural, economic and cultural aspects that played a role in creating its identity and shaping its development through the years.

The research's objective is to study different methods for quantifying the identity of historic centers using certain indicators to measure the change that occurred through time. This is achieved by:

- Identifying the physical and social patterns of historic Alexandria and the old Canopic Way, that created the character and identity of the City
- Identifying the interdependency between the change of urban morphology and place identity
- Setting a measurable indicator for identity, to give decision makers and legislators a tangible method to measure it, understand it and track whether the changes that affect it are positive or negative.

VII. HYPOTHESIS

The research argues that the identity of the street can be the result of the sum of its buildings rather than a significant single building or landmark. From the study's point of view, the repetition of the five ordering principles is what defines the identity of Fouad Street. For instance, street identity can be noted by the repetition of aesthetic elements and features in the architecture of street buildings.

The research suggests that by analyzing the change in the five ordering principles of heritage buildings, a quantifiable tool for measuring urban morphology can be reached.

VIII. THE FORMATION PROCESS OF RUE ROSETTE AND THE REASONS BEHIND ITS PRESENT STATE

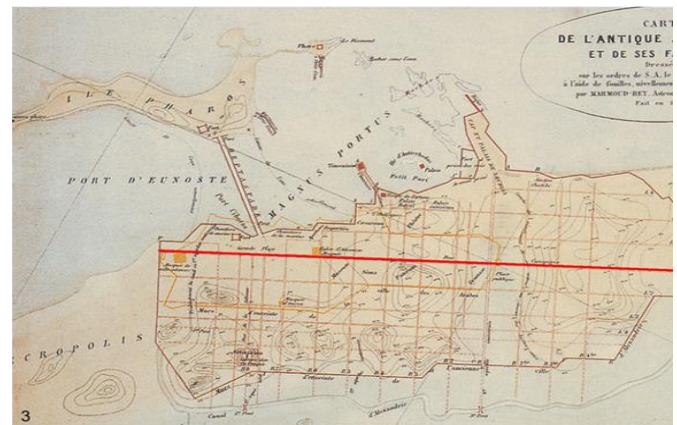


Fig.8. Alexandria in the 3rd Century B.C. as depicted in Mahmoud A falaki's map of 1866, where the Canopic Way is the main artery of the City

The Street, despite its modern appearance, is the most ancient in the City. It runs on the lines of the Canopic Way, the central artery of Alexander's town, and under the rule of the Ptolemies. It was lined from one end to the other with marble colonnades. Its full title was 'Rue de la Porte Rosette', from the Rosetta gate in the old Arab Town walls, through which it progressed eastwards. The Municipality of Alexandria recently changed its name, for no reason, to Rue Fouad Premier, thus breaking one of the few remaining links that binds their City to the past (APT, 2014).



Fig.9. An aerial view of Rue Rosette in approximately 1920. The Municipal Gardens follow the curves of the Arab walls of medieval Alexandria (Haag, 2008)

The Canopic Way was restored once again during the second half of the 19th Century. With the development of the cosmopolitan aspect of the City, this revival came as a coherence factor for the European quarters starting from the Place des Consuls towards Ramleh. Rue Rosette encompassed a lot of important and significant buildings some of which include Club Muhammad Ali, now El Horreyah Cultural Centre, Zizinia Theatre now Sayed Darwish Theatre, the Caracole, two mausoleums, various cisterns and the Al Attarine Mosque, along with residential buildings constructed at the end of the 19th Century. They all mark the most significant features of the Street's urban morphology. Nowadays, the Street still includes various important buildings such as, the Alexandria National Museum and various administrative, financial, commercial, leisure and residential activities.



Fig.11. A rainy day on Fouad Street in approximately 1951 (Haag, 2008)

IX. THE FORMATION PROCESS OF RUE ROSETTE AND THE REASONS BEHIND ITS PRESENT STATE

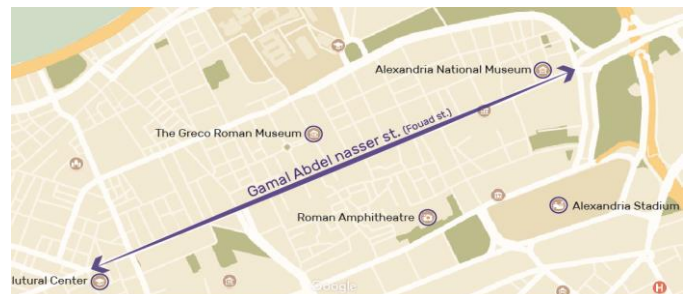


Fig.12. A diagram showing important buildings on Gamal Abdel Nasser Street (Researcher)



Fig.10. Looking east along Rue Rosette in approximately 1900 (Haag, 2008)

Fouad Street is part of the Canopic Way. It starts at the downtown area (Ramleh Station) and ends at the Montazah Palace area. It is situated to the east of the current City of Alexandria. It represents the main traffic axis of the City, acting as a link extending eastwards along Aboukir Road and westwards towards the Port of Alexandria. The selected study area stretches about 1.5 km in the North-East direction from Al Shallalt Gardens till the entrance of Salah Salem Street, previously known as Rue Sherif Pasha.

During the past decade, commercial activities increased in the Street, especially food industries, leading to an increase in the number of its users. About 10 new restaurants and cafés opened in the Street, one of which is a complex that consists of 11 restaurants, for a total of 20 food outlets. This change in morphology was not met, qualitatively and quantitatively, with an increase in services. This rapid growth, change in function, urbanization and dramatic pressures have to be put into consideration in order to deal with the problems of an overloaded infrastructure of services and transportation as well as the inevitable economic and commercial pressures resulting from its physical setting and the surrounding forces.



Fig.13. The new restaurants complex replacing the old TV Company on the ground floor of the Société immobilière Building (Researcher, 2017)

X. MORPHOLOGICAL ANALYSIS

The Street pattern shows a rich urban space created by a variety of buildings, from the 19th and 20th Centuries, located in different positions and at different angles. The Street mainly consists of a spacious environment for vehicular traffic rather than pedestrian routes. Despite this structure, pavements are mostly occupied by goods from commercial shops or are used by restaurants as a waiting area for customers. This has largely contributed to the present chaotic situation of the Street, where different forms of movement, not originally meant to be there, are present.



Fig.14. The quiet eastern end of Rue Rosette in approximately 1920 (Haag, 2008)

Despite the fact that new components have evaded the Street; the traditional form can be traced quite easily. A building averaging three to four storeys has been the traditional characteristic of the Street's urban texture. This silhouette has, however, been seriously harmed by the emergence of high-rise buildings thus threatening the traditional form and altering the homogeneity of the urban texture.



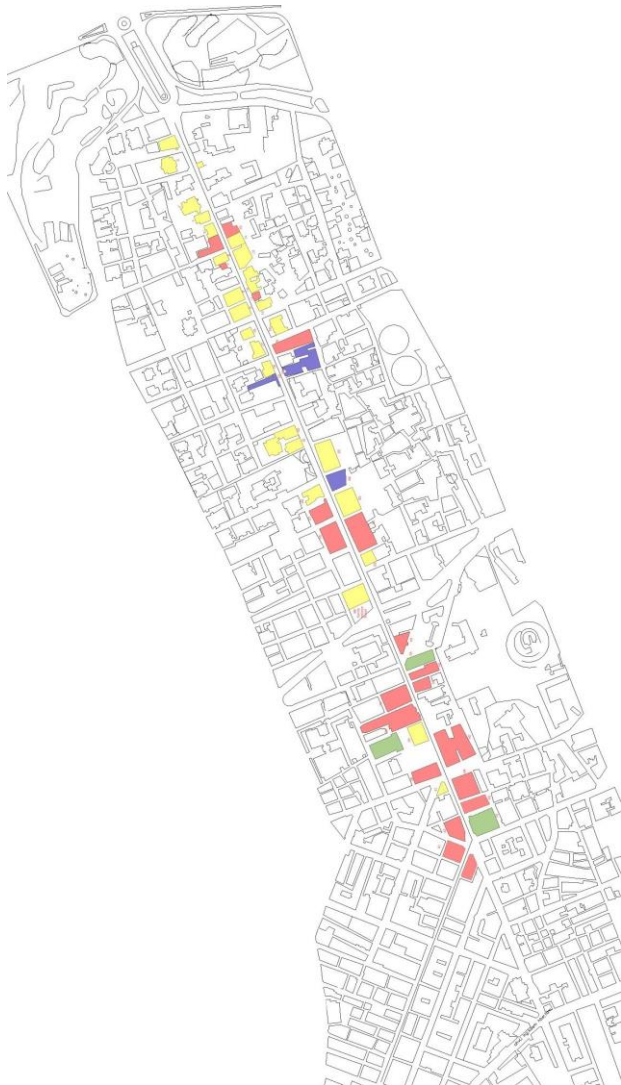
Fig.15. & Fig.16. Buildings on Fouad Street maintaining some of their old characteristics (Researcher, 2017)

Nevertheless, the richness of the Street's visual quality can still be observed in the majority of its parts.



- Mixed commercial/residential building
- Residential building
- Mixed public facilities and institutions/residential building
- Recreational building
- Abandoned building
- Public facilities and institutions

Fig.17. Map 1 Current use of the selected buildings on Fouad Street (Researcher, 2017)



- Mixed commercial/residential building
- Residential building
- Mixed public facilities and institutions/residential building
- Recreational building
- Abandoned building
- Public facilities and institutions

Fig. 18. Map 2 shows the previous use of the selected buildings on Fouad Street (Researcher, 2017)

Maps 1 and 2 show the change in building function through the last century. This analysis was made due to the fact that the change in function has affected the five ordering elements in the Street’s buildings. Accordingly, its morphology and identity have changed.

Figure (19) shows the change in function in Fouad Street’s buildings in the past 100 years. About 10 new restaurants and cafés opened in the Street, one of which is a complex that consists of 11 restaurants, making a total of 20 places serving food. The ground floors of ten buildings were transformed from residential to commercial use and nine buildings were transformed from residential to governmental buildings.

Business and governmental functions dominate the Street, but the disconnected functional structure does not give an impression of a uniform business/governmental district.

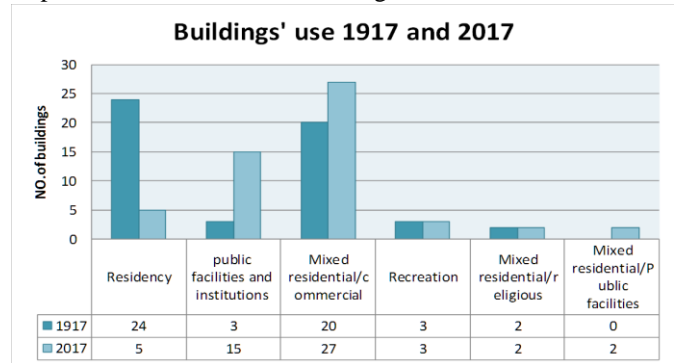


Fig.19. Graph showing the change in use in the street through the last 100 years (Researcher, 2017)

XI. ARCHITECTURAL SURVEY

A field survey was done in Fouad Street, where the chosen buildings were photographed. Current and historic data about these buildings were collected and diagrams representing them with the analysis of the five ordering principles was performed. These diagrams were created according to Jorge Hern’andez and Beatriz Marcotegui’s method “to isolate individual façades from general city block image within a segmentation process to analyze building façade images using digital tools (Adobe Photoshop and AutoCAD)” (Hern’andez and Marcotegui, 2009).

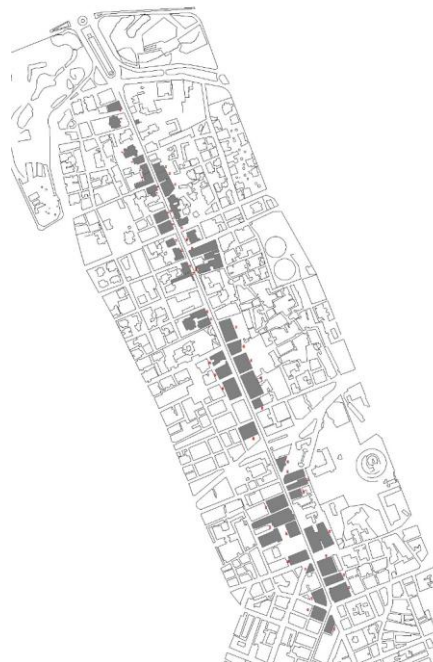


Fig.20. Map 3 showing the selected buildings on Fouad Street (Researcher, 2017)

A. Architectural Image of the Street According to the Five Ordering Principles

Throughout history, historians and architects have discovered the design ordering principles that can be used to analyze elements of a building in order to study the relationships between its different parts.

“Order without diversity can result in monotony or boredom; diversity without order can produce chaos. A sense of unity with variety is ideal. The following ordering principles are seen as visual devices that allow the varied and diverse forms and spaces of a building to coexist perceptually and conceptually within an ordered, unified, and harmonious whole.” (Ching, 1943)

I. Axis: The axis is perhaps the most elementary mean of organizing forms and spaces in design. It is a line established by two points in space, around which forms and spaces can be arranged in a regular or irregular manner. Although imaginary and not visible except to the mind’s eye, an axis can be a powerful, dominating, and regulating device.

From the case study of Fouad Street, we look at the entrance of Alexandria National Museum. Built in 1931, it is the former palace of Al-Saad Bassili Pasha and later the United States Consulate (1958-2008). It has a major axis through its main entrance.

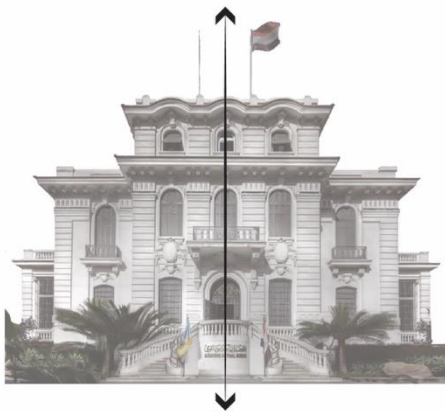


Fig.21. Axis analysis of the façade of the Alexandria National Museum (Picture by Deviant Art 2017, diagram and photo edited by the Researcher)

II. Symmetry: While an axial condition can exist without a symmetrical condition being simultaneously present, asymmetrical condition cannot exist without implying the existence of an axis or center around which it is structured. Symmetry can either be bilateral or radial.

The design of the Alexandria National Museum, is balanced as a whole and each of its three major sections are symmetrical around the main axis of its entrance.

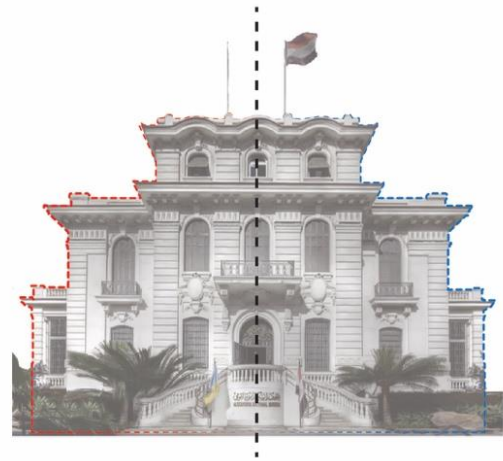


Fig.22. Symmetry analysis of the façade of the Alexandria National Museum (Picture by Deviant Art 2017, diagram and photo edited by the Researcher)

III. Hierarchy: The principle of hierarchy implies that, in most if not all design compositions, real differences exist among forms and spaces. These differences reflect their degree of importance, as well as the functional, formal and symbolic roles they play in the organization. For a form or space to be important or significant to an organization, it must be uniquely visible. This visual emphasis can be achieved by endowing a form or shape with exceptional size, a unique shape, or a strategic location.

The entrance of the Alexandria National Museum and its stairway is hierarchical in terms of size, shape, and placement.



Fig.23. Hierarchy analysis of the façade of the Alexandria National Museum (Picture by Deviant Art 2017, diagram and photo edited by the Researcher)

IV. Rhythm/Repetition: Rhythm is established through the use of repeated forms. In architecture, repetition refers to a pattern in which the same shape, size, or color is used over and over again throughout the design.

The façade of the Alexandria National Museum reflects a complex rhythm of different repetitive elements (Windows).



Fig. 24. Rhythm and repetition analysis of the façade of the Alexandria National Museum (Picture by Deviant Art 2017, diagram and photo edited by the Researcher)

V. Datum: A datum refers to a line, plane or volume of reference to which other elements in a composition can relate. It organizes a random pattern of elements through its regularity, continuity and constant presence.

The façade of the Alexandria National Museum has a decorative element molded along its roof and a cornice with a parapet that visually unifies the façade, acting as the Datum.



Fig. 25. Datum analysis of the façade of the Alexandria National Museum (Picture by Deviant Art 2017, diagram and photo edited by the Researcher)

B. Findings

The previous analysis was applied to all of the selected buildings on Fouad Street. The relative weight of each element in the buildings was calculated in order to determine a quantitative measurement of the change in the identity of the Street through the change in these elements in the past 100 years.

It was found that the relative weight of the axis design element in the Street was 90.3% of the selected sample of buildings. While the symmetry element represented 80.7% of the total number of buildings, Hierarchy 65.3%, Rhythm and Repetition 92.3%. The Datum is classified into three types,

Datum 1, which is a decorative element molded along a building’s roof or cornice with a parapet representing 82.6%. Datum 2, which describes horizontal grooves in the façades’ elevations represented 46.1%. Finally, Datum 3, which is the dominating color of buildings in the Street, represented 57.6%.

The following Figure, (26), shows the change in design elements selected over the past 100 years, after their analysis on the selected buildings through the collection of data and the drawing of diagrams.

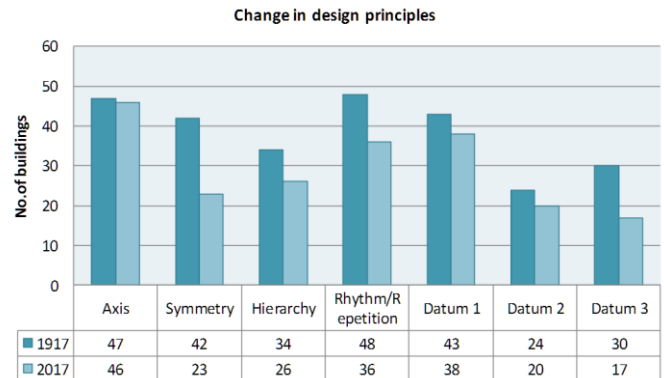


Fig.26. A graph showing the change in use in design elements on the Street’s buildings through the last 100 years (Researcher)

The following equation was deduced in order to measure the change in the effect of each element on the identity of the Street over the past 100 years and consequently quantitatively measuring the change in the total identity of the Street.

$$\text{Percentage of change in a design element} = \frac{(\text{Relative weight of the element in 1917} - \text{its relative weight in 2017})}{\text{its relative weight in 1917}} \times 100$$

It was found that 47 buildings had the axis element. Only one building’s axis was interrupted making a total change in the number of buildings 2% only. 42 buildings were symmetrical in 1917. In 2017, only 23 buildings maintained that symmetry which represents a 45% change in the number of symmetrical buildings. The hierarchy element appeared in 34 buildings out of 52. That recently changed to 26 buildings only which is about a 23.5% change. Rhythm and repetition was interrupted in 36 out of 48 buildings representing a 25% change. Datum 1 was present in 43 buildings that changed to a total of 38 buildings which results in an 11.6% change. 24 buildings had datum 2 that decreased to 20 buildings resulting in a 16.7% change. Finally, datum 3 was present in 30 buildings in the Street which changed to 17 buildings only recently representing a 43% change.

Measuring the total change in the Street’s identity is accomplished by applying the following equation:

$$\text{Total rate of change in design elements} = \frac{((N \text{ axis} \times RW \text{ axis}) + (N \text{ symmetry} \times RW \text{ symmetry}) + (N \text{ hierarchy} \times RW \text{ hierarchy}) + (N \text{ Rhythm} \times RW \text{ Rhythm}) + (N \text{ Datum} \times RW \text{ Datum}))}{((M \text{ axis} \times RW \text{ axis}) + (M \text{ symmetry} \times RW \text{ symmetry}) + (M \text{ hierarchy} \times RW \text{ hierarchy}) + (M \text{ Rhythm} \times RW \text{ Rhythm}) + (M \text{ Datum} \times RW \text{ Datum}))}$$

RW Rhythm) + (M Datum × RW Datum))

Where (N) is the number of buildings that lost a design element, (M) is the original number of buildings that had that design element and (RW) is the relative weight of each element. It was found that the design elements of the Street's buildings have changed by 19%. This marks the percentage of loss in these elements.

XII. CONCLUSION

Achieving identity is one of the essential goals for the future of a good environment. People should feel that some part of the environment belongs to them, individually and collectively. This part is something they care for and are responsible of, whether they own it or not (Oktay, 2002).

The unplanned and disorganized development within a city has many negative effects, notably the damaged inflicted on the natural and historical fabric. The city's identity is harmed and its unique spaces, monuments, streets and settlement arrangement are destroyed by the development of high-rise buildings (Perşembe, 2011). Accordingly, continually-changing and reestablished urban communities lose their readabilities in time. The perception of the city and the feeling of belonging of citizens are harmed. In the end, it becomes harder to preserve the cultural/historical values, monumental buildings, civil architectural examples, special characteristics, culture and identity giving the city its meaning and value.

Due to the common building and development activities witnessed in most places, similar-looking cities are formed. For those same reasons, cities that are already established lose their identities and become more and more identical by time. This happens due to the construction of high-rise buildings that have the same style, building technologies and materials and architectural style (Kiper, 2004). Thereby, a city's identity determined by local originalities is eliminated.

The paper tried to address the question of how to quantify urban identity. It might be considered that it has delivered a baseline measurement for the identity of historic urban centers. It can be a first venture into still rather uncharted territory, providing decision makers and legislators with a tangible indicator to understand and track whether the change in the aesthetic identity of a street is heading towards loss or gain. The research anticipates that the urban physical setting can be used to measure the change in a street's identity, and create specificity for the character of a place. Historical evidence, such as building condition, should be well visualized, maintained and conserved to build the visual character of old urban elements.

The study was undertaken to answer inquiries that overlap between the disciplines of human geography, heritage studies, spatial planning, architecture and the practice of 'identity management'. For this reason, the findings, as presented, should be considered no more than preliminary and merely giving some indications.

The results of the architectural survey indicate that although historic landmarks are so powerful in constructing an urban identity, traditional urban patterns and repetition of elements in buildings are also as significant. On the other hand, new developments, lacking locally appropriate architectural and contextual qualities, influence the urban image. Furthermore, as the findings revealed, the change in function affects the five ordering elements in the Street's buildings, according a change

in its morphology and identity.

XIII. REFERENCES

- [1] The Alexandria Mediterranean Research Center (2015) A new vision towards the future, Kom el Dikka, Alexandria
- [2] Alexandria Preservation Trust (2014) The re-development of Alexandria's historic city center along Gamal Abdel Nasser Avenue, Salah Salem Street and Kom el Dikka district
- [3] Appleyard, Donald (ed.) (1979), *The Conservation of European Cities*, Cambridge, Mass.: MIT Press.
- [4] Awad, M. F. (1991) Italian Influence on Alexandria's Architecture (1834-1985). *Environmental Design: Journal of the Islamic Environmental Design Research Centre*. 72-85
- [5] Awad, M. F. (2008) Italy in Alexandria: influences on the built environment. Alexandria preservation trust, Alexandria, Egypt.
- [6] Awad, M. F. (2008) From Historicism to Modernity (the inter-war period, Alexandria 1918-1939: The Italian connection, Italian Architects and Engineers in Egypt from the nineteenth to the twenty-first century. Italian Institute for Culture. 142-153
- [7] Baum M (2008) *Urbane Orte. Ein Urbanitätskonzept und seine Anwendung zur Untersuchung transformierter Industrieareale*. Universitätsverlag Karlsruhe, Karlsruhe
- [8] Bibliotheca Alexandrina (2006) *Voices from cosmopolitan Alexandria*
- [9] Bonafide, J.A. (1991) "National Register of Historic Places Registration: Manhattan Avenue-West 120th-123rd Streets Historic District". New York State Office of Parks, Recreation and Historic Preservation
- [10] Carmona, M.; Heath, T.; Oc, T.; Tiesdell, S. (2003) *Public Places, Urban Spaces*; Architectural Press: Oxford, UK,
- [11] Ching, D.K.F. (2015) *Architecture, Form, Space, & Order*, 1943. 4th ed. Hoboken, New Jersey: JohnWiley & Sons, Inc.
- [12] Conzen, M.R.G. (1960) "Alnwick, Northumberland: A Study in Town Plan Analysis", Institute of British Geographers, Publication no.27, London, (2nd revised edition, 1969.)
- [13] Delanty .G.& Jones .P.R. (2002) *European Identity and Architecture*. *European Journal of Social Theory*, 5, 453-466
- [14] Deviant Art, accessed 1/7/2017 <<https://www.deviantart.com/>>
- [15] Ellingsen W (2010) *Ethnic appropriation of the city. The territoriality of culture in Kathmandu*. LAP Lambert, Saarbrücken
- [16] El Semellawy, A.N. (2011), *the European Imprint on the Architecture of Alexandria (1830-1930)*, Ain Shams University, Faculty of Engineering, Architecture Department Cairo
- [17] *English Heritage Conservation Principles* (2007)
- [18] Fearon, J.D. (1999) What is identity (as we now use the word)? Accessed 1/7/2017. <https://web.stanford.edu/group/fearon-research/cgi-bin/wordpress/wp-content/uploads/2013/10/What-is-Identity-as-we-now-use-the-word-.pdf>
- [19] Forster, E.M. (1922) *Alexandria a History and a Guide*. Tauris Parke Paperbacks
- [20] Gospodini, A. (2001). Urban design, urban space morphology, urban tourism; an emerging new paradigm concerning their relationship. *European Planning Studies*, 9: pp. 925-935
- [21] Getty, (2009) *Historic Urban Environment Conservation Challenges and Priorities for Action*. Experts Meeting Report. The Getty conservation institute. Accessed 1/7/2017. <http://www.getty.edu/conservation/>
- [22] Haag, M. *Vintage Alexandria, Photographs of the city 1860-1960*. Cairo New-York: The American University in Cairo Press
- [23] Hanafi, M. (1993) *Development and conservation with special reference to the Turkish Town of Alexandria*. Institute of advanced architectural studies: University of York.

- [24] Hern´andez, J. and Marcotegui, B. (2009) Morphological Segmentation of Building Images. Fontainebleau-Cedex, France: IEEE
- [25] Hidalgo, M. C. & Hernandez, B. (2001). Place Attachment: Conceptual and empirical questions, *Journal of Environmental Psychology*, 21, 273-281.
- [27] Humeyra, B.A (2012). “Reconstitution of the place identity within the intervention efforts in the historic built environment.” *The Role of Place Identity in the Perception, Understanding, and Design of Built Environments*. Bentham Science Publishers.
- [28] Isidori, F. (2015). A structural project: Redevelopment of the historic center of Wuhu. *Frontiers of Architectural Research*, Retrieved from <http://dx.doi.org/10.1016/j.foar.2015.01.001>.
- [29] Kiper, P. (2004) Kreselleme Srecinde Kentlerimize Giren Yeni Tketim Mekanları Ve Yitirilen Kent Kimlikleri. *Planlama Journal*. 30. 14-18
- [30] Kropf, KS (1993), ‘An enquiry into the definition of built form in urban morphology’, unpublished PhD thesis, University of Birmingham.
- [31] Kyle R. Cave Facilitation, Inhibition, and the Advantage of Two Connections (1998)
- [32] Lewicka M (2008) Place attachment, place identity, and place memory: restoring the forgotten city past. *J Environ Psychol* 28:209–231. doi:10.1016/j.jenvp.2008.02.001
- [33] Lewicka M (2010) What makes neighborhood different from home and city? Effects of place scale on place attachment. *J Environ Psychol* 30(1):35–51. doi:10.1016/j.jenvp.2009.05.004
- [34] Lynch, K.(1972) *What time is this place*. MA:MIT Press.
- [35] Lynch, K. (1981) *A theory of good city form*, Cambridge, MA: MIT Press.
- [36] Madanipour, A. (1996) *Design of urban space: an inquiry into a socio-spatial process*. Wiley, 1996
- [37] Middleton, M. (1987) *Man made the town*. New York: St. Martin's Press
- [38] Motalebi, G., 2006. Recognition of form and function in Architecture. *Fine Art Magazine*, pp: 25.
- [39] Oktay, D. (2002). The Quest for Urban Identity in the Changing Context of the City: Northern Cyprus, *Cities*, 19(4), 2002, 31-41.
- [40] Oxford English Dictionary. Accessed 1/7/2017. <http://oxforddictionaries.com/>
- [41] Paasi A (2013) Regional planning and the mobilization of ‘regional identity’: from bounded spaces to relational complexity. *Reg Stud* 47(8):1206–1219. Doi :10.1080/00343404.2012.661410
- [42] Pakzad, J. (1996) *Theoretical Fundamentals and Process Urban Planning*, Shahidi Publications.
- [43] Perembe, E. (2011) *Samsun'da Kent Kimliđinin Olumasını Engelleyen Etkenlerin Sosyolojik Analizi*. Samsun: Samsun Symposium
- [44] Podeh, E. and Winkler O. (2004) *Rethinking Nasserism. Revolution and Historical Memory in Modern Egypt*. University Press of Florida
- [45] Prentice, D.A, Miller, D.T & Lightale. J.R. (1994). Asymmetries in attachments to groups and to their members: Distinguishing between common identity and common bond groups. *Personality and Social Psychology Bulletin*, 20, 484-493
- [46] *A Preservation Handbook for Historic Residential Properties & Districts in Australia* (2011)
- [47] Rabbani R. 2002. *Urban Sociology*, Isfahan University Press, first edition, Isfahan
- [48] Salesses P, Schechtner K, Hidalgo CA (2013) The Collaborative Image of The City: Mapping the Inequality of Urban Perception. *PLoS ONE* 8 (7): e68400. <https://doi.org/10.1371/journal.pone.0068400>
- [49] Secchi, B. (2007) *Prima lezione di urbanistica*, Bari: Laterza
- [50] Samir, H. H. & Arayici. Y. (2014) *The Influence of Modern Architecture in Transforming Iraqi City Identity*. School of Built Environment, Salford University, Manchester M5 4WT, United kingdom
- [51] Scheffler, N; Kulikauskas, P; Barreiro, F. (2009). *Managing Urban Identities: Aim or Tool of Urban Regeneration? The Urbact Tribune*, November 2009. p. 9-13
- [52] Schmitt TM (2011) Cultural governance. *Zur Kulturgeographie des UNESCO-Welterberegimes. Erdkundliches Wissen.*, vol 152. Franz Steiner, Stuttgart
- [53] Swedish Heritage Conservation Act (1988) Gleason P. identifying identity: a semantic history. *The Journal of American History*. 69 (4), 910-931
- [54] Tiesdell, S. (1996) *Revitalizing historic urban quarters*. Boston: Butterworth-Architecture, 1996.
- [55] Torabi, Zohreh. (2013) Effective Factors in Shaping the Identity of Architecture. *Middle-East Journal of Scientific Research* 15 (1): 106-113, 2013 ISSN 1990-9233. IDOSI Publications.
- [56] Ujang, N. (2010). Place Attachment And Continuity of Urban Place Identity. *Asian Journal of Environment-Behavior Studies*, 11, 41-74.
- [57] *Urban concepts of collective memory, identity & place attachment* (2017) Springer International Publishing Switzerland