

International Journal of Architectural Research

An international fully refereed journal published three times a year-

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Volume (11) - Issue (2) - July 2017

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Architecture Planning Built Environment Studies

Chief Editor
Ashraf M. Salama

Collaborating Editor
Farzad Pour Rahimian

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2016 Metrics

Archnet-IJAR is a Q1 Journal in Architecture and Q2 in Urban Studies

SCOPUS RANKING

Architecture (Q1) 23 out of 87
Urban Studies (Q2) 60 out of 134

SCIMAGO

Architecture (Q1) 18 out of 117
Urban Studies (Q2) 57 out of 138

Rankings are based on last metrics of May 2017 for Scopus and July 2017 for Scimago

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ArchNet-IJAR is an interdisciplinary scholarly open access journal of architecture, planning, and built environment studies. The journal aims at establishing a bridge between theory and practice in the fields of architectural and design research, and urban planning and built environment studies. The journal has two international boards; advisory and editorial. The range of knowledge and expertise of the boards members ensures high quality scholarly papers and allows for a comprehensive academic review of contributions that span wide spectrum of issues, methods, theoretical approaches and architectural and development practices.

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Focus and Scope

ArchNet-IJAR Objectives

ArchNet-IJAR objective is to establish a bridge between theory and practice in the fields of architectural and design research, urban planning, and built environment studies. It reports on the latest research findings and innovative approaches for creating responsive environments, with special focus on architecture and planning in developing countries. ArchNet-IJAR is truly international and aims at strengthening ties between scholars from different parts of the world with contributors and readers reaching across geography, boundaries, and cultures.

ArchNet-IJAR publishes research studies, criticisms and critical analyses about the creation, use, and evaluation of different types of environments at the macro and micro scales. The journal includes original empirical research papers, analytical case studies, and high quality position papers that contribute to the advancement of knowledge in architecture and urbanism.

Four major areas are covered by ArchNet-IJAR:

Architectural and Design Research

Topics include –but not limited to: architectural pedagogy and design studio teaching practices; architectural and sustainable design; design methods and architectural theories; architectural criticism; design and project programming; environment-behavior studies; information technology; Islamic architecture; computer applications and virtual environments;

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post occupancy and facility performance evaluation; and social and cultural factors in design.

Urban and Built Environment Studies

Topics include --but not limited to: administrative and political factors contributing to the shaping of communities, cities and urban regions, community planning; sustainable urban conservation; environmental planning and eco development; housing policy, planning, and design; new urbanism; everyday urbanism; sustainable development; space syntax and GIS applications; and way-finding and signage systems.

Critical Essays on Architectural and Planning Projects

Essays that cover the above topics; critically discussing projects in use; after they have been designed, built and occupied. Articles are preferred to utilize the case study approach as a critical method in built environment research.

Reviews and Trigger Articles

In this section, non-refereed, thought provoking articles are published while book reviews, conference announcements of interest to ArchNet-IJAR readers are outlined and summarized including critical reviews of recent books. The intention of this section is to give room for more voices so that the debate goes beyond pure academic writing. Therefore, this section represents a means of rapidly disseminating innovative ideas or lessons learned from experience and practice. However, while following the same graphical format, submissions are reviewed by the chief editor and interested board members principally on the basis of usefulness and interest to ArchNet-IJAR readers. However, the section is not necessarily a regular section and it will be available based on the quality of submissions received.

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4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together all elements of the paper?

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PLURALITY AND DIVERSITY IN ARCHITECTURAL AND URBAN RESEARCH

Ashraf M. Salama

Keywords

architectural education;
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charrette;
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human perception;
social ecology

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Abstract

Demonstrating the essence of the journal as a truly international platform that covers issues of interest and concern to the global academic and professional community, this issue of Archnet-IJAR, volume 11, issue # 2, July 2017 includes various topics that manifest plurality and diversity as inherent qualities of architectural and urban research published in the journal. Topics include architectural education and design studio teaching, urban and rural slums, heritage and historic environments in various contexts, participatory planning and the charrette process, assessment of public spaces and plazas, and human perception of the built environment. These topics are debated and analytically discussed within cities, settlements, and urban environments in Bahrain, Bangladesh, California-USA, Libya, Scotland, and Spain. The issue also includes three papers selected from the Fifth Architectural Jordanian International Conference – 1-3 November 2016, which uniquely speak to the context of Jordan and the wider Middle East. The edition ends with a book review that highlights emerging issues related to border landscapes and social ecologies.

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After 10 years of voluntary hard work, Archnet-IJAR: International Journal of Architectural Research advances its position among the world leading journals in architecture and urban studies. In addition to the various scientific and research databases including Avery index to Architectural Periodicals, EBSCO-Current Abstracts-Art and Architecture, Directory of Open Access Journals, Pro-Quest, Scopus-Elsevier and many university library databases, Archnet-IJAR is now part of the Web of Science Core Collection of Clarivate Analytics (formerly Thomson Reuters) and the Emerging Sources Citation Index <http://ip-science.thomsonreuters.com/mjl/> The Journal was recently invited to be part of China National Knowledge Infrastructure (CNKI) and for inclusion in its abstracting and indexing database which will add value and impact to Archnet-IJAR.

More great news about the achievements of Archnet-IJAR is that in the recent ranking of *Scopus* (May 2017), the journal has moved three places and topped many prestigious journals. It is now ranked for Architecture (Q1) 23 out of 87 and for Urban Studies (Q2) 60 out of 134. Another great achievement is that Archnet-IJAR continues to advance its position among the world leading journals in Architecture and Urban Studies where in the latest journal ranking and metrics of Scimago (SJR) Laboratories (June 2017), Archnet-IJAR has moved up 5 places and its performance exceeded many well known and well established journals that have been in the international refereed press for more than 40 years. As part of Scimago, Archnet-IJAR is now ranked: for Architecture (Q1) 18 out of 117 and for Urban Studies (Q2) 57 out of 138.

Following these achievements this issue of Archnet-IJAR, volume 11, issue # 2, July 2017 comes to demonstrate the essence of the journal as a truly international journal that covers issues of interest and concern to the global academic and professional community. The issue includes various topics that manifest plurality and diversity as inherent qualities of architectural and urban research published in Archnet-IJAR. Topics include architectural education and design studio teaching, urban and rural slums, heritage and historic environments in various contexts, participatory planning and the charrette process in the context of Scotland, assessment of public spaces and plazas, and human perception of the built environment. These topics are debated and analytically discussed within cities, settlements, and urban environments in Bahrain, Bangladesh, California-USA, Libya, Scotland, and Spain. The issue also includes three papers selected from the Fifth Architectural Jordanian International Conference – 1-3 November 2016, which uniquely speak to the context of Jordan and the wider Middle East. The edition ends with a book review that highlight important emerging issues related to border landscapes and social ecologies.

On architectural education and design studio teaching practices Marta Masdéu and Josep Fuses argue for the need to re-conceptualize the design studio and to incorporate pedagogical approaches such as distance learning and blended learning in order to revolutionize the studio environment as a learning space and a learning paradigm that needs to be continuously updated. They effectively develop the case for the design studio as a new participatory and delocalized learning space (Masdéu and Josep, 2017). On the other hand, in a different context, Fay Al Khalifa discusses the notion of autonomy in learning architecture in the context of the University of Bahrain (Al Khalifa, 2017). She examines the effect of using a mixed methods approach to integrate theoretical and practical assignments relevant to students' performance and understanding of complex architectural concepts and phenomena.

On the topic of slums, Aisha Abubakar *et al.* embark on a journey to define slums through a rigorous and rational thinking process. Summarising various trends, definitions and

approaches to solutions of slums, their work critically analyses more recent and structured approaches that attempt to grasp the complexity of all realities constituting the slum as a crucial key to their management. In pursuing this tough quest Abubakar develops a series of conceptual diagrams that illustrate the thinking process involved in slum definition (Abubakar *et al.*, 2017). The work concludes with a proposed Slum Property Map as a dynamic way that enables a deeper and a comprehensive understanding of slums and their underlying components, properties, and parameters.

In the context of the United Arab Emirates and the wider Gulf region, Joseph Hobbs (2017), from a geography-discipline perspective, examines how the architectural, social, and cultural heritage of this unique context may contribute to better development of this region's lived environment. His work proposes that adopting and adapting the vernacular architectural heritage to the modern built environment should not be the fundamental goal for heritage-informed design. He calls for understanding and examining the social processes underlying the traditional lived environment with the ultimate goal of reaching social sustainability. In a totally different context, the argument for heritage conservation persists where Rahman and Imon discuss the socio-political forces that shape human interventions in waterfronts in the context of Dhaka. Their work explores the way in which the conservation of the historic waterfront can contribute to the improvement of quality of life in Old part of the city. They also develop a series of suggestions toward protecting both natural and built environments (Rahman and Imon, 2017).

Ainslie Kennedy presents an analytical overview of the charrette process as performed in the context of Scotland. With a focus on charrette commissioning, construction, and delivery she examined over forty charrette reports developed and published between 2011 and 2016 utilizing a conceptual framework and a content analysis procedure (Kennedy, 2017). In essence, her work concludes with a typology of charrette-approaches unique to the context of Scotland.

The work of Georgia Lindsay explores the United Nations Plaza in San Francisco by arguing that the introduction and construction of the new Plaza has not fulfilled its promise to fully transform the social and economic life of the area. Yet, it has succeeded in creating a public space and a new scene of urban culture (Lindsay, 2017). Within the same interest of understanding social and economic dynamics as they relate to public spaces, Salama, Remali, and MacLean (2017) explore how successful urban spaces could impact the growth and performance of an urban context, not only as a physical urban reality, but also as a generator of social life. Utilizing St. Enoch Square as a case study, their work employs a multi-layered methodological approach constituted in a series of tools that include behavioural mapping, visual preference survey, walking tour assessment, contemplating settings, and observing physical traces and by-product of use in order to interpret various forms of experiences that take place. They conclude that results of implementing such methods combined would establish enhanced argumentation and rationalisations of different aspects of urban life in urban open spaces (Salama et al, 2017).

The work of Aghael and Özer is innovative in the sense that it applies two contrasting theories; Mental Map and Space Syntax on two Libyan cities, Al Khums and Bani Walid (Aghael and Özer, 2017). Their work advances the discussion on how various qualities and properties of the built environment affect human perception.

In this issue three papers were identified *the Fifth Architectural Jordanian International Conference – 1-3 November 2016*, after going through another round of reviews following the criteria of Archnet-IJAR, reflecting a wide spectrum of issues. The work of Al-Jokhadar and Jabi presents the different qualities of vernacular houses and neighbourhoods in the different

regions of the Middle East and North Africa in an attempt to build a vernacular model and apply it to high-residential developments. They offer a parametric exploration of sustainable solutions that are potentially appropriate and may facilitate the synergy of socio-climatic requirements, the well-being qualities of the residents, and the particularities of a locality. The work of Fakhouri and Haddad, presented in the form of a research or consultancy report, aims to define the key constraints and opportunities through conserving architectural and urban heritage in the historic cores of As Salt and Irbid. Abu-Alatta and Freewan (2017), argue, and rightly so, that the recent developments in Information Technology (IT) and digital media have introduced new opportunities to design studio teaching and learning and new dimensions to design and architecture. In light of this, their work examines the way in which the immersion of Virtual Reality (VR) in architectural design studio affects spatial perception within the design process.

Within the journal policy and interest in plurality and diversity three topics continue to be on the rise with a focus on cities, settlements, and spaces in the Global South. These topics are manifested in three themes: Built Environment Education, Sustainable Design and Development, and Architectural and Urban Heritage. Archnet-IJAR has recently explored the potential benefits of research and publishing partnerships, which include our forthcoming special issue, guest edited by Professor Mohamed Gamal Abdelmonem, entitled: *Emerging Issues on Architectural and Urban Heritage in the Digital Era*. This is coupled with our recent contribution to the Education and Training Forum of PLEA 2017 organized early this month in Edinburgh. This was a very successful activity that may result in a series of special sections of selected papers from over 30 contributions, which were presented as part of the forum and were published in PLEA 2017 proceedings.

We are currently exploring partnerships with other colleagues across the globe and within the UK. This includes partnering with University of East London through the International Conference for Sustainable Design of the Built Environment (SDBE), which will be held in The Crystal, London, UK on 20th and 21st December 2017. Extended conference papers will be invited for publication in a special issue of Archnet-IJAR in 2018 to be guest edited by Dr Heba Elsharkawy of the University of East London. The SDBE conference is a unique opportunity for academics, researchers, architects, urban designers, engineers, building consultants and professionals to meet and share the latest knowledge, research and innovations on low carbon building design, building performance, simulation tools and energy efficient building related technologies.

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REFERENCES

- Abu Alatta, R. T. and Freewan, A. (2017). Investigating the Effect of Employing Immersive Virtual Environment on Enhancing Spatial Perception within Design Process. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 219-238.

- Abubakar, A. Romice, O., Salama, A. M. (2017). Defining Slums Using Multidimensional and Relational Properties: A Dynamic Framework for Intervention. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 34-54.
- Agael, F. and Özer, Ö. (2017). Human Perception in the Libyan Built Environment: Al-Khums and Bani Walid Cities as Case Studies. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 157-174.
- Al Khalifa, F. (2017). Autonomy in Architectural Education: A Bahraini Perspective. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 24-33.
- Al-Jokhadar, A. and Jabi, W. (2017). Applying the Vernacular Model to High-Rise Development in the Middle East and North Africa. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 174-189.
- Fakhouri, L. A. and Haddad, N. A. (2017). Aspects of the Architectural and Urban Heritage: From Registers to Conservation for Adaptive and Modern Use. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 190-218.
- Hobbs, J., J. (2017). Heritage in the Lived Environment of the United Arab Emirates and the Fulf Region. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 55-82.
- Kennedy, A. (2017). Scotland's Approach to Participatory Planning: Characterizing the Charrette. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 101-122.
- Lindsay, G. (2017). Bricks, Branding, and the Everyday: Defining Greatness at the United Nations Plaza in San Francisco. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 123-136.
- Masdéu, M. and Josep, F. (2017). Reconceptualizing the Design Studio in Architectural Education: Distance Learning and Blended Learning as Transformation Factors. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 6-23.
- Rahman, M. and Imon, S. S. (2017). Conservation of Historic Waterfront to Improve the Quality of Life in Old Dhaka. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 83-100.
- Salama, A. M., Remali, A. M., and MacLean, L. (2017). Deciphering Urban Life: A Multi-Layered Investigation of St. Enoch Square, Glasgow City Center. *ArchNet-IJAR: International Journal of Architectural Research*, 11(2), 137-157.



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RECONCEPTUALIZING THE DESIGN STUDIO IN ARCHITECTURAL EDUCATION: DISTANCE LEARNING AND BLENDED LEARNING AS TRANSFORMATION FACTORS

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Keywords

architectural education;
pedagogy;
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Abstract

Nowadays, the professional practice is undergoing changes that are affecting the work of architects. Architectural studios and engineering consultancies are reinventing themselves to adapt to social, technological and productive needs. However, despite the professional changes, the training of architects in schools continues to focus on educational models that have grown more and more distant from the professional demands. In view of this, schools of architecture have been forced to revise their programmes to develop teaching methods that enable them to adapt to the current situation. Thus, the Design Studio -considered as the core of education in architecture- needs a reconceptualization in order to change the way architects should learn. Pedagogical approaches such as distance learning and blended learning can help update the concept of the Design Studio and transform it into a new participatory and delocalized learning space.

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INTRODUCTION

Nowadays the profession of the architect is undergoing major changes (COAC ed., 2005; Robinson et al., 2012; Union International des Architects ed., 2014). Architectural studios and engineering consultancies are reinventing themselves to adapt to social, technological and productive changes which are the result of the emergence of global society. For that reason, new forms of professional practice based on collaborative working methods and virtual organizations assisted by new digital technologies are emerging (Pressman, 2006; Elvin, 2007; Robinson et al., 2012). In addition, architects are also developing new procedures for the design and construction of architectural projects and creating other kinds of connections with experts and customers/users involved in the process (Kieran & Timberlake, 2004; Hyde, 2012).

The role of the architect, as a designer, is also evolving towards other professional profiles (Fundación Arquia ed., 2014; Union International des Architects ed., 2014). In addition, the architect is no longer a privileged professional capable of bringing together a set of artistic and technical knowledge, but has become a professional who interacts with others with a more specialized expertise. Consequently, skills and knowledge that the architect must acquire to act professionally in these new working environments are also changing. At present, the architect has to be able to network, to develop a broad perspective of the professional problems, to collaborate in multidisciplinary teams and to achieve an instrumental and social expertise in new digital technologies (Becerik-Gerber, Gerber & Ku, 2011).

However, despite the changes that are occurring in the profession, the training of architects in schools continues to focus on educational models that have grown more and more distant from the professional demands (Nicol & Pilling ed., 2000; Chadwick ed., 2004; CSCAE ed., 2007). Today, the Design Studio still lies at the core of architectural education (Salama, 1995). This pedagogical model can be described as a face-to-face learning space where students interact with others playing different roles of the professional practice and the knowledge is obtained through a process of creating a product design (such as an object, a building or a city). The Design Studio, however, has certain limitations due to the changes that are occurring in the professional field. Thus, a reformulation of the Design Studio is needed in order to transform the way architects are trained as professionals. Pedagogic approaches, such as Distance Learning and Blended Learning, can help transform the Design Studio into a new learning space in order to reduce the current gap between academia and professional practice.

THE DESIGN STUDIO AS A PARADIGM IN ARCHITECTURAL EDUCATION

The Origin of the Design Studio and its Evolution

The Design Studio has played a key role in the training of architects since the eighteenth century when, for the first time in history, the teaching of architecture was regularized in the French academic institutions. It was during this period when art academies and polytechnic schools created the *Modèle Polytechnique* and the *Modèle Industriel* to educate future architects and engineers. Both models blended theoretical instruction (*sciences pures*) taught by academics (*académiciens*) at the amphitheater (*amphithéâtre*) with practical learning (*sciences appliquées*) in the *ateliers* under the supervision of an architect (the *patron*).

The *ateliers* system was the core of the curriculum of these institutions. Its main features were: an evaluation system based on competitions (*concours*), the construction of knowledge through a critical reflection between the architect (*patron*) and students (*élèves*), the collaboration between students from different disciplines (architects and engineers) and the practical application of theoretical concepts in the *ateliers* by solving hypothetical design projects. These pedagogical features would become the heart of the Design Studio.

Since then, the pedagogical model of the Design Studio has been redefined over time in order to adapt to social, cultural and productive changes that have occurred in each historical period. As evidence of this, some institutions -such as the Bauhaus, the Ulm School of Design, the Texas School of Architecture and the Cooper Union- established various educational models throughout the twentieth century. However, despite the methodological changes made to the original model, its basic structure has remained unchanged over the course of the years: the teacher poses a project that introduces hypothetical or actual problems related to the practice of the architect and then students work on its development. The teacher guides students throughout the design process while some professional conditions are simulated in a physical space within the school (the studio).

Characteristics

Leaving aside its infinite modalities of application, the Design Studio is a model of reality where a professional situation is reproduced in an academic context. The Design Studio is used in the schools of architecture with the intention of teaching students -through the simulation of various roles (architect, client, builder, engineer and user) and real conditions (the brief, site, budget, and construction techniques)- the skills and knowledge required to work professionally in architectural studios and engineering consultancies. In this sense, Devetakovic (2007: p. 326) expresses that the Design Studio has for a long time been a well-established and constantly evolving pedagogic category simulating real architectural practice within the process of architectural education. Moreover, Schön ([1987] 2010: p. 156) conceived the Design Studio as a reflective practicum: a virtual world which seeks to represent essential features of the practice that must be learned while students are offered the opportunity to experience and learn with little risk in the studios.

Thus, the simulation of the professional practice in the Design Studio has one goal: students must understand, with the help of an expert, how the profession works by solving different professional problems (Problem-Based Learning). Typically, in a Design Studio the learning processes occur when students develop a project in its stages: identification of the problem, information gathering, sketching, development of a design solution, discussion of the results with tutors and peers, intermediate reflections and, finally, the presentation of a project for critical assessment by a panel. During the course of these stages students get a comprehensive view of the complexity of a project (from its conception to its final presentation) and acquire some expertise as professionals.

At the same time, the Design Studio is also conceived as a constructive learning space where students build up their own knowledge through an active process of interpretation, questioning and experimentation. The theoretical concepts are explored and understood by inclusion in a practical context: the project (Project-Based Learning). According to Lamunu (2008: p. 169), problem solving and analysis of situations are part of the design process. This means that one of the outcomes of the learning experiences is the process of knowledge

creation which is achieved actively by doing. The Design Studios in this situation encourage knowledge construction. This explanation suggests that students create their own knowledge from the different experiences they have in the studio when the different phases of the project are carried out. In this context, the task of the teacher is to assist students in their learning process and encourage them to become autonomous thinkers.

Furthermore, the Design Studio is also a social and face-to-face learning space. The teaching and learning processes take place in a physical space within the school in direct contact with teacher, peers and occasional collaborators. The studio is usually a multipurpose open space that serves to support various activities (conferences, seminars, lectures, formal and informal reviews) and promote different patterns of interaction. In this environment, students can work individually or in collaboration with other occasional participants who do not belong to the school.

Limitations

The characteristics that define the Design Studio have certain limitations which directly affect the training of students as professionals. Among the most prominent features, we can cite:

- The learning activities do not take place in the real professional environment.

The training of students in the Design Studio is different from the professional practice because important issues related to budgets, regulations and marketing are omitted. The Design Studio is generally perceived as focused on solving hypothetical problems instead of articulating real and pragmatic architectural problems (Maturama, 2014). Moreover, the role that other actors (customers, users and professionals) may have on the design process is also not taken into account. In most of the projects that students develop in the Design Studio, the client/user is just a fictional character described in the programme or an occasional contributor.

In addition, the Design Studio also does not establish a direct link with the professional practice because students spend most of their learning time interacting only with other students and teachers at school. Although in architectural studios architects collaborate all the time with other specialists with different levels of expertise, in the Design Studio students rarely carry out joint activities with real professionals. Some authors (Anthony, 1991; Cuff, 1992; Boyer & Mitgang, 1996) claim that students are subjected to isolation (in the physical sense but also in the formative sense). This creates a false sense of professional reality that can only be solved if learning is conceived as an open and participatory process.

- The students' learning is limited by the physical environment.

In the Design Studio students learn face-to-face. The Design Studio becomes the social and educational centre for students due to the fact that all learning activities are organized around this physical space. Thus, the relationships that students can establish with the outside world (universities, architectural firms and companies) are secondary and sporadic. Koch, Schwennsen, Dutton and Smith (2002: p. 9) concluded in a report for the American Institute of Architecture Students that students spend all of their time, with each other for four to six years, in the same classes and in the same building. As a result of this, they become disconnected from the ubiquitous public they will serve. Too often, faculty members do not encourage or even allow any unstructured time for students to develop interests and relationships outside of the studio.

Quinn (2000: p. 24) suggests that students' learning in the Design Studio is limited because it is solely based on experiences that they receive when developing a project. He proposes, therefore, that the pedagogical model of the Design Studio is geared towards expanding these experiences outside schools through other activities that allow the participation of other actors (departments of the university, other schools, professional institutions and public organizations). According to Quinn (Ibid.), if you think about what you should be learning while in school, it should extend well beyond the studio to include much more outreach, rather than being sequestered in a building 24 hours a day. Any outside/non-architecture experiences and knowledge that you gain are going to have the greatest impact on your success. This broad, general knowledge comes from greater university experiences through outreach to other departments, lectures, and visiting scholars, and many other things -not just architects or architecture.

- The design process is developed mostly in an individual way.

In the Design Studio, the individual work takes precedence over the collective work since interactions between students and teachers are reduced to certain situations such as informal group reviews and formal presentations. According to Papanek (1995: p. 203), the individualism comes from the professional field where designers and architects are encouraged to think of themselves as artists, with the result that a good deal of design and architecture seems to be created for the personal glory of its creator. Moreover, Lamunu (2008: p. 7) asserts that individual learning predominates in the Design Studio because only students with the best ideas and designs, who are labelled as *independent stars*, are praised. Although team work is also valued in the Design Studio, the *independent star* gains reputation, as opposed to the team. Consequently, this generates competitive working environments whose results are a lack of cooperation and trust among students and an excessive interest in attracting the attention of the teacher. According to Chivers (2015: p. 76), the process of developing an idea also becomes a private, almost shameful act, in which not knowing the right answer is an admission of failure rather than an opportunity for creativity.

- The teacher's influence on students limits their learning.

Teachers often tend to impose their own preferences on students rather than support their development. Dutton (1987: p. 18) states that teachers tend to speak in ways (often unconsciously) that legitimize their power and students orient their speech and work to that which is approved. In addition, Shor (1992: p. 93) explains that sometimes the interventions of the teachers become a barrier to students' learning. The transfer of knowledge from teacher to students limits dialogue and active questioning. In such a unilateral syllabus, the students are told what to do and what things mean. Through this authoritarian discourse, students gradually lose their childhood joy of learning. They also lose confidence in their thoughts and language, making them defensively silent in the presence of a teacher who apparently has the answers worked out already. In these circumstances, communication between the teacher and the student fails because the degree of understanding between the two sides becomes inconsistent and ambiguous. The solution to this problem depends largely on the ability of the student and the teacher to seek a convergence of meanings through a dialogue of mutual reflection. In this way, the teacher ceases to impose in order to assist the student in the learning process.

Ultimately, these limitations are an obstacle to the training of students as they do not comply with current professional demands. The profile of the architect used as a model in the Design Studio has certain shortcomings that must be resolved. In this context, schools of architecture (aware of the problem) are developing and implementing new teaching strategies in the Design Studio in order to provide a better education (Salama, 2015).

RECONCEPTUALIZATION OF THE DESIGN STUDIO: NEW LEARNING SPACES

Currently in academia, there is a broad consensus on the need to adapt existing educational models to the transformations that the professional practice is undergoing. Distance Learning and Blended Learning are two of the pedagogical models which are postulated as the most appropriate to update the concept of the Design Studio. When we integrate these models in the Design Studio, we can observe how they are transforming it. On the one hand, the Design Studio maintains its essential characteristics while it integrates technologies and methods from other fields. On the other hand, it is radically transformed into a new hybrid, distributed and delocalized learning space where a direct relationship with the professional reality is set up, a more active participation is encouraged, synergies are established with different partners within and outside the school and the use of digital technologies is promoted.

The Design Studio as a Timeless and Delocalized Learning Space

In the last two decades, schools of architecture have integrated (parallel to the face-to-face learning model) Distance Learning in the Design Studio in order to create a learning space where students and teachers can work and communicate with everyone regardless of place and time. The implementation of digital tools to carry out the learning and teaching processes in the Design Studio has produced transformations in the way of teaching architecture (introduction of new roles, working methods and evaluation systems), the place where learning occurs (in virtual spaces with geographically dispersed groups) and the training time of students (acquisition of knowledge can occur at any time).

According to Salama and Wilkinson (2007: p. 310), the Virtual Design Studio can be defined as a networked studio distributed across space and time. In such a studio, students from geographically separated educational institutions work together using a computer-mediated environment as if they were part of one Design Studio in one physical space. Wotjowicz (1995: p. 21) also explains that the Virtual Design Studio is an environment where each member has instant access to other members' geometric designs in-progress. Besides, the access to information occurs at different levels of time in several collective environments.

The Virtual Design Studio promotes the development of collaborative and remote projects using asynchronous and synchronous communication tools (Maher, Simoff & Cicognani, 1999). These instruments allow students to gain an increasing understanding of new ways of collaborative networking and integration of digital media in the design process of a project. The use of this type of collaborative tools is carried out in a computer-mediated environment that enables architecture students, designers and faculty members to interact and design via their computers (Devetakovic, 2007). This type of environment helps students and teachers to interact with others regardless of location and time, to create work teams and to participate virtually in the development of a project using digital technologies as design support tools.

For instance, in the Internet & WWW Module Project created by the Department of Architecture & Building Science of the University of Strathclyde (United Kingdom) (Grierson, 2004), teachers organized annually (from 1999 to 2003) a Virtual Design Studio in order to familiarize students with the following topics: how to use the information available on the Internet to develop architectural projects, which online media (synchronous and asynchronous) to choose in order to undertake collaboratively a design proposal and how to exchange digital data related to a project with the client and partners.

Students were grouped into teams of three people. During a four-week period, they had to write a housing programme for an artist, digitally develop a design proposal, keep a record of the work in a web diary and perform an online presentation of the final design to the client. The role of the teachers was to accompany the groups throughout the design process of the project acting as facilitators and to direct students towards a process of self-reflection using as a means the online registration of each group (texts, drawings and images). Teachers also tried to encourage Peer Learning undertaking several collaborative online activities. For example, online discussions with members of each team were held to examine jointly the project and the works were recorded online for review and to facilitate the proposal of new design ideas.

Grierson (2004: p. 84) conducted a subsequent study of the project and noted that, in the beginning, teachers and students put more emphasis on the use of asynchronous communication tools. The exchange of files via email was initially used in the Virtual Design Studio as a means of promoting communications between the teams and the client (teacher). Their integration into the dynamics of the Virtual Design Studio was not a problem because students were familiar with the resource. Most of them used their own emails but some groups decided to create a joint account. Teachers used email to send pictures and texts illustrating client preferences (material, style, form, distribution) while the teams used it to send the client their design proposals for review. However, over the years, this trend changed and students began to use more synchronous communication means because, in their opinion, it facilitated the contact with their peers, and to exchange immediately the information needed to proceed with the project. Students began to use the chat to share design information and the digital whiteboard to add comments to drawings in real time. According to one student, it was easier to have a discussion with colleagues because they used the digital blackboard and the chat simultaneously while they were drawing. The result was that the process of brainstorming was more immediate and direct (Ibid.). Nevertheless, one of the most frequent criticisms among students was the difficulty of identifying which group was working in each moment on the digital blackboard. For that reason, students quickly established a set of procedures to work tidily and to differentiate the design proposals.

Finally, teachers also asked students to create a web diary to document the state of their work and to coordinate the design duties of the team members. Each group had a weblog to upload all communications, texts and images. Later this information was published online. The purpose of this was to teach students to organize information when they work in groups, to create a virtual space to plan every stage of the design process and to simulate the professional practice with an online record of the project (similar to how an architect would proceed).

In a similar way, the Multiplying Time, Place2wait Project coordinated by the University of Hong Kong (China), the University of Washington (United States) and the Eidgenössische Technische Hochschule Zurich (Switzerland) focused on promoting online collaboration between students of different institutions and countries (Hirschberg, 2001). Teachers integrated Distance Learning in the Design Studio in order to create a new form of collective authorship using a database onto which students downloaded their work to be reusable on new architectural design proposals.

The preparation of the Virtual Design Studio was a collaborative effort. According to teachers, it was initially difficult to coordinate resources and tasks between the three partners but, finally, they reached a consensus. For their part, the University of Hong Kong designed a programme to build a house for a Swiss writer and a Chinese painter near Seattle. The goal

was to bring together cultural aspects of the three participating countries in a single project in order to share different architectural point of views. Meanwhile, the University of Washington prepared the documentation on the site while the Eidgenössische Technische Hochschule Zurich provided the two main tools of the project: the modelling software and a virtual environment.

The Virtual Design Studio was conceived as an evolving system structured in individual design phases. After each phase, each group had to store their design works on a common database to share them with other peers. In successive stages, each team had to select the project of another group, to develop it and to create a new version. In some cases, teams returned to select a modified version of their original design while others were not interested in continuing their work because they saw potential in the proposal of another group's version. All database functions were available through a custom interface that displayed and managed the information needed to carry out the new designs. Students had to navigate through the results of the previous phase and choose a design that interests them, request it and download a folder with Sculptor drawing files. The use of a common modelling programme was beneficial for students because it avoided the need to change formats, which often lead to some loss of information. Sculptor was especially designed for supporting the early stages of design and its intuitive interface made it very easy to learn. In fact, Hirschberg (2001: p. 52) comments that students noted that by exchanging Sculptor models throughout the project, they felt they could communicate in a universal architectural language. Supplementary information was also stored in the virtual environment in order to support the learning process of students. Teachers developed a series of visual representations on the collected data that allowed students to visualize the links between different design proposals, to analyse their genealogical development and to know which lines of work provided better design opportunities. In addition to the design work performed in the virtual environment, every eight hours a direct contact via videoconferencing was established by students to exchange ideas, creating a global think tank, operating 24 hours a day.

In both projects, the intention of the teachers was to incorporate Distance Learning in the Design Studio to create a learning space that could go beyond the physical studio and encourage different types of collaboration between students during the design process. The use of digital resources was helpful because teachers could teach the contents of the learning activities in different formats (images, texts, drawings) and means (web diary, virtual interface, chat, digital blackboard) and support individually and collectively students' learning.

In a Virtual Design Studio, the role of teachers and students acquire new nuances. This is because students' learning does not depend so much on the dialogue between the two sides but on the methods and resources used to perform the learning activities. The teachers' role as transmitters of knowledge (a feature of the conventional Design Studio) passes into the background since their main responsibility now is to boost the learning processes in the virtual environment. For example, in the Internet & WWW Module Project, teachers assumed the role of the client to reinforce distance relationships with students, to help them identify their learning needs through a process of self-review (without imposing their professional beliefs) and to enhance students' participation and cooperation in the differently designed learning activities.

On the other hand, students take a more active role in the learning process. Students have to learn to self-manage their own learning, to use the right information to achieve their goals and to plan their study time. In the case of both projects, as teams had been formed, the students also had to take responsibility for their peers' learning. This was a positive

experience because, as it happens in an architectural studio, students learned to distribute design tasks and to delegate responsibilities. Furthermore, they had the opportunity to create a collective environment where students could work together and share their design experiences regardless of their location, time and culture.

The virtual environment is used as a platform of work and communication to establish synergies that give rise to an evolutionary system fed by the exchange of experiences, ideas and documents. Thus, unlike the conventional Design Studio where the information is managed individually, the Virtual Design Studio becomes a space of knowledge in which information is linked to the collective reflections made in the virtual space. This guarantees its value as an active element in students' learning.

Moreover, the Virtual Design Studio also offers students the opportunity to collaborate with learners from other universities in a global context (in the same way as the Multiplying Time, Place2wait Project). This is a unique experience for them to discover new ways of designing architectural projects outside the boundaries of their own institution and to develop communicative skills in order to successfully deal with different professional experiences.

The Design Studio as a Blended and Participatory Learning Space

Nowadays, schools of architecture are implementing Blended Learning in the Design Studio to combine the efficiency and flexibility of computer-assisted forms of learning with the social aspects of face-to-face communication (Achten, Koszewski & Martens, 2011). This partnership between digital technologies and classroom teaching is considered by Garrison and Kanuka (2004: p 96) as an emerging trend in higher education because it constitutes an effective and low-risk strategy which positions universities for the onslaught of technological developments that will be forthcoming in the next few years.

Blended Learning is causing changes in how, when and where students learn in the Design Studio because it combines the methodologies used in traditional teaching and Distance Learning. This results in a multiplicity of techniques that enrich and facilitate students' learning in the studio. Blended Learning supports a rearrangement of current teaching and learning processes and allows the use of several learning theories at once -such as constructivism and behaviourism- selecting the most positive aspects of each of them.

According to Saghafi, Franz and Crowther (2012: p. 16) this pedagogical model creates more opportunities for communication through different media and modes responding to different personalities. Students have an opportunity to learn with teachers and peers in the studio but also with others who live in different countries and belong to other institutions. Because of this, the Design Studio becomes simultaneously a local and global learning space and, at the same time, a physical and virtual educational environment. Furthermore, Information Communication Technologies (ICT) facilitates the instant exchange of multiple design ideas and experiences. As a result of this, the conventional Design Studio becomes an open and social learning space that enables the integration of different groups of learners and the collective management of resources (materials, contents and tools).

For instance, in the Oikodemos Project created by the Escola d'Arquitectura La Salle of the Universitat Ramon Llull (Spain) (Madrazo, 2011), Blended Learning was implemented in the Design Studio with the goal of creating different virtual and physical learning spaces which connect courses (seminars, workshops and lectures), subjects (architectural projects, urban planning, housing design and energy efficiency) and students with different academic levels (bachelor and post-graduate) from various institutions. Thus, combining online and offline

activities, students could individually and collectively develop multiple design solutions and communicate their vision and knowledge about contemporary European housing to other partners (lecturers, architects, urban planners, citizens and researchers).

Schools involved in the project had different curricula, programmes and educational objectives. The purpose of the Oikodemos Project was to bring together this diversity of elements in a single pedagogical framework and to establish a common approach on the design of courses in order to be easily adopted by anyone. The first step was to determine collaboratively the educational processes and the language that would be used, leaving enough flexibility for each school to adapt the various online and offline learning activities to the specific conditions of its programme without losing its autonomy. The second step was to plan how the results would be disseminated and the information would be reused in future activities. To achieve this, the ARC research group (La Salle) created the Oikodemos digital platform. It consisted of two environments: Workspaces and Case Repository. The first supported different project-based learning activities and the second was a digital repository of housing case studies built collaboratively by students. These environments could be used separately or in combination during the Design Studios.

The learning processes were a sequence of learning activities, either online (debates, presentations of the design proposals, site analysis, study a set of concepts, development of a case study) or on-site (conferences, informal reviews, public presentations, visits and activities dealing with the participation of citizens). The joint Design Studio was a basic component of the Blended Learning model applied in the Oikodemos Project. This kind of workshop was part of a sequence of educational activities (online and offline tasks) in which several schools participated. It usually lasted one week. During this time, teachers and students of the participating schools worked physically together on a project. In 2011, students of the Escola d'Arquitectura La Salle and the Gebze Teknik Üniversitesi (Turkey) participated in a joint Design Studio that lasted three days. At the end of this Design Studio, students answered a questionnaire on the combination of classroom and distance activities, the work methodology and the knowledge acquired. This questionnaire was conducted during the development of our doctoral thesis: *The Transformation of the Design Studio in New Learning Spaces. A Study on the Process of Integration between Education and Professional Practice*. The information gathered revealed that the use of a blended approach was positively viewed by the participants. Some students mentioned that it was an enriching experience (out of the ordinary) because they were able to discover new ways to develop a project. As well, they considered it very useful to work online and on-site with students from other cultures. Students also commented that it was a great opportunity for them to improve their visual thoughts and to work with other people from other countries with different architectural ideas. Other students also stressed the importance of carrying out oral presentations and group reviews with teachers at the studio to discuss face-to-face the design errors and to adopt an efficient solution. Nevertheless, students reported some problems of coordination and communication. For example, they mentioned language difficulties. English was the language used but, because it was not the native language, some students had difficulty expressing themselves, causing them some anxiety and fear of being rejected by their classmates. Students also expressed concern about the short duration of the Design Studio. They had three days to develop a design proposal for the urban improvement of a neighborhood in Barcelona. In their opinion, this time was insufficient to work accurately on all aspects of the project. Besides, they did not know in advance the location and the partners so they needed some time to adapt before starting to work on the project.

In the case of the Faculteit Architectuur Sint-Lucas of the Katholieke Universiteit Leuven (Belgium), teachers organized an international Blended Design Studio on urban design (Pak & Verbeke, 2012). Their objective was to offer students new forms of learning and participation beyond the conventional Design Studio combining geographical information technologies and web 2.0 resources with face-to-face methods. Students were encouraged to work collaboratively on a project using an educational platform based on a geographical virtual environment: GEO-VEM. This platform was developed in 2010 as an alternative to the Urbis Geographical Information System tool used by the Brussels authorities. This consisted of two environments: one focused on the geographical location of urban areas and the other to search for information (data, images and texts) through an interactive map. These environments could be used separately or in combination. Its purpose was to promote urban development proposals in the region using the resources Google Maps and Google Earth Extension MediaWiki API. The first environment added information generated by users through a customizable interface. The second established conceptual maps.

The GEO-VEM platform was used to support classroom activities (conferences, visits, reviews with the tutor and group presentations) and online activities (creation of a collective map with geolocated photos, collaborative analysis of the site and presentation of the design proposals). From the virtual platform, teachers organized the contents of the Blended Design Studio on various urban topics related to the city of Brussels that were assigned to each group. Weekly, teams had to upload their works to the virtual platform by creating a web site from which images, maps, drawings and texts were displayed and used. Students used these web sites to share their findings while teachers could track the work done during the design process. Teachers also involved several specialists and students from other institutions in the design and evaluation process of the project. This interaction among participants was essential for the production of a steady stream of inputs (lectures, readings and design proposals) and outputs (assessment of works and feedback from students/professionals to other peers) and for the creation of a direct link with the professional field. Finally, the teaching material and the students' work were also recorded in the virtual platform to be used in future Design Studios.

In 2012 and 2013, teachers organized two more international Blended Design Studios (Pak & Verbeke, 2013). Both had similar objectives to the previous workshop. The existing curriculum, divided into three courses (one theoretical, one focused on the teaching of geographical information systems and another practical), was reformulated. The three courses were grouped in a single Blended Design Studio using the GEO-VEM platform as a means of managing the contents and activities of the three blocks. Students had various tools at their disposal including a collective mapping interface, a data filtering device and an image gallery. In the first Blended Design Studio, students had to study the urban center of the city of Luxembourg and to create a collective map using the virtual platform as a means of combining different types of geographical information. In the second Blended Design Studio, students had to carry out a collaborative urban analysis of an area of Brussels and to share their work on the platform. After the analysis phase, students had to explore different design alternatives to reconfigure the area using the information available on the platform. In both cases, the use of digital technologies did not replace face-to-face interactions between teachers and students, but served to improve the whole learning process by establishing different modes of communication and feedback.

In a subsequent study carried out by Pak and Verbeke (2013: pp. 55-56), the participation of students in the GEO-VEM platform was linked to their progress in the Blended Design Studios. Their participation began to recede and to produce negative effects. According to teachers, some of the most plausible explanations for these effects were: the technical

difficulties that some students experienced when they were developing their design proposals using the platform and the excessive online students' participation. They focused more on the use of the platform than in the learning process and they produced a lot of irrelevant design information. In spite of this, students considered the use of the GEO-DEM platform positive. For instance, a student commented that, overall, the website was interesting and it was easy to create new posts. It was also nice to be able to see other people's works at any time, but at the same time, it was obvious that this kind of approach to teaching had to be done very carefully. Another student acknowledged that it had been a very valuable source in the course of a Design Studio and a very interactive and continuous learning environment (Ibid.: p. 57). Most students also highlighted the potential of the virtual platform to improve their understanding of the development of collaborative projects and relationships with their peers and professionals.

In both projects, the use of virtual platforms was essential to overcome the spatial and time barriers of the Design Studio and to promote multiple modes of interaction during the learning process. As a result of this, more actors were involved in the development of activities. It allowed students to work simultaneously with other learners and specialists who did not belong to the school. This created a sense of being a part of a learning community because it enabled face-to-face integration with classmates and tutors and virtual contact with other collaborators. In the case of the Oikodomos Project, teachers were able to create an open-ended learning space, which transcended the established borders (physical, institutional and disciplinary) and promoted the construction of knowledge through interactions, outside and inside the virtual learning platform, among students and other participants.

The use of Blended Learning does not replace face-to-face connections between teachers and students but it serves to improve the whole learning process by setting different modes of communication. According to Pak and Verbeke (2012: pp. 505-506), the blended approach offers opportunities which are not fully or easily available in a conventional Design Studio setting. First of all, it can promote and facilitate reflective learning-in-action in a novel pedagogical context, in which various communication modes and styles are supported. The possibility of one-to-one, one-to-many, many-to-one and many-to-many communication allows more flexible and adaptable interactions and a greater number of design students. Furthermore, in the new setting Design Studio learning is complemented by asynchronous activities in the virtual campus. They offer the learners the possibility of extended online discussions complementing the activities in the Design Studio. In contrast, the discussions in the conventional Design Studio take place in small groups, complemented by plenaries and reviews.

In a Blended Design Studio, the role of teachers and students also acquires new nuances (in a way comparable with the Virtual Design Studio). It creates interactive learning environments where students are responsible for their own learning while teachers work in structuring the teaching and learning processes. For their part, students play an active role in their own learning and that of their peers from the synergies that are established remotely and physically during the development of the learning activities. Meanwhile, teachers act as a guide to advise students throughout the design project (similar to how they would be in the Design Studio) and as a coordinator to design and boost the learning processes in the virtual learning environment (similar to how they would be in the Virtual Design Studio).

The management of the information was another important factor in both projects. Unlike the conventional Design Studio where students treat information individually, in the Blended Design Studios, the information is accessible to everyone. Therefore, students must learn to

filter and label the correct information for their own use and to transform it into knowledge. They also have to be able to share their ideas in the digital and face-to-face format so their communication skills must cover different media and resources. This is a positive aspect of Blended Learning because it enriches the learning process and opens a window of new possibilities for developing architectural projects.

CONCLUSIONS

Discussion: Distance Learning or Blended Learning?

In the last decades, the implementation of Distance Learning in the Design Studio has led to changes in how, when and where the teaching and learning of architecture takes place in the studios. The goal has been to train new architects with new professional skills and competences. The Design Studio, with the support of digital technologies, has overcome its physical and temporal limitations. In the Virtual Design Studios, learning takes place in virtual environments with heterogeneous groups (with diverse interests, experience and knowledge) which are geographically dispersed throughout the world. The access to information can also occur at any time while the communication between participants can be carried out synchronously and asynchronously. As a consequence of this, the Design Studio has become a flexible learning space where students learn architecture outside the rigid requirements of space, rhythm and timing of the traditional classroom model.

However, despite the advantages offered by Distance Learning, its implementation in the Design Studio has been insufficient for several reasons. The first reason is that teachers have focused more on the technical aspects (information management and exchange) than on the social and pedagogical aspects (collective creation of knowledge and design of educational activities). Only a few cases (such as those presented in this text) are the exception. Today, it is still necessary to develop new instruments and methods to facilitate the design of learning processes in a virtual environment (virtual pin-up, virtual jury, virtual desk critic), to elaborate organizational strategies that encourage interaction between different actors (inside and outside academia), to create procedures to build knowledge collectively, to organize communication protocols in order to show the design results to different audiences and to manage repositories with quality content.

The second reason is that, in each school, Distance Learning has been included within a specific teaching system: a closed and controlled virtual environment, which is isolated from the rest of content and network resources. These virtual learning spaces (online educational platforms and interfaces created as administrative resources by schools) seem determined to limit what is exciting about the Internet and digital technologies: global communication, quick and open reproduction of content and the free exchange of information between network users. Finally, the last reason is that the proximity between students, teachers and peers disappears because communication occurs through a digital medium (even if the contact takes place synchronously). Consequently, there is a loss of communication based on a close and physical interaction that, in a face-to-face teaching model, is an added supplement to student learning.

Because of these drawbacks, in recent years, the integration of Distance Learning as a substitute for the traditional face-to-face model is giving way to a new type of the Design Studio based on Blended Learning. From our point of view, the implementation of Blended Learning in the Design Studio has a future because it combines in a single educational model the qualities of Distance Learning and Face-to-Face Learning. The classes in the studio (seminars, conferences, reviews and presentations) are complemented by learning

activities that take place in a virtual environment (collection and sharing of information, submission of design proposals and open dissemination of results). Combining both models, the Design Studio manages to overcome spatial, temporal and social limits without neglecting the characteristics that define it. For instance, students have the opportunity to communicate face-to-face with the teacher and their peers in the studio but, at the same time, also online with other participants. Thus, one of the limitations of the Virtual Design Studio is solved.

Another outstanding aspect of Blended Learning is that the existing teaching and learning processes can be restructured and reorganized for specific academic needs (academic resources, curriculum and educational objectives). Thus, its integration into the Design Studio offers infinite design possibilities that can be applied in multiple educational contexts. What is more, Blended Learning is postulated as one of the most appropriate pedagogical approaches in the current training of architects because, unlike the Virtual Design Studio, it focuses not only on the technological aspects of ICT but also in its social potential and capacity for collective construction of knowledge. New digital technologies allow strategies, tools and techniques to be established in order to create distributive and participatory learning spaces where students can collectively build up knowledge through research, discussion, reflection, consensus and dissemination of design works.

As a result of this, Blended Learning is used in the schools of architecture to redefine the Design Studio in order to provide the necessary tools and teaching methods to train future architects and to resolve the gap between academia and profession. Nowadays, Blended Learning is being incorporated into the Design Studio in order to create a new type of hybrid learning space that is more transversal, social and close to the professional reality. The combination of traditional methods with computer-assisted forms of learning is helping students to acquire new professional skills related to work in temporary, delocalized and multidisciplinary teams; to combine different specific and cross abilities related to design, research and management; and to master digital technologies in order to manage and spread architectural knowledge. Thus, the conventional Design Studio is becoming an interdisciplinary, interdependent and inclusive learning space where students collaborate with other learners (from architecture or other disciplines) and actors (specialists and non-professionals) in person or at distance to enhance mutual cooperation, to promote the exchange of experiences and to discover new ways of interpreting architecture.

The Design Studio is also changing in a cross-learning space where different areas of architectural knowledge are integrated simultaneously in the design process of a project. Through the online and on-site activities, students can reconnect the information acquired in separate courses and turn it into applicable knowledge in their own work. With this model, it is possible to solve the lack of coordination and communication between subjects of the same degree and to connect them on a single system of Blended Design Studios.

Moreover, the incorporation of digital technologies in the Design Studio is changing the work methodology of students, improving their capacity of learning. Online education platforms, blogs and social networks are some of the digital resources that students are currently using in order to exchange information, to access all kinds of learning contents, to publish freely their work and to discuss topics of common interest with different actors. These technologies combined with traditional learning methods are helping students to expand and enhance their educational experiences by encouraging them to develop new interests and relationships outside of the studio and the academic environment.

Towards a New Model of the Design Studio

When we examine how the Blended Learning is currently changing the educational model of the Design Studio, we can see that there are some trends that begin to emerge and, in the coming years, their integration into academic programmes will be a reality. Thus, we can speculate on the future development of the Design Studio and point out three possible lines of evolution.

The first change is that the term 'Design Studio' could be replaced by a new expression: 'Architectural Lab'. This change could take place because an experimental character could be introduced in the Design Studio. This would admit failure and self-discovery as part of the learning process of students and would focus less on the final outcomes. Besides, this new term would also serve to define several hybrid spaces. These spaces would be inspired by cooperative and knowledge production models and would be interconnected physically and virtually.

The second change could be a transition to a more open model. In this new model, active learning processes based on the development of real projects and methodologies focused on creative, innovative and collaborative processes would be especially relevant. Thus the traditional model would be progressively replaced by a new one based on three basic concepts: interconnectivity, interdisciplinarity and research.

The third change could have to do with the integration of ICT in the Architectural Lab. The need to equip students only with technological and technical knowledge would definitely pass into the background. Learning would focus on what students can do themselves with these digital resources. Their integration into the Architectural Lab would promote new ways of interaction and facilitate the access, creation and dissemination of knowledge despite the physical separation that may exist between students, staff and participants. The use of ICT would also provide tools and learning scenarios characterized by being mobile, personalized and networked.

Implementation of a Blended Case

This paper summarizes part of the doctoral thesis: *The Transformation of the Design Studio in New Learning Spaces. A Study on the Process of Integration between Education and Professional Practice*. The purpose of this thesis is to investigate the factors of change that are currently affecting professional practice and its impact on the teaching of architecture. In particular, it examines how the Design Studio is currently being transformed to give way to new learning spaces. The thesis is presented as a holistic study about different international and national types of Design Studios that stand out for their commitment to pedagogical innovation. As a result of this, an overview of what is happening today with the training of architects in schools of architecture is achieved. At the end of the thesis, as future line of research, we have designed a generic Blended Design Studio. The goal of the project iLab is to create a virtual platform to promote the learning of architecture through research and collaborative innovation. The idea is to adopt a new profile of architect that fits better into the current professional circumstances. This professional profile does not focus so much on whether the architect should have general knowledge or should specialize in a specific area of work. It focuses on a single premise: students have to acquire the ability to be more critical, curious and autonomous.

The iLab project uses a blended approach to develop research projects linked to different fields of architecture (technology, urban planning, energy analysis, heritage conservation and art) with the collaboration of specialists (from different disciplines) and companies from the sectors of architecture, engineering and construction. It combines on-site activities (master classes, reviews, practice period with professional partners) with online tasks (brainstorm sessions, design presentations, edition of video material). The learning process is supported by a virtual platform with two environments: the first hosts different research-based learning activities and the second is an autonomous and private environment where students can manage their own resources (bibliography, audiovisual material, interviews and reports) to carry out their current and future research projects.

The plan is that students adopt the role of entrepreneurs. They will have enough freedom to choose those projects which they wish to develop and investigate. Meanwhile, teachers will assume the task of guiding and accompanying students throughout the entire design and fabrication processes as partners. Professional companies and architectural studios will also play an important role by offering professional advice, sponsoring research projects and providing the necessary resources for the construction or marketing of the proposals.

The duration of each blended design studio will be different depending on the type of research project and academic level. In the degree of architecture, although the projects deal only with theoretical or design aspects, the duration will be at least two semesters (fifteen weeks each) in order to carry out a thorough investigation and to realize the practice period with the partners. The fifteen weeks will be divided into three blocks of five weeks (seminar block, project block and practice block) leaving the last week of each block to perform open presentations.

At present, this project has not yet been implemented in the curricula of the Universitat de Girona (Spain). In the following months, it will be presented to the academic staff of the area of architectural projects to gauge their interest and predisposition to adopt this model in their Design Studios. We are aware that this represents a change in the way of teaching of the school focused on a traditional system. It also involves more hours of work for academic staff. However, we hope that their gradual integration into the curriculum will improve the current training of students as they will be able to establish a direct link with the professional practice, to carry out more collaborative projects and to choose those architectural topics that they are most interested in developing.

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Acknowledgements and Reference heading should be formatted using the 'Heading 1' style to be left justified, bold, with all letters capitalized but have no numbers. Text below continues as normal.

REFERENCES

- Achten, H., Koszewski, K., & Martens, B. (2011). What Happened after the 'Hype' on Virtual Design Studios? Some Considerations for a Roundtable Discussion. In: University of Ljubljana (ed.), *Proceedings of the 29th International eCAADe Conference*, Ljubljana, 21-24 September 2011. pp. 23-32.
- Anthony, K.H. (1991). *Design Juries on Trial. The Renaissance of the Design Studio*. New York: Van Nostrand Reinhold.

- Becerik-Gerber, B., Gerber, D. J., & Ku, K. (2011). The Pace of Technological Innovation in Architecture, Engineering, and Construction Education: Integrating Recent Trends into the Curricula. *Journal of Information Technology in Construction (ITcon)* 16, 411-432.
- Boyer, E. L., & Mitgang, L. D. (1996). *Building Community: A New Future for Architectural Education and Practice*. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching.
- Chivers, H. (2015). Practices Makes Perfect. In D. Froud & H. Harriss (Eds.), *Radical Pedagogies. Architectural Education and the British Tradition* (pp. 75-79). London: RIBA Enterprises Ltd.
- COAC Ed. (2005). *L'exercici de l'arquitectura al món*. Barcelona: CG Anmar S.L.
<https://www.coac.net/internacional/cat/eamindex.php>. Access Date, 15/06/2016.
- CSCAE Ed. (2007). *Arquitectos Estrategias de formación*. Madrid: Artes Gráficas Palermo S.L.
- Cuff, D. (1992). *Architecture: the Story of Practice*. Cambridge, MA: MIT Press.
- Chadwick, M. (ed). (2004). *Back to School: Architectural Education -The Information and The Argument*. London: Wiley-Academy.
- Devetakovic, M. (2007). Codification of Site Related Knowledge in Virtual Design Studios. In A. M. Salama & N. Wilkinson (eds.), *Design Studio Pedagogy: Horizons for the Future* (pp. 325-344). Gateshead: The Urban International Press.
- Dutton, T. A. (1987). Design and Studio Pedagogy. *Journal of Architectural Education*, 41 (1), 16-25.
- Elvin, G. (2007). *Integrated Practice in Architecture. Mastering Design-Build, Fast-Track, and Building Information Modeling*. New Jersey: John Wiley & Sons Inc.
- Fundación Arquia, Ed. (2014). *IV Encuesta on-line a arquitectos*. Barcelona: Fundación Arquia.
http://fundacion.arquia.es/media/encuestas/downloads/informes/informe_encuesta_profesionales_2014.pdf. Access Date, 15/06/2016.
- Garrison, D. R., & Kanuka H. (2004). Blended Learning: Uncovering its Transformative Potential in Higher Education. *Internet and Higher Education*, 7, 95-105.
- Grierson, H. (2004). The Internet as a Tool for Communication in Design Projects. *CEBE Transactions*, 1 (2), 77-90.
- Hirschberg, U. (2001). VDS: Multiplying Time, Place2wait. In M. Engeli (Ed.), *Bits and Space. Architecture and Computing for Physical, Virtual, Hybrid Realms. 33 Projects by Architecture and CAAD, ETH Zurich* (pp. 50-55). Berlin: Birkhäuser.
- Hyde, R. (2012). *Future Practice. Conversations from the Edge of Architecture*. New York & London: Routledge.
- Kieran, S., & Timberlake, J. (2004). *Refabricating Architecture. How Manufacturing Methodologies are poised to Transform Building Construction*. New York, NY: McGraw-Hill.
- Koch, A., Schwennsen, K., Dutton, T.A., & Smith, D. (2002). *The Redesign of Studio Culture. A Report of the AIAS Studio Culture Task Force*. Washington, DC: The American Institute of Architecture Students INC.
- Lamunu, P. (2008). *The Architectural Design Studio as a Learning Environment: A Qualitative Exploration of Architecture Design Student Learning Experiences in Design Studios from First-through Fourth-year*. Iowa: Iowa State University.
- Madrazo, L. Ed. (2011). *Oikodomos Compendium from*
<http://www.oikodomos.org/resources/compendium.pdf>
- Maher, M. L., Simoff, S. J., & Cicognani, A. (1999). *Understanding Virtual Design Studio*. Berlin: Springer-Verlag.
- Maturana, B. C (2014). Where is the 'Problem' in Design Studio: Purpose and Significance of the Design Task. *ArchNet-IJAR: International Journal of Architectural Research*, 8 (3), 32-44.
- Nicol, D., & Pilling, S. Eds. (2000). *Changing Architectural Education. Towards a New Professionalism*. London: Taylor & Francis Group.
- Pak, B., & Verbeke, J. (2012). Design Studio 2.0: Augmenting Reflective Architectural Design Learning. *Journal of Information Technology in Construction*, 17, 502-519.
- Pak, B., & Verbeke, J. (2013). Redesigning the Urban Design Studio: Two Learning Experiments. *Journal of Learning Design*, 6 (3), 45-62.
- Papanek, V. (1995). *The Green Imperative: Ecology and Ethics in Design and Architecture*. New York: Thames & Hudson Ltd.
- Pressman, A. (2006). *Professional Practice 101. Business Strategies and Case Studies in Architecture*. New Jersey: John Wiley & Sons, Inc.
- Quinn, R. (2000). Studiomania. *Crit*, 48, 24-25.

- Robinson, D., Jamieson, C., Worthington, J., & Cole, C. (2012). *The Future for Architects?* London: RIBA. <http://www.buildingfutures.org.uk/projects/building-futures/the-future-for-architects>. Access Date, 15/06/2016.
- Saghafi, M. R., Franz, J. & Crowther, P. (2012). Perceptions of Physical versus Virtual Design Studio Education. *ArchNet-IJAR: International Journal of Architectural Research*, 6 (1), 6-22.
- Salama, A. M. (1995). *New Trends in Architectural Education. Designing the Design Studio*. Raleigh, NC: Tailored Text & Unlimited Potential Publishing.
- Salama, A. M., & Wilkinson N. (2007). Introduction: Digital Technologies and the Studio. In A. M. Salama & N. Wilkinson (Eds.), *Design Studio Pedagogy: Horizons for the Future* (pp. 309-311). Gateshead: The Urban International Press.
- Salama, A. M. (2015). *Spatial Design Education. New Directions for Pedagogy in Architecture and Beyond*. London: Routledge.
- Schön, D. (2010). *La formación de profesionales reflexivos. Hacia un nuevo diseño de la enseñanza y el aprendizaje en las profesiones*. Barcelona: Paidós. Original Version: id., *Educating the Reflective Practitioner*. San Francisco: Jossey-Bass Publishers (1987).
- Shor, I. (1992). *Empowering Education: Critical Teaching for Social Change*. Chicago, IL: The University of Chicago Press.
- Union International des Architects Ed. (2014). *UIA Accord on Recommended International Standards of Professionalism in Architectural Practice*. Paris: International Union of Architects. <http://www.uia.archi/Sites/default/files/AIAS075164.pdf>. Access Date, 15/06/2016.
- Wojtowicz, J. (1995). *Virtual Design Studio*. Hong Kong: Hong Kong University Press.

APPENDIX A

The examples presented in this report have been chosen to show briefly how Distance Learning and Blended Learning are implemented in the Design Studio. The Internet & WWW Module Project of the University of Strathclyde (United Kingdom) has been selected because it represents a distance educational model where remote collaboration between students of the same school is promoted using synchronous and asynchronous communication tools. The Multiplying Time, Place2wait Project of the Eidgenössische Technische Hochschule Zurich (Switzerland) represents a distance-pedagogical model that applies a participatory methodology among students from different universities through the collective creation and management of design proposals. The Oikodomos Project of the Ramon Llull University (Spain) is an inclusive and blended educational model that combines diverse elements in a single frame (as courses, subjects, disciplines and programmes) and integrates various educational activities developed collaboratively in different virtual and physical spaces. The GEO-VEM Project of the Katholieke Universiteit Leuven (Belgium) represents a blended pedagogical model where a virtual platform is used to unify three different courses in a single Design Studio and to promote online and on-site collaboration among students through the collective management of different educational activities.



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AUTONOMY IN ARCHITECTURAL EDUCATION: A BAHRAINI PERSPECTIVE

Fay Al Khalifa

Keywords

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Abstract

Formal architectural education in Bahrain is relatively young, born only at the beginning of the twentieth century. This paper discusses autonomy in learning architecture, and the effect of using a mixed methods approach combining theoretical and practical assignments on students' performance and understanding of complex architectural concepts. The study discusses the performance and progress of 81 undergraduate students in the course of Contemporary Architecture. The paper presents the students' learning process and engagement that occurred throughout the given assignments, theorizing about how students could build on these processes to support their understanding of contemporary architectural and urban issues. The research concludes that both theoretical and practical educations are very helpful in the learning process. Nevertheless, active learning offers distinct advantages to architectural education, especially when combined with group work. The study also shows that while students were able to plan, design and construct spatial installations, they were less capable of reflecting on their projects philosophically. The results indicate the importance of practical experiences in enhancing overall student understanding of architectural phenomena.

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INTRODUCTION

Research suggests that the key to education is experience (Boud et al., 1993; Boyd and Fales, 1983; Prosser and Trigwell, 1999). In the practice of Architectural Education, the experience is considered as a producer of knowledge and is used to provide a sound rationalization of some of the real world architectural phenomena (Hammer and Acherman, 2015). Thriving teaching practices have been gradually drifting from the fifty-minute lecture that is based on the usual formal teacher-centered approaches. More active learning methods are now being used to create opportunities for interaction between the students themselves, as well as between students and their mentors. Especially in architectural education, the visual and other methods of teaching foster a strong connection between theory and practical design ideas (Viswanathan and Champa, 2014).

In architecture schools, there are no special measures and norms among mentors in evaluating and assessing student projects, and where there are, mostly they are not communicated to students. Learners should be persuaded to interact in the process of making academic judgments to help them gain greater control over their learning and therefore become more self-monitoring (Utaberta et al., 2013). This study attempts to encourage students to take increased responsibility by reducing the influence and presence of the mentor and by letting them decide how best they can learn and achieve the course objectives.

The underlying goals of this research emphasize on experiential learning to encourage students' critical reflection on their learning process and how they best understand architectural information. Another goal is to enhance students' observation and to build habits of lifelong learning. In this paper, six students outcomes through which eighty-one undergraduate students engaged for the first time in the course of Contemporary Architecture are discussed. The research incorporates a qualitative undertaking in addition to the quantitative approach to meet the challenges of the twenty-first-century learning.

AUTONOMY IN ARCHITECTURAL EDUCATION

Learner autonomy is not a new approach to education; successful students have always been autonomous. Recent research into the topic does not promote a new type of learning but rather focuses on perusing independent learning as an ultimate goal (Little, 1995). The optimal goal for education is to generate lifelong, self-directed learners; however, many current educational processes propagate dependency rather than create self-direction. Just as the dependency is learned, being an autonomous learner can also be taught, to both the student and the teacher (Grow, 1991). Training students to become independent will require equipping them with the skills needed to learn more efficiently without the constant intervention and presence of a tutor. The teacher's role in autonomous education is not just to transmit knowledge but also to assure students take greater responsibility for their education (Boud, 2005).

A lot about being autonomous is also about the learner's ability to integrate the knowledge learned in the formal classroom with real life problems. This correlation has been a major concern in educational psychology, educational theory and curriculum development (Barnes, 1976; Bruner, 1974). In 1999, the RIBA called for a redefinition of the first knowledge and know-hows required by architects to work successfully in a complicated and rapidly changing world (The Royal Institute of British Architects, 1999). One of the interpretations of the redefinition is the belief that for students to embrace the inevitability of change, their abilities to adapt life-long learning should be enhanced by equipping them with the motivation and

skills needed for self-directed and independent learning throughout life (Webster, 2005). Thus, contemporary architectural education has drifted from the emphasis on providing students with a particular set of skills to being outcome based using student-centered education (McAllister, 2010; Savic and Kashef, 2013).

The standards of contemporary architectural education were introduced by some architectural courses initiated by the Bauhaus school. Since then, project-based design studios have been the backbone of most architectural programs in the world (Salama and Wilkinson, 2007). Today, design studios are where students learn to “think architecturally.” In the studio, students have the main responsibility for figuring their way through the design problem, and the mentor’s role is mainly to ensure that they do not drift too far off-course (Maturana, 2014). Due to the relatively high degree of autonomy in the design studio, students, even capable ones, are often fearful of the design process and feel they have limited control over it (Ledewitz, 1985, Salama, 2016). There is, thus, no doubt that the design studio is the most autonomous learning environment in architectural schools around the world. Most of the recent studies in architectural education focus on the design studio culture (Ashkan, 2016; Choi and Kim, 2016; Gaber, 2014; Maturana, 2014; McAllister, 2010). This research, however, focuses on other courses that are supplementary to the design studio. This study emphasizes how those supporting courses could, similarly to the studio, bear a higher degree of autonomy and focus on being outcome based. The research also attempts to investigate whether students of architecture prefer to be self-directed learners in those courses.

Research shows that the academic social climate is usually higher in design studios than in regular lecture classes in social connections, students’ involvement, teacher support, order, and organization; while in general classes, social climate measures are higher in teacher control and the orientation of learning material (Davidovitch and Casakin, 2015). Also, the research confirms that the interactive educational system in the design studios caters for integration between cognitive and behavioral skills that are necessary for practicing architecture (Savic and Kashef, 2013); this reaffirms the need to test the incorporation of some qualities of the design studio into other courses in the architectural program.

Mostly, studio teachers receive no training; there are no guidelines for teaching design, and they should rely merely on what they learned as students and on their instinct. The technique of instruction used mostly in design studios is the criticism of each student’s efforts at synthesis in relation to the course objectives (Attoe and Mugerauer, 1991). Research in the topic is steadily growing but continues to be needed to set some guidelines for teaching design. This study will add to this body of knowledge by implementing a number of methods of instruction and a new system of evaluation, which could be informative regarding student preference, and learning more about the best practice of tutoring students in design disciplines.

Active Learning

Active learning is the process of student engagement in activities that keep them mentally and physically active with projects, pushing them to reflect on individual concepts and their application. Students are encouraged to regularly evaluate their knowledge and understanding of the given concepts or problems in a particular discipline and to attain knowledge by participating and contributing (Michael, 2006). Data from many different disciplines including learning sciences, cognitive psychology, and educational psychology are now calling for the employment of student-centered, active learning educational systems.

There is a growing body of knowledge within teaching communities that supports and validates the adaptation of those new approaches to teaching. Mentors in different disciplines should too become learners in the classroom and begin to modify their teaching methods to employ attitudes that foster active learning and match the needs of students and course requirements with their teaching styles and personalities (Michael, 2006). This research will examine the benefits and students' acceptance of such approaches by engaging them in different assignments with varying levels of activity and autonomy.

While everyone has their own learning style, research claims that the best learning methods for architectural students include visual and real world context followed by verbal information. Studies also show that students of architecture are most satisfied when there is an optimal interaction between them, their mentors, and real-world problems, and also when making their decision about how best they can learn (Brazley, 2014; Gaber, 2014). When knowledge is offered before an opportunity to apply it arises, research claims that knowledge cannot find a conceptual scheme in the students' mind to reside (Gelernter, 1984). Studies suggest that students learn the technical skills necessary for their fully rounded education more efficiently and incorporate them into the architectural design process when the skills are taught on an as-needed basis during an ongoing project (Allen, 1984). Active learning is therefore said to be crucial in creative and sophisticated majors like architecture (Gaber, 2014). This study will investigate this thesis by reflecting on the learning process of a sample of undergraduate architecture students at Bahrain University.

Finally most, if not all, of the research on the topic of active and autonomous learning and architecture relates to western and eastern countries with little to no focus on architectural education in the MENA or the Arabian Gulf regions. This research attempts to fill this gap in the literature by addressing the challenges of teaching and learning architecture specifically in Bahrain.

METHODOLOGY

The research uses a combination of quantitative and qualitative methods. This study analyzes data from a survey administered to 81 undergraduate students enrolled in the BSc Architecture program for the first semester of the academic year 2016-17 at the University of Bahrain and assesses their performance and the quality of their submitted work in the course of Contemporary Architecture. Theoretical lectures were scheduled on three consecutive days each week. Each section attends once a week, therefore, the lecture content changes weekly and is repeated three times during a week. Students who were not able to attend the lecture on their given timing for any circumstances were allowed to show up in any of the other timings during the week to ensure that all students are present in as many lectures as possible.

In line with the hypothesis that passive learning by listening to lectures is not the best way to attain optimal education (Viswanathan and Champa, 2014); also, to investigate the hypothesis which suggests that when learning while applying, the student can recall the information given for a longer time and is able to later use the taught knowledge, expertise and competence practically (Viswanathan and Champa, 2014), active methods were applied in the class to engage students in small exercises relating to the topic of the lecture. The lectures usually begin with a general principle or theme related to Contemporary Architecture and eventually goes into detail with its applications, examples and case studies. Several exercises were used in the form of competition between groups at least once every lecture to gain students' interest and to ensure that the information has set and can be effectively recalled.

Research shows that students' performance can be evaluated against measurable objectives that relate the obtained knowledge and skills to performance expectations and real-world architectural phenomena (Savic and Kashef, 2013). The students' assignments were of varying levels of activity and autonomy, but mostly put more responsibility on the students for self-learning than the conventional learning approaches. The submitted work included:

1. Research paper (Weeks: 1-2): Individually, students were asked to write a research paper of approximately 1000 words (excluding references) on the topic of "Meaning and spatial character of Contemporary Architecture". Students were asked to support their argument with examples of international, regional and local contemporary architects, discuss their projects critically and analyze their attitude to Contemporary Architecture. They were also asked to make a summary of 150 words and a reference list.

2. Term project (Weeks: 3-11): The project was designed in a way to allow students to experience a relatively high degree of autonomy in a low-stress non-classroom setting by creating a partnership between students, faculty mentors, and their physical environment and thereby move beyond the goal of learning by spoon-feeding in the classroom. In groups of 5-7, students were asked to design a temporary spatial installation on the theme "Present spatial concepts and contemporary urban spirit". Learning with others is motivating and nurtures the student's self-confidence and self-efficiency. It is also an important part of active learning (Viswanathan and Champa, 2014). Installations were located within the campus area. By setting themselves on campus, students built a connection that they could later translate into a spatial project. Students were asked to illustrate in their installation, spatial concepts that are driven from the first assignment and lectures, trying to interpret them in a way as to provoke visitors and passersby to reflect on certain pressing issues related to contemporary city and campus life. The submission requirements for this assignment were A. a sketchbook illustrating the development of the concept, design ideas and construction details of the installation; B. a picture scroll showing the progress of the installation; C. the constructed installation.

3. Lecture Quizzes (20 Minutes): After each lecture, students were asked a question that summarizes their understanding of the theoretical content of the lecture. Students were then asked to answer the question individually on a piece of paper and submit it to the instructor. Solving a live example and giving solutions was very common throughout the lecture quizzes as it is a preferable learning alternative (Viswanathan and Champa, 2014). The instructor then collects all quizzes for each student in one folder with the student name and ID. Folders were then returned to students on the day of the midterm exam with their question papers.

4. Midterm (Week 10): As the term project, the midterm was also designed in a way to allow students to experience a relatively high degree of autonomy in a low-stress non-classroom setting. Students were responsible, on the day of the examination, for picking up their question and answer sheets in addition to a folder containing their lecture quizzes from the academic department. The department secretary kept a log with students' signatures to monitor students' arrival and the timely submission of completed exams. Students were then free to answer the exam wherever they wanted within the campus boundaries. The exam lasted for two hours and included three essay questions from which students should answer only two. The use of sketches to support the student answers was a must.

5. Final exam (Week 18): Held in a hall with formal, strict invigilation system, the exam comprised of five questions, each question addressing one or more of the course objectives. The questions varied in their style: essay, true/false, short answer, list question, and sketching.

6. Bonus assignment (Two weeks): Students were given the freedom to choose the type of bonus task they wanted to submit to enhance their grades. Awarded grades varied between an extra 3-7%: 3% was assigned when the work showed average effort and some development of relevant analytical and interpretive skills; 5% was awarded when the work showed good effort and development of related analytical and interpretive skills; and 7% was awarded when the work showed exceptional effort and high level of development of relevant analytical and interpretive skills.

The survey, given in January 2017, used Likert scale questions and open-ended questions to address the research: students' understanding and enjoyment of the course materials; the efficiency of the various teaching methods used; benefits of active learning; students anatomy; and best practices for architecture students' acquisition of knowledge in Bahrain. Students' performance and the quality of their submitted work were analyzed using Ordinal variables and were rated on a scale of "Outstanding", "Superior", "Good", "Satisfactory", "Low pass, but certifying" and "Failure" with numerical values of 0, 1, 2, 3, 4, 5, 6 (see Table 1).

The students completed the survey during the last week in the semester over the Internet using their smartphones in a classroom setting on three consecutive days, depending on the day on which their section took place. In the three separate sections, 81 undergraduate students completed the survey for a completion rate of one hundred percent (100%).

Table 1. Students' performance evaluation scale based on a holistic attitude in the evaluation. The scale adopts a combination of grading systems: the six points, eleven points, the 1-2-3-4 system, and a grade interpretation system proposed by (Utberta et al., 2013).

Table 1: An example of a table (Source: Author).

No.	Scale	Letter Grade	Percentage	Interpretation
1	Outstanding	A	90-100	Exceptional Attainment of all course objectives, showing complete and comprehensive understanding of the course content, with the development of relevant skills and intellectual initiative to an extremely high level.
2	Superior	A-	87-89	Clear Attainment of all course objectives, showing complete and comprehensive understanding of the course content, with the development of relevant skills and intellectual initiative to an extremely high level.
		B+		
3	Good	B	80-83	Substantial attainment of most objectives, showing a high level of understanding of the course content, with the development of relevant analytical and B 80-83 interpretive skills to high level.
		B-	77-79	
4	Satisfactory	C+	74-76	Sound attainment of some major course objectives, with understanding of most of the basic course content and the development of relevant analytical and interpretive skills to a high level
		C	70-73	
		C-	67-69	
5	Low Pass, but certifying	D+	64-66	Some attainment of a range of course objectives, showing a basic understanding of course content with the development of relevant skills
		D	60-63	
6	Failure	F	<60	Few or None attainment of course objectives, showing limited understanding of course content with minimal development of relevant skills.

Analysis of Data

The survey can be summarized as follows: the average student was a twenty-two-year-old Middle-Eastern (17 male and 64 female) who goes to school full-time. 58 % of the students were taking the course as per the degree program. The rest were behind schedule. Only 7.4% of the students delayed taking the course for more than two years and the eldest student enrolled in the course was delayed by five years. This delay is not a surprise since students were discouraged by their colleagues from taking the module due to its reputation for having substantial theoretical content and its association with low grades in the past few years. 79.3% of the students believed that the course had stimulated their interest in Architecture and 80% of the students showed an overall satisfaction with the course materials, delivery methods and outcome. The average overall grade in the course was 82% (B), which according to the scale in Table 1 is “Good.”

The theoretical and practical assignments

More students were satisfied with the level of the theoretical assignment than the practical, being not too hard or too easy. Nevertheless, students preferred the latter and believed that they learned better when involved in a practical task. Only 13.6% of the students thought that they learned better from the theoretical assignment. 42.5% of the students did not enjoy the theoretical task, while only 4.9% of the students did not enjoy the practical assignment. The students struggled to finalize their installations because of time constraints and the workload from other courses. Although the majority of courses in the Architecture Program require a term project of a practical type, the students collectively thought that their previous education prepared them to undertake theoretical assignments, but not practical ones. This could be attributed to the fact that students were never involved in an assignment that requires designing and building of 1:1 scale models. The average grade for the theoretical assignment was 70% (C, Satisfactory), and the average grade for the term project was 93.5% (A, Outstanding).

The Midterm Exam

Collectively, the students thought that the exam was of reasonable length and level. 75% of the students thought that they have learned from the midterm exam and 70% of the students enjoyed it. 83.5% of the students believed that not having to take the exam in a hall helped them to perform better. Only half of the students felt that they had the solid graphical, language, and theoretical education and training that prepared them to take an essay type of an exam that incorporated sketches. Consequently, 49% of the students were satisfied with their grades. Overall, only 14% of the students were not pleased with the exam. The average grade for the midterm exam was 72% (C, Satisfactory).

The Bonus Assignment

The bonus assignment was not compulsory. Only 37% of the students undertook the assignment. Mostly, students agreed to take the assignment to enhance their grades. Those who didn't were either satisfied with their semester performance grades or did not have the time to take the assignment. Almost all of the students who did not take the bonus assignment expressed their interest in putting the extra effort if time had permitted them and they had less unfinished work for other courses. Wanting to learn more about contemporary architecture was a motive for only a few of the students to undertake the extra workload.

Almost all of the students were satisfied with the unstructured nature of the bonus assignment except for only 1.3% who preferred structured assignments. Most of the students believed that they could learn and achieve better when the type of assignment was left for them to decide. 85% of the students wanted to be given the right to choose the kind of assignment they will do in the future. The submitted bonus assignments included essays, research papers, sketchbooks, posters, paintings, videos, and installations. The average bonus grade was +3.8%.

Final examination and overall evaluation

Although the midterm exam was an open book type and the final exam was a formally closed book exam, scores of the students in both exams were relatively similar. The average grade for the final exam was 77% (B-, Satisfactory) and for the midterm 72% (C, Satisfactory). Overall, and by the end of the semester, 88.5% of the students believed that they know what contemporary architecture is and feel confident to explain it to others. 85.9% of the students felt that they can critically categorize the different types of Contemporary Architecture and 77% were inspired by various Contemporary Architects and Projects and can confidently explain some of the recent theories and projects with details.

DISCUSSION AND CONCLUDING REMARKS

Student feedback is valuable and should be sought for in other courses in the architecture program. The researcher learned from the application of different learning processes at least as much as the students. This supports (Gaber, 2014) conclusion on the importance of lifelong constant education for students of architecture and their mentors. Asking students questions have also stimulated their interest in knowing their learning further. Students can provide much information on how they think and learn. The literature suggested a lack of guidelines to teaching design oriented disciplines (Attoe and Mugerauer, 1991). The findings of this study contributed to filling this gap by providing insight on the students learning preference. While the autonomous nature of the design studio has been discussed in the literature (see Allen 1984; Attoe & Mugerauer 1991; Ledewitz 1985; Nicol & Pilling 2005; Salama & Wilkinson 2007), less attention has been given to other supplementary courses in architecture programs, particularly in the Arabian context. This study investigated the benefits of using a mixed methods approach to teaching architecture in such courses to undergraduate students in Bahrain. The evaluated assignments in this study varied in their level of activity and autonomy.

The research concludes that both theoretical and practical educations are very helpful in the learning process because mentors need a variety of instruments to deliver different types of information to students. Active learning offers distinct advantages to architectural education, especially when combined with group work: longer reclamation of information, social connectivity and interactivity, personal and individualized learning, and the cultivation of self-confidence and self-efficiency. Students of Architecture learn more and make better grades in active learning than in traditional learning methods. The findings affirm that students of architecture are satisfied the most when there is an optimal interaction between them, their mentors and real-world problems, also when making their own decision about how best they can learn (Brazley, 2014; Gaber, 2014).

Most students thought that active learning was useful and more enjoyable, which adds to the body of knowledge within Western teaching communities that supports and validates the adaptation of active, project based approaches to teaching architecture. This study suggests

that such approaches are also preferable in the Bahraini context. Barriers to active learning in architecture included: time constraints, especially with the overload of work from other modules; miscommunication; and the lack of group work and leadership skills. Students said they learned best with active learning, followed by theoretical assignments that incorporate a high degree of autonomy.

Students liked the quizzes that tested their understanding of theoretical lectures. Recalling the information shortly after it's given with the students' own language facilitated a deeper understanding of the topic discussed. Also, using the students' notes in the midterm exam to recall information was a successful approach to conducting an effective open book examination. The literature suggested that when knowledge is offered alongside an opportunity to apply it, knowledge finds a conceptual scheme in the learners' mind to reside (Gelernter, 1984). The use of quizzes that incorporate live examples and giving solutions in this study helped students perform better and have a deeper understanding of the topic.

Students' learning in architecture is associated with meaningful hands-on processes that require some physical work, similar to the spatial installations. But too many practical steps submerge the project into craftsmanship and technological shortcomings that might not lead to desirable outcomes while also compromising the student's ability to reflect on their projects philosophically. This raises the question of, how can we balance the complex process of designing, constructing with critical analysis of the theoretical problem in hand? Finally, this study sheds light on the need to focus on particular measures and assessment strategies that will assess students' critical thinking and achievement of the course outcomes.

REFERENCES

- Allen, E. (1984). Second Studio: A Model for Technical Teaching. *Journal of Architectural Education*, 51(2), 92–95.
- Ashkan, M. (2016). The Phenomenological Evaluation of Teaching Professionalism in the Architecture Design Studio Culture: A Case at the University of Kansas. *Archnet-IJAR: International Journal of Architectural Research*, 10(1), 41–61.
- Attoe, W. and Mugerauer, R. (1991). Excellent studio teaching in architecture. *Studies in Higher Education*, 16(1), 41–50.
- Barnes, D. (1976). *From Communication to Curriculum*. Harmondsworth: Penguin UK.
- Boud, D. (ed.) (2005). *Developing Student Autonomy in Learning*. London & New York: Taylor & Francis.
- Boud, D., Cohen, R. and Walker, D. (eds) (1993) *Using Experience For Learning*. Bristol: SRHE and Open University Press.
- Boyd, E. M. and Fales, A. W. (1983). Reflective Learning: Key to Learning from Experience. *Journal of Humanistic Psychology*, 23(2), 99–117.
- Brazley, M. (2014) How Do Students Learn With Mobile Technology. *US-China Education Review*, 4(6), 357–371.
- Bruner, J. (1974). *Toward a Theory of Instruction*. Harvard: Harvard University Press.
- Choi, H. H. and Kim, M. J. (2016). The Potential of Reasoning Methods as a Teaching Strategy Supporting Students' Creative Thinking in Architectural Design. *Archnet-IJAR: International Journal of Architectural Research*, 10(3), 6–20.
- Davidovitch, N. and Casakin, H. (2015). Academic Social Climate – A Key Aspect in Architectural Studies. *International Journal of Art & Design Education*, 34(2), 237–248.
- Gaber, T. (2014). The Agency of Making and Architecture Education: Design-Build Curriculum in a New School of Architecture. *Archnet-IJAR: International Journal of Architectural Research*, 8(3), 21–31.
- Gelernter, M. (1984). Reconciling Lectures and Studios. *Journal of Architectural Education*, 41(2), 46–52.

- Grow, G. O. (1991). Teaching Learners To Be Self-Directed. *Adult Education Quarterly*, 41(3), 125–149.
- Hammer, S. and Acherman, A. (2015). Progress and Pitfalls in Community Mapping: Behaviors, Cognitions, and New Directions. *Cities People Places: International Journal on Urban Environments*, 1(1), 19–31.
- Ledewitz, S. (1985). Models of Design in Studio Teaching. *Journal of Architectural Education*, 38(2), 2–8.
- Little, D. (1995) Learning as dialogue: The dependence of learner autonomy on teacher autonomy. *System*, 23(2), 175–181.
- Maturana, B. C. (2014). Where is the 'problem' in Design Studio: Purpose and Significance of the Design Task. *Archnet-IJAR: International Journal of Architectural Research*, 8(3), 32–44.
- McAllister, K. (2010). The Design Process - Making it Relevant for Students. *Archnet-IJAR: International Journal of Architectural Research*, 4(2), 76–89.
- Michael, J. (2006) Where's the evidence that active learning works? *Advances in Physiology Education*, 30(4), 159–167.
- Nicol, D. and Pilling, S. (2005). *Changing Architectural Education: Towards a New Professionalism*. London & New York: Taylor & Francis.
- Prosser, M. and Trigwell, K. (1999). *Understanding Learning And Teaching: The Experience in Higher Education*. Philadelphia: SRHE and Open University Press.
- Salama, A. M. (2016). *Spatial Design Education: New Directions for Pedagogy in Architecture and Beyond*. London: Routledge.
- Salama A. M. and Wilkinson, N. (eds) (2007). *Design Studio Pedagogy: Horizons for the Future*. Gateshead: The Urban International Press.
- Savic, M. and Kashef, M. (2013). Learning outcomes in affective domain within contemporary architectural curricula. *International Journal of Technology and Design Education*, 23(4), 987–1004.
- The Royal Institute of British Architects (1999). *Meeting the challenge - RIBA strategy for architecture and architects 1999-2003*. London.
- Utaberta, N., Hassanpour, B., Bahar, M. A., et al. (2013). A Comprehensive Learning of Architecture Education: Understanding Critique Session as Learning Process and Criteria-based Assessment in the Architecture Design Studio. *Procedia - Social and Behavioral Sciences: 6th International Forum on Engineering Education (IFEE 2012)*, 102, 21–32.
- Viswanathan, G. and Champa, H. (2014). Experiences in Architecture Education Learning and Teaching Methodologies Topic: Teaching - Sharing or Enhancing the Learning. *Civil Engineering and Architecture*, 2(8), 281–283.
- Webster, H (2005). Establishing and managing a student learning contract: A diploma in architecture case study. In: Nicol D and Pilling S (eds), *Changing Architectural Education: Towards a New Professionalism*, London & New York: Taylor & Francis.



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DEFINING SLUMS USING MULTIDIMENSIONAL AND RELATIONAL PROPERTIES: A DYNAMIC FRAMEWORK FOR INTERVENTION

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Keywords

slums;
definition;
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Abstract

Phenomenon as old as cities themselves, slums - in their many permutations - have been part of city management for a long time. Descriptions and definitions have gone through trends and so have the strategies to address their conditions and relationship to cities. Summarising various trends, definitions and approaches to solutions of slums, this paper critically analyses more recent and structured approaches that attempt to grasp the complexity of all realities constituting the slum as a key to their management. Then, from a detailed review of properties of slums from literature, it proposes a rational framework – the Slum Property Map – that organises such properties (cultural, social, economic, environmental) into a relationship map where reciprocal links between properties are highlighted and used both to develop narratives of the slum – how it originates, develops and functions for its inhabitants, and in relation to the city- and thus eventually to guide intervention through investment in and management of local assets. The paper presents the Slum Property Map as a comprehensive and dynamic way to understand slums as holding potential for their immediate and future prosperity.

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INTRODUCTION – OVERVIEW OF SLUMS TODAY

In 2003, the United Nations Habitat (UN-Habitat) highlighted how continued slum growth in Developing Regions posed a challenge to global urban sustainability; accordingly, Millennium Development Goals were defined 'to significantly improve the lives of at least 100 million slum dwellers by the year 2020' (UN-Habitat, 2003, p. 8); these are now superseded by the Sustainable Development Goals (SDG) and new targets for total eradication of slums by 2030 (United Nations, 2014).

In a rapidly urbanising world, where 90% of an overall population presently growing at 0.9% annually is occurring in Developing Regions, slum urbanism is a dominant part of cities since early records in 1969 officially commenced (UN-Habitat, 2013a, 2016; United Nations Population Division, 1969). Of all continents, Sub-Saharan Africa is the most vulnerable to this phenomenon with 55% of the overall slum population, followed by Southern Asia, South-Eastern Asia, and Eastern Asia at 31%, 28% and 26% respectively (UN-Habitat, 2016). Because this trend is set to continue, the challenge for Developing Regions lies in the appropriate management of slum urbanism (Tannerfelt & Ljung, 2006).

Developing Regions are at a difficult juncture in the general challenge of meeting global urban standards, and slums are in general not regarded as mainstream parts of development nor an advantage to city profile (Alagbe, 2006; Marx, Stoker, & Suri, 2013; Satterthwaite, 2016). This perception has in the past steered most approaches to the management of slums towards their elimination or containment (Hamdi, 2010). Prevailing attitudes since the 1950s, and still common today, include policies of benign neglect by government bodies, who believed slums would disappear with steady economic growth (Arimah, 2010; Njoh, 2003); of forced evictions and demolitions of entire settlements during the 1970s and 1980s which destroyed communities in multiple ways (UN-Habitat, 2003; Arimah, 2010); and the re-settling or re-housing of entire slum populations into standardised, planned and over dense inner city estates, or structures outside the city (Abubakar, 2013; Davis, 2006). These have often been shown to rapidly degenerate into slums or to become gentrified, with the consequent expulsion of the population they were created for (see Hamdi, 2010; Cronin, 2013).

In the past three decades, there has been some progress in dealing with slum in a more positive way, involving on-site strategies to improve overall living conditions with the acknowledgement that destroying slums without resolving issues at their roots only fuels the growth of more slums. Some of these strategies include initiatives on tenure, poverty alleviation, sanitation and education (Arimah, 2010; Jaitman & Brakarz, 2013). However, a target 9% drop in the proportion of slum to urban populations between 2000 to 2014, favoured by slum upgrades and the Participatory Slum Upgrading Program of the UN-Habitat, remains dwarfed by the continued rise in absolute slum populations (UN-Habitat, 2011a, 2011b, 2013a, 2013b). The many layers of social related, economic, and environmental complexities intertwined in them makes appropriately implementing any interventions a challenge (Jaitman and Brakarz, 2013). As such, according to the UN-habitat, efforts are still unsatisfactory to the present challenge of slums, which remain a critical point of concern in the fight to improve overall wellbeing of cities (UN-Habitat, 2011b, 2013a, 2016).

SLUMS IN HISTORY

“All cities start in mud.” Robert Neuwirth, 2005

Slums are an old phenomenon, linked to the city's development as a form of specialisation and advancement (Glaeser, 2013), which makes it a place to foster, change and pursue ambitions, even if just by proximity to other people (UN-Habitat, 2013a; Geoffrey Payne,

2008). Slum development has been a consistent part of the urbanised Developed Worlds, Europe and America in particular, long before it became a phenomenon predominantly associated to the Developing World. In 800 BC, people were squatting in the temples and vacant or derelict lands of Greece (Finley, 1985 in Neuwirth, 2005). In Rome, seven centuries later, the migrating population that could not afford private housing or had anywhere to stay, built freestanding colonies wherever possible (Neuwirth, 2005); whilst France experienced squatter colonies and declining households as early as the 13th century, and by the 18th century their population amounted to 20% of the total. England also had its own fair share of squatters before the Industrial Revolution, as records show people settling in the royal forest, the commons and even about the Tower of London already in the 1500s, conditions that heightened after the great fire of 1666 and the 17th century plague (Neuwirth, 2005). Squatting also formed a substantial part of American urban expansion before the War of Independence and thereafter. The 18th and 19th century industrialisation in Europe and America exacerbated squatting and land speculation as city populations grew (Birch, 2014; Neuwirth, 2005; UN-Habitat, 2003). New forms of slums emerged – densely built, overcrowded makeshift, subserviced tenements, which drew exploitation and marginal activities to new limits.

For the new Developing Worlds of Asia, Latin America and Africa, however, it was the heterogeneous effects of the forces of colonisation, and related industrialisation of the late 19th and early 20th century that gave rise to the appearance of the first slums – Dharavi in India, favelas in Brazil, Kibera in Nairobi, and sections of Lagos island (Bigon, 2008; Neuwirth, 2005; UN-Habitat, 2003). Colonialists separated and confined indigenous populations, land and property holders to peripheral lands, and did not invest in native resources, thus creating settlements spatially segregated and marked by social differences (Bigon, 2008; Ekdale, 2011; Jefwa, 2015; Magalhães & Nacif Xavier, 2003). When migration into cities increased, due to scarcity of work in the hinterlands and countryside, segregation became even more acute, and slum settlements expanded. The mid-1900 wave of globalisation caused further migration amidst quests for employment, environmental and climatic challenges, and civil unrests. This extreme urbanisation happened without the necessary economic and structural growth and support (Fox, 2013; Hutchinson, 2010; UN-Habitat, 2003), widening extensive poverty and slum population to almost 1Billion, a figure set to double by 2050 (Florida, 2014; UN-Habitat, 2016).

OVERVIEW OF DEFINITIONS OF SLUMS SINCE EARLY 1800

Since their inception, defining and understanding the meanings of slums has been an ensuing challenge, not in standardising the noun ‘slum’ per se, with all its variations and connotations, but in describing the many complex contexts, conditions and causes that characterise it.

Some of the oldest references (Rome, Paris and London) are to shanty towns and squatters, characterised by squalid accommodation (evil smelling, squalid, filthy) and destitute inhabitants (beggar families, miscreants) (Whittaker, 1993; Geremek, 1987; Stow, 1842 in Neuwirth, 2005). The 19th century brought a wave of audits and campaigns for urban reform of the challenged parts of society and the term ‘slum’ – ‘to sink in a muddy swampy place’ (Bigon, 2008), ‘a form of depredation practiced by thieves, or house stripped of its linens or valuables’ (Prunty, 1998 in Gilbert, 2007), or ‘a racket or criminal trade’ (Davis, 2006, p. 21) – was coined in reference to a configuration of people and the physical places they inhabit (Davis, 2006).

The general discourse in the mid-19th to early 20th century focused on what was perceived as the main factors that distinguished slums from the rest of the city – poverty (especially), criminality, infectious diseases and resourceful, if desperate, behaviour (Davis, 2006; Gilbert, 2007), often leading to quite categorical conclusions. Hollingshead for example, writing in 1861 of Bayswater and Notting Hill suggested that if people were attached to a place of such un-wholesome sanitary conditions, then they were beyond help (Hollingshead, 1861 in Neuwirth, 2005). Cardinal Wiseman's documentation of the slums of Westminster (Ward, 1897), and Charles Booths' categorisation of London working class from upper-class wealthy, to lowest-class, 'vicious, criminal' (British Library, 2017), were more rigorous, attempting to profile both the slum as a place and their population. Others, like journalist H.C Bunner, saw industriousness and 'comic potential' in slums, rather than pestilence only (Neuwirth, 2005, p. 222). Nonetheless, squatter evictions, demolitions, re-settlement, sometimes supported by privatisation and legal rulings were the prevalent actions throughout the early centuries and into the 20th century in Europe and America, all geared to the eradication of the slum as a reality. Subsequently, however, slums in these regions were steadily managed owing to increasing affluence, and both physical and soft reforms (further driven by slum community organisations and social grassroots movements).

Dealing with slums in the new Developing Worlds during the first half of the 20th century was at least as much a challenge as it was for the Developed Worlds. Similarly, pejorative perceptions and disregard for them unveiled a very simplistic understanding of a very complex phenomenon (UN-Habitat, 2003). The ignorance of the realities and the needs of the poor, and slum clearance prevailed (Davis, 2006; UN-Habitat, 2003; see also Bigon, 2008; Ekdale, 2011; Jefwa, 2015; Magalhães and Nacif Xavier, 2003), causing further slum expansion and breakdown of social and civil relations between their people and the administrations.

ARTICULATING THE PROBLEM: LACK OF ACCEPTED AND ADOPTED DEFINITIONS OF SLUMS

"Whenever action is required, it is necessary to identify the target population. So, what is a slum?" (Alan Gilbert, 2007: 699).

Cuthbert (2011) highlights that scholars have been tracking the problem of defining slums for decades without actually coming to a precise definition. Nevertheless, the clock is ticking; evident and projected peaks in urbanisation and their impacts on Developing Regions post 1950's heightened calls for effective urban management policies and action, thus making a proper, as well as operational, slum definition even more essential. Stokes (1962, p. 188) explained the lack of systematic understanding of slums very simply: they are 'the home of the poor and the stranger [...] classes not (as yet) integrated into the life of the city' and therefore difficult to document. This, according to Gilbert (2007) made the slum an even more amorphous term. Many arguments against the use of the term 'slum', the superficial perception of slums along with the lack of consideration for the human and social capital, housing solutions, and interactive and dynamic nature of slums followed – Turner (1976, 1978, 1969) and Marris (1979) can be cited as examples.

Following the adoption of the United Nation's millennium declaration in 2000, the organisation sought to breach the slum definitional gap with an operational definition in the 'Challenge of Slums' (UN-Habitat, 2003) – returning the use of the 'slum' to popular urban discourse (Gilbert, 2007). This definition of slum referred to an area with a combination of the following characteristics:

- Inadequate access to safe drinking water;
- Inadequate access to sanitation and other basic infrastructure and services;
- Poor structural and inadequate quality of buildings;
- Overcrowding and insecure tenure.

This definition is still restrictive (Davis, 2006; Gilbert, 2007), as it disregards the more social and complex aspects of slums and their communities. The Cities Alliance's slum definition is also limiting, as it only uses tenure and sanitation as indicators (see Cities Alliance, 2016); its slum upgrading strategy is, however, more socially oriented. The UN-Habitat, however, recognising the limitations of its operational slum definition, has called for a more organic and socially inclusive slum definition.

In response, scholars have proposed comprehensive frameworks to define slums: Gulyani and Bassett (2010) propose the 'living conditions diamond' as an overview of slums that distinguishes four interactive dimensions, with their relevant indicators: (1) tenure, (2) infrastructure, (3) housing unit, (4) neighbourhood and location. This framework does not consider other (causal) variables that lie outside the purview of the slum (Gulyani and Bassett, 2010); or, again, their associated complex social contexts. Kohli et al. (2012) propose the Generic Slum Ontology (GSO), a framework for conceptualising slums (based on image analysis and classification) and for the extraction of information across non-physical contexts. The GSO describes slums on three levels of image analysis: (1) building and access network at the object level; (2) settlement shape and density at the settlement level, and (3) location and neighbourhood at environmental level. Considerations for other salient social contexts, interrelations between the distinctive characteristics of slums, and local knowledge from slum community is however, still limited.

Indeed, there are many complex contexts – social, physical, economic and political – that play a part in the conditions (and causes) of slums, some of which are positive capital, rather than negative challenges. For Pretz, Naples and Sternberg (2003), the first stage to manage a complex problem is a precise *cognitive* identification and understanding of it; the second is a definition that enables it to be conceived relative to *why it is needed*, allowing a more positive approach to be found. For slums then, we need to capture the cognitive complexities associated with them to guide proactive and effective intervention.

The dimensions that make slums complex and hard to define are:

Differences in perceptions

- Standards and baseline measures for urban planning and housing vary between regions and are influenced by ideals, cultures, professional affiliations and society, making objective targets all the harder to establish. Slum are more of a political than scientific issue (Yelling, 1986 in Gilbert, 2007).

Locational, social and spatial dynamics

- Geographical locations create great variety in slum profiles and forms. In addition to this are people's relative social, subjective, and spatial interactions and associations that are further complicated by culture, ethics, and socio-economic profiles, and which generate great variations in the dynamic of life in slums, and are difficult to represent.

Transformations with time

- There are three contexts to transformations that occur in, or affect slums over time: 1) changes in social-spatial interactions between people in the slum; 2) Social, economic, and structural changes of cities' spatial structure; 3) The continuous review and evolution

of urban and development standards of the infrastructure that make up the slum in the city – standardisation of land, use, functions, and materials. What might have been condoned at one time might not be so at another time. For Gilbert (2007) the only temporal consistency of the slum concept is the general perception that they are undesirable places to live.

In light of the preceding dimensions, the paper proposes a comprehensive framework to define slums and guide intervention within them in a context specific manner: a definition that is both comprehensive, as a platform of analysis, and relative to unique slum contexts.

AN APPROACH TOWARDS A SOLUTION: BUILDING A FRAMEWORK FOR A DYNAMIC SLUM PROPERTY MAP (SPM)

To answer the age-old question of what a slum is, and for effective intervention, its story needs to be told: a story that gives a narrative to the multidimensional contexts – of people and their place, and the wider city – of slum development. To guide this narrative, we propose the Slum Property Map (SPM); it will need to take into account the many dimensions that give complexity to slums, thus fulfilling these requirements:

- To allow any slum to be profiled irrespective of variations in standard, form or location dynamics. A standard way of perceiving and telling the story of the slum, yet allowing context specific profiles to be formed;
- To consider the complete image of slums, the complex and interactive social (and even subjective) and spatial, and physical dynamics that are characteristic of all city systems (see Jacobs, 1961). These dynamics, one must remember, are not necessarily all negative challenges;
- To be a dynamic framework that can be used to describe the slum when changes to general conditions occur;
- To profile the slum in a manner that is **heuristic**, where the effects of actions and outcomes can be considered relative to the unique slum profile.

To fulfil the first three requirements, we follow an integrated ontological as well as cognitive approach, identifying all those properties needed to develop a comprehensive overview of slums and organising them into *Types* (of perceptual properties) and *Categories* (of cognitive properties).

This first step of the research involved a qualitative content analysis. Over 98 publications were considered and reviewed. The literature survey was done using global search in Google Scholar, Scopus, and Supremo (library contents); publications including published journals, books, theses, reports, working papers, media, and websites were all considered. The literature survey was also done without restriction to location, from a publication date of 1969 (emergence of publications on urban concerns), with specific focus on literature on types of slums presented by (UN-Habitat, 2003), and to include literature that discuss slums in general (e.g. (Davis, 2006)) and those that discuss specific slum areas (e.g. (Cronin, 2013)).

The *Types* (of perceptual properties) and *Categories* (of cognitive properties) describe the social, cultural, economic and environmental characters of the slum, but taken alone do not offer a comprehensive overview of such a complex phenomenon. Two further steps that we propose in the SPM are required. The first consists in making explicit the connections that such properties have amongst themselves, to highlight relationships, effects, influences that

they might have on each other. The second consists of building narratives that connect all properties into complex and context specific overviews on how the slum originates, develops and functions for its inhabitants, and in relation to the city. This step fulfils the fourth requirement and makes the comprehensive overview of the slum operative.

TELLING THE STORY OF THE SLUM: BUILDING A COMPREHENSIVE IMAGE OF SLUMS

In philosophy, *ontology* is a systematic account of the existence of something, a characterisation of its nature or reality (Agrawal, 2005 in Kohli et al., 2012); a conceptualisation of it that clarifies or simplifies it (Gruber, 1993). To know the true nature of anything or ‘object’ being contemplated (Kluge, 2000) – in our case (any) slum – we need to know: (1) What composes it; (2) what form it takes; (3) what causes it and/or produces the change towards its form; and (4) its purpose. These are its material, formal, efficient and end causes (Aristotle in Falcon, 2015; Kemerling, 2011; Koslicki, 2008).

Some of this information is acquired through simple observation and perception of phenomenal, and the noumenal realms (Haybron, 2011; Koslicki, 2008; McLoud, 2011); and then through our cognitive processing of such information (O’Brien, n.d.). We therefore aim to describe the ontology of slum through two sets of properties, those which we observe and perceive, and those we construct through cognition and elaboration of information (figure 1).

The SPM, therefore is structured in: (1) an experiential set of *slum (object) property Types*, and (2) a cognitive set of *slum (object) property Categories*.

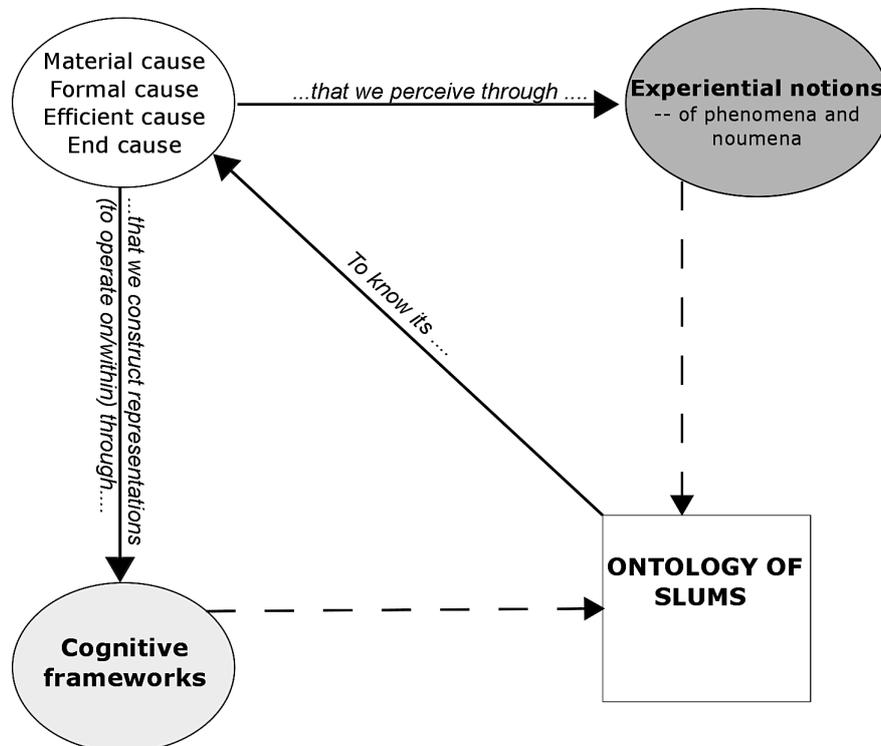


Figure 1. The slum ontology – we experience through perception and operate through cognition (Source: Authors).

Experiential Slum (object) Property Types

The experiential set of *property types* are necessary to experience and observe the slum as it manifests itself, its describable and measurable traits that we perceive, and they include *objective* and *inferred properties*. Objective properties are aspects of the phenomenal realm of slums; that is, descriptions of it that are grounding appearances in real space-time, or can be experienced and measured through sensorial intuition (or pure reasoning – seen, heard, touched etc.). Properties that we perceive in this way have objective existence, measures can be both qualitative and quantitative (Cordier & Tijus, 2001; McLoud, 2011). Inferred properties, however, are aspects of the noumenal realm of slums that are hidden and/or not observable by grounding appearances in real space-time; hence, we cannot experience them in a sensorial way but rather through intellectual intuition (or practical reasoning) (Cordier & Tijus, 2001; McLoud, 2011) (figure 2).

For a comprehensive understanding of slums therefore, its property profiles will include those that are observable – physical, environmental – and those that are not but formed from acquired knowledge of things and of people’s experiences – social and subjective, cultural, economic and environmental contexts. The cognitive set of *property categories* provides a conceptual coherence (within which we can operate) to exploring and representing slum *property types* that we can objectively comprehend and those we infer. Both are important to define the slum as a complex system.

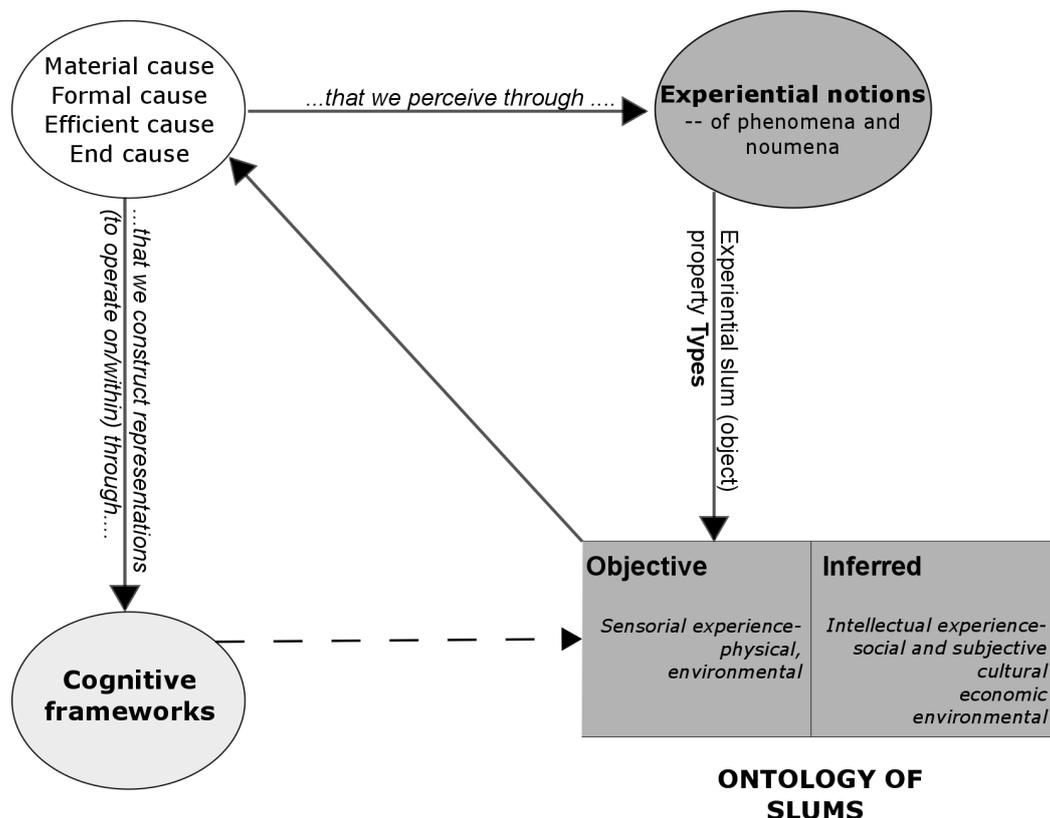


Figure 2. Experiential slums properties – descriptions of slums include those that are objective and those that are inferred (Source: Authors).

A Cognitive Slum (object) Property Categories

The cognitive set of *property categories* represents our cognitive frameworks of slum properties, and they expand upon the typology of object properties by Cordier and Tijus (2001). Exploring and properly representing the complex *causal nature* of objects (their ontology) – in our case the slum – so we can operate on or within it, implies dealing with property concepts that can be grouped into three: (1) structural properties that describe its structure; properties linked to action relative to it that include (2) *functions*, (3) *procedures and agency*, (4) *processes*, (5) *personality traits*, and (6) *behaviours*; and properties that can add to meaning and context of it, which include (7) *place* and (8) *name*.

We then combine the slum property types within their complex narratives. In their conceptual set up, structural properties are objective profiles of the slum: functions, procedures, processes, personality traits are inferred and observed from knowledge and/or people's experiences, whilst behaviour properties can be both objective and inferred. Place properties can be both objective and inferred, whilst the name property is inferred (figure 3). Combined, cognitive property categories with experiential property types generate a framework of the eight property categories (named above) with relevant clusters of slum properties that they capture (which similarly combine property types into their narrative) (figure 4).

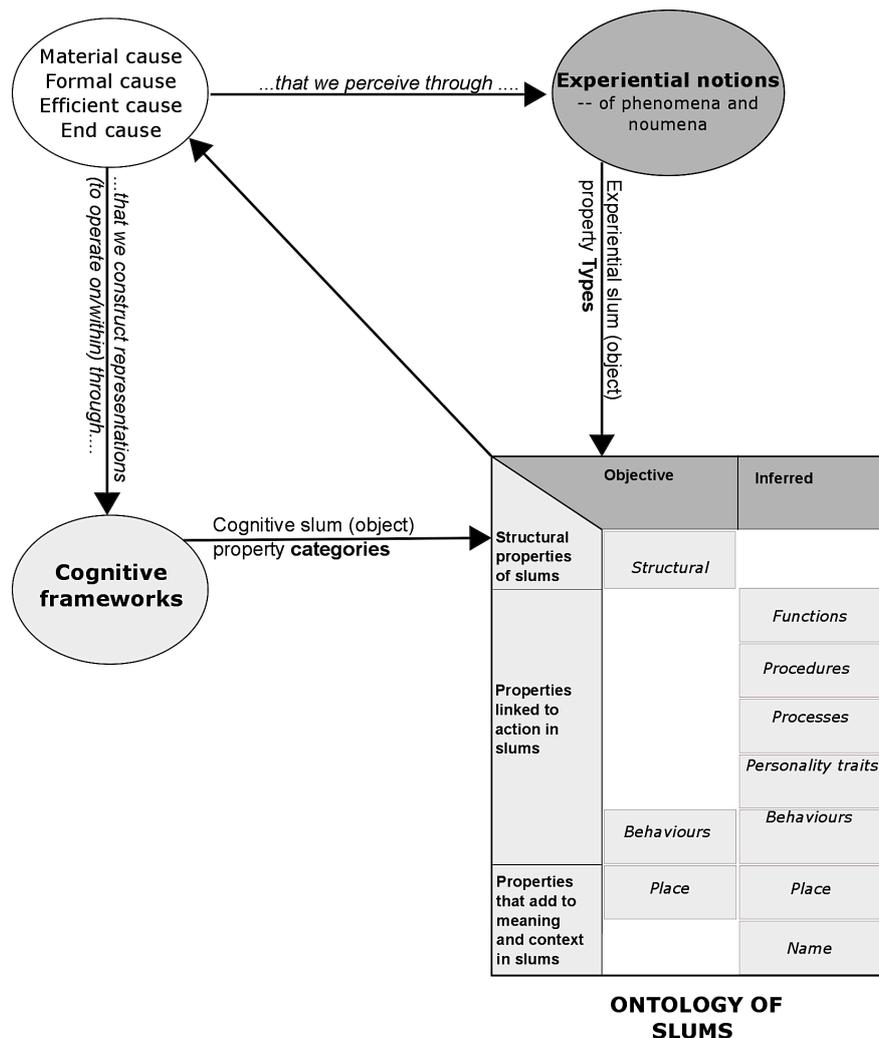


Figure 3. the experiential and cognitive framework of properties of the slum property map. (Source: Authors).

Structural properties:

- Slums' structural properties refer to all composition of parts that make up the slum (as an object (Cordier & Tijus, 2001; Koslicki, 2008)) and their attributes – arrangement, and quantity, quality, materials and relations that capture the physical image of slums. Slum properties that are structural include: (1) *the form of the slum – infrastructure, safe water, sanitary conditions, density, spatial patterns, building forms and durability, and building construction*. These properties of slums describe the nature of the physical spaces, forms, and services that should fundamentally support people's living and livelihood activities in slums (Arputham, 2016; Gulyani & Bassett, 2010), and are therefore important to understand.
- Experiential property types: these properties for describing the (1) the form of the slum are objective.

Properties linked to action in slums:

- The function of the slum (as an object (Cordier & Tijus, 2001; Kemerling, 2011) captures its purpose and usefulness to its inhabitants or those who choose to settle there. In defining slums, we consider the function of the slum to be primarily: (1) *provision of relatively available and accessible domicile* – attributed to an inability to afford and/or access standard city domiciles – and thereby providing access to livelihood opportunities (Agyeman & Warner, 2002; Geoffrey Payne, 2008; E. Glaeser, 2011).

Experiential property types: inferred, from knowledge and people's experiences.

- Procedures & agency capture how slums are developed, transformed, and used by inhabitants to become what they are and fulfil their purpose, and agencies or forces that are responsible or influential it (as object of contemplation (Cordier & Tijus, 2001; Kemerling, 2011; Marmodoro, 2014)). These properties therefore capture how slums originate and include: (1) *the origin of slums – by activities of land occupation, by type of built form, and type of land possession*, which are decisive to slums development and portrays what they are (Fernandez, 2011; Parham, 2012; UN-Habitat, 2003); and (2) *forces and drivers of slum – migration, poverty, appropriateness and adaptive nature of homes, structural policies and institutional functions, land use and zoning patterns, social and cultural pathology, and gentrification* – need to be understood in principle as they highlight links to other relevant characters of the slum, or between slum and city that need to be looked at more precisely (Berner & Phillips, 2005; Gulyani & Bassett, 2010).

Experiential property types: (origin of slums, and forces and drivers of slums) inferred, from knowledge and people's experiences.

- Processes capture the evolution of the slum and the story of different states it has been, relevant events, and even conditions, etc. that define it (as an object (Cordier & Tijus, 2001)). Process properties are therefore a documentation of slums' existence and will include: (1) *the age of settlement and social evolution – history and defining events, social consolidation and established social structures, and spatial consolidation of place* – are vital information on how it reached the stage it is and social and spatial dynamics at play (Hamdi, 2004, 2010; Maturana, 2014; UN-Habitat, 2003).

Experiential property types: these properties of slum are inferred from knowledge and people's experiences.

- Personality traits are the multi-dimensional sets of an individual's intellectual, mental, emotional characteristics, and (in their semantics) individual's manner of behaving, which can be influenced by needs, culture, place settings ongoing-events etc. (McLeod, 2014; Sincero, 2012; Veld, 1999 and Wojsiszke & Pienkowski, 1991 in Cordier & Tijus, 2001). Personality traits are inherent to people and include: the (1) *place map: perceptions of the slum by its community – meanings and experiences attached to it, and feelings evoked by these experiences* – that are an important in understanding the quality of life of people (Hamdi, 2010).

Experiential property types: inferred, from knowledge and people's experiences.

- Behaviours describe people's manners of acting or expressive responses, and conditions of being or physiological responses within, and due to, their environments, which are responsible for carrying out changes within them (Cordier & Tijus, 2001; Hockenbury & Hockenbury, 2007; Kemerling, 2011; Malle, 2011). Behaviours are generally responsive to mental activity (of personality traits); and in combination, therefore, are intermediaries between profiles of the slums existence. People's behaviours are also characteristically of intelligent agency relative to slum descriptions and include: (1) *health conditions*, which are vital information on challenges and vulnerabilities to people's quality of life (Satterthwaite, Mitlin, & Bartlett, 2015; UN-Habitat, 2003), and (2) *activities of people* – that capture changes to slum profiles, livelihood and need endeavours, as well as social vices etc.

Experiential property types: health conditions of people: inferred, from knowledge and peoples experience; activities of people: objective, but can, however, be inferred after the act.

Properties that add to meaning:

- Place properties capture the many layers of interrelated locational, physical, social (people), and spatial contexts of the slum (as an object (Cordier & Tijus, 2001; Noberg-Schulz, 1993; Bourdieu, 1986 in Rose, 2009)), which cannot experience change without other profiles of the slum changing. These properties are an identity of slums as well as context for all else that capture it, and include: the slum (1) *geography – absolute space and location, relative landscape and site conditions, relative position in the city, and slum presentation* (visible or hidden) – that influences settlement and livelihood choice and patterns (Davis, 2006; Gulyani & Bassett, 2010), (2) *demography – population profile (count, family structures, culture, education, work, political engagement), and socio-economic enterprise* – that frame vital information on the people and their livelihood endeavours (Hamdi, 2010; Kyobutungi et al., 2008; UN-Habitat, 2003), (3) *tenure conditions – tenure security, tenancy and ownership, and tenure mix* – that are symbolic to dwelling and habitation patterns (Gulyani & Bassett, 2010; Patel, 2011), and (4) *poverty conditions – income poverty, non-income poverty, and social exclusion* – which are a reality in slums that need to be clearly understood to encourage human development (Broch-Due, 1995; UN-Habitat, 2003).

Experiential property types: slum geography, demography – population count, and family structure, and socio-economic enterprise: objective; demography – culture, education, work, political engagement, and specifically social enterprise, and tenure and poverty conditions: inferred, form knowledge and people's experiences.

- The name property of slums (as objects) can be described as a holonym that by reference, sets all information about them in our semantic memory, and this will include any meanings of the name (Cordier & Tijus, 2001; Cummings, 2016; Ketchian, 2006;

Speaks, 2014). The meanings of slum name (either slum or any relative term used as a form of address) can have causal-historical references (to people, environment etc.) attributed to profiles of its other properties. Name property is therefore an identity of slum and includes: (1) *slum name and its significance* – a unique characteristic of a slum that knowing its origin and meaning can contribute to a better understanding of the physical and social profiles it is attributed to (Suditu & Vâlceanu, 2013; UN-Habitat, 2003, 2013a; Wood, 2007), as well as its effects on the quality of life of people.

Experiential property types: inferred, from knowledge and people’s experiences.

Experiential slum (object) property types

		Objective		Inferred	
Cognitive slum (object) property categories	Structural properties of slums	5. Structural - Form of the slum			
	Properties linked to action in slums			3. Function - Provision of domicile and access to livelihood opportunities 4. Procedures & Agency - Origin of the slum - Forces and drivers 6. Processes - Age of the settlement and social evolution 7. Personality traits - place map: perceptions of slum	
	Properties that add to meaning and context in slums	7. Behaviours - Health conditions		7. Behaviours - Activities of people	
		2. Place - Geography - Demography		2. Place - Demography - Tenure conditions - Poverty conditions	
				1. Name - Slum name & its significance	

Figure 4. The slum property map (SPM) showing the interactive framework of properties to comprehensively describe and form the narrative of slums (Source: Authors).

Together, the framework of slum properties with all embedded sub-properties propose a standard and rigorous way of investigating and representing the ontology of (any) slum, as well as a narrative of its existence. It builds a comprehensive image of slums inclusive of the social and spatial along with the physical traits, as well as its challenges and positive potentials. For investigations into the nature of slums to be clear and detailed, the SPM also proposes how to find or analyse these slum properties – using thresholds, and profiles – guided by their context and the *type* (notion) of property they portray.

TELLING THE STORY OF THE SLUM: LINKING IT ALL TOGETHER AND BUILDING NARRATIVES

It is essential to establish a narrative of the slum, deriving and forming meaningful associations between the varying properties (especially its physical observable properties and those linked to action (see (Cordier & Tijus, 2001)) that describe it. One can know the distinctive characteristics that make up the slum, but unless the way they interact to generate its profile is understood, meanings will be lost. There are apparent associations in the theoretical contexts (discussed in previous section) of properties which we gathered from literature and the way in which they interact to reveal the nature of the slum. We use this knowledge to propose associations that take place between properties, for investigations to be unbiased in forming the slum's narrative. These associations consider how the profile of one property can *affect/influence/trigger* a change in another (and/or vice versa), thereby becoming a tag/anchor to it in forming the slum's narrative (this is seen in figure 5). At the same time, these associations reveal the degree to which the various dimensions of the slum play a role in its narrative (this also shown by the sizes of property nodes in figure 5). The theoretical context of properties, the unique descriptions of slums that they capture, and associations between them also reveal a hierarchy of importance as to how they generate the slum narrative. This hierarchy may not be reflected in the degree of impacts that properties play in the slum narrative, but is rather essential to understanding slums. As shown (by the depth of property sectors in the outer circumference) in figure 5, we posit that to tell the story of (any) slum, one should generally consider:

1. The (1) slum name and its significance as it is an identity of it that can also assert meaning, functionality and knowledge of it relative to existing social, spatial and physical contexts of slums. Due to this, it can therefore be affected/influenced/triggered by profiles of place, slum's structure, procedures, process – for example, Kumbarwada, a sub-sector of Dharavi, is named after the community of potters (demography) that have settled there (Jacobson, 2007).
2. The place properties of (1) geography, (2) the demography, (3) tenure conditions, and (4) poverty conditions, as they are the varying physical, social, economic contexts within which slums (objects) exist. Due to this they can affect/influence/trigger slum structural profiles, function, types of procedures to develop slum, and processes – for example, geographic location and attributes (e.g. valley) can influence people to consider it for a place of domicile (function) and carry out informal settlement (procedure), and building forms that develop (structural) (see (Karlsson, 2012; Leitão, 2008)). In reverse, changes to the above properties will affect/influence/trigger change in place properties, including name (on social place – demography) – for example, where slum spatial structure expands to accommodate more people. Still yet, because the place properties are varying social, economic, and physical contexts they can affect/influence/trigger each other (adjacent relations) – for example, landscape

- hazard (e.g. landslides) (geography) profiles, can define conditions of tenure (in)security (Leitão, 2008)), or geographic location to city can affect access to work (demography), which can enhance/reduce forms of poverty (Gulyani & Bassett, 2010) etc.
3. The function of the slum is the (1) provision of relatively available and accessible domicile for those who cannot afford, or access, the standard city as it is the general purpose for which the slum (object) exists to fulfil. Thus, it affects/influences/triggers how it starts – procedures with the outcome or changes to structure and place properties.
 4. The procedure & agency properties of (1) origin of slums – by activities and built form - and (2) forces and drivers of slum development respectively - as they describe practices that are decisive to how the slum (object) originates – is developed, transformed and used to provide relatively available and accessible domicile. Due to this, origin of slums can affect/influence/trigger development of slum's structure – building types, and spatial patterns etc. (Fernandez, 2012). Similarly, because forces and drivers are agencies to procedures that develop slums, they can affect/influence/trigger origin of slums, and function of slums (considerations for the slum as a place to settle, including which functional attribute is more prevalent – inability to afford and access due to poverty, or access standard city domicile due to other forces and drivers, or a combination of them).
 5. The structure properties of (1) the form of the slum as they capture compositions of the physical image of the slums (objects). These can affect/influence/trigger procedures to develop slums if we consider that procedures also include making use of, and transforming slum (objects) to fulfil its purpose – for example an unused and/or deteriorating building being informally settled to become slum (see (Shuford, 2015)), or irregular (and unregulated) spatial patterns that encourage further informal settlement. Furthermore, to consider how the varying forms of the slum affect/influence/trigger change in each other (in layers of adjacent interactions) because they are different compositions of it which interact to reveal its nature – for example, in slums conditions of infrastructure will affect sanitary conditions, water safety, building durability (Gulyani & Bassett, 2010; Satterthwaite et al., 2015); or, high densities affecting sanitary conditions (Taher & Ibrahim, 2014); or, irregular spatial patterns defining levels of infrastructure (Fernandez, 2012; Gulyani & Bassett, 2010)) etc.
 6. The process properties that describe (1) age of settlement and social evolution of the slum, as these are a documentation of the slums (objects) existence. Therefore, processes will capture relevant evolution of name, structure profiles, procedures that develop slum, place profiles, and behaviours that map them, and are therefore affected/influenced/triggered by all of them – for example, changes and adaptations to buildings (structure). Also, because they capture varying physical and social events and conditions etc., the properties in this cluster can affect/influence/trigger each other (in layers of adjacent interactions) – for instance the types of social structures (cultural, social, interest communities etc.) that develop in slum can support spatial (and physical) consolidations of place (Hamdi, 2010; Neuwirth, 2005; UN-Habitat, 2003), and changes to these will reflect in the history of slum etc.

7. And lastly, the personality traits of (1) place map: perceptions of slum, and behaviour properties of (2) health conditions, and (3) activities of people as they are the intelligent agencies that are also intermediaries to continuous change between all other social, physical, and spatial profiles of slums (objects) – all other properties of it – highlighting how they interact. Thus, personality traits and behaviour properties are influential to slum profiles as well as outcomes of it. These properties will be vast and many. Hence, we posit that for the purpose of understanding the slum and for practical intervention, one should consider the perceptions of slum, health conditions, and activities that are specifically the effects/outcomes/responses for all other slum property profiles formed (name, place, procedures, structure, and processes) – for example, recycling activities to counter poverty (place property), due to the presence of solid waste (structure property) (Hamdi, 2010)), or lack of access to water infrastructure (structure property), because it is peripheral to city (place property), influencing harassment and exploitative activities (Gandy, 2006). Also, because behaviours respond to influences of personality traits, one should as well consider health conditions and activities that are the effect/outcome/response to place map: perceptions of place – for example, where meanings attached to the name of a slum causes people distress that they take civil action to change it (Robertson, 2014; Wood, 2007)).

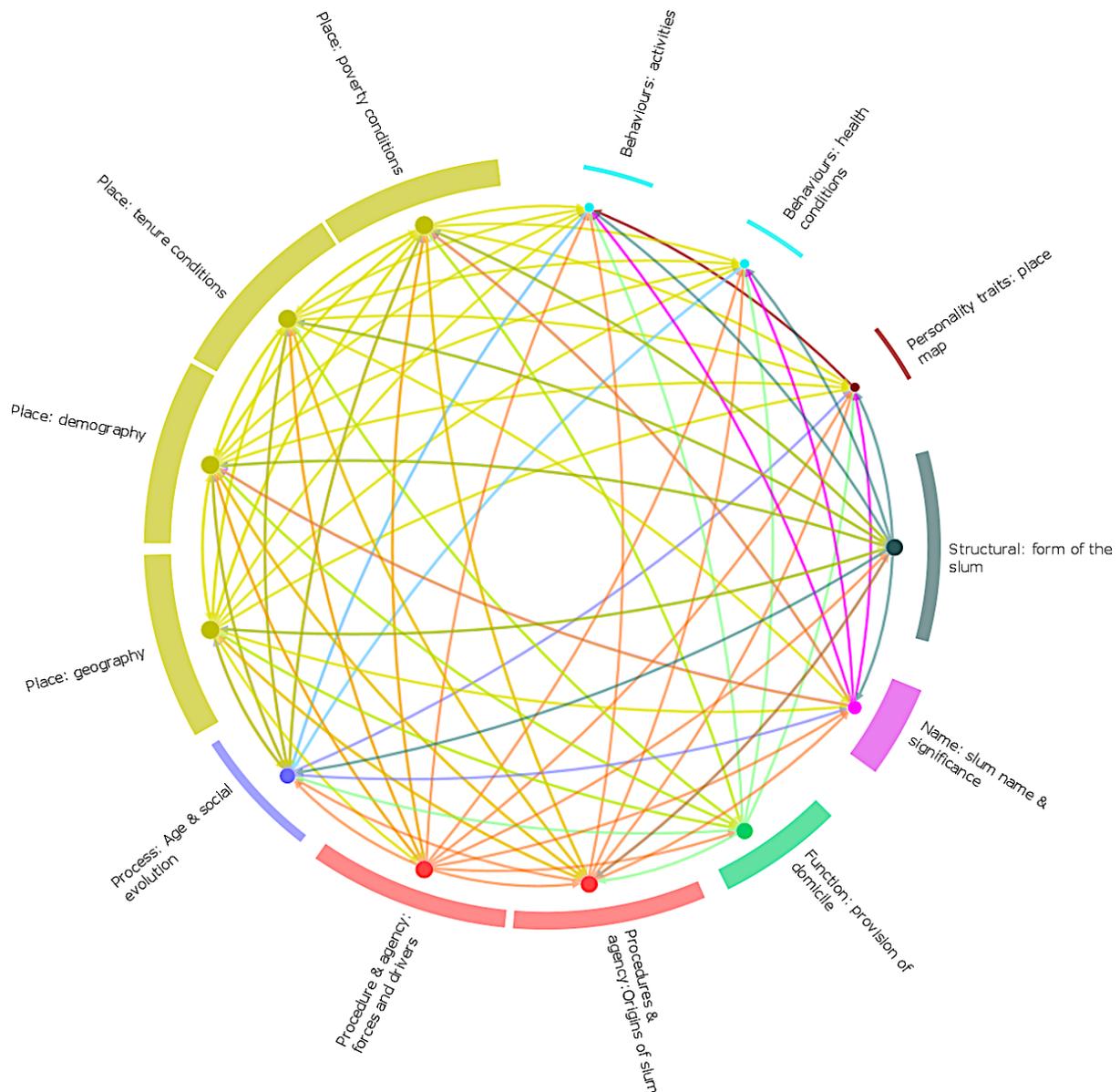


Figure 5: The Slum Property Map (SPM): here a network map is used to show the interactive framework of properties; associations that take place between properties which should be considered and explored in forming the narrative of slums; the degree of importance that each property cluster plays in the narrative of slums; and the property hierarchies to forming the narrative. In the network map, the varying properties are represented by the different coloured nodes (disks), and the interaction between properties by the ties that link them. The gradation of property node colours and arrows from one to the other shows the affect/influence/trigger relations, with those that are not reciprocated having singular colours. The degree to which properties play a role in this narrative is indicated by the size of the disks as well as the length of the sector in the outer circumference – place properties have the highest degree of importance (and therefore, anchors) in the slum narrative, followed by procedures and agency, structure, processes, name and function, then personality traits and behaviours – which play a stronger role (in reverse) as effects/outcomes/responses that can mediate between properties. The proposed property hierarchies to forming this narrative are indicated by the depth of property sectors in the outer circumference of the map, which reflects the discussion of properties in this section – name, followed by place, function, procedure & agencies, structural, processes, and personality traits and behaviours. Source: Authors

The conceptual framework of properties, therefore, presents interactive paragraphs within which the story of the complex nature of slums can be told in a contextual manner. This story can be relative to what is, and how it has reached the way it is (complete image); or/in combination, a narrative can be found on impacts or effects that are envisaged – a **heuristic** profile. At the same time, this narrative can be approached by any stakeholder, from any conceptual angle, or relative to the type of story of the slum (considering properties of interest with associations that can occur) that one needs to tell, irrespective of the apparent hierarchy. In all, whatever approach is taken to form a narrative of the slum, the profile generated will be one that tells the essential story of the slum, as it is, and without any bias to it.

CONCLUSIONS: UNDERSTANDING SLUMS IN RELATION TO PROSPERITY

Slums are a consistent reality in the growth of Developing Country cities, and from all accounts have become a growing form of urbanism that is here to stay. Their effective management lies at the helm of ensuring sustainable as well as progressive human development, but is however, challenged by the complex perceptual, contextual, and dynamic nature of slums. The Slum Property Map proposes an approach towards comprehensively grasping such complexities of slums through a framework of properties for defining them; and in this way, aims to guide interventions appropriate to their nature and peculiarities. We suggest that it fulfils the four outlined requirements that are essential to defining slums, and it is an applicable conceptualisation tool: (1) the framework of slum properties was built from established theories in the philosophies of perception and reasoning; (2) it guides the formation of context specific slum profiles through an outline of properties that, while not exhaustive, offers suggestions on how to complete it according to specific needs, thus paving the way towards a truly comprehensive definition of slum; (3) it captures a complete image of slums – linking physical, social, cultural, spatial, and even subjective properties; (4) because it is developed as a conceptualisation framework, it can be applied in a **dynamic** way to define slum, as it is, and when changes occur; (5) it is a non-linear as well as heuristic framework that encourages the forming of associations between the property profiles of the slum to have a clear narrative that guides engagement with it.

The SPM is part of broader research whose goal is to frame slums in relation to prosperity. We expect that extending efforts towards more progressive definition and effective slum management will contribute to their re-interpretation as potential stakeholders to broader city prosperity, rather than an inconsistency to it.

REFERENCES

- Abubakar, A. (2013). *The Impact of Rapid Urbanization on Sustainable Development of Nyanya*, Federal Capital Territory Abuja, Nigeria. University of Abuja, Nigeria.
- Agrawal, P. (2005). Ontological considerations in GIScience. *International Journal of Geographical Information Science*, 19(5), 501–536.
- Agyeman, J., & Warner, K. (2002). Putting “Just Sustainability” Into Place: From Paradigm To Practice. *Policy and Management Review*, 2(1), 8–40.
- Alagbe, O. A. (2006). COMBATING THE CHALLENGES OF RISE IN URBAN SLUMS IN CITIES IN DEVELOPING WORLD : A CASE STUDY OF LAGOS STATE . In *The Built environment: Innovation Policy and Sustainable Development*, 24-26, January. Ota, Ogun State.
- Arimah, B. C. (2010). *The face of urban poverty: Explaining the prevalence of slums in developing countries* (No. No. 2010,30, ISBN 978-92-9230-265-8). Helsinki: WIDER. Retrieved from <http://www.econstor.eu/handle/10419/54181>

- Arputham, J. (2016). *Ward diaries : crucial evidence for planning in Mumbai's slums*. Retrieved April 15, 2017, from <https://www.iied.org/ward-diaries-crucial-evidence-for-planning-mumbais-slums>
- Berner, E., & Phillips, B. (2005). Left to their own devices? Community self-help between alternative development and neo-liberalism 1. *Community Deveelopment Journal*, 40(1), 17–29. <https://doi.org/10.1093/cdj/bsi003>
- Bigon, L. (2008). Between local and Colonial Perceptions: The History of Slum Clearances in Lagos (Nigeria), 1924-1960. *African and Asian Studies*, 7(1), 49–76.
- Birch, E. (2014). *Slums and Cities: past present and future*. Global Urban Lectures. UN-Habitat WorldWide. Retrieved from <https://www.youtube.com/watch?v=pFD7hPJ37lw>
- Bourdieu, P. (1986). The forms of capital. In R. J. (Ed.), *Handbook of Theory and Research for the Sociology of Education* (pp. 241–258). New York: Greenwood.
- British Library. (2017). *Charles Booth's London Poverty Map*. Retrieved March 13, 2017, from <https://www.bl.uk/collection-items/charles-booths-london-poverty-map>
- Broch-Due, V. (1995). *Poverty and prosperity: Local and Global Perspectives. A Research Prospect (No. 1)*. Retrieved from <http://www.diva-portal.org/smash/get/diva2:288768/FULLTEXT01.pdf>
- Cities Alliance. (2016). *Cities without slums action plan*. Retrieved March 16, 2017, from <http://www.citiesalliance.org/cws-action-plan>
- Cordier, F., & Tijus, C. (2001). Object Properties: A Typology. *Current Psychology of Cognition*, 20(6), 445–472.
- Cronin, V. (2013). A Sustainability Evaluation of Slum Rehabilitation Authority Housing Development at Nanapeth, Pune, India. *Environment and Urbanization Asia*, 4(1), 121–134. <https://doi.org/10.1177/0975425313477567>
- Cummings, S. (2016). Names. In *Stanford Encyclopedia of Philosophy* (Fall 2016,). Retrieved from <https://plato.stanford.edu/entries/names/>
- Cuthbert, A. (2011). *Understanding Cities: Methods in urban design*. New York: Taylor and Francis.
- Davis, M. (2006). *Planet of Slums*. London. Brooklyn: Versobooks.
- Ekdale, B. (2011). *Kibera's History*. Retrieved from <http://www.brianekdale.com/2011/05/04/the-history-of-kibera/>
- Falcon, A. (2015). Aristotle on Causality. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy (Spring 2015 Edition)*. Retrieved from <http://plato.stanford.edu/archives/spr2015/entries/aristotle-causality/>
- Fernandez, R. F. (2011). Physical and Spatial Characteristics of Slum Territories Vulnerable to Natural Disasters. *Les Cahiers de l'Afrique de l'Est*, 44, 5–22.
- Fernandez, R. F. (2012). Physical and Spatial Characteristics of Slum Territories Vulnerable to Natural Disasters.
- Finley, M. I. (1985). *The ancient economy*. London: Hogarth Press.
- Florida, R. (2014). *The Amazing Endurance of Slums*. Retrieved September 2, 2014, from <http://www.citylab.com/work/2014/01/amazing-endurance-slums/8120/>
- Fox, S. (2013). *The Political Economy of Slums: Theory and Evidence from Sub-Saharan Africa (2013 No. 13–146) (Vol. 44)*. London. Retrieved from <http://www2.lse.ac.uk/internationalDevelopment/pdf/WP/WP146.pdf>
- Gandy, M. (2006). Planning, anti-planning and the infrastructure crisis facing Metropolitan Lagos. *Urban Studies*, 43(2), 371–396. <https://doi.org/10.1080/00420980500406751>
- Geoffrey Payne. (2008). Are architects and planners part of the solution or the problem? The role of professionals in facilitating or constraining access by the urban poor to land and housing in developing countries. In D. U. Vestbro (Ed.), *Are architects and planners obstacles to slum upgrading ?* (pp. 13–21). Stockholm. Retrieved from <http://www.arcpeace.org/en/publications/item/164-are-architects-and-planners-obstacles-to-slum-upgrading>
- Geremek, B. (1987). *The margins of Society in the late Medieval Paris*. Cambridge: Cambridge University Press.
- Gilbert, A. (2007). The Return of the Slum: Does Language Matter? *International Journal of Urban and Regional Research*, 31(4), 697–713. <https://doi.org/10.1111/j.1468-2427.2007.00754.x>
- Glaeser, E. (2011). *Triumph of the City*. New York: penguin Books.

- Glaeser, E. L. (2013). A World Of Cities: The Causes And Consequences Of Urbanization In Poorer Countries (Nber Working Paper Series A).
- Gruber, T. R. (1993). A translation approach to portable ontology specifications. *Knowledge Acquisition*, 5(2), 199–220. <https://doi.org/http://dx.doi.org/10.1006/knac.1993.1008>
- Gulyani, S., & Bassett, E. M. (2010). The living conditions diamond: An analytical and theoretical framework for understanding slums. *Environment and Planning A*, 42(9), 2201–2219. <https://doi.org/10.1068/a42520>
- Hamdi, N. (2004). *Small Change: About the art of practice and the limit of planning in cities*. New York: Earthscan.
- Hamdi, N. (2010). *The Placemakers Guide: To Building a Community*. London: Earthscan.
- Haybron, D. (2011). *Phenomenology*. The Stanford Encyclopedia of Philosophy, Fall. <https://doi.org/10.1111/1467-9973.00225>
- Hockenbury, D. H., & Hockenbury, S. E. (2007). *Discovering psychology*. New York: Worth Publishers.
- Hollingshead, J. (1861). *Ragged London in 1861*. London: Smith Elder and co.
- Hutchinson, R. (2010). *Encyclopedia of Urban Studies: Volume 1*. (R. Hutchinson, Ed.). California: Sage Publications Inc.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York: Random House.
- Jacobson, M. (2007, May). *Dharavi: Mumbai's Shadow City*. National Geographic, 1–9. Retrieved from <http://ngm.nationalgeographic.com/2007/05/dharavi-mumbai-slum/jacobson-text/1>
- Jaitman, L., & Brakarz, J. (2013). *Evaluation of Slum Upgrading Programs. Literature Review and Methodological Approaches*. Technical Note, Inter-American Development Bank, Institutions for Development Sector (IFD), (November). Retrieved from <http://publications.iadb.org/handle/11319/6021?locale-attribute=en>
- Jefwa, J. J. (2015). Is the Kenyan child still weeping a quest for education within the backdrop of colonial and post-colonial violations. In *International Perspectives on Race (and Racism): Historical and Contemporary Considerations in Education and Society* (pp. 121–136). Nova Science Publishers, Inc.
- Karlsson, M. (2012). *The World's Invisible Communities*. Retrieved from <http://www.qualitative-research.net/index.php/fqs/article/view/1428/3027#g11>
- Kemerling, G. (2011). *Aristotle : Logical Methods*. Retrieved March 10, 2017, from <http://www.philosophypages.com/hy/2n.htm>
- Ketchian, S. I. (2006). "Cto V Imeni Tebe Moem?": Names As A Window Into Puškin's Evgenij Onegin. <https://doi.org/10.1016/j.ruslit.2006.09.002>
- Kluge, S. (2000). Empirically Grounded Construction of Types and Typologies in Qualitative Social Research. *Sozialforschung/Forum: Qualitative Social Research*, 1(1), Art. 14. Retrieved from <http://nbn-resolving.de/urn:nbn:de:0114-fqs0001145>.
- Kohli, D., Sliuzas, R., Kerle, N., & Stein, A. (2012). An ontology of slums for image-based classification. *Computers, Environment and Urban Systems*, 36(2), 154–163. <https://doi.org/10.1016/j.compenvurbsys.2011.11.001>
- Koslicki, K. (2008). *The Structure of Objects*. Published to Oxford Scholarship Online: September 2008. <https://doi.org/10.1093/acprof:oso/9780199539895.001.0001>
- Kyobutungi, C., Ziraba, A. K., Ezech, A., Yé, Y., Todaro, M., Magadi, M., ... Lopez, A. (2008). The burden of disease profile of residents of Nairobi's slums: Results from a Demographic Surveillance System. *Population Health Metrics*, 6(1), 1. <https://doi.org/10.1186/1478-7954-6-1>
- Leitão, G. (2008). From Wood Huts to Buildings of Seven Floors: An Analysis of the Process of Housing Production in the Slum of Rocinha in Rio de Janeiro, Brazil, over a Fifty-Year Period. *Vulnerable Cities: Realities, Innovations and Strategies*, 8, 141–168. https://doi.org/10.1007/978-4-431-78149-3_7
- Magalhães, F., & Nacif Xavier, H. (2003). *Summary of City Case Studies. Urban Slums Report: The case of Rio de Janeiro, Brazil*. Global Report on Human Settlements 2003, The Challenge of Slums, 1–28.
- Malle, B. F. (2011). Attribution Theories: How People Make Sense of Behavior. *Theories in Social Psychology*, 72–95. Retrieved from [http://research.clps.brown.edu/SocCogSci/Publications/Pubs/Malle_\(2011\)_Chadee_chap_precorr.pdf](http://research.clps.brown.edu/SocCogSci/Publications/Pubs/Malle_(2011)_Chadee_chap_precorr.pdf)

- Marmodoro, A. (2014). *Aristotle on Perceiving Objects*. Published to Oxford Scholarship Online: August 2014. <https://doi.org/10.1093/acprof>
- Marris, P. (1979). The meaning of slums and patterns of change. *International Journal of Urban and Regional Research*, 3(1–4), 419–441. <https://doi.org/10.1111/j.1468-2427.1979.tb00798.x>
- Marx, B., Stoker, T., & Suri, T. (2013). The Economics of Slums in the Developing World. *Journal of Economic Perspectives*, 27(4), 187–210. <https://doi.org/10.1257/jep.27.4.187>
- Maturana, B. C. (2014). How Spike And The Slumdweller Find Reality In Design Studio Handouts: An Exploration Of Reality In The Design Studio (Beatriz C. Maturana). *International Journal of Architectural Research: ArchNet-IJAR*, 4(2/3), 158–173. Retrieved from <http://www.archnet-ijar.net/index.php/IJAR/article/view/103>
- McLeod, S. (2014). *Theories of personality*. Retrieved March 18, 2017, from <https://www.simplypsychology.org/personality-theories.html>
- McLoud, W. (2011). *Kant's noumenal realm reconsidered in the light of contemporary developments in physics*. Retrieved June 24, 2016, from <http://wmcloud.blogspot.co.uk/2011/07/kants-noumenal-realm-reconsidered-in.html?m=1>
- Neuwirth, R. (2005). *Shadow Cities: A billion squatters, a new urban world*. New York: Routledge.
- Njoh, A. J. (2003). Urbanization and development in sub-Saharan Africa. *Cities*, 20(3), 167–174. [https://doi.org/10.1016/S0264-2751\(03\)00010-6](https://doi.org/10.1016/S0264-2751(03)00010-6)
- Noberg-Schulz, C. (1993). *The concept of Dwelling*. Milan: Electa/Rizolli.
- O'Brien, D. (n.d.). Objects of Perception. In *Internet Encyclopedia of Philosophy: A peer reviewed academic resource*. Retrieved from <http://www.iep.utm.edu/perc-obj/>
- Parham, E. (2012). The Segregated Classes : spatial and social relationships in slums. In J. R. and A. C. M. Greene (Ed.), *Eighth International Space Syntax Symposium*. Santiago de Chile: PUC, 2012. (pp. 1–19). Santiago de Chile. Retrieved from http://www.sss8.cl/media/upload/paginas/seccion/8150_1.pdf
- Patel, K. (2011). Tenure And Vulnerability : The Effects Of Changes To Tenure Security On The Identity And Social, (October), 294.
- Pretz, J. E., Naples, A. J., & Sternberg, R. J. (2003). Recognizing, Defining, and Representing Problems. In J. E. Davidson & R. J. Sternberg (Eds.), *The psychology of problem solving* (pp. 3–30). Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511615771>
- Prunty, J. (1998). *Dublin Slums, 1800–1925: a study of urban geography*. Dublin: Irish Academic Press.
- Robertson, C. (2014). *What's in a Name? Slum Stigma Worldwide*. Retrieved September 28, 2016, from <http://www.rioonwatch.org/?p=16479>
- Rose, J. (2009). *Pierre Bourdieu and the Practice of Resistance*. Jeff Rose November 30. Retrieved from https://www.academia.edu/202471/Pierre_Bourdieu_and_the_Practice_of_Resistance?auto=download
- Satterthwaite, D. (2016). Finding a place in the city; low-income housing sub-markets revisited. In *Rethinking Precarious Neighbourhoods; works, paths and interventions* (pp. 1–15). Paris, June 2015. Retrieved from https://www.academia.edu/24327533/Finding_a_place_in_the_city_low-income_housing_sub-markets_revisited?auto=download
- Satterthwaite, D., Mitlin, D., & Bartlett, S. (2015). Key sanitation issues : commitments , coverage , choice , context , co-production , costs , capital , city-wide coverage. *Environment and Urbanization Briefs*, 31(4). Retrieved from <http://pubs.iied.org/pdfs/10745IIED.pdf?>
- Shuford, C. (2015). More People More Slum : Venezuela's Struggle with Urbanization. *International Affairs Review. Spring 2015, (Spring)*. Retrieved from <https://www.usfca.edu/journal/international-affairs-review/spring-2015/venezuelas-struggle-with-urbanization>
- Sincero, S. M. (2012). *Behaviourist Theories of Personality*. Retrieved March 19, 2017, from <https://explorable.com/behaviourist-theories-of-personality>
- Speaks, J. (2014). Theories of meaning. In *Stanford Encyclopedia of Philosophy (Spring 201, pp. 1–27)*. Retrieved from <https://plato.stanford.edu/entries/meaning/>
- Stokes, C. (1962). A theory of slums. *Land Economics*, 8, 187–97. Retrieved from http://www.jstor.org/stable/3144581?origin=crossref&seq=1#page_scan_tab_contents

- Stow, J. (1842). *Survey of London written in the year 1598*. London: Whittaker and Co.
- Suditu, B., & Vâlceanu, D.-G. (2013). Informal Settlements and Squatting in Romania: Socio-Spatial Features and Typologies. *Human Geographies – Journal Of Studies And Research In Human Geography*, 7(2), 65–72. <https://doi.org/10.5719/hgeo.2013.72.65>
- Taher, M. T., & Ibrahim, A. (2014). Transformation of Slum and Squatter Settlements: A Way of Sustainable Living in Context of 21st Century Cities. *American Journal of Civil Engineering and Architecture*, 2(2), 70–76. <https://doi.org/10.12691/ajcea-2-2-3>
- Tannerfelt, G., & Ljung, P. (2006). *More Urban Less Poor: An Introduction to Urban Development and Management*. London: Earthscan Ltd.
- Tijus, C. A. (2001). Contextualization Categorization and Cognitive Phenomena. In V. Akman, P. Bouquet, R. Thompson, & R. A. Young (Eds.), *Modelling and Using Context* (pp. 316–329). Berlin: Springer-Verlag.
- Turner, J. F. C. (1969). Uncontrolled Urban Settlement: Problems and Policies. In G. Breese (Ed.), *The City in Newly Developing Countries: Readings on Urbanism and Urbanization* (pp. 507–534). Printice Hall.
- Turner, J. F. C. (1976). *Housing by People*. London: Marion Boyars Publishers Ltd.
- Turner, J. F. C. (1978). Housing in three dimensions: Terms of reference for the housing question redefined. *World Development*, 6(9–10), 1135–1145. [https://doi.org/10.1016/0305-750X\(78\)90068-2](https://doi.org/10.1016/0305-750X(78)90068-2)
- UN-Habitat. (2003). *The Challenge Of Slums: Global Report on Human Settlements 2003*.
- UN-Habitat. (2011a). *State of the World's Cities 2010/2011: Bridging The Urban Divide*. London • Sterling, VA.
- UN-Habitat. (2011b). *UN Habitat State Of The Worlds Cities 2010/2011 Urban Trends : 227 Million Escape Slums. Cross-currents in global urbanization*. Retrieved from www.unhabitat.org
- UN-Habitat. (2013a). *State Of The World ' S Cities 2012/2013: Prosperity of Cities*. New York: Earthscan.
- UN-Habitat. (2013b). *UN-Habitat Global Activities Report 2013 Our Presence and Partnerships*. Nairobi: UN HABITAT.
- UN-Habitat. (2016). *Slum Almanac 2015 2016*. Retrieved from <https://unhabitat.org/>
- United Nations. (2014). *Open Working Group proposal for Sustainable Development Goals*. Open Working Group of the General Assembly on Sustainable Development Goals. <https://doi.org/10.1177/0973408214538584>
- United Nations Population Division. (1969). *Growth of the World's Urban and Rural Population, 1920-2000*. Retrieved from [file:///h/abcBibliography/Demography/United Nations \(1969\). Growth of the world's urban and rural population 1920-2000.pdf](file:///h/abcBibliography/Demography/United%20Nations%20(1969).%20Growth%20of%20the%20world's%20urban%20and%20rural%20population%201920-2000.pdf)
- Veld, D. Van de. (1999). Adjectifs d'états, adjectifs de qualite. In *Fonctions syntaxiques et roles semantiques* (pp. 151–160). Cahiers scientifiques de l'Universite d'Artois: Artois Press Universite.
- Ward, W. (1897). *The life and Times of Cardinal Wiseman*. London. New York. Bombay: Longmans Green and Co. Retrieved from https://ia802605.us.archive.org/6/items/cardinalwiseman01ward/cardinalwiseman01ward_bw.pdf
- Whittaker, C. R. (1993). *Land, City And Trade In The Roman Empire*. Brookfeild: Ashgate Publishing co.
- Wojsiszke, B., & Pienkowski, R. (1991). Prototypical Structure Of Personality Trait Concepts And Person Perception. *Cahiers de Psychologie cognitive/European Bulletin of Cognitive Psychology*, 11, 213–228.
- Wood, A. (2007). *What is a "Slum"?* Retrieved July 3, 2016, from <http://servantsasia.org/slum/>
- Yelling, J. A. (1986). *Slums and slum clearance in Victorian London*. London: Allen and Unwin.



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HERITAGE IN THE LIVED ENVIRONMENT OF THE UNITED ARAB EMIRATES AND THE GULF REGION

Joseph J. Hobbs

Keywords

vernacular architecture;
bioclimatic architecture;
Islamic urbanism;
social sustainability;
traditional knowledge;
sense of place;
United Arab Emirates;
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Abstract

This paper examines how the architectural, social, and cultural heritage of the United Arab Emirates and other Gulf countries may contribute to better development of this region's lived environment. Modern urbanism has largely neglected heritage in architectural design and in social and private spaces, creating inauthentic places that foster a hunger for belongingness in the UAE's built environment. The paper reviews recent urban developments in the UAE and the Gulf Region, and identifies elements of local heritage that can be incorporated into contemporary planning and design. It proposes that adapting vernacular architectural heritage to the modern built environment should not be the principal goal for heritage-informed design. Instead we may examine the social processes underlying the traditional lived environment, and aim for social sustainability based on the lifeways and preferences of local peoples, especially in kinship and Islamic values. Among the most promising precedents for modern social sustainability are social and spatial features at the scale of the neighborhood in traditional Islamic settlements. Interviews with local Emiratis will also recommend elements of traditional knowledge to modern settings.

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INTRODUCTION

This paper recognizes one of the principles of sustainable development, that local people often possess the best practices and solutions for their own problems. Local know-how however has often been side-lined by globalized trends that are disconnected from local environmental conditions and social needs. The cultural heritage of the United Arab Emirates (UAE) and other Gulf States includes architectural and other adaptations to hyper-arid conditions, and social sustenance rooted in kinship and faith. This paper examines the heritage of the UAE and other Gulf countries, and the opportunities that patrimony provides for future development. The essay's sources are the author's interviews and other fieldwork in the UAE in 2003, 2007 and 2016, along with relevant literature. These sources reveal a hunger for authenticity and "belongingness" in architecture and other components of the built environment. I employ the geographical concepts of *sense of place* and *placelessness* to appeal for hindsight as well as foresight in creating and inhabiting spaces – especially those inspired by vernacular architecture – to help achieve social sustainability, the key design challenge facing every developed society (Fraser, 2013). I address this question, with particular attention to vernacular architecture and human geography: How did historic Emirati and other Gulf city-dwellers live in relative balance with the land and with one another, and what could this mean for the future?

GEOGRAPHIC AND ECONOMIC SETTING

Based primarily on their fossil fuel wealth, the economies of the Gulf nations are by most development measures situated among the "Global North." Collectively, on a per capita basis, the six Gulf Cooperation Council (GCC) countries in recent years have had the highest energy and water usage, and the highest carbon footprint in the world (Caton & Ardalan, 2010). Among the GCC nations, Qatar, Kuwait and the UAE have the top three highest per capita ecological footprints in the world respectively (Worldwide Fund for Nature, 2014). With their small territories these are essentially city-states; the UAE for example is 83% urban. The fossil fuel-endowed Gulf countries face the difficult challenge of pursuing sustainable development – including its principles of self-reliance and appropriate technology – against the strong headwinds of their relative "over-development" and the consumption associated with it. Generally, the tenets of sustainable development will grow increasingly relevant to these countries as they transition to the post-petroleum era.

By geographic measures of site and situation, the Gulf countries are uniquely located to take advantage of economic opportunities in the post-petroleum age. The region is a global crossroads. Two-thirds of the world's population is within eight hours flying time of the Gulf air hubs (CNN, 2014). A primary nerve center for regional and global trade, as well as financial and other services, Dubai has the world's busiest airport (Mitchell, 2013). The GCC states are situated along and near heavily-transited marine shipping routes. Geopolitically, in recent times the Gulf countries have been a relative oasis in a desert of regional instability. Their assets advantage these countries in preparing for a future built upon a rich heritage of land and life.

The inspiration for this research came in part from my interview with Gisela Lohlein, an architectural engineer and long-time expatriate resident of the UAE, who told me:

"[Older Emiratis] want to remind young Emiratis in particular of how Emirati history, culture, and environment represent a system of traditional living in balance, in tune, with the land. They raise questions: how did they do this? What could this mean for the future? The traditional system also poses a bigger challenge to be brought to all the non-Emiratis

who are the majority living here at any given time: to appreciate this very unique location that we are in and the richness of local culture, opportunities and solutions.” (personal communication)

The Gulf Arabs are legatees of peoples who coped with rigorous environmental challenges. They devised architectural and other adaptations through close contact with their desert and marine environments. More than mere folklore, their cumulative traditional knowledge represents a valuable but broadly overlooked resource for modern development. As noted by the authors of *The Emirates: A Natural History*:

“One major area of research that has, as yet, received little attention, is the knowledge of the inhabitants of the country itself, learned over generations and passed down through word of mouth. Such information is an essential part of the cultural heritage of the UAE.... Man’s survival in this land was dependent on maintaining a sustainable balance in the use of the available resources, providing a lesson for current and future generations.” (Hellyer & Aspinall, 2005).

Prominently among their Gulf counterparts, UAE leaders have repeatedly emphasized the contemporary value of traditional knowledge. The nation’s founder, Sheikh Zayed bin Sultan Al Nahyan, said “Our ancestors left us a legacy of traditions we are proud of. Our mission is to maintain and develop them as assets of the nation for future generations” (Zayed, 2016). The UAE also aspires to fulfil a sustainability agenda that the other Gulf countries and developing nations will follow (Ahmed, 2012).

With the recent surge of fossil fuel revenue and investments into the Gulf, its nations have accomplished exceptional feats in modernization, urbanization and globalization in a short period of time: “In less than one lifetime the Gulf has transformed from one of the most disengaged parts of the world to a strategic fracture point of globalization in a regional context” (Fox, Mourtaba-Saba & Al Murtawa, 2006). Gulf cities have some of the most modern and costly architecture and amenities in the world. Dubai’s skyline boasts the Earth’s tallest building, and a ski slope in a nearby mall defies some of the world’s highest temperatures just outside. Offshore, speculative real estate developments boast artificial islands in the shapes of palm trees and continents. The urban landscape continues to change rapidly – some say too rapidly. “The pace of development is a huge challenge, threatening our natural heritage,” said Razan al Mubarak of the Worldwide Fund for Nature (personal communication). Another Emirati observed “there are no effective controls on development”; “What threatens our resources most is the breakneck pace of the region’s development,” another said; “We hear a cry to ‘slow down,’” yet another added (personal communications).

THE PATTERN LANGUAGE OF THE *MEDINA*

For contrast with this urgency, we may consider the *medina* or traditional Islamic city of the Gulf Region and elsewhere in the Middle East, in which “life went at a slow pace” (Ragette, 2013). This paper proposes that the cultural and environmental legacies of the *medina* are potentially of high value in fostering sustainable and socially healthy communities in the modern Gulf. There are both material and social components of the heritage of the region’s built environment – particularly of the “pattern language” of the *medina* – that are relevant to modern conditions (Galantay, 1987). This pattern language organized both social and urban life, “unifying them in a way that manifested ideologies and paradigms and their implications in the physical form of the city” (Mohammad and Thwaites, 2010). Many of these characteristics were not limited to the region’s large cities with their classic Islamic urban

patterns, but were also prominent in smaller settlements, for example in the southwest Arabian villages described by Saleh (2004).

In different environments stretching from Morocco to the Gulf, people came up with remarkably similar architectural, spatial, and cultural conventions. This pattern language of their settlements had logic and harmony with environmental and social conditions. Urban site and situation were typically based on geographic logic, especially for access to sea or river, and with attention to terrain, climate, and fresh water. Major urban functions were protection, religion, residence and commerce. The confluence of these interests gave rise to the classic town plan of the *medina* and its antecedents. Communities had to be protected from attacks, so most were walled. The interior skyline was dominated by the central congregational mosque (church or temple in earlier times), so important that many of these were the finest pieces of Middle Eastern architecture. Nearby typically was the *sug* with its specializations of trades and products. Major buildings of worship, education and commerce tended to interconnect in linear fashion alongside a larger thoroughfare leading from gate to gate. Neighborhoods and residences developed in a clustered form usually described as “organic” or “cellular,” and were the result of individual decisions guided by deference to social and legal constraints on the use of space. The overall layout was not a street grid but a cat’s cradle of lanes, many with dead ends, just wide enough to accommodate foot traffic and animal-drawn carts.

The spatial pattern of the *medina* was the “labyrinth” which, Falahat cautions, was misrepresented as backward by generations of Orientalists (Falahat, 2014). It is therefore important to consider impartial measures of these urban environments. “You want to revive Islamic architecture?” asks Sayyed Hossein Nasr. “We don’t need to revive it; it is living. What we need is a scientific evaluation. We have never thoroughly evaluated Islamic town planning and house design...What we need today is an objective evaluation of these environments in their own terms” (Nasr, 1980). One such evaluation was an Egyptian study of air temperature and movement inside houses and along streets of Cairo’s *medina*, which concluded that moderation of temperature extremes in these historic quarters were “ahead of anything we are doing today” (Nasr, 1980). Urban architectural technologies in the *medina* and other Middle Eastern towns were both renewable and energy-efficient, and tended to harmonize with natural conditions. “Islamic architecture remained faithful to simple building materials and employed the elemental forces of nature such as light and wind for its sources of energy,” writes Nasr (1980). “It brought nature into the city through the re-creation of the calm, harmony and peace of virgin nature within the courtyards of the mosque or the home.” The cities’ maze-like patterns created much shade in this hot environment (Figure 1). Typically a single door gave access to a home centered around a courtyard, a passive adaptive design that also provided shade and cooling. Local materials were used in construction. Many building materials and other resources were scarce, and recycling was a must. “Building to blend into the context was assured,” wrote Friedrich Ragette. “These physical constraints were so strong that the builders could not possibly build in disharmony with their natural environment” (Ragette, 2013).

In today’s parlance, traditional architecture technologies were bioclimatically designed, meaning they took into account climatic and environmental conditions to help achieve optimal thermal comfort inside (BioclimatiX, 2016). The signature piece on both sides of the Gulf is the practical and often ornamental wind catcher or wind tower (*malqaf* in the Arab Gulf countries, *badjeer* in Iran). These passive cooling towers capture cooler winds aloft, directing them into the living space and displacing warm air. Where circumstances allowed, on both sides of the Gulf these were used in conjunction with the moving subsurface waters of the *falaj* irrigation tunnel (*qanat* in Iran), providing an exceptionally effective air conditioning

system (Bahadori et al., 2014; Hagan, 2013). A number of functioning wind catchers are scattered throughout the UAE, including the restored examples in Dubai's al-Bastakiya neighborhood (Figure 2), and aging ones in the poorer Emirate of Umm al-Quwain. Another functional and graceful bioclimatic device is the carved *mashrabiya* screen of private and public buildings across North Africa and into the heartland of the Middle East (Figure 3). Carved from wood or stone or cast in plaster, often with Islamic geometric patterns, these block and diffuse sunlight, allow fresh air to pass into living space, and provide privacy for the *hariim* and other personal quarters.

Art Historian Ronald Hawker describes other traditional bioclimatic technologies in the UAE: homes were often built of fossilized coral, ideally suited for the heat because of its low thermal conductivity; a ventilation system called *badkesh* (wind-taker or breathing wall, a perforated outer wall) allowed breezes to pass down external walls and cool residents at a lower level; insulating plaster (*juss*) was applied to the breathable masonry walls made of collected beach rocks, coral and alluvial stones; and the high walls and courtyards operated like wind towers and *mashrabiya* to direct cooler air down into the heart of buildings, while protecting them with shade (Hawker, 2008). Oxford geographer Sandra Piesik studied the cooling effects of the *ariish* (*barasti*) date palm houses that Bedouin used on both ends of their seasonal movements between the date orchards of Liwa Oasis and the pearl diving and fishing enterprises of the Gulf. (Piesik, 2012; Duncan & Tomic, 2013) (Figure 4). Later in the paper, we will see that modern designers have reinterpreted a number of the historic techniques and materials described above in modern bioclimatic architecture.



Figure 1. Passage in al-Bastakiya, Dubai. The narrow lanes of vernacular urban architecture provided much shade in hot environments across the Middle East. (Source: Author, 2016).



Figure 2. Wind towers (*malqaf*) in Dubai Heritage Village (Source: Author, 2016).



Figure 3. Plaster *mashrabiya* screens of a private home in Nizwa, Oman. These provided ventilation and allowed women and others in private areas of the home to see activities in the public/male space of the courtyard below. (Source: Author, 1984).



Figure 4. Reconstruction of a barasti-style or ariish home with wind-tower, Dubai Museum. Almost all of the structure is made of palm materials. (Source: Author, 2016).

Materially, these building forms of Islamic cities were not specifically Islamic. Morphologically, the pattern of the *medina* was in many cases a direct heir to ancient Mesopotamian and other pre-Islamic patterns, to such an extent that the spatial configurations of continuously-occupied sites like Erbil in Iraqi Kurdistan replicated themselves upward in time on their *tells*. The labyrinthine residential pattern and devices such as wind catchers were adaptations to various climatic factors, while preferred building materials and techniques were rooted in the availability of local natural and human resources (Galantay, 1987). Culturally, however, while accommodating diverse peoples the Islamic city was fundamentally Islamic. In preparing the conceptual ground for architecture that fosters social sustainability in the western Gulf today, it is essential to identify the characteristic Islamic and Arab traits of the *medina* and its peoples.

These Islamic traits are distinctive from their Western counterparts, arguably setting the stage for an inherent culture clash - described later in this paper as a “crisis” - in modern town planning. Lynn White identified Biblical Judeo-Christian instructions to “subdue the earth” (Genesis 1:28) as the “Historic Roots of Our Ecologic Crisis” (White, 1967). These contrast with Islamic tenets upholding the concept of stewardship, with mankind the servant of the Divine but also nature’s custodian. Metaphorically, Muslims could “make paradise on earth;” for sedentary peoples the garden paradise metaphor became an ingredient of the urban form (McHarg, 1971; Ardalan, 2013). Nasr sees Islamic architecture not as stylistic or based mainly on climate or building materials but as genuinely religious, writing that the traditional Muslim person carried an “inner sense of beauty, dignity, harmony and nobility,” and saw the city “as the extension of the natural environment, in harmony rather than in discord with it” (Nasr, 1980).

Islamic cities provided for their diverse peoples’ social, cultural and spiritual priorities and interests, fostering what today would be recognized as social sustainability, defined as “development (and/or growth) that is compatible with harmonious evolution of civil society, fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups while at the same time encouraging social integration, with improvements in the quality of life for all segments of the population” (Polese & Stren, 2000). Islamic tenets encouraged problem-solving among the varied parties cohabiting traditional Islamic settlements. Many aspects of responsibility and behavior in space were tied closely to the Islamic legal system (*shari’a*) and its precedents (Galantay, 1987). *Shari’a* and local customs or *urf* (contemporary ways of doing things, including ordinary acts and civic transactions, either public -- large community -- or private -- small community) promoted simplicity and modesty in social and economic practice, calling for good governance, harmony and tranquillity in the neighborhood, and avoidance of damage to neighbors (Ardalan, 2011; Hakim, 1994). These attributes virtually define social sustainability; a social sustainable development or activity must keep to specific social relations, customs and values, while reducing social inequality, especially in terms of social exclusion, social discontinuity and destructive conflicts (Chiu, 2004; Ahmed, 2012). Mohammad and Thwaites (2010) argue that professionals and tradespeople applied core Islamic principles to the built form, “which underlie the sustainability of the social environment in Middle Eastern cities, in a collective and socially responsive manner that drives the bottom-up development of solutions”.

Akbar (1988) recognizes five distinct patterns of responsibility for properties within the *medina*. The most prevalent and successful was the pattern of private property in which the same party owned, controlled, and used the property. In a legal and social environment of what Akbar calls “autonomous synthesis,” parties had complete freedom within their properties, which were not subject to external influences or rules. Well-established but always evolving *shari’a* and *urf* precedents were invoked from the bottom up when

appropriate to settle disputes, but regulations meant to be followed by all citizens did not exist, and authorities with top-down control rarely intervened (Hakim, 1994). 'Urf was especially relevant at the scale where individual decision-making and building craftsmanship were implemented, for example at the scale of a housing cluster or neighborhood (Hakim, 1994).

Traditional Muslim urban environments changed gradually and harmoniously because parties achieved consensus; for example, the residents of a dead-end street controlled the street, and nothing affecting the street could be done without the consent of all the residents, who were responsible for maintaining it. Acting parties guided by their personal values, norms, and motivations as well as prevailing cultural, social, psychological, and religious factors, had freedom of action within their properties, and dialogued with one another to resolve conflicts. Proscriptive principles that defined what agents should *not* do addressed varied needs and situations, emphasizing the relationships between parties, and prompting collective and creative problem-solving among the concerned parties. In this environment of decentralization and autonomy, people tried different solutions; acting parties did not seek permission from authorities but made changes, and if these did not incur objections the changes prevailed. Through trial and error, every town developed its own solutions to fit its cultural and environmental needs. When small-scale users were given decision-making control, the outcome was the characteristic "lively variety within unity." The results of small-scale decisions of those who used, owned, and controlled properties accumulated over time to generate the morphology of Islamic towns. "The weight of experience of the whole society lies behind the traditional buildings," Akbar (1988) wrote.

Hakim (1994) attributes the unity of the built environment of Islamic towns across the Muslim world largely to the precedents set by *shari'a* during the time of the Prophet Muhammad, and the diversity of those towns over time and space to the localized 'urf, which *shari'a* recognized as legitimate. Importantly, he observes that the interplay of *shari'a* and 'urf were fundamental to place-making in traditional settlements. This legal system is "very sensitive to local conditions," he writes, and "accords legitimization and protection to a locality's customs and practices and thus contributes substantially to the identity of a place through the individuality of its place-making process and its resulting built form".

The *medina* was subdivided into quarters based on kinship, geographic origin, ethnicity, religion, or occupation, rather than on socio-economic status. Within this socially cohesive quarter, the sense of belonging to a neighborhood (*hayy*, *haara*, *fariij*, or *mahalla* as identified as a neighborhood parish of a mosque) as the basic urban socio-spatial unit developed with the values of extended families, based on patrilineal household, lineage, clan, and tribe, with hospitality as a prime virtue (Caton & Ardalan, 2010). As we will see later in the paper, this neighborhood scale is most pertinent to sustainable design today. Missing was any subdivision of neighborhood by socio-economic status: residences were introverted as rich lived alongside poor, with opulence or poverty inside hidden by indistinguishable street facades. A neighborhood or its kinship-based subdivision was often a cluster of residences with semi-private cul-de-sacs. The inhabitants of this cluster comprised a network of extended family based on male descent lines, bound together by the obligation of honor (*sharaf*) which extended even to unrelated neighbors who shared wells, ovens, and other utilities. Islamic separation of female and male space applied at every scale. Public space was primarily male space, with separate secluded female space available throughout. The home was a microcosm of that space. Women in the *harem* could not be seen but were able to view activities in the public/male quarters of the home, with *mashrabiya* screens providing them both privacy and ventilation.

For Muslims, the over-arching concept of the community was (and is) not a spatial unit but the *umma*, the brotherhood of Muslims based on shared faith rather than on kinship. With charity as one of Islam's five pillars, Muslims yielded to the alms-collector of their neighborhood and also donated income or goods to the Islamic *waqf* or charitable trust (literally "detention," and legally defined as "detaining the substance and giving away the fruits"; Akbar, 1988), which in turn provided water and other utilities along with religious, educational, healthcare and other social services – especially for the poor -- back to them (Nour, 1915). Reinforcing the notion of people as stewards of the earth, the *waqf* upholds that God owns all things – so that the individual land owner is nominally a trustee or steward – and *waqf* income must benefit humankind (Khan, 2015). Mosques, schools, hospitals, fountains and ultimately a large portion of Islamic settlements funded by the *waqf* became public grounds. The *waqf* was not a centrally-controlled religious charity governed by external agents. Autonomous and independent, it was instead created at the neighborhood level by a donor committed to renovation of historic buildings or dedicated to some other public good, for example a hospital or school. It was a comprehensive enterprise, so for example a *waqf*-funded school was complemented by housing, shops, baths and farmlands that generated the charitable contributions to sustain the school. Another expression of social solidarity and mutual care was *takaful*, a kind of Islamic insurance policy in which community members pooled money to guarantee against losses (Galantay, 1987).

These peoples shared an urban identity, a sense of place and of belongingness in a city that fit its natural environment. Far from being a backwater of world architecture, with its material and social sustainability the Islamic *medina* was what may be viewed as the original green city. While the principles discussed above are uniquely historic and Middle Eastern, they have a familiar ring in modern universal appeals for green urbanization. Ragette (2013) points out that in seeking to join material and spiritual priorities, Islamic principles of community organization and design are similar to their Western green counterparts: living within one's means and avoiding excess, recycling materials, consuming less energy, attuning architecture to climate with local materials, designing from the inside out for efficient use of space, promoting a sense of neighborhood, adopting appropriate technologies, revitalizing local retailers offering local goods, minimizing vehicular traffic, sharing responsibility for common spaces, and combating social decay.

URBAN SYSTEM SHOCKS

We may now consider the sharp contrasts between traditional Islamic urban life and what the tides of time and globalization have brought to Emirati and other Gulf cities, and then proceed to examine how they may be reconciled. This is the methodology that Hakim proposes to reconcile heritage and modernity in a way that will promote innovation: ask questions about what is occurring now in the built environment and how it used to occur in the traditional Islamic city; "it is only after careful analysis and understanding of the two systems that any fresh strategies can be formulated," he writes (Hakim 1994).

The processes and forms of urban development unfold differently today than they did in the past. Developers, planners, and architects predetermine urban forms in the Gulf, often with profit in mind, and cities cannot grow organically (Ragette, 2013). New urban forms are seldom based on local heritage. Official decision-makers invest their own and other extrinsic values in the built environment with little consideration of how suitable those values are in the local context (Akbar, 1988). Lifestyles and architectures are being westernized, while local design, skills and knowledge are overlooked or abandoned, argues Ragette: "With the coming of industry, the craft base of our traditional architecture has died" (Ragette, 2013). Modern and postmodern architecture have gone their own way and disregarded local

tradition, Jaidah and Bourenanne observe, with the result that architectural identity has been erased and the inhabitants' sense of belongingness dulled (Jaidah & Bourenanne, 2010). Abu Dhabi's 2007 Master Plan, for example, aspired to "showcase its vision as a world class leader in creating an innovative and sustainable Arab capital city", but its "fascination for progress and development in such a barren land" led to the "Brutalist" architecture of an "alienated hyper modernism of reinforced concrete structural frames clad with glazed curtainwall. This kind of hyper modern architecture tends to ignore its context, and as a result, it creates human isolation and denies a desirable human scale within the city's public realm" (Duncan & Tomic, 2013).

In terms especially applicable to the Gulf, Akbar (1988) contrasts contemporary with traditional urban environments and finds that modern developments marginalize the local-scale powers of their inhabitants and thereby diminish the quality of their environments. While traditional environments were ordered, contemporary environments are organized. While traditional environments operated with proscriptive constraints about what not to do, contemporary regulations are prescriptive, specifying what to do and ultimately decreasing the control of concerned parties. The traditional built environment was a complex, interdependent urban ecosystem, a system of constraints in which any massive intervention could result in unexpected and harmful changes. "Regulations are such massive intervention," Akbar writes. Modern decision-makers do not seek consensus but generate their own regulations according to their own norms and values, minimizing communications and relationships between involved parties, eliminating their ability to reach agreements, and reducing their influence and power. Their intervention in complex urban systems has shifted elements of the traditional environment from the "unified form of submission" – in which the same party owned, controlled, and used the property -- to a "dispersed form of submission," in which three independent parties share a property: one party owns the property, a second controls it, and a third uses it. "People who neither own nor control are irresponsible and dissipate the resources of the society," Akbar writes.

The social and physical qualities of the built environment have suffered from this shift in responsibilities. Top down, centralized decision-making has destroyed the creative conventions reached through trial and error, along with the "diversity within unity," so typical of Islamic settlements, that was generated by users who have control. "An unexpected result of centralized control in the built environment is its limited ability to accommodate users' diverse needs, leading to an environment whose potential remains largely unrealized," Akbar argues. The Islamic and other precedents that fuelled imaginative exploitation of traditional environments no longer apply. The aesthetic quality of the built environment, once refined over time by the entire society, is now controlled by individuals who produce a uniform monotonous environment. Having terminated shared responsibility, authorities assert their dominance over territories, owning and controlling a high percentage of outside public spaces and eliminating such characteristic urban elements as gates, walls, and dead-end and narrow streets. The quarter as a territorial organization broke down as authorities came to own and control the streets within it. Regulations failed to protect parties from one another and even encouraged harm. The abolition of traditional principles of ownership created land speculation. Rapid technological change and foreign influences compounded the shock to the urban ecosystem. Saleh (2004) offers examples of disruption caused by the introduction of top-down authority in southwestern Saudi Arabia, and reveals how the change in responsibility reverberated through the entire society. Whereas a tribal council traditionally planned for community needs and urban development, with the creation of the Kingdom of Saudi Arabia in 1932 this system of local control and planning was abandoned, with urban development coming under the auspices of the central government, causing "the disintegration of their old socioeconomic structure".

Contrasting with historic urban accommodation to habitat, most of the Gulf's contemporary buildings are so disassociated from the natural environment that with air conditioning, even the most basic concern for shade is obsolete. The "AC Culture," as Caton and Ardalan (2010) see it, is the "ultimate obstacle for sustainable design". Investigating issues of sustainability in the Gulf, their research team found Emiratis lamenting that construction for profit results in buildings that stand "against nature," meaning, a local said, that "they're working continuously against heat, and it's a pity that we haven't see more interactive, adaptive, naturally-evolved elements that really work with rather than against nature". The result is a vicious cycle, within which buildings emit heat because of the mechanics needed to cool them, contributing to the urban heat island effect. Dubai's artificial islands, the researchers add, represent "a picture of man out of harmony with nature" (Caton & Ardalan, 2010).

Given their rich urban heritage, why have Gulf Arabs embraced such out-of-sorts forms? Galanty (1987) may have the best answer: they haven't. Instead, a clash of urban traditions has overtaken them. He sees Eastern (including the Islamic) urban paradigms, with their premium placed on spiritual factors and the search for harmony based on *permanent* values, colliding with the Western mode's premium on efficiency and spatial organization to optimize production and consumption, and its expression of a lifestyle in which constant *change* has become a goal in itself. Other authorities conclude that with the breakneck pace of change, Gulf Arabs simply have not had the time to innovate. As Western architecture made inroads into the region, "The Arabs had no time to develop new structural understanding of the developments engulfing them; there were neither time or vision to put solid regional town planning standards in place" (Ragette, 2013). In a similar vein, an expat architect in the Emirates told me "People take the Arabs for a ride in architecture. This place is east and west and has the chance to do something remarkable. But no one is challenged to come up with a vision for the region." Such concepts of hapless local peoples fail to appreciate the dislocations that would confound any society buffeted by powerful crosswinds of opportunity, wealth, tradition and globalization. "The cities of the southern Gulf have grown so quickly in a few decades, they couldn't possibly have produced a perfect synthesis of disrupted traditions and disrupting economics and technology in that time," Hagan (2013) writes. "The question is where do they go from here?" (Hagan, 2013). The search for that answer comes below.

Many people look to Gulf cities as "disruptive" in the positive sense of creating new paradigms. I am concerned about how new urban and other forces have been disruptive in the negative sense to Emirati and other Gulf cultures. What have been the social impacts of Arab communities being flash-flooded by wealth and by western consultants, ideas, methods and urban landscapes? Individuals and societies suffer effects from such rapid transformations. "New architecture paid scant attention to the social and cultural needs of the local community," a UAE government forum noted. "As a result, urbanisation and modernisation impacted significantly on tribal and family structures" (UAE Interact). "It had to lead to a confrontation with established values," writes Ragette. "All western things were not only available over night, but even forced upon people by armies of eager western or western-trained salesman. The physical and cultural effect was devastating" (Ragette, 2013). Hakim (1994) observes that "Unfortunately the public sector's performance is dismal in dealing with the changes brought about by new building types, materials and urban functions. It responds with negative practices and methods, facilitating the degradation of the quality of the built environment. This is primarily due to the clash resulting from imported ideas and associated regulations (dictated by the central government on the local level), with embedded deep rooted customs." Galanty (1987) regards the indirect impacts of imported value systems on traditional lifestyles as even more destructive than the outward signs of modernization: "The competitive, dynamic and aggressive nature of western capitalism and

the high value given to ‘progress’ contrasts with the importance according to continuity and incremental change in patriarchal order.” In southwestern Saudi Arabia, Saleh (2004) described gender segregation and the centrality of religion in community life as the “backbones” of the public realm of Islamic society, observing that these were precisely the major issues neglected by modern schemes and their exotic designs. Dogan Kuban added that “transformations are so rapid that people feel alienated in the modern environment. Alienation, not only in its physical aspects, but also in the life of modern man, is a source of grave concern” (in Ragette, 2013). An Emirati explained alienation from the built environment to me in these terms: “The problem here is that you make a nice building, but then you don’t support the activities going on inside of it. It’s not the building that counts. It’s what’s inside in the long term that matters.”

There is substantial research addressing how disruptions in urban Gulf societies have prompted a variety of “crises.” Along with studies by a variety of international agencies, Ardalan’s research identified an “identity crisis” prompted by the loss of many forms of heritage: “a visual/ spatial loss of a vital sense of cultural identity, collective memory, traditional knowledge and values, indigenous narratives, historic textures/patterns, and a sense of place. In other words, the intangible elements of heritage” (Ardalan, 2013). Some architects and planners pin the blame for what they view as the Gulf’s “architectural and urban crises” on Arab surrogates of Western interests. Nasr sees the critical erasure of Islamic architectural identity as Islamic beauty lost to Western secularization: “the major modern urban environments of the Islamic world are suffering from a crisis which is most directly reflected in their ugliness and is in stark contrast with the serenity and beauty of the traditional Islamic city.” At fault, he argues, is a Westernized Muslim minority of wealthy individuals and government authorities, an “elite in reverse” whose “spiritual sense has become dulled by the force of secularization,” who have “forgotten the ephemeral quality of human life on earth and the peace and harmony pervading nature,” and who create “an urban environment in total disequilibrium with the natural environment;” the result is “the plight of the modern city within the Islamic world” (Nasr, 1980). Saleh (2004) has documented how the demise of traditional architecture in southwestern Saudi Arabia coincided with the introduction of modern designs, creating an overall result of “considerable bleakness.” Akbar’s book on the “Crisis in the Muslim City” (1988) systematically explores the urban disequilibrium produced by the shift in decision-making from autonomous and local to controlled and remote, with “endless disastrous consequences.”

Social heterogeneity is a disruptive factor in Emirati and other Gulf societies. Social cohesion and solidarity are diminished as clusters of homes once settled by cohesive and compatible family groups are replaced by housing units assigned at random to wide variety of peoples (Galantay, 1987). Further compounding the Gulf’s “urban identity crisis” is dependency upon two major expatriate groups which by necessity compensate for small populations of citizens; in the GCC countries collectively, more than 70 percent of work force are non-nationals. One is small but with outsized influence, while the other is vast and with almost no influence at all. The former are the mainly Western (European and North American) consulting and management class, and the latter are labor and service personnel, mainly from South and Southeast Asia. In the management realm, local knowledge and skills are often overlooked with the maxim that one Emirati described to me as “foreign is better.” Another Emirati put it this way: “People here never ask, ‘how can we do it our way?’ They always look to the outside, thinking they may have the more innovative solution.” An Emirati engineer urged “our society needs creativity – not just consulting.” The Emirati chairman of a United Arab Emirates University department summed up the long-term demographic challenge: “There is a need for local experts to lend their experience and credibility to efforts, and in time, through considerable investment in capacity building of young Emiratis, to replace the flow of

expatriate consultation into the country” (personal communications). Among the labor and service classes living with poor conditions, there is always a danger of social unrest.

A consistent experience reported in the literature and in my interviews is that many native Gulf Arab urbanites, outnumbered and overwhelmed, feel reduced to anonymous members of a mass society. What happened to the cohesive neighborhood, the *haara* or *fariij*? It was diluted as residents were dispersed or segregated by new socioeconomic cohorts. What of essential adaptations of human life to an unforgiving natural environment? They are no longer essential. I have asked Emiratis about such impacts. “People have lost their sense of belonging to place,” one observed. “We need to get back ‘belongingness’ to areas” (personal communications).

Geographers use the humanistic concept of *sense of place* to analyze concerns like these. Sense of place is the combination of characteristics that makes a place special and unique. It involves the experience of identifying oneself in relation to a particular piece of land, and includes local knowledge and traditions (Art of Geography, 2016). Places may be experienced either *authentically* or *inauthentically*. An authentic sense of place is “a direct and genuine experience of the entire complex of the identity of places” (Relph, 1976). Geographer Edward Relph argues that, in our globalized environment of “flatscapes,” an authentic sense of place is being overshadowed gradually by a less authentic attitude he calls *placelessness*, which he defines as “the eradication of distinctive places and the making of standardized landscapes that result from an insensitivity to the significance of place.” The overall impact is the “undermining of place for both individuals and cultures, and the casual replacement of the diverse and significant places of the world with anonymous spaces and exchangeable environments” (Relph, 1976).

Relph wants to understand how strongly people identify with place, using the concept of *insideness*—the depth of attachment, involvement, or concern that a person or group has for a particular place (Seamon and Sowers, 2008). Conversely, a person can be separated or alienated from place, an experience that Relph calls *outsideness*. His central message is that humans cannot live and function successfully without inhabiting meaningful places. In the research on social sustainability, sense of place is regarded as critical to helping people identify with their region and with each other, thereby encouraging residential stability (Ahmed, 2012).

For architectural design of sustainable communities in the Gulf, Ardalan focuses on the critical role of sense of place:

To truly understand the key issues of sustainability and cultural identity... we need to become aware of that particular worldviews of the individual indigenous civilization, the *genius loci* of the place, and the optimum ecological fit of proposed developments. The mandate of good design is to elegantly realize this holistic vision in physical reality. Such an approach may provide an important methodology by which common ground can be found between the profound worldviews of traditional civilizations and the highest aspirations of contemporary innovations in art and architecture (Ardalan, 2013).

There are no data measuring how broadly the perception of lacking “belongingness to places” is diffused through Emirati and other Gulf societies. If the literature and interviews related here are representative, the regional and local senses of place among many Gulf Arabs are giving way to senses of placelessness and outsidedness more characteristic of mass culture in the West. There are however some common themes of alienation rooted uniquely in Gulf settings. One is deprivation of public natural amenities. Public spaces that encourage social interaction, along with public parks, green areas, and public open spaces,

are essential components of social sustainability, and are widely lacking in the UAE (Ahmed, 2102). An Emirati lamented how developments have robbed people of the amenity of common recreational space, including urban beaches: “We don’t have public space, just shopping malls” (personal communication). Shopping malls have, for a number of reasons, become highly significant places in Gulf life.

In the Gulf countries, senses of dislocation and outsideness are accentuated by the fact that many people spend the great majority of their lives in artificial, enclosed environments like malls. They feel cut off from the wonders of nature close by, yet seemingly worlds away. An Emirati woman told me “The biggest problem here is that people are too far removed from the world, do not know their own country, and get most of their information from outside.” She said that when she showed slides of UAE landscapes to a group of schoolchildren, one of them accused her of lying that a picture of mangroves was taken nearby: How could something so beautiful be here? (personal communication). Belongingness and placefulness could come in part from environmental awareness and education, and especially from spending more time exploring the out of doors.



Figure 5. Dubai skyline, 2007. At far left, the Burj Khalifa is nearing completion. (Source: Author).

The feelings of dislocation and alienation among urban Gulf Arabs discussed above are not universal; many have accommodated themselves well in their modern surroundings. Elshestawy (2004) argues that all too many comparative analyses of traditional and modern urbanism in the region are founded upon a “narrative of loss” in which stable and sustainable old cities have yielded to the disarray and disharmony of their newer counterparts. But this is an incomplete view. A young Emirati architect, for example, told the Harvard research team on New Arab Urbanism that downtown Dubai (Figure 5) “definitely represents the way we live now. Our culture. It’s not like our culture in terms of Islam but it definitely represents the way we are living now.” When a team member posed that Dubai may not be sustainable and that it has obliterated traces of the past, the architect replied that he wanted to learn from the past

without being overly nostalgic about it (Caton & Ardalan, 2010). The researchers also pointed out that rootedness and authenticity are not the only valid sentiments: “Whereas it is important to have the individual rooted in a particular locality, with all its historical and cultural specificities, it is just as important for him or her to feel connected in a positive sense to world systems.” A Dubai professional told Caton and Ardalan “It’s very global, the way we are living. We are living as global citizens. I see similarities between me and any person living in downtown Manhattan.”

“WHERE DO THEY GO FROM HERE?” ACCOMMODATING HERITAGE

This portion of the paper addresses the particular ways in which the vernacular architectural heritage of the UAE and other Gulf States may be incorporated into the modern built environment of the Gulf. There are, for the sake of simplification, three alternatives on a spectrum of architectural options: to modernize, to synthesize, and to “heritagize.”

The so-called “modernizers” insist that heritage has no role. In this era of globalization, they argue, complete change is inevitable. At the extreme end of the spectrum is deconstruction architecture, a philosophy that deliberately opposes valuing one’s architectural heritage (Ragette, 2013). Compatible with this philosophy, but not always coinciding with it, is what is known euphemistically as “bulldozer planning,” in which old quarters are razed and modern buildings take up their footprints. Some forward-looking, oil-wealthy states have viewed the decaying remnants of the *medina* as embarrassing remnants of a bygone era not worthy of restoring or remembering. Thus in the 1960s in Kuwait “the destruction of everything that was old was indiscriminate, swift, permanent, and uncontrolled” (Botz-Bornstein, 2016).

At the other end of the spectrum is the resolve to preserve or restore – to “heritagize” -- the vernacular architecture of old quarters, or to identify what a special issue of the *International Journal of Architectural Research* called “the contemporaneity of built heritage” (Volume 9, Number 1, 2015). Conservation of urban heritage is a global priority, motivated especially by the prestige and potential economic returns conferred by UNESCO’s World Heritage Program. Urban world heritage sites in the Middle East include numerous *medinas*. To date the sole World Heritage Site in the UAE is Al-Ain Oasis, inscribed for its archaeological and natural treasures, and the country has several open-air museums of restored and replicated architecture. These include the 50 buildings of Dubai’s Bastakiya (al-Fahidi) Historic District, spared from demolition in the 1980s, and restored with art galleries and educational exhibits, and the nearby Dubai Heritage Village in the historic al-Shindagha neighborhood (see Figures 1 and 2). Ragette (2013) observes that the scope for true heritage preservation is very limited, and that getting it right is a big challenge: some critics for example decry the Dubai Heritage Village as “Disneyfied,” presenting “an idealized version of bygone eras, without the smell, dirt, poverty, insecurity and disease.”

Both Bastakiya and the Dubai Heritage Village however have considerable educational and touristic – and therefore economic -- value. About 275,000 people visit these sites each year, of which roughly 40 percent are Emiratis; young Emiratis and particularly university students are reportedly very interested in these places (Caton & Ardalan, 2010). The remaining 60 percent are mainly Germans, Koreans, Japanese and Chinese. An Emirati told me, “tourists don’t want to see malls -- they want to see heritage” (personal communication). But most do not miss the chance to visit the Dubai Mall (the largest in the world by total area, and recorded in 2011 as the most visited building in the world, with more than 54 million patrons), or the Mall of the Emirates, so at least in Dubai most tourists clearly enjoy seeing both. The potential for growth in architectural heritage tourism in the Gulf is high, and among its many

benefits is that international visitors return home to spread appreciation of Arab and Muslim civilizations, in a time when the larger world sorely needs that understanding.

Synthesis and Hybridization

Midway along the spectrum are the “synthesizers,” who value tradition and regionalism, and seek to integrate old and new. Their aim is, broadly, to hybridize or to preserve “locality within globalization” (Aydinli & Karababa, 2013). Getting the hybrid right is also difficult: the task of taking the best that old and new offer rarely succeeds, according to Ragette (2013). What possibilities, obstacles, and criticisms face the synthesizers? What architectural elements of the past inform their designs?

A widely-practiced approach to hybridization in the UAE and other Gulf States has been to apply a veneer of vernacular architecture to modern buildings, most notably by positioning wind catchers on them. Wind catchers rise from hotels, shopping malls (such as Sharjah’s Gold Suq), mosques, and residential developments. While they pay homage to the heritage of traditional Gulf architecture, these wind towers are non-functional. Perhaps the best example of this cut-and-paste architectural symbolism is Dubai’s resort of Medinet Jumeirah, bristling with non-functioning wind towers. While touted by its agents as an “authentic recreation of ancient Arabia, capturing the natural beauty of the region,” architectural critics cite the resort’s over-the-top Orientalism (Jumeirah Resorts; Caton & Ardalan, 2010; Mitchell, 2013). Designed for and visited mainly by tourists, Medinet Jumeirah is the creation of local developers (it is “an example of where the Orient is producing its own generalized orientalism,” quips Mitchell). It is frequently patronized by Emiratis who admire the resort’s effort to create a hybrid space of past and modern life, but who reportedly would like to see something similar serving their cultural preferences. An Emirati architect told the Harvard researchers: “I may not feel comfortable because of my cultural background, because that place is overwhelmed with tourists. I would like to have it but in an [Emirati] community context” (Caton & Ardalan, 2010).

With few exceptions, critics pan such pseudo-traditional hybridization as dishonest re-creation of an illusory, idealized past. The Harvard team observes that:

Unfortunately there has now evolved only two “mono-cultures of design models” in the Gulf cities that all developers are following: the mega, “Avant Garde, supermodern tower” or the low/mid rise “Disneyland Gulf Kitsch.” The former has no ecological or cultural relevance to the place, while the latter is burdened with fake wind catchers and fiberglass arches, neither model offering a suitably sustainable and contemporary paradigm for the region (Caton & Ardalan, 2010).

Ardalan (2013) chastises, “the predominant models in the GCC that have been followed seem to be those of Los Angeles and Las Vegas with regard to contemporary urban patterns and zany avant-garde architecture, while often resembling Disneyland wherever pastiche gestures towards the traditions of regional architecture are concerned.” Within the UAE, such gestures abound in Abu Dhabi as well as in Dubai. In Abu Dhabi of the 1980s and 1990s, Islamic ornamentation was applied to the city’s earlier-described “Brutalist” concrete box architecture, along with “pseudo-traditional Islamic principles in urban design and architecture” (Duncan & Tomic, 2013). Duncan and Tomic relate how Abu Dhabi has “built fairytale traditionalism favoring superficial Arabic geometric form. In this subcategory, the buildings showcase an inaccurate and artificial localized style, if not indeed a kitsch version of refined traditional Arabic architecture.” Here is the condemnation of Ervin Galantay, who seeks authentic vernacular architecture in the modern context: “the cosmetic use of

traditional decorative elements, applied skin deep to the exterior of Western-style buildings, is dishonest trickery and should be avoided” (Galanty, 1987). Edward Relph would likely describe pseudo-traditional architecture as inauthentic and resulting from an insufficient sensitivity to the significance of place.

Bioclimatic Adaptations

If pseudotraditionalism is not an effective hybridization of the old and new in Gulf architecture, a more promising and innovative synthesis with both environmental and cultural roots in the region is bioclimatic architecture. This involves the application of traditional principles of climatic adaptation, discussed earlier in the essay, to modern high-tech construction. Viewed from the outside, vernacular environmental building techniques might not be apparent at all; the architectural “language” of most bioclimatic architecture is contemporary. “Environmental design is not an answer to a perceived loss of cultural identity unless it is deliberately pushed in that direction,” writes Savannah Hagan (2103).

The cultural relevance of bioclimatic borrowing from the past in some Gulf architecture is a push in that direction and towards Chadirji’s definition of excellence: “no truly excellent regional architecture can be achieved unless in some sense it blossoms from within its own culture” (Chadirji, 1986). At the twin Al-Bahr Towers in Abu Dhabi, a high-tech mechanical adaptation of *mashrabiya* screening provides a functional and aesthetically compelling effect (Figure 6). The panels of the building’s responsive façade, a series of aluminum frame folding screens faced with PTFE (the synthetic resin Teflon), are computer-controlled to open and close with the movement of the sun. The result is a reduction of solar gain by more than 50 percent (Fraser, 2013). The 29-storey, 145 m.-high Al-Bahr Towers are effectively “bioclimatic skyscrapers,” a term used to describe Ken Yeang’s buildings in Malaysia. It is noteworthy that in designing Al-Bahr Towers and other buildings, Abdulmajid Karanouh was motivated by disappointment with the alternatives: “the social and environmental results of mass modern development are unacceptable” (Leech, 2011). The UAE’s contemporary adaptations of vernacular bioclimatic design also include a reinterpreted, computer-controlled wind tower rising 45 meters over Abu Dhabi’s aspirationally sustainable city of Masdar (Yassine & Elgendy, 2011). This carbon-neutral settlement also adopts some hot weather-mitigating features of the traditional *medina*, including narrow lanes that provide shade. Even Frank Gehry’s giant air-cooled cone-shaped galleries of the Guggenheim Abu Dhabi Museum are, the architect says, inspired locally by the wind catcher (Ouroussoff, 2007).

Bioclimatic features including the *mashrabiya* and wind tower, along with photovoltaic energy sources, are incorporated into the designs of Msheireb, an ongoing project intended to regenerate and preserve Qatar’s historic downtown Doha (see Figure 7). Proclaimed as “The World’s First Sustainable Downtown Regeneration Project,” the 31-hectare site is a mixed-use development of about 200 buildings intended explicitly to attract native Qataris. Following a “half-century struggle to find a balance between the powerful culture of globalized architecture and urbanism and fragile local traditions” in Qatar’s capital, Msheireb resolves to “blend traditional Qatari heritage and aesthetics with modern technology, and focus on sustainability and harmony with the environment” (Adam, 2013; Msheireb Downtown Doha). The project required razing part of Doha’s mid-20th century buildings and replacing them with a medina-style tight pattern of traditional narrow lanes (*sikkaat*, which were characteristic of old Doha), the reconstructed Souk Waqif (based on historic photographs, living memories, and “a fair bit of imagination;” Adam, 2013), and courtyard urban blocks. (Adam, 2013; Makower, 2013). This district’s buildings call for low-energy design, finding them in elements of vernacular architecture such as the breathing wall, the shaded buffer zone of the *liwan* overlooked by *mashrabiya* screening (locally, *shanasheel*)

and construction with high thermal mass. Does Msheireb succeed in its own goal of creating “Qatari contemporary vernacular” architecture in the modern context? Robert Adam, founder of ADAM, the “largest traditional architecture practice in the world,” says no: “The global-to-local or modern-to-traditional architectural dialogue shows no sign of resolution” (Adam, 2013).



Figure 6. Al-Bahr Towers, Abu Dhabi. On the right tower, the screens are open to let in light on the shaded portion of the building. On the right side of the left tower, the screens in full sun are closed, while on the left side those in the shadow are open (Source: Author, 2016).

Other bioclimatic features of Gulf vernacular architecture have found a footing in modern design (Hagan, 2013). Many design variations of the *mashrabiya* for homes and businesses are available from several specialized vendors in the UAE and other Gulf States. The wind catcher’s action of fresh air in/stale out is the principle of the “stack effect” employed widely in Western passive cooling systems. Wind catchers and fountains (*salsabil*), Hagan notes, are the progenitors of passive downdraft evaporated cooling (PDEC, such as Brian Ford’s design for the Torrent Research Laboratories in India), essentially wind towers whose cooling effect is enhanced with water spray.

ASKING THE RIGHT QUESTIONS: TOWARD SOCIAL SUSTAINABILITY

The literature and oral interviews discussed above suggest that neither heritagization nor hybridization could succeed fully in the goal of positioning vernacular architecture comfortably in the modern Gulf context. There is still a “great need for an authentic contemporary architectural regionalism informed by critical thinking about sustainability, cultural relevance and valid opportunities for technological innovation,” write Caton & Ardalan (2010). Akbar (1988) scorns contemporary architects for their shortcomings: “So far, the majority of professionals that are trusted by their societies do not seem to know where they are headed. They run after movements. A movement appears and a generation of architects adopts it, only to be fed-up after a while and ready to swallow another movement. the avant-garde movements seem more attractive to architects than the real needs of societies.” He points out that in contrast to contemporary physical forms, traditional physical forms were

simple in all aspects. “The simplicity and perfection of traditional buildings demands a certain flair of real understanding that is beyond most architects' experience.” He asks whether it makes sense for modern architects and planners to draw inspiration from traditional forms generated by users with different norms and technical capabilities than those of today's world. He insists it does: “if we are convinced that the traditional physical forms were the best solution for their users, then attention to the process that generated those forms will bring us one step closer to a better environment.”

The authorities discussed above concede that the Gulf can do more justice to its architectural heritage, and ask variations of a critical question about alternatives:

Are there no more valid design alternatives left? Can the new generations of Islamic cultures of the Persian Gulf today become the ‘visionary stewards of this environment,’ and rise to the challenge of contemporary opportunities and globalization while remaining true to the values and aesthetic principles of their ancient heritage? The unique identity of each of these places along the Persian Gulf waters, of these millions of new pioneering inhabitants at this time, building these vast testaments of the human spirit in the 21st-century, deserves far more meaningful signs of their diversely rich civilizations than what is being realized today. Can then the next phase of development achieve a more authentic, environmentally sustainable and civilizational narrative relevant for the identity images of this region (Ardalan, 2010)?

How do we define a narrative that successfully suits this region's “identity images”? I propose that it should be guided more by the social sustainability it fosters than by the elusive goal of bringing the Gulf's signature pieces of architectural heritage to fit in a modern context. This goal has been shaped primarily around material rather than social objectives. I agree with Akbar's observation that rather than investigating the societal processes that produced the traditional environment, all too many are preoccupied with analyzing the end product (Akbar, 1988). We will not find a fitting synthesis of old and new in the modern context if we do not consider the Emirati's remark, quoted earlier, that “It's not the building that counts. It's what's *inside* in the long term that matters.”

The main goal should be building an urban environment undergirded by social sustainability that is rooted in the heritage, lifeways, and preferences of Gulf Arabs. We have been focusing on a problem incompletely: rather than asking how to perpetuate heritage in the *built environment*, we should be asking how to do so in the *lived environment* or what Guy Di Méo calls *lived space*, mindful of Relph's message that humans cannot live and function successfully without inhabiting meaningful places (Di Méo ,1991; Casey, 1993; Malpas, 1999). Lived space is the place of ongoing interactions of social relationships, not the result of such interactions. Lived space may be understood a process of production, rather than a product; in lived space, human experiences, imagination, feelings, and local knowledge play out over time against the backdrop of the built environment (Zhang, 2006). The challenge of design is to build environments most suited to these social processes.

With the focus on the role of heritage in social sustainability, this final portion of the paper addresses the question of how the architectural and other heritage of the Gulf States can help grow social sustainability in the modern lived environments of these places. “The principles and lessons from traditional Middle Eastern culture may be applied to bring more social responsiveness and sustainability to our contemporary built environments in all locations,” write Mohammad and Thwaites (2010). Here however we consider the wants of indigenous Gulf populations -- those who may wish to regain their lost sense of belonging to place --rather than the majority expatriate peoples who are transient and whose senses of place are rooted abroad.

We have considered the social crises of Gulf peoples inundated by alien built environments and populations. But many Gulf natives have accommodated themselves to these conditions, aided especially by the strength of their kinship networks. In Abu Dhabi for example, Fox et al. (2006) recognized that despite the influx of foreign cultures and designs, the locals' strong traditional familial structure has "developed receptive ways of synchronizing localism with globalism within the area... the traditional social structure persists to direct the changes, and serves to filter what is acceptable— working as a sort of indigenous conservatism."

Some of the most important features associated with social sustainability in the traditional city were material and based in the organization of space, and many were rooted in the intangible components of sense of place: spiritual, cultural, and especially those related to kinship and family dynamics. These spatial, social and spiritual components converge at the scale of the neighborhood, and this is where we may focus our attention and efforts.

Many of the elements of social sustainability that can apply as much in contemporary settlements as they did in traditional ones are Islamic, and they focus on the neighborhood. Islamic principles based in *shari'a* and *'urf* insist on harmony and tranquillity in the neighborhood, and avoidance of damage to neighbors; simplicity and modesty in social and economic practices; and good governance. Nasr (1980) and Ragette (2013) argue that a return to Islamic values, with Islamic principles of community organization and design, are needed to re-create the key social elements that were the glue of traditional Gulf cultures, including balanced communities of the poor and wealthy, the elderly and the young, coexisting in the neighborhood or *haara*, and served by community centers providing religious, health, and social and retail services.

Several authorities argue that the traditional Islamic institution of the *waqf* could be restored to play a key sociocultural role at the neighborhood level in the modern environment, promoting community activities and education, filling the gaps between social classes, helping to maintain public buildings and grounds, and generally strengthening the cohesion of the Islamic city (Galantay, 1987; Nour, 2015). The *waqf* system had drawbacks, however. Conventionally owned in perpetuity by God and not any single party, the *waqf* property was prone to neglect and deterioration over time. This decay was due to the fact that different parties shared the property; these were the controller (an appointed trustee) and the users (beneficiaries elderly people or students, for example), in what Akbar labels the "dispersed form of submission" (Akbar, 1988). There was no incentive for proper management or use of the property. While pressured for more profits, the controller was not interested in maintaining it, while the user did not invest in it because he did not own it and was often poor. Even if imperfect however, the *waqf* was one of the indigenous Islamic systems that helped to sustain Islamic communities over long periods of time, and was particularly vital in helping the most-need. A modern variation of the *waqf* based on accountability and autonomy, and suited to values and circumstances of the society today, could play a strong role in social sustainability.

Good governance in the context of traditional and modern settlements means neighborhood self-governance. Ahmed (2012) researched the degree to which public neighborhoods in the UAE are sustainable, concluding that they are not; only one of his eight measures of social sustainability – safe environment -- was "significantly achieved." One of the largest impediments to social sustainability in his study site of al Ain (UAE) and in many cities in the Gulf Region is the absence of resident participation in decision-making processes; people need to be empowered to participate on mutually agreeable terms in order to influence choices for development. Noting that the present hierarchical, top-down system of planning has led local peoples to reject even the most-sound policy decisions, Hakim (1994) argues

that planners must seek support from locals through the kind of public-consultation systems that developed in this region's tribal cultures. Akbar, also focusing on autonomous decision-making, concludes that the key to restoring the social balance characteristic of traditional settlements is to change patterns of responsibility so that same party owns, controls, and uses the property. "The problem will never be solved until infrastructure is placed in the unified form of submission and land speculation is abolished," he contends (Akbar, 1988). Galantay (1987) also calls for the restoration of local autonomy to the *mahalla*. Working from experience in southwestern Saudi Arabia, Saleh (2004) exhorts that "To facilitate a bottom-up planning process, existing administrative systems and regulations may need modification to allow responsibility for urban development projects to be delegated to local organizations wherever feasible. Policies should further be established to allow communities to voice their opinion on local development as they see fit."

Community cohesion, based on harmonious social relations between inhabitants, is widely viewed as essential for socially sustainable neighborhoods (Ahmed, 2012). The above-cited success of Abu Dhabians' adjustments to their environment suggest that if traditional familial and other social structures are given priority, the social cohesion reminiscent of the Islamic *medina* is attainable in the modern urban context. Galantay (1987) calls for the implementation of recommendations that could provide the preconditions for the rise of settlements "more in harmony with Islamic principles," and recommends more social homogeneity at the scale of the *mahalla*. We should broadly understand homogeneity to mean, as discussed earlier, neighborhoods populated with traditional Arab extended families defined by their patrilineal household, lineage, clan, and tribe.

Indicators of Success in Spatial Design

The principles of good design for the lived environment are already present in a number of projects in the Gulf Region. What the examples discussed below have in common is again their neighborhood scale -- they focus on small clusters, blocks, and neighborhoods -- and their spatial configuration -- they have dead-end streets and other elements that help shape neighborhood identity and social interactions. These draw directly from architectural heritage dating back to the *medina* and other traditional settlements, and they prize the traditional and often tribal social dynamics of families and neighbors.

These design principles come together in Jaidah's and Bourenanne's ideas about cultural continuity in vernacular Qatari architecture. They insist that vernacular Qatari architecture can easily be adapted to meet the requirements of modern functionality and high living standards for maintaining congruence in natural, social, and cultural environments. They make a powerful case for what they call "*the renaissance of vernacular architecture*," which "aims to revive traditional styles in modern sustainable design contexts and preserve local culture." They propose that at the city level new research based on vernacular Gulf architecture should focus on forming a *new urban cluster* based on the efficient use of space, house types, liveable streets, and public spaces (Jaidah & Bourenanne, 2010; emphasis added). Doha's Msheireb redevelopment project, described earlier, does not fit their vision of this renaissance, but spatially it does have many of the elements that may be foreseen in projects based on architectural heritage (Figure 7).

Saleh (2004) describes the components of a similar renaissance, which he calls "*New Vernacularism*," in the al-Horaidhah planning model for community development in three administrative regions of southwestern Saudi Arabia. New Vernacularism "seeks the preservation of community values in terms of social, religious and economic issues in the face of modernization by uncovering the relationships between the culture of Islam and its

urban form and architecture and incorporating them in a new urban vision.” Proposed as the Middle East’s answer and alternative to the West’s “New Urbanism,” New Vernacularism works at the scale of the neighborhood, beginning with deep understanding of customary religious and cultural concerns relevant to designing and planning for an invigorated sense of community. The goal is to articulate “physical solutions for religious, social and recreational requirements and integrate them within a unified neighborhood concept.” Spatial planning for the neighborhood emphasizes the centrality of religion and enhances extended social relationships according to traditional tribal segmentary kinship structure, gender privacy, and gender segregation. As in design principles for New Urbanism, New Vernacularism design considers climatic and other environmental variables in designing housing units, street passages and green areas, and minimizes energy consumption.



Figure 7. Model of Msheireb Project, Doha. (Source: Msheireb Properties).

Msheireb map legend: (Source: <http://mdd.msheireb.com/en-us/exploreproject/characterareas.aspx>).

- | | |
|------------------------------|--------------------------|
| 1. Souk Waqif | 2. Al Koot Fort |
| 3. Amiri Diwan | 4. Cultural Forum |
| 5. Heritage Houses | 6. Sahat Al Nakheel |
| 7. Mohammed Bin Jassim House | 8. Eid Prayer Ground |
| 9. Sikkat Wadi Msheireb | 10. Retail Galleria |
| 11. Department Store | 12. Barahat Msheireb |
| 13. Qatar National Archive | 14. Amiri Guard Building |
| 15. Diwan Annexe | |

The layout of the al-Horaidhah community is a superblock divided into several smaller blocks, each with multiple clusters. A cluster consists of a group of lots, creating dead ends accessible only to the inhabitants’ cars. There are 100 housing units in each block, along with two mosques, a post office, a health-care facility, bank, boys’ and girls’ schools, green spaces and recreational areas, tourist and commercial facilities, and a shopping center. This vision of a new vernacularism is significant because it both establishes the principles of contemporary social sustainability based on heritage and indigenous knowledge, and builds an environment on those principles. Saleh makes a case for others to follow this model:

Professionals need to look at indigenous planning practices in a new light... To foster the idea of “New Vernacularism,” professionals need to be sensitive to religious, cultural, socioeconomic, and political conditions at the micro level. This means that an urban development and management program has to be locally based, in line with the local cultural patterns and be responsive to local needs and conditions in terms of site selection and economic base... To encourage the idea of “New Vernacularism,” urban development programs should make use of indigenous knowledge or technology with which the local people are already well acquainted... It is only through awareness of inherited cultural values, environmental conditions, the anthropological history of an area, and the psycho-system of a target group that it would seem to be possible to provide people with an authentic and distinguished built environment. [New Vernacularism exposes] professionals to fundamentals of Islamic culture through the concepts of *Shari’a* and *al-Urf*; Both the legal system and social customs become the guiding factors for New Vernacularism or Urbanism in most Muslim societies. The universality of this approach should not be undermined or belittled.

Returning to the spatial properties and human scale of the *medina*, Galantay (1987) also focuses on the urban cluster concept and quantifies its population: keeping in line with the traditional size of the *mahalla* of 6 acres, the cluster should contain 250 to 600 dwelling units per acre. Ahmed (2012) emphasizes that the efforts to attain social sustainability in Emirati communities should focus on the scale of the neighborhood, especially taking into account the social and cultural characteristics of Emiratis. Designing for their preferences, for example through a privacy-supportive street hierarchy, would enhance their identification with their neighborhoods.

Akbar (1988) turns to Taif, Saudi Arabia, in the 1960s to reveal the spatial and social patterns that autonomous urbanites, not shackled by top-down constraints, came up with. Once again the scale of social interaction and decision-making was a neighborhood or cluster. Over a five-year period, the inhabitants of one quarter reached a series of agreements, much as users in traditional environments did, that shaped neighborhoods with many of the physical and social characteristics of traditional settlements: dead-end streets, single party walls, dwellings with courtyards, social interaction between residents, and investment in private rather than public spaces. Akbar observes that the social relationships created by the physical environment of these neighborhoods in Taif were very strong.

The vision of clusters or blocks organized around extended family members, and taking into account traditional Emirati social preferences such as privacy, is also taking form in both the city and outlying areas of Abu Dhabi. Duncan and Tomic (2013) relate that as early as the 1970s, Shaykh Zayed sought social sustainability for this Emirate’s capital, and that its city government remains committed to incorporating sustainable practices in its city-making process. The goal of “Plan Abu Dhabi 2030” is “a contemporary expression of an Arab city.” Blocks within the city, whose design the authors define as “eco-minded contemporary traditionalism,” will meet the specific needs of Emiratis (who make up about 20 percent of this city of one million), with guidelines that include “The *fareej* [neighbourhood] – modeled on a set of villas around a central courtyard, reflecting an extended Emirati family structure – as well as island and desert eco-villages. The villages are based on traditional Emirati ways of life, and the aim is to ensure these environments are provided across the Emirate in a way that reflects local customs” (Vine, 2009).

This model accentuates “both modernity and tradition through a contemporary reinterpretation of Arabic architectural forms and elements” by emphasizing customary urban forms such as:

pedestrian-oriented streets, the principle of *fareej* as a social urban component, -- with each neighbourhood accommodating the Emirati extended family -- and a revival of courtyard housing concepts [including threshold, wall and gate providing privacy, serenity and safety]. Traditional concerns for adapting the structures to the harsh desert climate are built into their design, and are complemented by reduced energy demand met by solar and wind power.

“This fusion of avant-garde international modernism with Arabic traditionalism has produced a profound change in attitudes toward housing and public realm design,” write Duncan and Tomic (2013). “The capital is on the brink of truly becoming a leader in the creation of sustainable living in urban environments.” In this time of universal interest in green, smart, and socially sustainable cities and the architecture suited to them, innovations based on traditional values and institutions will inspire new ways of thinking about urban environments far beyond the Gulf and the Middle East.

CONCLUSIONS

Until now most modern urban environments of the Gulf Region have been the creations of Western architects and developers. Incongruities are inevitable; Robert Adam for example is skeptical that the London-based developer Oriental Consultants is genuinely in tune with close-knit vernacular planning: “there are regular official statements aspiring to a combination of modernity and tradition which fail to recognize that imported and globalized North Atlantic architectural modernity was developed precisely as an antithesis to tradition” (Adam, 2013). In their defense, firms like Arup in the UK and AECOM in the US assert that “our intention as foreign designers working in Qatar is to prepare fertile ground for a homegrown indigenous architecture to evolve” (Makower, 2013).

In the long term the most appropriate and best inspirations and designs for Gulf cities will come from locals. For the time being however the shortage of Gulf architects and developers is one of the many consequences of demographics working against the GCC countries. In almost every field there are not enough Emiratis and their Gulf national counterparts to fill the need. These countries have constitutional policies for Emiratization, Qatarization and their counterparts to address these needs, which are not always met by training abroad: “If Qataris can use their (often foreign) education as a springboard for a rediscovery of their cultural heritage, instead of a mimicry of global culture, then a quite different and unique kind of architectural modernization can take place that develops those built traditions that help to define Qatari culture” (Adam, 2013). The Harvard researchers interviewed a local architect in Dubai who offered a glimpse of the future in his own hands: “I want to know if there is a way to use this beautiful time that we are living in to come up with something that is interesting” (Caton & Ardalan, 2010).

Learning from “Living Treasures”

These local experts will find inspiration mainly from their local heritage, including from the often-overlooked resource of local people. Oral tradition is among these countries’ greatest legacies, and is the only one not originally generated or preserved in tangible form. In the research on architectural heritage in the Gulf Region, there has been little attention to the role of living sources, who in a variety of contexts can inform thinking about the future.

Many physical and social traditions in architecture and other realms exist only in the memories and life experiences of local peoples, especially elders. The task of documenting their knowledge, with the expectation that this may advise future development, is an urgent

one. In the UAE and other Gulf States there are still former craftspeople, builders and master builders, fisherfolk, pearl divers, nomadic pastoralists, farmers, and others who have unique and undocumented knowledge, but they are passing on. We can learn from people like these in the UAE and other Gulf nations, and countries farther afield, and appreciate their technical know-how and their sense of place, and literally build on that foundation.

A fine example of the vulnerability and promise of traditional knowledge of the lived environment comes from the research of Oxford geographer Sandra Piesik in the UAE. She writes of how paradigms of indigenous architecture offer alternatives: “Vernacular buildings have responded to climate and landscapes for thousands of years,” she argues. “Indeed, they both offer the best lessons for environmental sustainability and position architecture in the cultural context.” The opportunities to learn these lessons however are fleeting; Piesik emphasizes that more research must be done “while the knowledge and the evidence of those alternatives remains” (Collins, 2012).

Piesik identified a major component of built heritage remaining only as a living memory in the UAE. As many as 80 percent of the UAE’s people lived in *barasti*-style date palm houses or *ariish* until the 1970s (see Figure 4). Piesik reports that they disappeared altogether in the 1980s without a single unit standing. She relates how her chance meeting with a Bedouin woman, Fatima Khamis Al Fendi Al Mazroueui, at Liwa’s 2009 Date Festival brought the building back to life. This woman recalled for Piesek in great detail the materials, dimensions, and functions of these palm-leafed huts, as well as the important role of building them in the social life of the community. This led to Piesek’s “Liwa Arish House Project,” which intrigued the United Arab Emirates University scientist and International Date Palm Award festival director Dr. Zaid Abdelouahhab. Of Piesik’s findings he said, “This work is important. Nobody knew 30 years ago where the UAE would be, and without heritage and culture, society would lose a lot.” He hoped her work would “heighten a general awareness of the risk that such culture and habits are disappearing.” He appealed for others to wake up decision makers and say, ‘Hey, something is in the process of being lost. So let’s save it together’.” (Collins, 2012)

“This core of the Emirati nation is in danger of being lost,” Piesik said in an interview: “A culture dies and becomes extinct if you fail to transfer learning from one generation to the next. The people who used to live in these houses are still alive but they are getting old and they are dying. The younger generation has maybe 10 years to learn the skills before it’s too late. If you don’t transfer the knowledge, and find a contemporary use for this material that is so bountiful here, then this will be extinct.” (Collins, 2012)

The *ariish* of Emirati vernacular architecture is proving to be relevant and applicable today in a large and unexpected way. Building on Piesik’s work, the UN Convention to Combat Desertification is promoting *ariish* housing to improve living conditions and as an appropriate adaptation to climate change for the poor, especially in Africa (Stevens, 2015). We can anticipate other exchanges and applications in this era of unprecedented global flow of information and technology. As we have seen, bioclimatic architects borrow from the heritage of traditional vernacular architecture, and an exchange has evolved in which western high-technology flows into the developing world while low-technology techniques flow back into the developed one (Hagan, 2013).

Just as the preservation of biodiversity allows discoveries of new medicines and foods, we may not know until years in the future just how valuable the heritage of traditional knowledge is. It was a chance encounter that led to Piesik’s focus on *ariish* architecture, which then made it possible for the UN to consider *ariish* as sustainable low-cost housing for the poor in arid Africa. If elders from all walks of life in the Gulf States were interviewed systematically,

they may reveal other unforeseen benefits and applications to sustainable development, and to social sustainability in the lived environment. This critical task of interviewing Emiratis in depth is being carried out by female and male researchers of the Oral History Project at Abu Dhabi's National Archive (formerly The National Center for Documentation and Research). Since 2009, the center's trained ethnographers have recorded more than 1000 interviews with the people they call "living treasures;" some of these may be seen on the Archive's YouTube Channel. Researchers at the Emirates Heritage Club, the Abu Dhabi Tourism and Cultural Authority, the Ministry of Culture and Youth, and Zayed University are doing similar work.

There is much work yet to do, including interviewing the elders and combing through oral history transcripts for ideas and techniques that can be applied now and in the future. The chances for real breakthroughs based on local legacy are great. As that architect told me *"the challenge is to come up with a vision for this region. This place is east and west and has the chance to do something remarkable."* Ardalan echoes that challenge: "imagine then what the prospect might be for these communities over the next decade if more positive and constructive values -- based upon a more holistic ecological fitness and the well-being of human processes -- became the motivating rules and forces that governed development in the Gulf region" (Ardalan, 2013). To imagine the possibilities, consider this motivational observation that an Emirati shared with me: *"If there's anywhere in the world that things can happen, it's this place."*

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REFERENCES

- Adam, R. (2013). Doha, Qatar. In M. Fraser & N. Golzari (Eds.). *Architecture and Globalisation in the Persian Gulf Region* (pp. 105-128). Ashgate, UK: Farnham.
- Ahmed, K.G. (2012). *Urban Social Sustainability: A Study of the Emirati Local Communities in Al Ain*. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability* 5(1), 41-66.
- Akbar, J. (1988). *Crisis in the Built Environment: The Case of the Muslim City*. Singapore, Minar.
- Ardalan, N. (2013). *Sustainable Identity: New Paradigms for the Persian Gulf*. In M. Fraser & N. Golzari (Eds.), *Architecture and Globalisation in the Persian Gulf Region* (pp. 329-346). Ashgate, UK: Farnham.
- Ardalan, N. (2014). *Towards Sustainable Urbanism in the Persian Gulf: Analysis of the Past*. *International Journal of Islamic Architecture*, 3(1), 171-186.
- Art of Geography. (2016). *The Sense of Place: What is the Sense of Place? From* <http://www.artofgeography.com/info/the-sense-of-place>

- Aydinli, S. and A. Karababa (2013). Bushehr, Iran. In M. Fraser & N. Golzari (Eds.), *Architecture and Globalisation in the Persian Gulf Region* (pp. 243-264). Ashgate, UK: Farnham.
- Bahadori, M., Sanij, A. & Sayigh, A. (2014), *Wind Towers: Architecture, Climate and Sustainability*. Springer, Wiesbaden.
- BioclimaticX. (2016). What is Bioclimatic Architecture? From <http://bioclimaticx.com/bioclimatiarchitecture1>
- Botz-Bornstein, T. (2016). *Transcultural Architecture: The Limits and Opportunities of Critical Regionalism*. London: Routledge.
- Caton, C. and Ardlan, N. (2010). *New Arab Urbanism: The Challenge to Sustainability and Culture in the Gulf*, Final Report Prepared for the Kuwait Program Research Fund. Cambridge, Mass.: John F. Kennedy School of Government, Harvard University.
- Chadirji, R. (1986). *Concepts and Influences: Towards a Regionalised International Architecture*. London: Routledge & Kagan Paul.
- CNN. (2014). Is the Middle East the New Hub of Global Aviation? From <http://www.cnn.com/2014/05/29/travel/qatar-gulf-airports/> (Accessed 5 May, 2016).
- Collins, L. (2012). Book Reawakens Interest in Ancient Palm-Leaf Architecture. *The National*, February 2. From <http://www.thenational.ae/arts-culture/books/book-reawakens-interest-in-ancient-palm-leaf-architecture>
- Di Méo, G. (1991) *L'Homme, la Société, l'Espace*. Paris: Anthropos.
- Duncan, O. and Tomic, S. (2013). Abu Dhabi, UAE. In M. Fraser & N. Golzari (Eds.), *Architecture and Globalisation in the Persian Gulf Region* (pp. 129-154). Ashgate, UK: Farnham.
- Elsheshtawy, Y. (Ed.). (2004). *Planning Middle Eastern Cities: An Urban Kaleidoscope in a Changing World*. London: Routledge.
- Environmental Research and Wildlife Development Agency. (2003). *Environmental Strategy and Action Plans for the Emirate of Abu Dhabi*, Abu Dhabi.
- Falahat, S. (2014). *Re-Imagining the City: A New Conceptualization of the Urban Logic of the 'Islamic City'*. Wiesbaden: Springer
- Fox, J., N. Mourtaba-Saba, & M. Al Murtawa (Eds.). (2006). *Globalization and the Gulf*. New York: Routledge.
- Fraser, M. (2013). The Scale of Globalisation. In M. Fraser & N. Golzari (Eds.), *Architecture and Globalisation in the Persian Gulf Region* (pp. 383-404). Ashgate, UK: Farnham.
- Galantay, E. (1987). Islamic Identity and the Metropolis: Continuity and Conflict. In A. Saqqaf (Ed.), *The Middle East City: Ancient Traditions Confront a Modern World* (pp. 5-24). New York: Paragon.
- Hagan, S. (2013). Reflections on a Wind Catcher: Climate and Cultural Identity. In Fraser, M. and N. Golzari (Eds.), *Architecture and Globalisation in the Persian Gulf Region* (pp. 347-358). Ashgate, Farnham.
- Hakim, B. (1994). The 'Urf' and Its Role in Diversifying the Architecture of Traditional Islamic Cities. *Journal of Architectural and Planning Research* 11 (2), 108-127.
- Hawker, R. (2008). *Traditional Architecture of the Arabian Gulf: Building on Desert Tides*. Southampton, U.K.: WIT Press
- Hellyer, P. and Aspinall, S. (Eds.). (2005) *The Emirates: A Natural History*. Cape Town: Trident Press.
- Jaidah, I. and Bourenane, M. (2010). *The History of Qatari Architecture 1800-1950*. New York: Skira.
- Jumeirah Resorts. Have You Ever Wanted to Experience Medinat Jumeirah in 360°? Now You Can. From <https://www.jumeirah.com/en/hotels-resorts/dubai/madinat-jumeirah>
- Khan, H. (2015). Architectural Conservation as a Tool for Cultural Continuity: A Focus on the Built Environment of Islam. *International Journal of Architectural Research*, 9(1), 1-17.
- Leech, N. (2011). Lessons to be Learnt from Buildings of the Past. *The National*, September 17. From <http://www.thenational.ae/news/world/middle-east/lessons-to-be-learnt-from-buildings-of-the-past> (
- Makower, T. (2013). Doha Renaissance: Msheireb Reborn. In M. Fraser & N. Golzari (Eds.), *Architecture and Globalisation in the Persian Gulf Region* (pp. 359-382). Ashgate, UK.
- Mitchell, K. (2013). Dubai, UAE. In Fraser, M. and N. Golzari (Eds.), *Architecture and Globalisation in the Persian Gulf Region* (pp. 155-172). Ashgate, UK: Farnham.
- McHarg, I. (1971). *Design with Nature*. New York: Doubleday.

- Mohammed, G.T. & Thwaites, K. (2010). An Exploratory and Reflective Process of Urban Spatial Morphology within Social Sustainability: Lessons from Middle Eastern Islamic Tradition. *Digest of Middle East Studies*, 249–267.
- Msheireb Downtown Doha. From <http://mdd.msheireb.com/en-us/home.aspx?ga=1.248943623.1216771423.1471635191>
- Nasr, S. (1980). Towards an Understanding of Architectural Symbolism. In *Towards an Architecture in the Spirit of Islam*. Aga Khan Awards.
- Nour, H. (2015). Reconsidering the Waqf: Traditional Mechanism of Urban Regeneration in Historic Muslim Cities. *International Journal of Architectural Research*, 9(1), 18-30.
- Ouroussoff, N. (Feb. 1, 2007). A Vision in the Desert. *The New York Times*. From http://www.nytimes.com/2007/02/01/arts/design/04ouro.html?_r=1
- Piesik, S. (2012). *Arish: Palm-Leaf Architecture*. London: Thames and Hudson.
- Polese, M. & Stren R. (2000). *The Social Sustainability of Cities: Diversity and Management of Change*. Toronto: University of Toronto Press.
- Ragette, F. (2013). *Traditional Domestic Architecture of the Arab Region*. Fellbach: Edition Axel Menges.
- Relph, E. (1976). *Place and Placelessness*. London: Pion.
- Saleh, M.A.E. (2004). Learning from Tradition: The Planning of Residential Neighbourhoods in a Changing World. *Habitat International* 28, 625-639.
- Seamon, D. & Sowers, J. (2008). A Singular Impact: Edward Relph's Place and Placelessness. In P. Hubbard, R. Kitchen & G. Vallentine (Eds.), *Key Texts in Human Geography* (pp. 43-51). London: Sage.
- Stevens, P. (March 27, 2015). Sandra Piesik Constructs a Food Shelter Using Palm Leaves. *DesignBoom*, From <http://www.designboom.com/architecture/sandra-piesik-3-ideas-ltd-food-shelter-the-sabla-al-ain-unesco-03-27-2015/>
- UAE Interact. Traditional Architecture. From <http://www.uaeinteract.com/culture/architecture.asp>
- Vine, P. (Ed.). (2009). *United Arab Emirates 2009*. London: Trident Press.
- White, L. (1967). The Historic Roots of our Ecologic Crisis. *Science* 155(3767), 203-207.
- Worldwide Fund for Nature. (2014). *Living Planet Report 2014*.
- Yassine, W. & Elgendy, K. (2011). Passive Cooling: Responding to Electricity Demand in the UAE. From <http://www.carboun.com/sustainable-design/passive-cooling-responding-to-uae's-soaring-electricity-demand/>
- Zayed bin Sultan al Nahyan. From <http://www.ourfatherzayed.ae/eng/web.html#Words%20Of%20Wisdom>,
- Zhang, Z. (2006). What is Lived Space? *Ephemera* 6(2), 219-223.



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CONSERVATION OF HISTORIC WATERFRONT TO IMPROVE THE QUALITY OF LIFE IN OLD DHAKA

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Keywords

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Abstract

Liveability of a city is related to the quality of life (QOL) assessed by the impact of the quality of physical environment on liveability and the role of recreation in psychological wellbeing of individuals. Like in major Asian cities, the historic waterfront and architectural heritage of Dhaka are important components of the fabric. Despite diminution, it continues to affect the social life of Old Dhaka residents. In recent years, protection of the waterfront from illegal encroachment and pollution has become a major concern, amidst a lack of understanding of the river's role in improving the QOL of the waterfront residents and the role of community involvement. By comparing waterfronts in similar contexts and through literature review and observations, the authors investigate how the conservation of the historic waterfront can contribute to the improvement of quality of life in Old Dhaka, and suggest ways to protect the riverfront with this objective. Seeing waterfronts as products of human intervention into nature, this paper discusses the socio-political forces that shape this, and investigates how conservation of the historic landscape can improve the QOL of the nearby residents. It uses a case study approach based on documentary research, unstructured and nonparticipatory observations, and interviews with community leaders, environmental activists and local bodies.

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INTRODUCTION

The historic relationship between a city and the water is being altered by urbanisation, new modes of transports, technological advances and economic changes. Port and industrial functions on many historic waterfronts are now extinct, making the areas derelict (Corcoran et al., 2013; Galland & Hansen, 2012; A. Jones, 1998; Oakley, 2011). But as Nagpal and Sinha (2009) observed, urban waterfronts in many developing countries became continuously-lived, high-density, mixed residential-commercial areas with poor infrastructure and amenities. Such waterfronts pose different kinds of challenges to conservation. In the former, dealing with the functionally obsolete structures and spaces is a challenge. Elsewhere, improving the living conditions while ensuring cultural continuity amidst developments is a bigger challenge. Except for a few (Hoyle, 2002; Latip et al., 2012; McCarthy, 2004; Nagpal & Sinha, 2009), little research has been done on waterfront regeneration in the developing countries.

Improving the quality of life (QOL) of community is important for urban regeneration in a developing country (Serageldin et al., 2001). Encompassing various spheres of human lives, it indicates qualitative changes in the lives of the concerned people. Despite the historic waterfronts containing rich heritage, Hoyle (2000) found that such projects paid more attention to commercial interests at the expense of the community's needs. This paper attempts to contribute to the discussions on waterfront regeneration in a developing country by presenting a case from Old Dhaka, the historic core of the capital of Bangladesh. It looks at heritage conservation as part of such regeneration, and its impact on life quality.

Bunce and Desfor (2007) argued that urban waterfronts are products of human manipulation of various natural components over a time, e.g. waterbodies, land formations and ecosystems. According to them, urban waterfront development provides examples of how material forms of nature have been transformed by a range of socio-political decisions. Hence, instead of looking at the historic waterfront of Old Dhaka as a geographic feature, this paper adopts the political ecology approach by looking into the socio-political forces that shape the Old Dhaka waterfront, and investigates how the QOL of nearby residents can be improved by conserving that. The case study includes documentary research, unstructured and nonparticipant observations, and interviews with environmentalists, community leaders and local organisations.

HISTORIC WATERFRONT CONSERVATION

Urban waterfronts have historically been the meeting points for people for trading, religious and transportation purposes. In many cultures, rivers have an important place in the people's lives. Strong associations between water and religion, especially in Hinduism, exemplified by the riverfront cities, e.g. Varanasi and Mathura, show the influence waterfronts have on the lives of people. Although it is less spiritual than utilitarian, rivers have important roles in the Muslim-majority places too. Unlike Varanasi and Mathura, where religious structures dominate the waterfronts, the Lucknow waterfront is a mixture of residences, cremation *ghats* (decks), and open recreational spaces (Nagpal & Sinha, 2009).

Waterfront projects often deals with physical and economic development of derelict waterfront districts; though they may involve some form of architectural conservation, that is not a major objective of these projects. Many such western projects in the 1980s and 1990s included conservation of architectural heritage to create new social facilities, expand employment and provide a foundation for the environmental, economic and social regeneration of many urban areas (A. L. Jones, 2006). Recent projects demonstrated how

waterfront regeneration creates new leisure and tourism opportunities (McCarthy, 2004). According to Gospodini (2000) quality of file:///D:/collected paper/paper collection/waterfront/ujain ghats.htm - hit26#hit26urban space is a prerequisite for economic development of cities; and regeneration projects are a means to achieve that.

But Gunay and Dokmeci (2012), A. Jones (1998) and A. L. Jones (2006) were concerned with standardised design, commercial goals overriding community needs, displacement of traditional water-front activities, and conflict between local residents and new developments. The first three concerns are critical where historical and cultural significance are evident in various tangible and intangible manifestations of unique qualities. The socio-cultural and aesthetic values of the city were not addressed in many riverfront constructions (e.g., in Amsterdam or St. Petersburg). These altered the natural ecology, and disrupted historical human interactions with the waterfronts. However, the Thames Embankment project showed that these could increase people's "cognitive connectivity" despite physical separation (May, 2006).

In the US, waterfront regeneration projects focussed on rehabilitation and redevelopment consisting of a mix of residential, recreational, commercial, service and tourist facilities (A. L. Jones, 2006), driven by real estate. Projects like the London Docklands, the Sydney Darling Harbour or the Lambton Harbour in New Zealand are some of the examples of this mode (A. L. Jones, 2006). These thriving ports or docklands decayed or subsequently became derelict with the change in economic situation and new developments. The solutions the western projects sought were suitable for those contexts with main functions ceasing where conservation of cultural heritage was limited to the adaptive re-use of some historic structures without respecting their surroundings.

Economic considerations were one main driving force for waterfront regeneration in the developing world too. But these were boosting economy with tourism, not real estate (McCarthy, 2004). However, as Hoyle (2002) pointed out, despite their intrinsic motivation, many waterfront projects in Africa and Asia, e.g. the Stone Town (Zanzibar), Lamu Old Town (Kenya), Medina of Essaouira (Morocco), Hoi An (Vietnam), and Melaka and Georgetown (Malaysia), focussed on cultural heritage conservation, and became UNESCO World Heritage sites. With fast growth in Asia, many cities revived their historical connections with the waterfront, protected their architectural and urban heritage, improved the physical environment and infrastructure, and provided the community with economic opportunities. While the waterfront World Heritage sites are good examples of such conservation efforts, none of them started with a regeneration target; the relationship between waterfronts and their associated urban cores made that essential.

Once-polluted Singapore River was restored in a decade-long facelift in the 1970s. It transformed the Boat Quay, commanding the shipping business in the 1860s, to an upscale tourist strip, replacing the dingy barges and derelict warehouses. Motivated by conservation and tourism gains, Singapore eschewed the economic forces that marginalised the local identity (Chang, et al., 2004). Chinese coastal cities having rapid economic transformation have also renewed their waterfronts. In Shanghai, economic plans were incarnated in planning to attract investment (Wu, 2000). Similarly Hong Kong's 'redevelopment, rehabilitation, preservation, and revitalisation' scheme continues efforts to redevelop the Victoria waterfronts against demolition to build high-rises (Rahman, 2010).

Urban densification advancing sustainability by minimizing infrastructure cost, energy consumption and fuel emissions have intensified the planning and building of near-core waterfront areas, and provided justification to 'redevelop' them. Such projects with social impacts, involving complex and contradictory issues and pressures of different actors and views, are

increasingly influencing urban politics. Multifaceted waterfront redevelopment features heritage conservation, environmental awareness, water clean-up, redeveloping rundown areas, restoring houses, upgrading infrastructures, creating public spaces, and promoting culturally compatible tourism (Sairinen & Kumpulainen, 2006). By bringing citizens and visitors back to the water's edge, many revitalised waterfronts provide a tangible sign of the continuing vitality. Hoyle (2002) suggested integrating these with the whole city's context and needs. Key issues include promoting the waterfront as a central rather than a peripheral component; developing infrastructures, human capital and mixed land and water uses, including leisure activities: all are attributes of quality of life.

QUALITY OF LIFE AND HISTORIC URBAN LANDSCAPE

Pickett and Cadenasso (2008) showed that nature in cities contributes to better quality of life. Also the physical and psychological wellbeing of the residents is related to the quality of a physical environment (Berke et al., 2007; van den Berg et al., 2007). "Liveability" depends on the level of QOL as experienced by the residents. According to Timmer and Seymore (2005), it is directly tied to the city aesthetic- the public squares, the neighbourhoods, street network, the architecture, the open spaces and landscaping, which create the identity and communicate the essence of the city.

Economist Intelligence Unit (2005) based QOL Index on health, family life, community life, material wellbeing, political stability and security, climate and geography, job security, political freedom and gender equality. This and Mercer Quality of Living Report (2010) use indicators developed by others. A look into these reveals that though the quality of life depends on many interdependent factors, the general sense of wellbeing influences the perception the most.

A liveable community is socially inclusive and focuses on environmental preservation. 'Liveability' ranges from the aesthetics to economic revitalisation (PLC, 2005), and entails urban design, environmental quality, and human and economic development. Though this focused on reclaiming the economic and social centrality of downtowns, criticisms of socially deadening, poorly designed and environmentally destructive urban sprawl and the destruction of wetland started in the 1990s. Such ecological restoration and environmental rhetoric of liveability authenticate developments and allay fears of the loss of 'nature' and 'community'. Urban political ecology presents a scope to consider a more nuanced analysis of waterfront regeneration beyond a reason for gentrification. Preserving and enhancing the liveability of a place has been seen as a way to retain people near it (Buchwald, 2003).

Quality of life experience by residents is influenced by their psychological wellbeing too. Bradburn (1969) found that social participation has a positive impact on the psychological wellbeing of community members. Thus public spaces for social interactions play a significant role in enhancing the QOL experience, and help maintain a healthy public life, enhance familiarity with local places and people, and provide opportunities to interact with neighbours and local organisations. Social interactions can also contribute towards achieving and maintaining diversity and harmony within a mixed-culture society by providing scope for interaction between communities, enhancing social cohesion and maintaining community identity.

These collectively can also enhance community members' sense of wellbeing. The intimate scale of historic quarters and traditional meeting points supports such interactions. This is emphasised in *The Valletta Principles for the Safeguarding and Management of Historic Cities and Towns and Urban Areas*: "The loss and/or substitution of traditional uses and functions, such as the specific way of life of a local community, can have major negative

impacts on historic urban areas. If the nature of these changes is not recognised, it can lead to the displacement of communities and the disappearance of cultural practices, and subsequent loss of identity and character for these abandoned places (ICOMOS, 2011, p6).

WATERFRONT HERITAGE, SUSTAINABLE DEVELOPMENT AND QOL

Development has to improve the quality of life to be sustained (Newman, 2004). The governments striving to improve quality of life with sustainable development strategies must recognise the value of historic buildings, and encourage their conservation. By contributing to wellbeing and quality of life, heritage helps mitigate the impacts of cultural globalisation, provides impetus for sustainable development, prevent globalisation, sustain diversity, and make economic development (Gražulevičiūtė, 2006; Heritage Counts, 2003, Luxen, 2012). Thus its conservation can be used to maintain and enhance cultural values, not only economic benefits. Reviving historic quarters can be a strategy to improve inefficient developments, neighbourhoods without identity, and worsening life quality. As conservation contributes to improve citizens' quality of life, and provides a social justification, institutions like the World Bank or the European Union agreed to fund conservation of historic neighbourhoods.

Characteristic features of each community reflect diversity and identity of the place and a sense of belonging, loss of which is a major concern in sustaining communities and historic environment. The ongoing privatisation and commercialisation of historic environment and public space erode neighbourhoods and communities, and deteriorate quality of life (Gražulevičiūtė, 2006). A broadened notion of sustainable development acknowledges the importance of non-economic aspects like functional sustainability of public infrastructure, the fiscal sustainability of local government, physical sustainability of the built environment, and cultural sustainability of local heritage (Gražulevičiūtė, 2006). Therefore, sustainable development must protect and rehabilitate ecological systems, improve economic efficiency, and enhance the wellbeing and cultural diversity of the population (Pepper, 2006).

Gražulevičiūtė (2006) determined wellbeing by senses of place, identity, evolution, ownership and community. As heritage shapes them - creating the sense of belonging, of social traditions and of cultural identity, of historic continuity, and fosters ownership and responsibility - the UK adopted conservation as an important strategy for meeting sustainability targets (Heritage Counts, 2003). It established indicators like the number of buildings at risk against which progress towards sustainability is measured; this involves fostering local distinctiveness and sustaining cultural heritage. Another strategy is the Community Plan that lists requirements like a sense of place, a safe and healthy environment with public and green spaces, and a diverse vibrant and creative local culture bringing community pride and cohesion (Heritage Counts, 2003).

Mills and Young (2009) found a strong link between heritage and individual and community wellbeing as people that live near conservation sites benefit. Britain Thinks survey found 80% acknowledging conservation improving their life quality, and 50% rating the impact heritage sites have on their personal quality of life at least 7 out of 10. The transactional and emotional impacts bring people together and improve their perceptions of quality of life. Across the UK, museums and heritage sites participate in improving health and wellbeing, involving mainly families and including all age groups (Atkins, 2016). There are also areas of common interest that encourage collaboration among community organisations, charities and residents' groups, enhancing cohesion and social wellbeing, and thus contributing to quality of life (Museums Association, 2017). Moreover, an increasing heritage awareness among the

lower socio-economic groups and minorities is causing the class gap to drop (Heritage Lottery Fund, 2017).

Samant (2004) found pollution and crowding as pre-eminent concerns of waterfront residents in India where absence of adequate and quality public space is an environmental and health necessity that severely compromises the quality of life. He suggests regaining valuable waterfront by preserving existing traditions and reusing historic buildings. One main task of Social Impact Assessment of such projects is to predict changes to the nature and welfare of a community, by enquiring if the projects would generate segregation and gentrification, and its contribution to improving the life quality (Sairinen & Kumpulainen, 2006). Projects also aim to increase public accessibility, remove barriers, resolve traffic and parking problems, allow all to make use of the recreational potential, increase public participation, and enrich people's perception and experience.

Heritage conservation generated tourism can also be used to increase residents' quality of life and satisfaction (Myunghee, et. al, 2016). In addition to economic benefits, these affect residents' wellbeing, measured by a variety of factors like satisfaction, perceived quality, life domain, happiness, etc. (Sirgy, et. al., 2010). A high quality of life increases residents' positive attitudes toward tourism, which can make sustainable economic and social contributions to the community. The link between tourism and waterfront redevelopment in advanced countries show that while the promotion of the first is an effect of the later, the growth of recreation and tourism industries can in turn instigate waterfront redevelopment (Hoyle, 2002). For many such cases in the developing world, improvement of the quality of urban space and life is a prerequisite to restructuring services towards tourism. This has been reflected in the efforts many cities made to redesign and redevelop decaying waterfronts.

Conservation of historic waterfronts encompasses human development, income, funding, education, training, open information, multi-disciplinary collaboration, resource management, and participation by decision makers and people (Jokilehto, 2010; UNESCO, 2011). The *Nairobi Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas* recognised the irreplaceable context of historic urban areas and their surroundings where activities are an essential element. New urban spaces evolve by transforming historic areas; conservation refers to this to consolidate citizenship and pride and ensure belongingness. It injects new use, and provides an inspiring vision by embodying the history and forming the spiritual or cultural milieu. Long-term sustainability calls for improving lifestyles and the sense of wellbeing by preserving local resources and ecosystems. Sustainability as a conservation and regeneration goal can multiply benefits over time.

THE HISTORIC WATERFRONT OF DHAKA

Dhaka, a major urban centre at the convergent of two large rivers— Buriganga and Shitalakhya (Figure 1), rose to prominence by becoming the capital of Bengal— a Mughal province, in 1608. During the rule of Shaista Khan (1662–79), it grew to a million people over 160 km² (Taifoor, 1965). The city started to decline when the capital was shifted to Murshidabad in 1713. Bradley-Birt (1906) mentioned of apathy in dwindling trade, ruination of once splendid houses and factories, and demise of textile sectors. By 1828, Dhaka's area shrunk 16 times and the population 21 times (D'Oyly & Landseer, 1830). With the establishment of railway linkages in 1888, Dhaka started to re-emerge as a centre of trade, industry, education and culture.

Between 1905 and 1912, Dhaka was made the capital of the new province of East Bengal and Assam. It started to set up civil lines, parks, avenues, and bungalows on the city's northern outskirts (Figure 3); the expansion away from the river still continues. After the British left India in 1947, Dhaka became the capital of East Pakistan, which emerged as the sovereign country Bangladesh in 1971. Currently more than a million people live in Old Dhaka on only 7% of the city's area at three times the density than rest of the city; it is one of the most crowded areas in the world (Barnett et al., 2005).

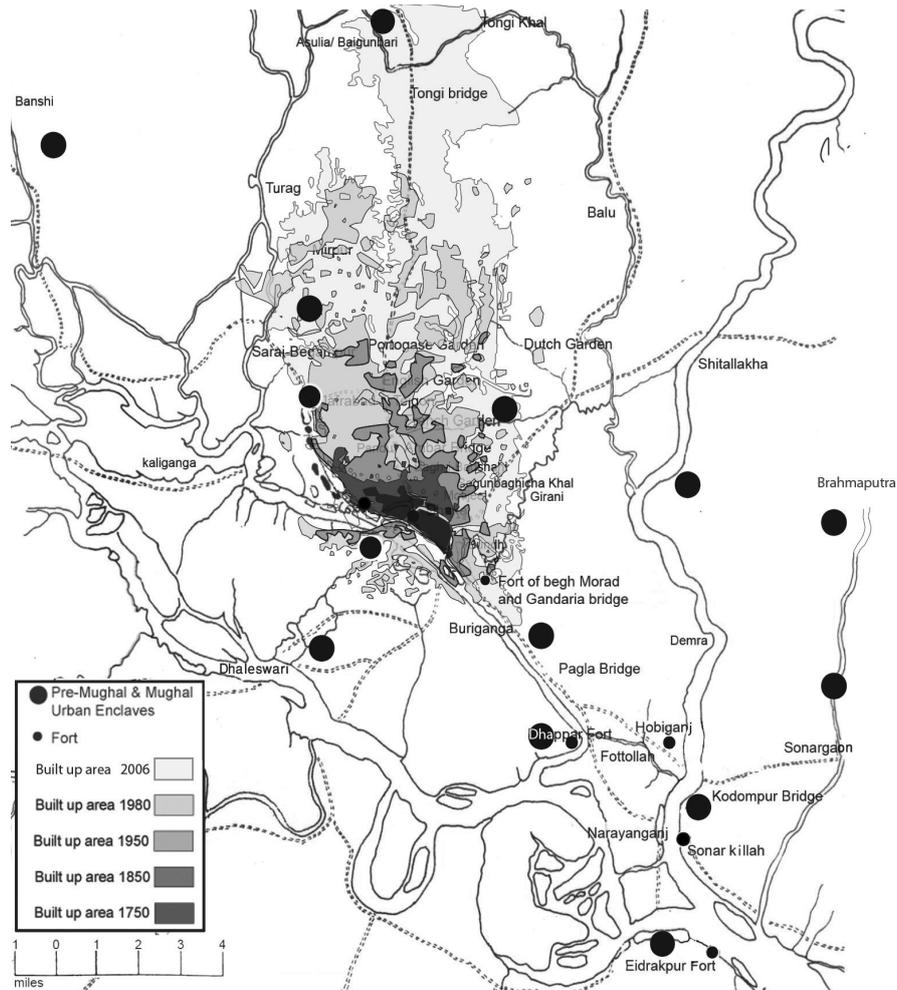


Figure 1. Growth of Dhaka in the context of surrounding rivers and historic settlements (Source: Authors).

Pre-Mughal Dhaka consisted of caste-based *mahallas* (quarters) and bazaars. Houses had front entries from cart roads and service entries from water bodies at the back (Rahman & Haque, 2001). The long narrow shop houses and houses facing inner-courtyards generated a dense form with intimate social spaces. The winding *galis* (lanes), often ending at the riverfront, created street level social spaces. The *mohrs* (nodes) and sudden widening of the *galis* due to placing of built masses were the hangout spaces for all ages (Khan, 1985). *Chawks* (squares) were the larger social gathering and festival spaces (Ferdous & Rahman, 2016). This pattern linking the courtyard, *galis*, *mohrs* and *chawks* still characterises the socio-cultural spaces in Old Dhaka (Figure 3).

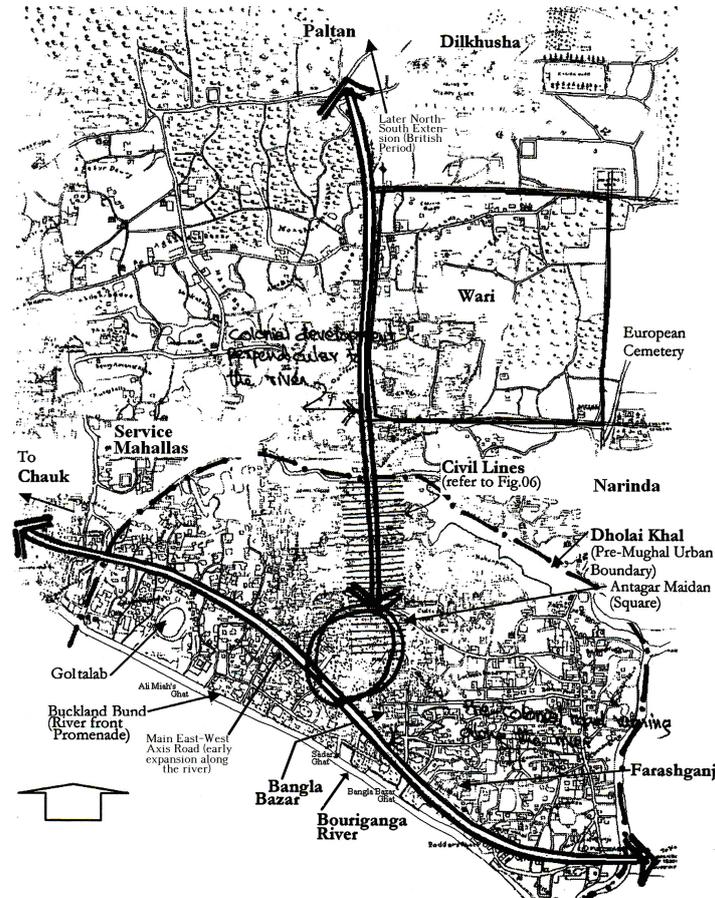


Figure 2. Dhaka's Growth in relation to the River (Source: Authors).

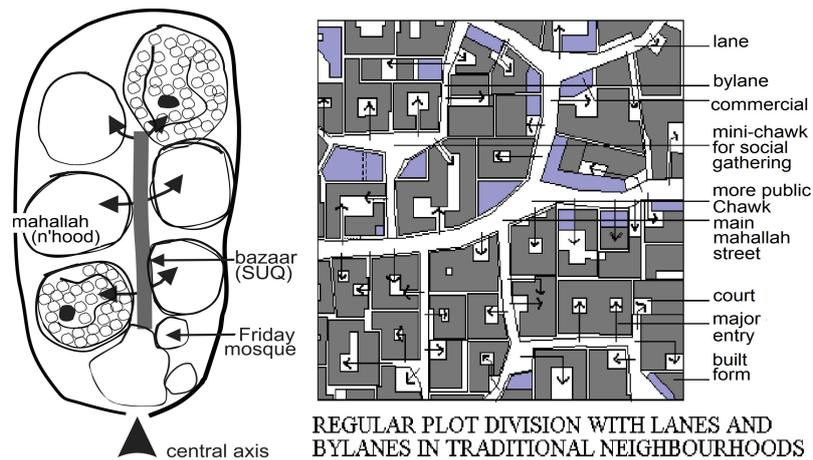


Figure 3. Morphology of Old Dhaka- street pattern and the socio-cultural spaces (Source: Authors).

Islampur Road is the oldest major street that crosses east to west in parallel to the river (Figure 1). Royal, civic and religious structures– some are now conserved, were built along this road (Figure 4 & 5). Tavernier and Ball (1889) noted that Dhaka extended in breadth as luxury houses lined up the river– a sought after area in the city that provided a magnificent view from and towards the city. *Ghats*, significant transitory spaces between the river and the land with commercial, social and religious roles, were the wholesale places of primary

produce, embarkation docks, and sacrificing and cremation points. Diversified formal and domestic activities and regular and seasonal rituals evolved around the river, making sense of the water-oriented morphology (Ashraf, 2010).



- | | | | |
|-------------------------|-----------------------------|----------------------------------|-------------------------------|
| 01. Suspension Bridge | 16. Louis's Nulla | 31. Bibi Mariam Masjid | 44. Imambara (Hussaini Dalan) |
| 02. Northbrook Hall | 17. Nawab Estate Office | 32. Shikh Gurudwara | 45. Musa Khan Masjid |
| 03. Eden High School | 18. Badamtali Ghat | 33. Salimullah Muslim Hall | 46. Curzon Hall |
| 04. Sadarghat | 19. Amiruddin Daroga Masjid | 34. Ahsanullah Engr. College | 47. Dhaka College Laboratory |
| 05. Weisghat | 20. Babubazaar Masjid | 35. Bara Siva Temple | 48. University Senate |
| 06. Ali Miah's Ghat | 21. Mitford Hospital | 36. Greek Tomb | 49. New Secretariat |
| 07. General Post Office | 22. Armenian Church | 37. New (Dhaka) Club | 50. Yemeni Masjid, Mazaar |
| 08. Collector's House | 23. Nawab Yusuf Market | 38. Collector's House | 51. Veterinary Dispensary |
| 09. St. Gregory Church | 24. Lalbag Water Works | 39. Commissioner House | 52. Sultani Masjid |
| 10. Dhaka Municipality | 25. Aurangabad Killa | 40. Kali Mandir | 53. Miran's Nulla |
| 11. Mohsinia Madrasha | 26. Dhakeswari Temple | 41. Shahbaj Khan Masjid & Mazaar | 54. Governor's Bungalow |
| 12. Victoria Park | 27. Salimullah Orphanage | 42. College Play Ground | 55. Dana Dighi |
| 13. Protestant Church | 28. Shahshaheb Bari | 43. Secretariat/ Medical Col. | 56. Zoo |
| 14. Law Court | 29. Muslim Burial Ground | | 57. English Cemetery |
| 15. Kotwali Thana | 30. Military Police Line | | |

Figure 4. Part of Old Dhaka in 1925 showing the location of few heritage buildings (Source: Authors).

Before Dhaka's northward growth had started, many civic, administrative and educational buildings were already built within the old city core, along the river bank, or by converting older structures. Despite the existence of a small settlement since the Mughal period, the expansion on the other side of Buriganga (south) started only after the construction of bridges in late 1980s. Till mid-19th century, waterways around Dhaka, vital for mobility and natural drainage, provided ecological and recreational spaces. However, haphazard growth of the city led to reduced dependence on the waterways in Dhaka (Ahmed, 1986). Over the

years, constricted Buriganga provided new lands along its bank. Informal low-income settlements and small and informal businesses were set on these and on land reclaimed illegally (Figure 6). Furthermore, a dyke constructed along the river's edge in the 1990s connected the city's northwest and the south-western part. Hossain (2013) pointed out that it severed the visual linkage to and from the river, restricted access, and broke the historical relationship of the structures with the river.



Figure 5. Three of the conserved once-on-the riverfront structures, now encircled with incompatible structures and uses— (left): The palace of Ahsan Manjil, (middle) the Lalbag Fort, (right): Satgambudj Masjid. (Source: Authors).

CURRENT STATE OF THE HISTORIC WATERFRONT



Figure 6. Various Encroachment (top) and Detrimental Uses (below) of Riverfront (Source: Authors).

Independence in 1971 brought expansion pressure on land and other infrastructure. According to Mahmud et al (2011), about 18.72 km of water channels and about 76.67 km² of wetland were lost during 1978-2009. Islam (2009) showed that the rate of loss of wetlands (502.5 hectare/yr. during the 1989-99) increased fourfold in 1999-2005. Zoning based city planning did not consider the water bodies that once provided natural drainage and transport corridors, threatening the survival of water and heritage resources. Illegal reclamation of new land, limited access to the riverfront and absence of development control allowed rapid transformation of the riverfront through construction of commercial, storage and manufacturing facilities, encroachment of the waterfront, pollution, etc. Also, dumping of

untreated industrial and domestic waste into the river turned it into an open sewer (The Daily Star, 2010). Yet Buriganga, the 500 metre wide river with a 20-km long bank along the city, maintains a communication with southern Bangladesh, houses various economic activities, and provides an identity to the locals.

Old Dhaka is facing physical deterioration, densification leading to scarcity of open areas, and gradual un-liveability. Its civic and service amenities are over-stressed, and the narrow winding streets are choked with pedestrians, animals and vehicles (Johnson, 1975). Many of the heritage structures are in a dilapidated state because of lack of maintenance or abuse. The riverfront, which had been a place for recreation and festivity, is now encroached upon by warehousing activities and parking of goods carriers; it is also used for dumping commercial waste and building shanties on bamboo stilts. Low-rise residences and business establishments are transformed into multi-storied structures (Mahmud & Rahman, 2016). Consequently, the recognisable social spaces, and patterns of interaction, entertainment and mobility, have changed significantly (Ferdous & Rahman, 2016). Yet, Old Dhaka is preferred by economic migrants searching cheaper accommodation in dilapidated buildings and easy jobs in manufacturing and river-based activities (Imam & Mamoon, 1993).

The Old Dhaka has lost many of its valuable urban spaces; most of the historic structures are either in poor physical state, or have been lost completely. Direct access to many of them from the river is no longer possible. Two most important open public areas– Chawk Bazaar (Mughal era) and Victoria Park (British era), were directly connected to the river. Many of them also had surrounding gardens enhancing the liveability of the area in the past. However, most of them have been encroached upon by contextually unfit structures and uses detrimental to the heritage. Only two partially conserved open areas are around the Ahsan Manjil and in the Lalbagh Fort (Figure 5).

APPROACHES TO OLD DHAKA'S WATERFRONT PROTECTION

Old Dhaka has been long associated with the river that increased its connectivity, and provided a breathing space. It faced the river with prominent structures located on its bank. But the city's growth away from the river, increased commercialisation of the area, dilapidation of existing amenities, and undesirable development and encroachment on the waterfront allowed by weak governance, reduced Old Dhaka's attraction (Mahmud & Rahman, 2016). Thus the highly polluted and inaccessible waterfront is significantly affecting residents' physical and psychological connections. These negative developments permeated into the nearby city areas too. Four different types of fragmented and piecemeal attempts were made by non-governmental organisations (NGOs), government departments and the civil society to address these multi-dimensional and interconnected issues.

1. Awareness creation to the protection of the river was the most prevalent form. Led by environmental activists or NGOs, e.g. Bangladesh Paribesh Andolon (BAPA), Paribesh Bachao Andolon, Dhaka Nagorik, etc., the main aim of actions, e.g. rallies and seminars, is to create public awareness and draw the government's attention to the problems associated with pollution and encroachment. These activities achieved some of their objectives and led to below actions.

2. Legal and administrative actions– In the last few years, several successful court actions initiated by NGOs, e.g. Human Rights and Peace for Bangladesh (HRPB), forced the government to take up programs to clean up the river and remove illegal structures from its banks. Bangladesh Inland Water Transport Authority (BIWTA) and the Ministry of Shipping are involved in these. In the absence of a proper administrative framework and a

management regime, the success of these programs has been short-lived, though produced visible and positive results; many cleared up areas were re-encroached.

3. Technological solution– BIWTA dredged the riverbed in some areas in order to remove the toxic sludge accumulated due to many years of neglect. But if the pollution sources (industries located along the riverbanks, garbage dumped by Dhaka City Corporation, and untreated human waste discharge) are not controlled, the dredging will accelerate the contamination of ground water in the area. There is also a plan to divert water from upstream rivers to increase flow and depth, and flush away the polluted water.

4. Urban planning and heritage protection– Ongoing since 2003, the Dhaka Tannery Estate Project aims to relocate all tanneries from the riverfront. Tanneries, discharging about 22,000 m³ of toxic liquid waste into Buriganga, are considered its biggest pollutants. It is hoped that their removal will improve the water quality significantly.

Little activities on the protection of cultural heritage in Old Dhaka are limited to documentation and awareness creation. The most significant conservation project, incidentally on the waterfront, was that of Ahsan Manjil, restored in 1992. But there has been no attempt to conserve other heritages and historic quarters in the area.

DISCUSSION

Old Dhaka is a continuously-lived bustling place with rich cultural heritage. This warrants an approach to tangible and intangible heritage in development planning for the area. Discussing a similar situation in India, Nagpal and Sinha (2009) pointed out why the revitalisation of Gomti riverfront in Lucknow had to go beyond conservation of buildings, and allowed multiple connections between the built and other forms of tangible expressions of cultural heritage and intangible heritage with the landscape. The UNESCO-promoted notion of Historic Urban Landscape (HUL)¹ emphasises on retaining or re-establishing the significant qualities of and the relationships between the historic, cultural and natural elements of an urban area.

Rivers as such elements are a dominant component of this; the traditional connection between it and the built and cultural environment has to be preserved. To regenerate waterfront, it has to be reconnected to the city life by letting physical, visual or psychological access to the residents and by attracting social and cultural activities (May, 2006). But such attempts are not necessarily based on the historical relation between the different elements highlighted by Jokilehto (2010). While it is possible to achieve the objectives of the HUL conservation through waterfront regeneration, it may end up obliterating many of the historic relationships between urban dwellers and nature unless such projects adopt the concept.

Connectivity is a key measure of built environment's relationship with the river that makes the city attractive and liveable to diversified residents (May, 2006). Professionals other than conservationists, like cultural historians, ecologists, environmentalists, hydrologists, urban designers and urban planners, also consider understanding the connection of a river with

¹ UNESCO defines HUL as "the urban area understood as the result of a historic layering of cultural and natural values and attributes, extending beyond the notion of 'historic centre' or 'ensemble' to include the broader urban context and its geographical setting"(UNESCO, 2011).

various dimensions of its natural, cultural and social settings. May (2006, p. 480) summarised this sense of multi-dimensional connectivity by using a Russian example: “Ecological connectivity attracts human settlement; hydrological connectivity ensures interchange among ethnic groups; and changing political realities dictate a range of propagandistic uses for the junction, from promoting trade and assimilation to defining territorial borders and forging symbolic connections between this geographically marginal but historically vital site and the heart of the Russian state”.

The conservation of historic waterfronts therefore cannot be limited to the protection of only waterfront heritage architecture; rather it requires a holistic and multidisciplinary approach in which all stakeholders and related professionals work together to ensure retention or revival of all forms of connectivity that makes the waterfronts special. The same approach can be applied to the case of Old Dhaka waterfront.

Key Considerations

Dhaka could be a liveable city by responding to its geography and hydrology, sustained by due respect to its built and natural environment, and heritage (Ashraf, 2010). This recalls the memories of the city with promenades, and installs a ‘future’ exploiting the potential of its cultural heritage and natural resources. Rahman and Ara (2016) suggested a framework for the city’s development that focuses on its water urbanism to revitalise the riverfront by using its natural resources, reviving the historical relationship with the river, and making it connected, ecologically sustainable, culturally authentic, and vibrant. It should also stop encroachment and incorporate the existing commercial and manufacturing activities into more eco-friendly development.

The historic waterfronts are deteriorating due to the lack of proper management. Indifference to environmental qualities, negligence in enforcing laws and regulations, lack of understanding of quality of life, incompetence in urban management, etc., are a few of many problems that have made the current management regime ineffective. The regime therefore requires an overhaul to sustain the conservation of Old Dhaka waterfront. Experiences from other historic urban areas show that management is difficult without the participation of the local population. To understand what can lead to an effective riverfront regeneration in Old Dhaka and enhance the QOL of the residents, the following factors could be considered:

Connectivity: To reconnect the waterfront to Old Dhaka residents, the ecological, economic, cultural, historic, and physical connection of the river with the residents, and its potential roles, have to be understood. The Buriganga is still playing an important role in transportation and trading, connecting the city with its south side and the rest of the country (Latip et al., 2012). Though the land transport network has reduced the importance of water-based transportation in the country, the historic role of waterways can be re-established in this riparian landscape by a well-developed water-based transport system. The multi-dimensional benefits of waterways include: a transport mode fitting the topography that can help reduce pressure on land transport, improve the city’s drainage system, reduce pollution and provide an integrated waterfront (Ashraf, 2010). The reconnection of the water with the people will also reorient the city towards the river, ensuring greater attention to its condition.

Accessibility: Access to and quality of waterfront are two other important factors in connecting the waterfront to the residents (Hoyle, 2002; Ashraf, 2010). The first means making the water’s edge physically connected to the waterfront quarters, the river visible from various locations within the city, and the residents perceiving the river accessible. To achieve this in Old Dhaka, it is important to apply all three ways. Riverfront can be made a

destination to all for social and cultural activities by using pedestrian paths, vista, bridges, transit linkages, parks, etc.

A connected ambience with pedestrian access, restricted vehicle movement on the waterfront, land use appropriate for community activities, riverfront facilities for social interaction, maintaining traditional use of the river, and development control to enhance river views could revive pedestrian scale of Old Dhaka. While much of these measures can augment psychological access, unless the river water quality is improved, it will not attract the residents. Therefore, a healthy river should be maintained by removing or treating all sources of pollution, improving the natural environmental quality along the river, and ensuring a balanced ecology.

Heritage Conservation: One of the ways of creating community spaces along the waterfront and reconnecting the place to its historic roots is to conserve the historic waterfront buildings and reintegrate them with their settings. Such conservation also gives a sense of continuity and identity, which in turn lift the sense of wellbeing. Conservation of cultural heritage of a place will lead to better care of one's own environment through social engagement. However, conservation of HUL requires an understanding, maintenance or reestablishment of the connections between various natural and cultural elements. Otherwise a monument centric approach may lead to a monumental past-conserved buildings with little or no connections to their settings, an empty past-conserved places with no contemporary use, or a simulated past-imitation of the past with no value (O'Brien, 1997).

Jones (2006) provides examples of projects worldwide where conservation of cultural heritage in waterfront regeneration was limited to adaptive reuse of some historic buildings for commercial purpose only. These projects displaced the waterfront-based traditional activities, making them economically and socially unsuitable for the original residents. Thus one of the challenges of Old Dhaka waterfront conservation would be to ensure the continuity of traditional activities and control gentrification. Provisions of amenities and new uses of historic buildings will have to serve the community first. Riverfront preservation will not mean exclusion or eviction of storage, inland transport, wholesale markets, workshops, and low-income housing. It should rather focus on creating liveability by retaining and enhancing the beneficial activities and spaces.

Dhaka's heritage is rooted in its urban spaces, architecture and cultural practices. The distinct dense and rich tissue of Old Dhaka, scale and nature of public and private spaces, the intricate network of roads, alleyways and built forms, and rich architecture, can be used to improve the liveability, by promoting and using proper conservation and restoration, and by ensuring or improving their visibility and accessibility. Riverfront planning entails regulating diversity of functions with policy to encourage multiplicity of functions and participative activities (Walzer, 1995). Such mixed-use should provide an effective line of defence for conserving the riverfront and make proper reuse of heritage elements—a component of the area's quality of life, fostering the wellbeing of residents and visitors (Mercier, 2003).

River Protection: As Dhaka's heritage also comprises the topographical features forming a unique morphology, it is essential to recognise and protect the natural heritage against the effects of urbanisation. The non-articulated edges between the rivers and the city could be exploited to make it liveable, integrating the normative values of environmental protection, flood control, transport and production facilities, recreational and visitor offerings, public health and amenity. The reinvigorated river could become the sustainable life-blood while the regenerated riverfront heritage could offer amenities to the whole city.

Community Participation: Any conservation-regeneration project in a living city has to involve the local people to protect the heritage, especially when “problem defined by the political actors were misaligned with the community’s needs” (Morgia & Vicino, 2013). Holod (1980) found that in many countries, conservation with no matching social action put the monuments at risk. Rather than withholding power, the government should place legal measures, guidelines and incentive for the community, private capital, and the activists to create a congenial environment. Globally the community initiatives and activism have advanced the cause of conservation by complementing government efforts, sustaining projects (Cantacuzino, 1990). Therefore, for sustainable conservation of urban heritage, people and private voluntary and community based organisations must be empowered and facilitated to participate.

Participatory planning process opens new perspectives for strengthening the social fabric that allows people to improve QOL. It ensures control over mobilisation of community resources and allocation of project resources for development; it is also important for implementation, monitoring and evaluation of project activities. However, people will not commit to a program that may appear detrimental to their interests; and without such commitment, conservation may not be sustained. Alam (2003) showed that Old Dhaka residents were generally willing to contribute time and money to clean up the river. Engaging the local residents in protecting the waterfront should not be a problem as community feeling in Old Dhaka is very strong in examples of community management. However, an absence of a proper government mechanism to involve the residents in such matter needs to be addressed before such participation can become meaningful.

CONCLUSION

This paper looked at the possible impact of waterfront conservation on the QOL in Old Dhaka. It is found that despite the loss of many environmental and cultural qualities of the waterfront due to poor urban planning and management, the revival of historical connection between the Buriganga River and the local residents through conservation will improve the physical environment of the area, and provide the residents a much-needed breathing space. This needs to integrate the spatial and social assets to retain and augment its splendour and heritage, enhance its topographical wealth, strengthen its economic base, protect the environment, all of which will improve QOL. Waterfront conservation will accommodate urban and community activities, develop mobility, harmonious living and amenities of a modern city, and protect the water and heritage resources from destruction.

The unregulated growth and encroachments in Old Dhaka have considerably reduced the social interaction spaces in the last few decades. With little public space left in the highly dense Old Dhaka, the waterfront can cater for social interaction and recreation space. As increased and enhanced scope for social interaction and recreation helps improve psychological wellbeing directly related to the quality of life experience of the residents, the conservation of the historic waterfront in Old Dhaka will no doubt improve the quality of life of the residents.

Although it is possible that the conservation of the historic waterfront in Old Dhaka may or may not have significant effect on the key factors that affect the quality of life experience, e.g. the sense of security– both personal and economic, health, equity, etc. But that historic waterfront conservation should focus on the improvement of the QOL of the people and that the improvement requires a holistic and multi-disciplinary approach can bring positive changes in the approaches to problem solving in Old Dhaka. This understanding can also be

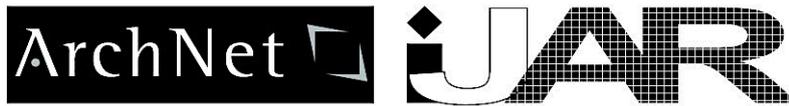
extended to waterfront regeneration in other historic cities in a similar socio-economic context as the issues are also similar in such places.

REFERENCES

- Ahmed, S. U. (1986). *Dacca: A Study in Urban History and Development*. Riverdale, MD: Curzon Press.
- Alam, M. K. (2003). *Cleanup of the Buriganaga River: Integrating the Environment into Decision Making* (Doctor of Philosophy PhD Dissertation). Murdoch University, Perth. Retrieved from <http://researchrepository.murdoch.edu.au/22/2/02Whole.pdf>
- Ashraf, K. K. (2010). A New Dhaka is Possible. *Forum*, 3.
- Atkins, R. (6.9.2016). Museums Take Part in Health and Wellbeing Week. Museums Association. Retrieved from <http://www.museumsassociation.org/museums-journal/news/03032017-health-and-wellbeing-week>
- Barnett, C., Cloke, P., Clarke, N., & Malpass, A. (2005). *Antipode*, 37(0), 23.
- Berke, E. M., Koepsell, T. D., Moudon, A. V., Hoskins, R. E., & Larson, E. B. (2007). Association of the Built Environment with Physical Activity and Obesity in Older Persons. *American Journal of Public Health*, 97(3), 486-492.
- Bradburn, N. M. (1969). *The Structure of Psychological Well-Being*. Chicago: Aldine Pub. Co.
- Bradley-Birt, F. B. (1906). *The Romance of an Eastern Capital*. London: Smith, Elder & Co.
- Buchwald, E. (Ed.). (2003). *Towards the Liveable City*. Minneapolis: Milkweed Editions.
- Bunce, S., & Desfor, G. (2007). Introduction to "Political ecologies of urban waterfront transformations". *Cities*, 24(4), 251-258.
- Cantacuzino, S. (1990). A Policy for Architectural Conservation. In A. H. Imamuddin & K. R. Longeteig (Eds.), *Architectural and Urban Conservation in the Islamic World*. Geneva: Aga Khan Trust for Culture.
- Chang, T. C., Huang, S., & Savage, V. R. (2004). On The Waterfront: Globalization and Urbanization in Singapore. *Urban Geography*, 25(5), 413-436.
- Corcoran, T., Perno Iii, A., & Greenberg, J. (2013). A river runs through them. *Economic Development Journal*, 12(2), 37-43.
- D'Oyly, C., & Landseer, J. (1830). *Antiquities of Dacca*. London: John Landseer.
- Ferdous, F., & Rahman, M. (2016). Chawk Bazar and Shankhari Bazaar: Morphology of two organically developed cultural spaces of Old Dhaka. In M. Rahman (Ed.), *Dhaka- an Urban Reader*. Dhaka: University Press, 25-51.
- Galland, D., & Hansen, C. J. (2012). The Roles of Planning in Waterfront Redevelopment: From Plan-led and Market-driven Styles to Hybrid Planning. *Planning Practice & Research*, 27(2), 203-225.
- Gospodini, A., 2000. European cities in competition and the 'uses' of urban design. *Journal of Urban Design*. July, 18–23.
- Gražulevičiūtė, I. (2006). Cultural Heritage in the Context of Sustainable Development. *Environmental Research, Engineering and Management*, 3(37), 74-79.
- Gunay, Z., & Dokmeci, V. (2012). Culture-led Regeneration of Istanbul Waterfront: Golden Horn Cultural Valley Project. *Cities*, 29(4), 213-222.
- Heritage Counts. (2003). The State of the Historic Environment. Retrieved from <http://www.english-heritage.org.uk>
- Heritage Lottery Fund. (2017). 20 Years in 12 Place. Retrieved from http://www.hlf.org.uk/about-us/research-evaluation/20-years-heritage#.VSvXR_nF_ul
- Holod, R. (1980). *Conservation as Cultural Survival*. Paper presented at the Seminar on Architectural Transformations in the Islamic World, Istanbul.
- Hossain, M. S. (2013). Strategies to integrate the Mughal settlements in Old Dhaka. *Frontiers of Architectural Research*, 2(4), 420-434.
- Hoyle, B. (2000). Global and Local Change on the Port-city Waterfront. *Geographical Review*, 90(3), 395-417.
- Hoyle, B. (2002). Urban waterfront revitalization in developing countries: the example of Zanzibar's Stone town. *Geographical Journal*, 168(2), 142-162.
- ICOMOS. (2011). The Valletta Principles for Safeguarding and Managing Historic Cities, Towns and Urban Areas. Retrieved from

- http://www.international.icomos.org/Paris2011/GA2011_CIVVIH_text_EN_FR_final_20120110.pdf
- Imam, S. R., & Mamoon, M. (1993). Architectural Conservation in Practice. In A. H. Imamuddin (Ed.), *Architectural Conservation, Bangladesh*. Dhaka: Asiatic Society of Bangladesh.
- Islam, I. (2009). *Wetland of Dhaka City: A Study from Social Economic and Institutional Perspective*. Dhaka: AH Development Publishing House.
- Johnson, B. L. C. (1975). *Bangladesh*. London: Henimann Educational Books.
- Jokilehto, J. (2010). Notes on the Definition and Safeguarding of HUL. *City and Time*, 4(3). Retrieved from <http://www.ct.ceci.br.org>
- Jones, A. (1998). Issues in Waterfront Regeneration: more sobering thoughts - A UK Perspective. *Planning Practice & Research*, 13(4), 433-442.
- Jones, A. L. (2006). On the Water's Edge: Developing Cultural Regeneration Paradigms for Urban Waterfronts. In M. K. Smith (Ed.), *Tourism, Culture, and Regeneration* (pp. 143-150). Oxfordshire: CABI Publishing.
- Khan, I. M. (1985). *Liveability of Old Dhaka: Evolving Residential Patterns in Mahallas*. Paper presented at the Regionalism in Architecture- Proceedings of the 2nd Regional Seminar in the Series: Exploring Architecture in Islamic Culture, Dhaka.
- Latip, N. S. A., Shamsudin, S., & Liew, M. S. (2012). Functional Dimension at 'Kuala Lumpur Waterfront'. *Procedia - Social and Behavioral Sciences*, 49(0), 147-155.
- Luxen, J-L. (9.1.2012). Heritage preservation and quality of life. Heritage News. Retrieved from http://www.cultureindevelopment.nl/News/Discussing_Culture_and_Development/1420/Heritage_preservation_and_quality_of_life
- Mahmud, M. S., Masrur, A., Ishtiaque, A., Haider, F., & Habiba, U. (2011). Remote Sensing & GIS Based Spatio-Temporal Change Analysis of Wetland in Dhaka City, Bangladesh. *Journal of Water Resource and Protection*, 3(11).
- Mahmud, S. & Rahman, M. (2016) Preserving Old Building by Transformation of Domestic Spaces: a case of Old Dhaka. In M. Rahman (Ed.), *Dhaka- an Urban Reader*. Dhaka: University Press. 99-125.
- May, R. (2006). "Connectivity" in urban rivers: Conflict and convergence between ecology and design. *Technology in Society*, 28(4), 477-488.
- McCarthy, J. (2004). Tourism-related waterfront development in historic cities: Malta's Cottonera Project. *International Planning Studies*, 9(1), 43-64.
- Mercer. (2010). Quality of Living worldwide city rankings 2010 – Mercer survey. Retrieved from http://www.mercer.com/qualityoflivingpr#City_Ranking_Tables
- Mercier, G. (2003). The Rhetoric of Contemporary Urbanism: A Deconstructive Analysis of Central City Neighbourhood Redevelopment. *Canadian Journal of Urban Research*, 12, 71-98.
- Mills, S. & Young. J. (2009). Impact of HLF Funding, 2005-2009 Report. London: BDRC.
- Morgia, L., & Vicino, T. J. (2013). Waterfront politics: revisiting the case of Camden, New Jersey's redevelopment. *Urban Research & Practice*, 6(3), 329-345.
- Myunghee, M. J., Myunghwa, K. & Desmarais, E. (2016). Residents' Perceived Quality of Life in a Cultural-Heritage Tourism Destination. *Applied Research Quality Life*, 11, 105-123.
- Nagpal, S., & Sinha, A. (2009). The Gomti Riverfront in Lucknow, India: Revitalization of a Cultural Heritage Landscape. *Journal of Urban Design*, 14(4), 489 – 506.
- Newman, P. (2004). Sustainability and global cities. *Australian Planner*, 41(4), 27-28.
- O'Brien, C. (1997). Form, function and sign: Signifying the past in urban. *J. of Urban Design*, 2(2), 163.
- Oakley, S. (2011). Re-imagining City Waterfronts: A Comparative Analysis of Governing Renewal in Adelaide, Darwin and Melbourne. *Urban Policy & Research*, 29(3), 221-238.
- Partners for Liveable Communities. (2005). America's Most Liveable Communities. Retrieved from <http://www.mostliveable.org>
- Pepper C. (10. 02. 2006). Sustainability of Cultural Heritage and Landscapes. Retrieved from <http://www.sustainability.dpc.wa.gov.au/docs/BGPPapers/CoralPepperHeritage.pdf>.
- Pickett, S. T. A., & Cadenasso, M. L. (2008). Linking ecological and built components of urban mosaics: an open cycle of ecological design. *Journal of Ecology*, 96(1), 8-12.
- Rahman, M., & Ara, Y. (2016). [Re]Structuring Dhaka through Water Urbanism: Visions, Challenges and Prospects. In M. Rahman (Ed.), *Dhaka 2012: An Urban Reader* (pp. 101-122). Dhaka: University Press Limited.

- Rahman, M. (2010). Economy, Environment, Culture: Global Dreams by Two Asian Cities. *Archnet-IJAR*, 4(1), 20-41.
- Rahman, M., & Haque, F. A. (2001). Multiple Courtyard Mansions of Dhaka: Form and Context. *Traditional Dwelling and Settlements Review*, 12(2), 57-71.
- Sairinen, R. & Kumpulainen, S. (2006). Assessing social impacts in urban waterfront regeneration. *Environmental Impact Assessment Review*, 26(1), 120-135.
- Samant, S. (2007). Manifestation of the urban public realm at the water edges in India—a case study of the ghats in Ujjain. <mailto:swinal.samant@nottingham.ac.uk> *Cities*, 21(3), 233-253
- Serageldin, I., Shluger, E., & Martin-Brown, J. (2001). *Historic Cities and Sacred Sites: Cultural Roots for Urban Futures*. Washington DC: World Bank.
- Sirgy, M. J., Widgery, R. N., Lee, D. J., & Yu, G. B. (2010). Developing a measure of community well-being based on perceptions of impact in various life domains. *Social Indicators Research*, 96, 295–311.
- Taifoor, S. M. (1965). *Glimpses of Old Dhaka: a short historical narration of East Bengal and Aassam*, Dhaka: S. M. Perwez.
- Tavernier, J. B., & Ball, V. (1889). *Travels in India*. London: Macmillan & Company.
- The Daily Star. (03.02.2010). Stop dumping in Buriganga: Authorities urged at citizens' rally. *The Daily Star*. Retrieved from <http://www.thedailystar.net/newDesign/news-details.php?nid=124651>
- The Economist. (2005). The Economist Intelligence Unit's quality-of-life index. Retrieved from http://www.economist.com/media/pdf/quality_of_life.pdf
- Timmer, V., & Seymoar, N.-K. (2005). The World Urban Forum 2006: Vancouver Working Group Discussion Paper: The Livable City. http://www.cscd.gov.bc.ca/lgd/intergov_relations/library/wuf_the_livable_city.pdf
- UNESCO. (2011). Recommendation on the Historic Urban Landscape, including a glossary of definitions. Retrieved from <http://whc.unesco.org/en/activities/638>
- van den Berg, A. E., Hartig, T., & Staats, H. (2007). Preference for Nature in Urbanized Societies: Stress, Restoration, and the Pursuit of Sustainability. *Journal of Social Issues*, 63(1), 79-96.
- Walzer, M. (1995). Pleasures and costs of urbanity. In P. Kasinitz (Ed.), *Metropolis: Center and Symbol of Our Times* (pp. 320–330). New York: University Press.
- Wu, F. (2000). The Global and Local Dimensions of Place-making: Remaking Shanghai as a World City. *Urban Studies*, 37(8), 1359-1377.



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SCOTLAND'S APPROACH TO PARTICIPATORY PLANNING: CHARACTERISING THE CHARRETTE

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Keywords

charrette;
participation;
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Abstract

Since 2010 the 'charrette' has been promoted by the Scottish Government as an effective approach to community and stakeholder involvement in participatory design; yet, there has been little opportunity to formally reflect on the mainstreaming programme that has now delivered sixty charrettes across Scotland. This paper presents a preliminary review of the programme by focusing on charrette commissioning, construction and delivery as detailed in post-completion reports with the overall purpose to better understand what constitutes a Scottish charrette. For this study the researcher identified forty-six reports published between 2011 and 2016. A conceptual framework guided report content analysis, which found eight charrette characteristics with sufficient content to derive subcategories. These characteristics and subcategories broadly describe charrette design and implementation. To conclude, this analysis is used to develop a charrette-descriptor table, which provides a preliminary means to distinguish between different charrette-approaches found in Scotland.

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INTRODUCTION

Involving multiple stakeholders in spatial and community planning has become a salient concept with decades of legislative support in the United Kingdom (Jenkins, 2002). Many public services now lay claim to having been longstanding supporters of this participatory turn (Bishop, 2015); of which, planning is one. The 1969 Skeffington Report is often evidenced as one of the earliest national level documents to consider public involvement strategies (Baker et al., 2007; Damer et al., 1971). Since then, a plethora of techniques have come to the fore (Sanoff, 2000), and the Scottish Government in recent years endorsed the 'charrette' as an effective participatory design tool to generate strategies for community development (Scottish Government, 2010a, 2011b). The term 'charrette' derives from the Ecole des Beaux-Arts, in which architecture students would hurriedly work until the 'little cart' came to collect their drawings for the examiners. The term has since been used to connote a sense of urgency, which frames the format of a typical charrette as it is approached today (Walters, 2007). The tool is a participatory 'model' yet malleable enough in the sense that its process constitutes a series of other participatory mechanisms, which can be matched to suit different scenarios (Sanoff, 2000).

The model that was introduced to Scotland in 2010 was developed by New Urbanism's co-founder, Andres Duany as part of Duany Plater-Zyberk (DPZ) & Company. The charrette is often their go-to approach to community participation (Grant, 2006), which typically lasts between four to seven days and involves a multidisciplinary team establishing a temporary design studio within the study area. The team will work collaboratively with community members and key stakeholders in a series of interactive workshops, often producing a masterplan that has been developed through a series of short feedback loops (Sanoff, 2000; Walters, 2007). The compressed format has been lauded over other communicative approaches that may last weeks or months. Proponents argue these feedback loops condense the time between input and design to just hours, so not only do participants exercise more influence they can watch a transparent process unfold, thus fostering greater trust (Lennertz, 2003; Walters, 2007). Benefits of this approach therefore do not centre only on the physical; there is a commitment to social goals embedded in New Urbanism (Talen, 2002), and communicative processes more generally.

Jurgen Habermas, who many communicative theorists are indebted to, also advocated collaborative discursive approaches to challenge the shortcomings observed in representative democracy (Bond, 2011). These approaches challenged modernist thinking that valued expert epistemologies, and instead believed knowledge to be something co-constructed; not a collation of ideas but rather that communication has the power to build shared meanings through reasoning and deliberative exchange (Brand et al., 2007; Innes et al., 1999). Equally, the charrette's consensus-seeking nature depends on feedback loops and an iterative dialogue to not only acknowledge perspectives but ultimately create new shared meaning, leading to a widely endorsed strategy (Lennertz, 2003; Sanoff, 2000).

However, there is a lack of research into the charrette, and some speculation into the efficacy of the model's practical application and democratic commitment (Bond et al., 2007; Grant, 2006; MacLeod, 2013). Since the model was first introduced to Scotland sixty charrettes have been facilitated through the Charrette Mainstreaming Programme (CMP); many generating charrette reports with local strategies for the participating communities (see Appendix A) (Scottish Government, 2015). Thus far, there appears little formal reflection has been given to the programme or its outputs i.e. post-charrette completion reports (Wheeler, 2016). In response, this will be the focus of the paper as it presents analysis from forty-six charrette reports that were produced between 2011 and 2016. The purpose is to provide

insights into how charrettes are commissioned, constructed and delivered within the context of Scotland following their introduction in 2010.

Charrettes in Scotland: An Overview

In 2008 the Council of Economic Advisors reported Scotland's development was too often of 'mediocre or indifferent' quality (Scottish Government, 2008, p. 44). It presented a challenge for the planning system to create better, quality places; since, there has been a concerted effort on behalf of the Scottish Government to address this (Lawlor, 2010). The Scottish Sustainable Communities Initiative (SSCI), launched in 2008, intended to raise place-making standards through eleven exemplar projects. These exemplar projects were selected because they were thought capable of leading-the-way in sustainable community design (Scottish Government, 2011a). In 2010 three out of eleven were involved in the *Charrettes Series*. As part of the SSCI, and with support from the Scottish Government, DPZ worked on masterplans for three projects; each underwent a charrette. The subsequent Charrette Series Report (2010a) heralded the method so successful it suggested the model should be mainstreamed.

In 2011-2012 three projects were commissioned through the newly launched CMP. Between 2012 and 2013 another three projects were selected, this time to inform the emerging Local Development Plan (LDP) for the area. In its third year the programme provided part-funding for eleven charrette projects that focussed either on informing the LDP or town centre regeneration. A further fourteen charrettes were commissioned between 2014-2015 with the same criteria and part-funding structure. However, LDP and town centre regeneration criteria were disbanded in the programme's fifth year, opening up the application to community organisations, and those focussing on linking community and spatial planning or town centre action plans to community plans. In 2016-2017 the charrette fund was accompanied by a partner programme called 'Activating Ideas', sharing a £300,000 project fund. Out of the nineteen projects twelve were charrettes commissioned by either councils or third sector organisations¹.

In line with the charrette application guidelines the majority of these charrettes have produced a post-charrette report documenting the process and what it generated (Scottish Government, 2011b). Whilst others have analysed outputs of participatory exercises for their *quality* (Margerum, 2002), which is not the purpose here, a similar content analysis approach was undertaken to better understand the Scottish charrette, as a participatory mechanism. Similar to Margerum (2002) criteria for output-analysis was defined in advance. A conceptual framework for comprehending content was drawn from a literature review of empirical assessment case-studies and wider literature on participation (see Figure 1).

Conceptual Framework for Analysing Charrette Reports

The participatory turn has created new opportunities for engagement (Gaventa, 2004), some of which have been assessed although there remains little 'academic commentary on

¹ In addition to the mainstreaming programme local authorities have commissioned their own charrettes (Angus Council, 2017), and alternative mini-charrettes have been delivered by volunteers on considerably smaller budgets (Ede, 2017).

charrettes' (Bond et al., 2007, p. 455). Scholars exploring the efficacy of public participation in practice have unearthed a series of different mechanisms each with different process constructs and supporting conditions. It was from the variations between these cases and discussions in broader participation literature that a conceptual framework for charrette-report content analysis was derived. The first category on the framework centred on case-complexity. It is now widely understood that participation spaces do not unfold in a vacuum but are a product of the socio-political structures surrounding them, and fundamentally by the people that initiate them (Philip Allmendinger et al., 2002; Gaventa, 2004). For example, McAreavey (2009, p. 313) highlights the 'complexity of the governance model' in her study as the participatory initiative sits within a complex web of actors, and Pacione (2012) lists the 'major agents' typically involved in a local decision-making process within the Scottish context.

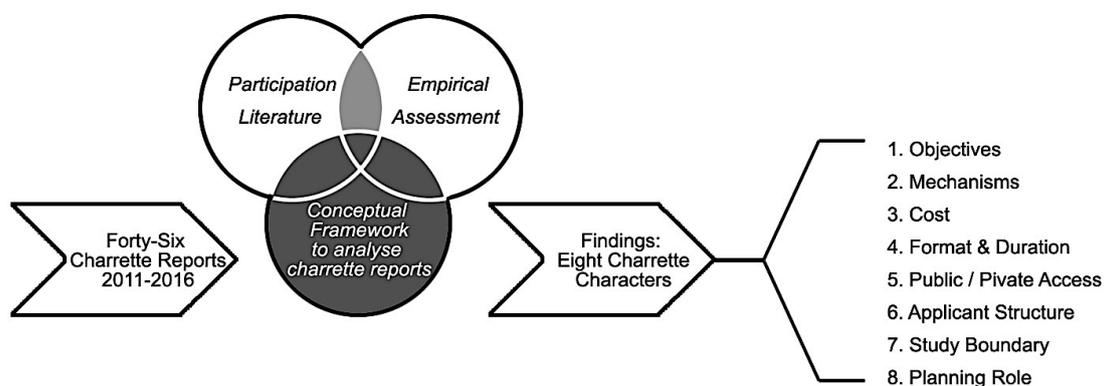


Figure 1. Building a conceptual framework to analyse charrette reports (Source: Author).

The second variation observed was participatory project *length*. As some initiatives assessed continued for several years (Blackstock et al., 2007), others were short-lived targeted exercises delivered in charrette-like fashion (Bond et al., 2007; Hopkins, 2010). Although the charrette format is somewhat predetermined (Walters, 2007), Sanoff (2000), in wider participation literature, describes its variations when adapted to meet different project objectives.

Third, *cost* of participatory exercises has been discussed in the wider literature concerning both its monetary value and what it costs participants and organisers in time, effort and preparation (Blackstock et al., 2007; Conley et al., 2003). Given Rowe and Frewer (2004) suggest evaluation is necessary 'to ensure the proper use of public or institutional money', and the financial penalties mentioned in Mouat et al.'s (2013) failed project, charrette cost became an important component on the conceptual framework.

Fourth, Brand and Gaffikin (2007) observe in their review of participatory planning processes, at various governance levels, future visioning exercises generally create more 'fanciful ideas that are not rooted in any real options for practical delivery' compared with those tied to legislative bases. Other participatory spaces were highly formalised, and were created from legislative or legal proceedings (Aitken, 2010; Cunningham et al., 2008). Therefore, understanding the relationship between the charrette and relevant *statutory* processes in the wider regional context was another important factor.

Fifth, participatory projects had been created for a number of different reasons; some stated democratic commitment and participatory objectives whilst others focussed on project objectives only. For example, Hopkins (2010, p. 60) chose a case study that explicitly stated

'equity among citizens and stakeholders' and building confidence was an important part of the youth conference Barnes et al (2004) observed. At the same time, others were primarily pragmatic (Aitken, 2010; Cunningham et al., 2008).

The sixth variation is participatory mechanisms. Authors Petts and Leach (2000), Leach and Wingfield (1999) and Sanoff (2005) among others have separately described participation 'typologies'. Typologies range from awareness to consultative to deliberative mechanisms; however, since then Baker et al (2010) expanded this categorisation to include in-depth or indirect, long-term or immediate, and coming-to or going-to mechanisms. The latter is thought to promise more innovative engagement forms as facilitators create opportunities out with formally organised, participatory spaces. Considering the charrette is an aggregate of other mechanisms this theme was included in the conceptual framework.

Lastly, project complexity is thought to increase with size; Alexander (2002, p. 232) suggests 'the smaller the plan area is, the more homogeneous it is likely to be'. Projects in the empirical cases also varied, for example Brownill & Carpenter's (2007) study looked into the redesign of a two-mile stretch of road, whilst other participatory initiatives considered growth management for an entire region (Blackstock et al., 2007). Nevertheless the former's smaller study boundary could still be considered complex as it was characterised by its diverse demographic. In response, the conceptual framework aimed to explore charrette project scale.

In short, these six themes constituted the conceptual framework for comprehending charrette report content (see Table 1 for an example).

RESEARCH DESIGN

Content analysis of forty-six charrette reports was guided by the conceptual framework described above. It is worth noting what was considered a *charrette report* within the context of this research. The Scottish Government requires a post-charrette report and although the majority are publicly available and labelled as such, details of the charrette process and its findings have been found in other document types. For example, Tirie (2015-2016) produced two charrette outputs including a Socio Economic Study and a Strategy Report; whilst Priesthill and Househillwood (2015-2016) charrette created a short film documenting the charrette. A minority of cases had little or no post-completion documentation publicly available. Therefore, these charrettes and those with unique output-types were cross referenced with the Scottish Government and additional files obtained where possible. After sourcing traditional reports, and unique output-forms a total of forty-six charrettes were included in this study given there was a sufficient amount of post-charrette output material. An iterative process of primary manual coding guided by the conceptual framework, and its questions, determined initial themes and concepts. More detailed coding aided by NVivo software was used to determine the eight charrette characteristics, which had sufficient content to then derive subcategories (Creswell, 2013; Tracy, 2012).

However, the coding process highlighted charrette reports often had inconsistent information on charrette costing and study-boundary size varied greatly. In response to the first, a request was made to the Scottish Government who replied in kind with a list containing their awarded amount to each of the sixty charrettes involved in the CMP (Scottish Government, 2016). To understand the spread of charrette donations, and identify those that lie to either extreme of the average, standard deviation was used.

Table 1: Conceptual framework for content analysis of charrette reports (Source: Author).

Conceptual Framework for Analysis	Charrette Description
Complexity Who is hosting the charrette? What governance levels were involved?	<i>Applicant: Planning Authority. Three levels (planning authority, local & central government).</i>
Length How long did the charrette last? How was the charrette structured?	<i>Total: five days. 2+2+1 format. Additional pre-charrette activities in advance.</i>
Cost Who funded the charrette? What was the charrette's total cost?	<i>Match funding: planning authority & local authority. Donors listed; but no costs given.</i>
Statutory / Non-statutory How did the charrette align with other local planning efforts? Describe planning context of wider region.	<i>Charrette will inform the Main Issues Report. Intended to shape Local Development Plan at an early stage.</i>
Objectives What was the participatory rhetoric in report? What was the purpose of the charrette?	<i>Social goals: build new community links; develop shared understandings. Project Objective: Masterplan.</i>
Mechanisms What participatory mechanism were used? Is there evidence of innovative approaches?	<i>Awareness: information provision, social media; Interactive: Workshops, focus groups; Going-to: in-street interviews</i>
Scale Describe the study boundary. Where is the charrette taking place?	<i>Location: north of city centre, suburb. Boundary: town centre focus.</i>

In response to the latter, a British Grid Reference obtained from Ordnance Survey was used to identify a 10 kilometre grid square for each charrette. The geo-located grid squares were ordered from Ordnance Survey Open Data and imported into GIS software (Geographic Information Systems) (Ordnance Survey, 2016, 2017). Another data layer was obtained from the Scottish Government. Urban-rural classifications are available in four forms; selecting the six-fold urban rural classification and importing the publicly available shapefile, charrette project boundaries could be described in terms: 1. Large Urban Areas, 2. Other Urban Areas, 3. Accessible Small Towns, 4. Remote Small Towns, 5. Accessible Rural and 6. Remote Rural (Scottish Government, 2014a).

RESULTS: CHARRETTE REPORT ANALYSIS

This section presents eight characteristics derived from the above analysis, which includes: charrette objective; participatory mechanisms; cost; duration and format; public/private access; client structure; study boundary; and lastly planning role. Each are defined below and often supported by charrette references. To condense the findings a charrette descriptor table is presented at the end (see Table 8). The first ten charrettes listed on Appendix A were entered into the descriptor table, which provides an overview of each charrette's characteristics.

Objectives

A lack of common terminology in charrette reports made distinguishing charrette objectives difficult. For example, whilst one report deliberately distinguished between development framework and masterplan objectives, observing the former is more flexible than the latter, other reports used the terms synonymously suggesting little differentiation (see Port Dundas, 2013-14 compared with Elgin, 2013-14 & Whitburn, 2014-15). Additionally, the comprehensiveness of ‘vision’ differed; some intended it to be a preliminary planning layer influencing more detailed work (Clydebank, 2014-15 & Callander, 2011-12), whilst others gave it greater weight describing something akin to a detailed strategy (Girvan, 2011-12). In response, objectives had to be defined to effectively understand what charrettes sought to achieve, and equally what was out with their remit. In total, seven charrette objectives were derived from content analysis:

Table 2: Seven charrette objectives (Source: Author).

Definition	Example from Report	Potential Format
<p>Objective 1: Community Appraisal</p> <p>A community appraisal is an assessment of needs, assets and opportunities. Rarely is it the sole objective; often a Community Appraisal is completed in connection with other objectives.</p>	<p>‘The theme of the Charrette will be “A wish for your community” and the plan is to engage the community in arts led workshops which explore the strengths and assets of the community, along with the areas for improvement.’ Priesthill & Househillwood Neighbourhood, 2015-16</p>	<p>A report; documentary</p>
<p>Objective 2: Shared Vision</p> <p>A shared vision is long term collective aspiration for a community’s future. It is aspirational in nature, informs other planning layers and may aim to foster a collective, partnership approach to working. For the purposes of this study, anything more sophisticated will not be considered a vision.</p>	<p>‘The 2025 vision for Clydebank Town Centre aims to inspire, shape and direct the identification of projects and priorities across the overarching themes of place, business and community. The vision has helped shape the integrated Development Framework and Action Plan that were the main outputs from the Charrette.’ Clydebank, 2014-15</p>	<p>A title, statement, principles, concept diagram</p>
<p>Objective 3: Local Strategy</p> <p>A local strategy builds on the first two, and normally explores a way forward for a community by considering potential physical and non-physical strategies for improvement and development. Often, but not always, it tackles a particular issue; for example, regeneration, housing, land-use or policy. Similar to Shared Vision there is a notable degree of detail among local strategies. As a result, charrettes that combine other</p>	<p>‘The mini-charrette focused on reviewing effective housing land supply issues and developing a spatial strategy for housing development in the South Wishaw area defined by the study area boundary’ South Wishaw, 2012-13</p>	<p>An illustrative masterplan, a report, a spatial strategy.</p>

objectives i.e. community appraisal, shared vision, potential action and deliverability work, will be considered a Local Strategy.

Objective 4: Development Framework

A development framework is supportive in nature often working in tandem with other objectives like a masterplan or deliverability work. Its purpose is to guide and coordinate action, explore options, define parameters and set overarching themes from which more detailed work can draw.

‘The Masterplan Framework will define parameters and guide further detailed masterplanning stages to ensure that Perth West is a place that will successfully grow and integrate with the wider Perth community.’
Perth West, 2014-15

An illustrative masterplan, a statement, schematic illustrations.

Objective 5: Masterplan

A Masterplan is perhaps the most comprehensive of all objectives. Although, it has been used for illustrative purposes only (e.g. to represent a Vision, see Girvan, 2011-12) it is more often used as an aggregate of several objectives (e.g. including design guidance, spatial strategies, shared vision and so forth). Whilst it is primarily a visual tool it is often supported by other material e.g. illustrations, action plan and frameworks. Given the all-encompassing nature of the masterplan, charrette reports that include other objectives i.e. community appraisal, shared vision, local strategy, development framework, potential action and deliverability work, will be considered holistically as a producing a masterplan.

‘This document brings together the community conversations and responses into a set of guidelines (Key Drivers, Guiding Principles, the Spatial Strategy and suggested Actions) that, when combined, form a masterplan to give direction for community-led activity and external investment or support.’
Rothesay, 2015-16

A visual document with supporting documentation.

Objective 6: Potential Action

Potential actions are site plans, design proposals, project plans and concept diagrams to present potential future options, yet they often need further exploration and testing.

‘This document reports on a series of community workshops that have taken place in Blairmore Village at the end of 2013 and beginning of 2014, focused on creating a plan for the future of Blairmore Village Green.’
Blairmore, 2013-14

Visuals e.g. design proposal, schematic illustrations, site plans.

Objective 7: Deliverability Work

Deliverability work essentially explores implementation routes. This can include short, medium and long term projects, assigned responsibilities and potential funding sources. It provides advice to those working and living within the community post charrette.

‘In effect the Charrette exercise was designed to act as a bridge between the early vision of the Town Charter and the project delivery phase.’
Neilston, 2013-14

A report, table, timeline.

Participatory Mechanisms

After an iterative grouping and re-grouping process the mechanisms found in charrette reports have been classified based on the type of data collected to include Baker et al.'s (2010) expansion of previous categorisations. Therefore, traditional and innovative mechanisms may be grouped in the same category, and arguably one mechanism might straddle one or more categories as it is used for different purposes. For example, traditional 'awareness' methods include indirect means of information dissemination (e.g. leaflets, newspaper articles and so forth), whereas charrette reports showed more innovative means for the same 'awareness' purpose during their *pre-charrette phase*, which included on-street interviews and targeted workshop sessions. In total, eight mechanism-types were found:

Table 3: Eight charrette participatory mechanisms (Source: Author).

Examples	Participatory Mechanism-Types Definition
Posters, Banners, Blogs, Temporary Websites, Articles, Letters, Postcards, General Invitations, Meetings, Existing Networks, Pre-Charrette Workshops.	<p>Publicity; Awareness</p> <p>The purpose of these tools is to generate interest and ensure involvement in the charrette. Traditionally these mechanisms are in-breadth and take the form of indirect information provision. However, the reports show facilitators have used a range of techniques to generate interest during the pre-charrette phase. For example, Thurso & Wick (2012-13) capitalised on existing community networks to promote the charrette. Others used pre-charrette workshops, and meetings as a promotional and charrette structuring tool (Erskine, 2015-16; Govan & Partick, 2014-15; Tranent, 2014-15; Dunblane, 2014-15; Blairgowrie & Rattray, 2015-16). Interestingly, facilitators of Crinan Canal (2015-16) found their professional film making and photography team generated interest in the advent of the charrette. These more innovative, as well as traditional forms, constitute awareness mechanisms.</p>
Keynote Addresses, Presentations (expert, locals, charrette team), Public Exhibitions, Design Studio Drop-in, Site Visit / Local Tours; Work Experience; Live Build Workshops	<p>Informing, Educating & Sharing</p> <p>The purpose is to provide information, educate participants or share perspectives or experiences. For example, experts or specialists might deliver presentations, as will charrette teams to communicate development and local perspectives might be shared through project work or verbal presentations. Innovative examples could include live-build workshops whereby participants are exposed to new trades or disciplines (Denny, 2014-15); and Pecha Kucha events i.e. a quick-fire round of local presenters (Crinan Canal, 2015-16)</p>
Questionnaires (online, household, in-house), Community Installations, Social Media, Public Exhibitions + Comment Sheets, Behavioural Observations; Feedback Forms.	<p>Indirect; Passive</p> <p>The purpose is to gather data passively or through indirect means. This could be feedback via one-way communication in relation to an issue, question or proposal, which will be considered and potentially used to shape outcomes. These methods will accommodate participants unable to attend in person or those that prefer not to participate in interactive sessions. Additionally, behavioural observations that require no direct interaction could be used to record data (Lennoxtown, 2015-16; Blairgowrie & Rattray, 2015-16).</p>

<p>Telephone Interviews, Planned Interviews, 1:1 Studio Discussions, Meetings.</p>	<p>In-depth Feedback</p> <p>Unlike indirect feedback that can generate quantifiable data, the purpose here is to gather more personal, qualitative responses that are collated through a range of interview-style techniques. These could either be pre-arranged interviews (North Lanarkshire, 2012-13) or a series of informal 1:1 discussion within the charrette studio (Maybole, 2014-15).</p>
<p>Future Visioning, SWOT analysis, Place Standard Tool, Group Discussions, Fact Finding, Structured Discussions e.g. Post-It Note Sessions, Discussion Stall, Scenario Planning, Roundtable Discussions + Presenting Back, Hands-On Planning Sessions, Feedback Session, Interim Reviews.</p>	<p>Public Workshops</p> <p>Interactive group working is used frequently at various stages of the charrette for consultative and deliberative purposes i.e. feedback through discussion. Before (i.e. pre-charrette) or early in the charrette programme, workshops are often used to explore local issues, gather perspectives and provide the charrette facilitators with a foundation from which to develop ideas or structure upcoming workshops (Thurso & Wick, 2012-13, LLTNPA 2012-13, Blairmore 2013-14, Erskine, 2015-16).</p> <p>Post introduction, public events might be used to inform, share perspectives and gather feedback in response to developments through group discussion or scenario planning sessions (Bridgend 2013-14, Tranent, 2014-15; Neilston, 2013-14). Workshops are often themed to give focus to a particular issue.</p> <p>Leading to charrette close, public workshops can be used as a review opportunity, gathering comments before charrette output is published (Tranent, 2014-15).</p>
<p>Invited Workshops, Themed Discussions, Small Group Meetings, Q&A Session, Youth Sessions, Meetings.</p>	<p>Targeted Workshops</p> <p>Specialist knowledge is often sought through targeted sessions, whether that is a meeting or workshop format. The objective is to gather insight from a particular community demographic e.g. elderly, young people (Denny, 2014-15; Bridgend, 2012-13) or community sector e.g. local business, landowners, councillors (Port Dundas, 2012-13; North Lanarkshire, 2012-13). Further, expert knowledge might be required to analyse an issue in more detail (Muirtown & South Kessock, 2013-14; Port Dundas, 2013-14) or revise charrette developments; for example, Bowling (2013-14) used technical sessions to better understand site-development feasibility.</p>
<p>Design Challenge, Youth Games, Lego Workshop, Game Adaptations.</p>	<p>Interactive Games</p> <p>Some charrettes build games into their programme to develop or test ideas in a way that does not rely on structured group discussion. For example, Kirkcaldy (2013-14) adapted the televised programme 'Dragon's Den' to test ideas and receive feedback from an expert panel. Neilston (2013-14) used Lego workshops and design challenges to generate individual ideas.</p>
<p>Documentary-Making; Pop-Up Installations; Portable Aerial Maps; Event Attendance, Fun Days, Art</p>	<p>Informal; In-Situ</p> <p>The last group draws from Baker et al.'s (2010) <i>going-to</i> approach. It is similar to in-depth engagement as it focusses on daily-life</p>

Outreach. experiences of community members but extends beyond the charrette studio. It happens within the community through a range of creative and informal means (Applecross et al, 2014-15).

For example, some charrette facilitators identified existing spaces (e.g. meetings, events) and attended these in order to engage with their target audience (North Lanarkshire 2013-14, South Queensferry, 2013-14, Denny, 2014-15). Others focussed on daily life experiences by collecting personal narratives to produce creative works (e.g. short films, publications) (see Denny, 2014-15; Johnstone SW 2011-12, Govan & Partick, 2014-15). Many engaged with local pupils through in-school youth workshops (Bridgend, Callander, Kirkcaldy, South Queensferry, Perth West, 2014-15; Peterhead, 2015-16)

Cost

Standard deviation was used to generate four cost-groups ranging from very low to very high, which was based on a confirmed list of Scottish Government donations (Scottish Government, 2016). Therefore, the cost groups refer only to public money that has been awarded; match-funding sourced by the applicant is not considered here because not enough information was available in all reports. The majority of charrettes fall within one standard deviation from the average award donation, which is £18, 660. Five were found to be ‘very high’ because they were either two or more standard deviations away from the average; these charrettes were all commissioned within the first two rounds of the CMP and received full funding. Those at the lower end of the scale received donations two standard deviations away from the average, which means their donations were lower than £9,450.00. Figure 2 shows the spread of donations, highlighting a higher concentration of charrettes receiving either ‘very low’ or ‘low to average’ donations.

Table 4: Four cost groups (Source: Author).

Cost Groups	Number of Charrettes	Percentage of Charrettes
Very Low Donations two away (below) from the mean (-2SD)	4/60	6.5%
Low to Average Donations one away (below) from the mean (-1SD)	27/60	44%
Average to High Donations one away (above) the mean (+1SD)	24/60	39%
Very High Donations two to five away (above) the mean (+2SD - +5SD)	5/60	8.5%

Format and Duration

Some charrettes rejected the traditional duration and format attributed to the typical charrette believing a ‘disaggregated’ approach would help bring about ‘collective ownership of ideas and solutions’ (Neilston, 2013-14, p. 16). Similarly, South Queensferry (2013-14) had only two public charrette days, whilst others extended beyond ten, non-consecutive days to manage multiple study boundaries (e.g. LLTNPA, 2013-13). However, it would be unfair to

surmise these shorter charrettes donated only this amount of time to community and stakeholder engagement; process entirety often totalled a few months including pre-charrette and targeted community engagement. In short, charrette duration and format is categorized by: 1) total number of ‘charrette’ days, 2) consecutive or split format and 3) single or multiple charrette study boundaries.

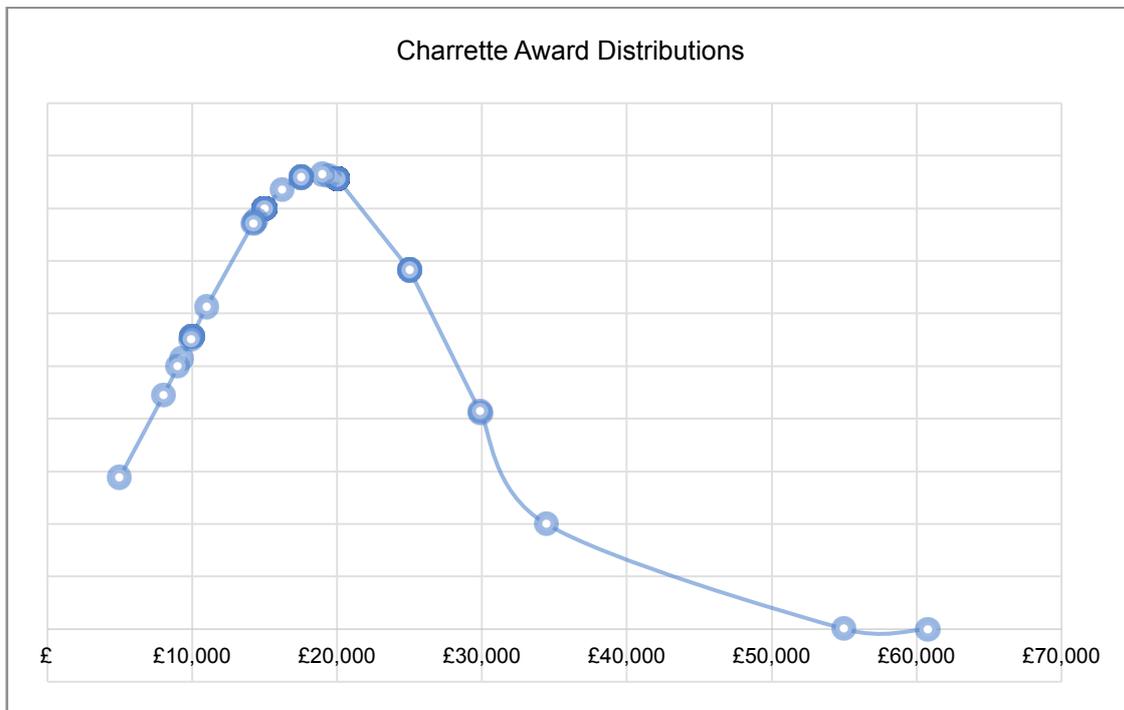


Figure 2. Spread of Scottish Government donations (Source: Author).

Participatory Access

The earliest charrette like model, which arguably was the R/UDAT (see Batchelor, 1986), were typically large-scale public affairs. However, they have been used for different purposes e.g. problem-solving, education and so forth (Sanoff, 2000). Similarly, some charrettes were described to have a unique purpose and as a result a minority were *invite only* (e.g. South Wishaw, 2012-2013; North Lanarkshire, 2013-1014; Elgin, 2013-2014). Hence charrettes are categorised by their access status: public or private.

Applicant Structure

Drawing from Gaventa (2004) charrettes that are commissioned through the mainstreaming programme, are arguably ‘invited spaces’. They are not examples of collective direct activism seen in other studies (Schmidt-Thomé et al., 2014), although self-organised community groups are able to apply to the CMP. Regarding *place* and involved governance levels, the charrette always involves the central government, considering their donation and attached stipulations (Scottish Government, 2011b). Often local government is involved too, depending on the client structure and match-funding sources. The below classifications provides insight into how the applicant team is constructed i.e. the charrette’s lead initiator. However, this does not include details regarding additional agencies that may have provided support, in terms of match-funding, to the lead initiator.

Table 5: Four client structures (Source: Author).

Client Structure	Definition
Planning Authority Only	This refers to the local government i.e. council or planning authority. Geographical locations incur different governance structures; for example, Loch Lomond and the Trossachs National Park Authority is the planning authority for more than council region (see Blairmore, 2013-14, p. 9)
Joint Applicant	Two organisations. Often the local authority partners with another organisation to apply for charrette funding.
Partner Application	The applicant team is comprised of three or more organisations collaborating to host the charrette. For example, Crinan Canal (2015-16, p. 2) is described to have formed a loose partnership arrangement with Scottish Canals, the local authority and various community councils and trusts within the area to 'undertake' the charrette ²
Independent	This category includes charrettes initiated by 1) third sector organisations independent of government e.g. registered charities, community groups; and 2) other partnership organisations that may include government agencies. Many of the <i>community-led</i> charrettes will fall into this category. The purpose of this category is to distinguish between local authority led and non-local authority led charrettes.

Study Boundary

The second to last characteristic is geography and study boundary. Charrettes notably manage a range of study boundaries that vary in size. Blairmore (2013-14) focussed on a parcel of land the community sought to purchase; others focussed on towns, town centres or small villages (e.g. Thurso & Wick, 2011-12; Peterhead, 2015-16; Callander, 2011-2012; Balloch, 2015-16). Castlebay (2015-16) and Tiree (2015-16) centred on their island locales; Scottish Canals and partners have hosted charrettes to consider stretches of canal corridor (Applecross et al, 2014-15; Crinan Canal, 2015-16; Bowling, 2013-14). Larger sites for regeneration or development have been identified and often these are part of an existing settlement (e.g. Johnstone SW, 2011-12; Kirkcaldy, 2013-14; Perth West, 2014-15; East Pollockshields, 2015-16); and North Lanarkshire considered a whole council region. Based on this, six charrette boundaries were found as shown in table 6. A pre-determined value drawn directly from the Scottish Government's official urban-rural six-fold classification will accompany the above charrette boundary types, as discussed in research design.

Planning Role

Content analysis of charrette reports suggest planning authorities are not obliged to incorporate the charrette's findings in any formal planning processes such as Local or Strategic Development Planning (LDP or SDP) (See Pacione 2012; 2014 for an overview of planning in Scotland); however, many suggest the output is intended to shape future local development planning in some capacity. Offering early, frontloaded opportunities for

² However, the award donation list (Government, 2016) states 'Scottish Canals' as the main proposer.

engagement in planning has been promoted at a national level because it is thought to help increase efficiency by speeding-up decision making processes and potentially reduce conflict (Brownill et al., 2007). Commitment to this can be seen in the Scottish Planning Policy and supporting guidance (Scottish Government, 2010b, 2014b). However, others remain critical suggesting it is these sorts of institutional structures that provides evidence of national governments protecting pro-growth interests (Phil Allmendinger et al., 2012; Inch, 2014) . Set within this debate, and considering the non-statutory plus preferred frontloaded nature of engagement, four categories were drawn from content analysis to provide insight into the charrette’s intended impact on local development.

Table 6: Six charrette boundary types (Source: Author).

Boundary Types	Definition
Whole Region	Charrettes considering entire council regions e.g. North Lanarkshire (2014-15).
Part of / Within Larger Area	Charrettes focussing on regeneration sites, growth areas, extensions or suburbs that form part of a larger area (e.g. Perth West, 2015-16)
Islands	Inner or Outer Hebridean islands on Scotland’s coast (e.g. Tiree, 2015-16).
Towns, Town Centres	Towns, Town Centres This includes all charrettes focussed on towns including their wider environs or their centres within various urban-rural areas.
Canal Corridors	Charrettes focussed on a designated stretch of canal corridor (e.g. Crinan Canal, 2015-16; Applecross et al, 2014-15).
Site Development	Smaller areas normally reserved for potential development. Charrettes at this scale often aim to develop <i>potential action</i> (e.g. Denny, 2014-15; Blairmore, 2013-14).

Table 7: Four categories to describe intended impact of charrette (Source: Author).

Planning Role	Definition
Stated MIR	Charrettes that intend to inform the upcoming Call for Sites or Main Issues Report (MIR), which are both frontloaded opportunities for engagement in the local development planning process.
LDP or SDP	Refers to reports that have stated the charrette output will inform either an emerging local or strategic development plan without specifying the stage. It will include charrettes that happened post MIR in the LDP or SDP process (e.g. Blairmore, 2013-14; Kirkcaldy, 2013-14; Muirtown, 2013-14), and those that intend to inform Supplementary Planning Guidance (e.g. Port Dundas, 2013-14; Neilson, 2013-14)
Independent or Post	Elgin’s (2013-14) outputs were intended for a separate local strategy. Scottish Canals and the local authority intended to use the outputs of the charrette to develop a strategy for a site that had been identified for development in the last Local Development Plan (e.g. Bowling, 2013-14). The charrettes will be considered independent or post LDP or SDP.
No Stated Commitment	This refers to charrette reports that have not directly referred to local or strategic development planning or any official independent strategy. Although, this is not to suggest a link was unintended, rather it was not definitive.

Having presented descriptions of all eight characteristics in detail a condensed charrette descriptor table (Table 8) has been created to share information on the first ten charrettes listed in Appendix A. The purpose is to provide easily obtainable, general information regarding charrette context, commission, overall structure and process content.

DISCUSSION

The purpose of this paper was to reflect on the CMP by conducting content analysis of available charrette reports. The analysis aimed to provide insights into how charrettes are commissioned, constructed and delivered within Scotland following their first introduction in 2010. Eight characterisations were identified, and sub-categories were defined to describe variations within each.

With reference to charrette commissioning, the category *client structure* shows four different applicant-types. In more recent years the CMP has welcomed applications from third-sector organisations, which could lead to a more complex client-structure arrangement as organisations work in partnership with match-funding providers. An example could be made of Dunblane (2014-15) and Peterhead (2015-2016). Dunblane's report suggests it would fall into 'partnership application' sub-category as non-government and local government agencies formed a 'steering group' to host the charrette, whilst receiving outsourced funding support. Peterhead's report suggests it would fall into the 'independent organisation' sub-category as the lead applicant was a local arts organisation; however, the local council provided total match-funding required. Similarly, Dumbarton Rock (2014-15), Perth West (2014-15) and Balloch (2015-16) received charrette donations out with the lead applicant(s). Participatory ventures are known to be complex with multiple objectives (Blackstock et al., 2007), and as other studies have shown these more complex arrangements provide interesting sites from which to observe the relationships between multiple actors, which may or may not have complimentary objectives (Dargan, 2009; McAreavey, 2009).

Reflecting on charrette structure, Sanoff (2000) describes three distinct phases a charrette typically passes through. First, 'knowledge transfer' to generate initial ideas; second, 'dialogic discourse' supporting decision-making; and third, proposal feedback during a 'problem-solving' stage to refine the outcomes. Arguably, the Scottish charrette appears to follow this pattern with the extensive engagement practices found in *participatory mechanisms*. Normally, facilitators conduct a pre-charrette phase, before delivering a range of workshops and innovative interactive practices, which inform developments. Developments are later shared again in review-type workshops before closing. Interestingly however, Brownill (2009) found that despite good intentions and enthusiastically rolling-out extensive innovative practice, some years later those involved questioned the longer-term impact this had. Therefore, scrutinising the outcomes of charrettes that are typically innovative i.e. using more *informal; in-situ* mechanisms, as part of their extensive practice, could be a worthwhile endeavour.

Delivery of these practices is often across split-days and sometimes across multiple sites, which suggests the Scottish charrette is typically different to the norm that is described by Walters (2007). North Lanarkshire (2013-2014, p. 1) for example intended to be a 'charrette with a difference', thus begging the question whether these unique delivery structures still capitalise on said benefits of the compressed charrette model, or whether it is further evidence of the tool's adaptability to different scenarios. Finally, charrettes appear to lie outside any formal, statutory engagement space but many express an intention to influence local development planning at an early stage. Delivering early, frontloaded opportunities is

preferred by central government (Brownill, 2009). However, studies have shown participants can be strategic in choosing when to participate; hanging-off until the statutory space is available (Brownill et al., 2007). Therefore, the merits of delivering frontloaded engagement are something to be explored further.

Seven years have passed since DPZ delivered three exemplar charrettes in the 2010 Charrette Series. During that time, sixty charrettes, not including those out with the Charrette Mainstreaming Programme, have been delivered across Scotland by multi-disciplinary teams. However, in the absence of programme evaluation Scotland's interpretation, adaption and development of the charrette model remains largely unexplored. In response, this paper aimed to present a preliminary review of the Charrette Mainstreaming Programme through content analysis of charrette reports. The analysis, which was guided by themes and questions in the conceptual framework, generated eight characteristics. There was sufficient content in reports relating to these eight characteristics to continue coding until subcategories were derived.

This resulted in the charrette descriptor table (Table 8 above) that provides a means to quickly capture details about a charrette and its particular context and process characteristics. Since context is such an important element to consider in any evaluation of public participation, this table is the first step toward delineating charrette characteristics, which could be used as a precursor guiding evaluation (Hassenforder et al., 2015). Comparability of cases is only feasible if a degree of similarity can be identified; therefore, the results from this analysis could help toward building classifications or charrette-groups (Conley et al., 2003). Equally, the table coupled with a sufficient sample of evaluations could help toward achieving what Chess (2000) described as the relationship between mechanisms and their underlying conditions. This could build a better understanding of what works well and what conditions are needed to support effectiveness. However, defining *effective* and building an evaluation strategy would need to come first.

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REFERENCES

- Aitken, M. (2010). A three-dimensional view of public participation in Scottish land-use planning: Empowerment or social control? *Planning Theory*, 9(3) 248–264, 248–264.
- Alexander, E. R. (2002). The Public Interest in Planning: From Legitimation to Substantive Plan Evaluation. *Planning Theory*, 1(3), 226-249. doi:10.1177/147309520200100303
- Allmendinger, P., & Haughton, G. (2012). Post-political spatial planning in England: a crisis of consensus? *Transactions of the Institute of British Geographers*, 37(1), 89-103. doi:10.1111/j.1475-5661.2011.00468.x
- Allmendinger, P., & Tewdwr-Jones, M. (2002). The Communicative Turn in Urban Planning: Unravelling Paradigmatic, Imperialistic and Moralistic Dimensions. *Space and Polity*, 6(1), 5-24. doi:10.1080/13562570220137871
- Angus Council. (2017). Charrettes. Retrieved from https://www.angus.gov.uk/community_support/charrettes
- Baker, M., Coaffee, J., & Sherriff, G. (2007). Achieving successful participation in the new UK spatial planning system. *Planning Practice and Research*, 22(1), 79-93. doi:10.1080/02697450601173371
- Baker, M., Hincks, S., & Sherriff, G. (2010). Getting Involved in Plan Making: Participation and Stakeholder Involvement in Local and Regional Spatial Strategies in England. *Environment and Planning C: Government and Policy*, 28(4), 574-594. doi:10.1068/c0972
- Barnes, M., Knops, A., Newman, J., & Sullivan, H. (2004). Recent research: The micro-politics of deliberation: Case studies in public participation. *Contemporary Politics*, 10(2), 93-110. doi:10.1080/1356977042000278756
- Batchelor, P. (1986). *Urban Design in Action: The History, Theory and Development of the American Institute of Architects' Regional/Urban Design Assistance Teams Program (R/UDAT)* (Vol. 29): Aia Press.
- Bishop, J. (2015). *The craft of collaborative planning: people working together to shape creative and sustainable places*: Routledge.
- Blackstock, K. L., Kelly, G. J., & Horsey, B. L. (2007). Developing and applying a framework to evaluate participatory research for sustainability. *Ecological Economics*, 60(4), 726-742. doi:http://dx.doi.org/10.1016/j.ecolecon.2006.05.014
- Bond, S. (2011). Negotiating a 'democratic ethos': moving beyond the agonistic – communicative divide. *Planning Theory*, 10(2), 161-186. doi:10.1177/1473095210383081
- Bond, S., & Thompson-Fawcett, M. (2007). Public participation and New Urbanism: a conflicting agenda? *Planning Theory & Practice*, 8(4), 449-472.
- Brand, R., & Gaffikin, F. (2007). Collaborative Planning in an Uncollaborative World. *Planning Theory*, 6(3), 282-313. doi:10.1177/1473095207082036
- Brownill, S. (2009). The Dynamics of Participation: Modes of Governance and Increasing Participation in Planning. *Urban Policy and Research*, 27(4), 357-375. doi:10.1080/0811140903308842
- Brownill, S., & Carpenter, J. (2007). Participation and Planning: Dichotomies, Rationalities and Strategies for Power. *The Town Planning Review*, 78(4), 401-428.
- Chess, C. (2000). Evaluating environmental public participation: Methodological questions. *Journal of Environmental Planning and Management*, 43(6), 769-784.
- Conley, A., & Moote, M. A. (2003). Evaluating collaborative natural resource management. *Society & Natural Resources*, 16(5), 371-386.

- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.
- Cunningham, C., & Tiefenbacher, J. (2008). Evaluating the effectiveness of public participation efforts by environmental agencies: repermitting a smelter in El Paso, Texas, USA. *Environment and Planning C: Government and Policy*, 26(4), 841-856.
- Damer, S., & Hague, C. (1971). Public participation in planning: a review. *Town Planning Review*, 42(3), 217.
- Dargan, L. (2009). Participation and Local Urban Regeneration: The Case of the New Deal for Communities (NDC) in the UK. *Regional Studies*, 43(2), 305-317.
doi:10.1080/00343400701654244
- Ede, P. (2017). Our Hammyhill – Developing a Community Led Vision from the Ground Up. *SURF: Scotland's Regeneration Forum*
- Gaventa, J. (2004). Towards participatory governance: assessing the transformative possibilities. In S. Hickey & G. Mohan (Eds.), *Participation: From tyranny to transformation* (pp. 25-41): Zed Books.
- Grant, J. (2006). *Planning the good community: new urbanism in theory and practice* (Vol. 9): Taylor & Francis.
- Hassenforder, E., Smajgl, A., & Ward, J. (2015). Towards understanding participatory processes: Framework, application and results. *Journal of Environmental Management*, 157, 84-95.
doi:http://dx.doi.org/10.1016/j.jenvman.2015.04.012
- Hopkins, D. (2010). The emancipatory limits of participation in planning: Equity and power in deliberative plan-making in Perth, Western Australia. *Town Planning Review*, 81(1), 55-81.
- Inch, A. (2014). Ordinary citizens and the political cultures of planning: In search of the subject of a new democratic ethos. *Planning Theory*, 1473095214536172.
- Innes, J. E., & Booher, D. E. (1999). Consensus building and complex adaptive systems: A framework for evaluating collaborative planning. *Journal of the American Planning Association*, 65(4), 412-423.
- Jenkins, D. P. (2002). *Getting Involved in Planning: Perceptions of the Wider Public*. (ISBN 0 7559 3448 2). Scottish Executive Planning Division Retrieved from <http://www.gov.scot/Publications/2002/10/15632/12146>.
- Lawlor, D. (2010, Spring 2010). Towards the creation of places where people want to be. *Urban Design Journal*
- Leach, S., & Wingfield, M. (1999). Public participation and the democratic renewal agenda: prioritisation or marginalisation? *Local government studies*, 25(4), 46-59.
- Lennertz, B. (2003). The charrette as an agent for change. *New Urbanism: Comprehensive Report & Best Practices Guide, 3rd edn.* (Ithaca, New Urban Publications). Available at <http://www.charretteinstitute.org/resources/charrettes/article.html> (accessed 1 June 2006).
- MacLeod, G. (2013). New Urbanism/Smart Growth in the Scottish Highlands: Mobile Policies and Post-politics in Local Development Planning. *Urban Studies*, 50(11), 2196-2221.
doi:10.1177/0042098013491164
- Margerum, R. D. (2002). Evaluating collaborative planning: Implications from an empirical analysis of growth management. *American Planning Association*, 68(2), pp.179-193.
- McAreavey, R. (2009). Community Regeneration: An Elite or a 'Real' Community Space? *International Planning Studies*, 14(3), 311-327. doi:10.1080/13563470903481627
- Mouat, C., Legacy, C., & March, A. (2013). The Problem is the Solution: Testing Agonistic Theory's Potential to Recast Intractable Planning Disputes. *Urban Policy and Research*, 31(2), 150-166. doi:10.1080/08111146.2013.776496
- Ordnance Survey. (2016). A guide to coordinate systems in Great Britain *An introduction to mapping coordinate systems and the use of GNSS datasets with Ordnance Survey mapping*. Online
- Ordnance Survey. (2017). Order OS OpenData: Mapping data and geographic information from OS. from Ordnance Survey
- Pacione, M. (2012). Private profit, public interest and land-use planning -A conflict interpretation of residential development pressure in Glasgow's rural-urban fringe. *Land Use Policy*, 32, 61-77.
- Pacione, M. (2014). The power of public participation in local planning in Scotland: the case of conflict over residential development in the metropolitan green belt. *GeoJournal*, 79(1), 31-57.
doi:10.1007/s10708-013-9477-y

- Petts, J., & Leach, B. (2000). *Evaluating methods for public participation: literature review in R&D Technical Report E135*. Retrieved from Environment Agency, Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, BS32 4UD:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/290295/stre135-e-e.pdf
- Rowe, G., & Frewer, L. J. (2004). Evaluating Public-Participation Exercises: A Research Agenda. *Science, technology & human values*, 29(4), 512-556. doi:10.1177/0162243903259197
- Sanoff, H. (2000). *Community participation methods in design and planning*: John Wiley & Sons.
- Sanoff, H. (2005). Community participation in riverfront development. *CoDesign*, 1(1), 61-78.
- Schmidt-Thomé, K., & Mäntysalo, R. (2014). Interplay of power and learning in planning processes: A dynamic view. *Planning Theory*, 13(2), 115-135. doi:10.1177/1473095213490302
- Scottish Government. (2008). *First annual report of the scottish council of economic advisers December 2008*. (ISBN: 978-0-7559-5898-6). Retrieved from <http://www.scotland.gov.uk/>.
- Scottish Government. (2010a). *Charrette Series Report* Scottish Government Retrieved from <http://www.gov.scot/Topics/Built-Environment/AandP/Projects/SSCI/SSCICharretteSeries/Charrette>.
- Scottish Government. (2010b). *Planning Advice Note 3/2010 Community Engagement* (ISBN 978 0 7559 9514 1).
- Scottish Government. (2011a). *Scottish Sustainable Communities Initiative - 2 years on*. Retrieved from <http://www.gov.scot/Publications/2011/03/16100049/17>.
- Scottish Government. (2011b). *Scottish Sustainable Communities Initiative: Charrette Mainstreaming Programme*. Retrieved from <http://www.gov.scot/Publications/2011/03/02145732/13>.
- Scottish Government. (2014a). Scottish Government Urban Rural Classification. Retrieved from <http://www.gov.scot/Topics/Statistics/About/Methodology/UrbanRuralClassification>
- Scottish Government. (2014b). *Scottish Planning Policy* (ISBN: 9781784125677). Scottish Government Retrieved from <https://beta.gov.scot/publications/scottish-planning-policy/>.
- Scottish Government. (2015, 07/09/2015). SSCI Charrette Mainstreaming Programme. Retrieved from <http://www.gov.scot/Topics/Built-Environment/AandP/Projects/SSCI/Mainstreaming>
- Scottish Government. (2016). [SG Funded Charrettes List 2011-2017 incl grant amount].
- Talen, E. (2002). The social goals of new urbanism. *Housing policy debate*, 13(1), 165-188.
- Tracy, S. J. (2012). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*: John Wiley & Sons.
- Walters, D. R. (2007). *Designing Community: charrettes, master plans and form-based codes*: Routledge.
- Wheeler, D. (2016). Celtic Connections and Charrettes: late January 2016 reflections. Retrieved from <https://www.douglaswheelerassociates.com/celtic-connections-and-charrettes-late-january-2016-reflections.htm>

APPENDIX A: CHARRETTE LIST

Appendix A: Charrette List, Report Format & Title

Date	Charrette	Format	Charrette or Report Title
2011-2012	Callander	Report	Callander Charrette
	Johnstone South West	Report	Johnstone South West Charrette
	South Carrick, Girvan	Report	Your Girvan, Your Vision
2012-2013	Thurso & Wick	Report	A New Vision for Wick & Thurso
	LLTNPA	Report	Local Development Plan Charrette Report
	South Wishaw	Report	South Wishaw Charrette
2013-2014	Blairmore Village Green	Report	Blairmore Village Green
	Bowling Basin	Report	The Bowling Basin Charrette
	Victoria Road	Report	Victoria Road, Kirkcaldy
	Muirtown & South Kessock	Report	Muirtown Basin & South Kessock
	North Lanarkshire	Report	Places for Business and Industry Charrette
	Neilston	Report	Neilston Going Places
	Bridgend	Report	Bridgend Charrette
	Elgin	Report	Elgin city centre regeneration masterplan: mini charrette
	Port Dundas	Report	Port Dundas Planning Charrette
	South Queensferry	Report	Shaping the Future of Queensferry
	Port Glasgow	Report	Port Glasgow Town Centre Regeneration Strategy & MasterPlan Charrette
2014-2015	Applecross, Firhill & Hamiltonhill	Report	What Floats Your Boat? Charrette
	Dumbarton Rock	Report	Seeing Things Differently. Dumbarton Rock & Castle Charrette
	Elgin	Report	Central Elgin Regeneration Public Design Charrette
	Govan and Partick	Report	Govan Partick Charrette
	Perth West	Report	Perth West Masterplan Framework Report
	Tranent	Report	Tranent Town Centre Charrette
	Carnoustie	Report	The Big Carnoustie Conversation
	Clydebank	Report	Clydebank Town Centre: Design Charrette
	Crieff, Aberfeldy & Auchentrader	Report	Auchentrader Charrette Report
	Denny	Report	Denny Design Charrette
	Dunblane	Report	Dunblane Charrette <i>Plus</i>
	Maybole	Report	The Maybole Town Centre Charrette
	Nairn, Tain & Fort William	* Action Plan	Nairn, Tain & Fort William: Town Centre Action Plans
	Whitburn	Report	Placemaking in Whitburn
2015-2016	East Pollockshields	* No Report	Make Your Mark
	Blairgowrie & Rattray	Report	The Blairgowrie & Rattray Town Centre Charrette
	Erskine	Report	Design Erskine Town Centre Charrette
	Rothsay	Report	Remaking Rothsay
	Cupar	Report	Cupar Could
	Peterhead	Report	Choose Peterhead

	Greenock	Report	Greenock Design Charrette
	Tiree	* Report	Tiree Island Futures Community Charrette Report
	Fauldhouse	Report	Fauldhouse Focus
	Garnock Valley	* No Report	Go Garnock
	Prestwick	Report	Prestwick Town Centre Charrette
	Priesthill & Househillwood	* Short Film	All in for Priesthill & Househillwood
	Arbroath	Report	Arbroath Town Centre Design Charrette
	Castlebay, Barra	Report	Castlebay Regeneration Charrette Report
	Crinan canal	Report	Crinan Corridor Charrette
	Lennoxtown	Report	The Lennoxtown Centre Charrette
	Balloch	Report	Balloch Charrette Report
2016-	Buckhaven	To be completed	
2017	Easterhouse Town Centre	To be completed	
	Cumbræ & Millport	To be completed	
	Kinlochbervie	To be completed	
	Parkhead	To be completed	
	Dunoon	To be completed	
	Saltcoats, Ardrossan & Stevenston	To be completed	
	Kincardine (Longannet)	To be completed	
	Muirhead, Birkhill & Liff	To be completed	
	Leith	To be completed	
	North Berwick	To be completed	
	Glenrothes West	To be completed	

* No available report; unique format; cross-check was required



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BRICKS, BRANDING, AND THE EVERYDAY: DEFINING GREATNESS AT THE UNITED NATIONS PLAZA IN SAN FRANCISCO

Georgia Lindsay

Keywords

United Nations Plaza;
Lawrence Halprin;
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Abstract

After over a decade of reports, designs, and public outreach, the United Nations Plaza in San Francisco was dedicated in 1976. Using historical documents such as government reports, design guidelines, letters, meeting minutes, and newspaper articles from archives, I argue that while the construction of the UN Plaza has failed to completely transform the social and economic life of the area, it succeeds in creating a genuinely public space. The history of the UN Plaza can serve both as a cautionary tale for those interested in changing property values purely through changing design, and as a standard of success in making a space used by a true cross-section of urban society.

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INTRODUCTION

After over a decade of reports, designs, and public outreach, the United Nations Plaza in San Francisco was dedicated in 1976. An eddy for pedestrians along the spine of Market Street, the brick-paved plaza with a memorial fountain was the brainchild of a handful of local property owners who had formed a task force to push for its creation. It was an attempt to increase property values in an area of San Francisco better known for risqué theaters than for the high-end shopping the task force was hoping would arrive with the planned underground commuter rail. The task force was manipulating the design of the space in the hopes of drawing different people to the area and creating a social scene more accommodating to the white middle class that could afford higher-priced goods. The design changes failed to evict all of the existing uses of the plaza, but good programming supported by the new space has diversified both the people and the activities in the plaza. The history of the UN Plaza can serve both as a cautionary tale for those interested in changing property values purely through changing design, and as a standard of success in making a space used by a true cross-section of urban society.

Social life is produced and reproduced through space (Hayden, 1997; Lefebvre, 2011), and adequate public space is deeply important to levels of social interaction and to social well-being (Chitrakar, 2016). The manipulation of space is an attempt at producing a new social order; in the case of the United Nations Plaza, the manipulation has been guided by business leaders and technocrats. However, agency for the design of cities can be placed not only with technocrats, policy makers and designers, but also with the social producers of the space (Tonkiss, 2013), as demonstrated by the history of the UN Plaza. In spite of the monumental design of the space, including sporadic additions of monoliths and insignia, the social life of the plaza has never completely turned into a space purely for middle-class shopping as the original task force had hoped: the manipulation of space has failed to overturn the social order entirely. Because the designers lacked a real understanding of the local market conditions or customer desires, the plaza has continued to be peopled by the homeless and other populations that the task force was trying to banish through high design, or what Dell Upton calls “big-A” Architecture (2002).

The primary designer of the plaza and the fountain was Lawrence Halprin, who was thought to be especially sensitive to design’s potential to change the economic fortunes of cities on the decline. He was “as responsible as any designer or builder at work today for the “new” architecture that is changing the face of several decaying cities, [and] reviving moribund neighborhoods” (Engles, 1972). Moreover, Halprin thought of himself as sensitive to the social life of cities, which he said “...require the participation of the people who live in them,” saying designers at his firm “involve ourselves deeply in interaction with them as well as the physical environment” (Halprin, no date). Yet, the early plans and designs for the Plaza were all created by a small group of select business leaders trying to bolster property values in the area: neither the residents of the nearby neighborhoods nor the potential customers for the planned rejuvenations were allowed to have any of what scholars Caneparo and Bonavero (2016) call “self-organization”. The idea behind the design of the UN Plaza was a common one at the time: using design to make the area attractive to white suburban women to shop in (Isenberg, 2004), to spur Market Street to become “one of the major retailing thoroughfares of the world” (The Wyman Company, n.d.).

In this, Halprin never quite succeeded. The Project for Public Spaces, an organization dedicated to highlighting design that supports good sociability in spaces, has the UN Plaza on its wall of shame (Project for Public Spaces, n.d.), and Halprin himself could not understand “...the street’s stubborn resistance to greatness” (quoted in Murphy, 2004). If by

greatness he means “monumentality” then he is assuredly correct. The homeless people have not left the plaza, ceremonies are held there only occasionally, and the obelisk declaring the re-dedication of the plaza to the UN is used as a prop for leftover market day supplies. Yet, with the farmer’s market, tourists, people eating lunch there, and continued presence of multiple people, maybe the plaza is more of a success than we realize. Is the Plaza’s greatness in the fact that the use value has in fact not diminished, but instead increased, with a variety of eyes on the street (Jacobs, 1961)? If “urban life...requires a certain...willingness to engage with the unknown and unpredictable” (Solnit, 2002, p. 123), the United Nations Plaza in San Francisco is an excellent representation of urban life. No one group has unspoken reign over the plaza (King, 2002), so it is populated by a mix of the economically disadvantaged, tourists, middle-class office workers, and farmers market merchants. Even monumental, carefully planned spaces can be part of the everyday fabric of social practices in the city. Appropriated by the everyday, swept up in the moment instead of remaining outside time, the UN Plaza is part of the everyday, described as “ambiguous and unstable,” existing somewhere “...between private, commercial, and domestic” and containing “multiple and constantly shifting meanings rather than clarity of function” (Crawford, 1999a, p. 28).

Using historical documents such as government reports, design guidelines, letters, meeting minutes, and newspaper articles from archives at the San Francisco History Center and at the University of Pennsylvania School of Design, I argue that while the construction of the UN Plaza has failed to completely transform the social and economic life of the area—Halprin’s “resistance to greatness”—it succeeds in creating a genuinely public space. Market Street, and especially the United Nations Plaza, has all the signs and symbols of design for a globalized world, yet still has resisted monumentality. Open spaces may be designed to meet people’s needs (Al-Bishawi & Ghadban, 2011), but it is worth asking whose needs are being met. In the case of the UN Plaza, the design responded to the perceived needs of the business leaders who commissioned it, but the use is responding to the needs of the community. Design as the sole solution does not work without consulting the potential users of the space and customers to nearby businesses—an important lesson for cities looking to rejuvenate cultural districts and improve property values with spectacular architecture.

THE UNITED NATIONS PLAZA

The United Nations Plaza is part of the Market Street Corridor in San Francisco. Market Street runs diagonally across the more-or-less North-South grid of streets from Embarcadero Boulevard at the Ferry Building—historically the connection between San Francisco and the East Bay and San Francisco and the rest of the world, and more recently a center of tourism—to Castro Boulevard, dividing the financial and shopping districts in the North from the warehouse and historically low-income residential districts in the south. Public transportation runs along Market Street, both above ground in the form of busses and trolleys, and below-ground in the form of the Bay Area Rapid Transit (BART). The UN Plaza covers an intersection that leads from this corridor to City Hall and the Civic Center, which were both part of an earlier attempt at reform during the City Beautiful era (Wiley, 2000). Parades that begin at the Ferry Building and process along Market Street can make a soft left at what is now the UN Plaza to arrive at the Civic Center and City Hall. The Plaza is bordered on the north by a Federal building and on the South by Orpheum Theater (Figure 1). The plaza consists of over two acres of brick paving, with an entrance to the BART, raised planters with grass and rows of trees, rows of granite columns with lights, and a blocky fountain (Figure 2).

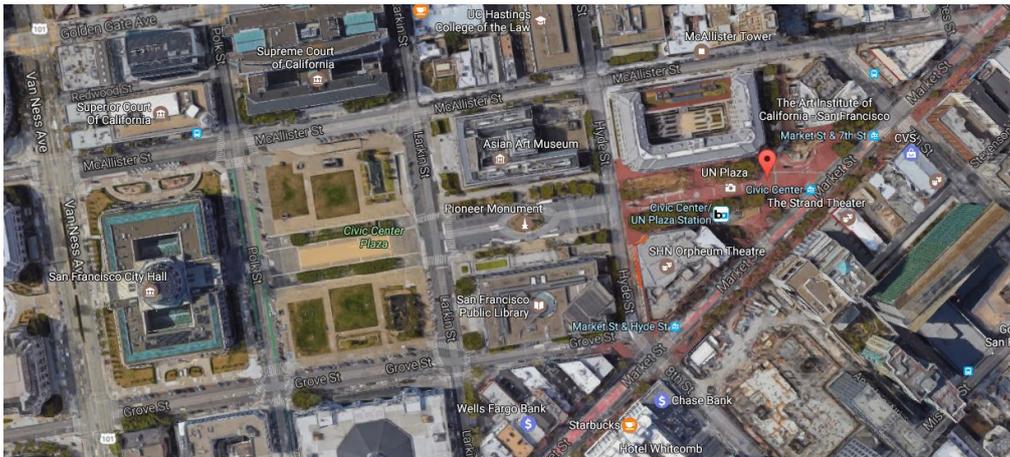


Figure 1. The United Nations Plaza and surrounding buildings in San Francisco (Image and Map Data Source: Google, 2017).

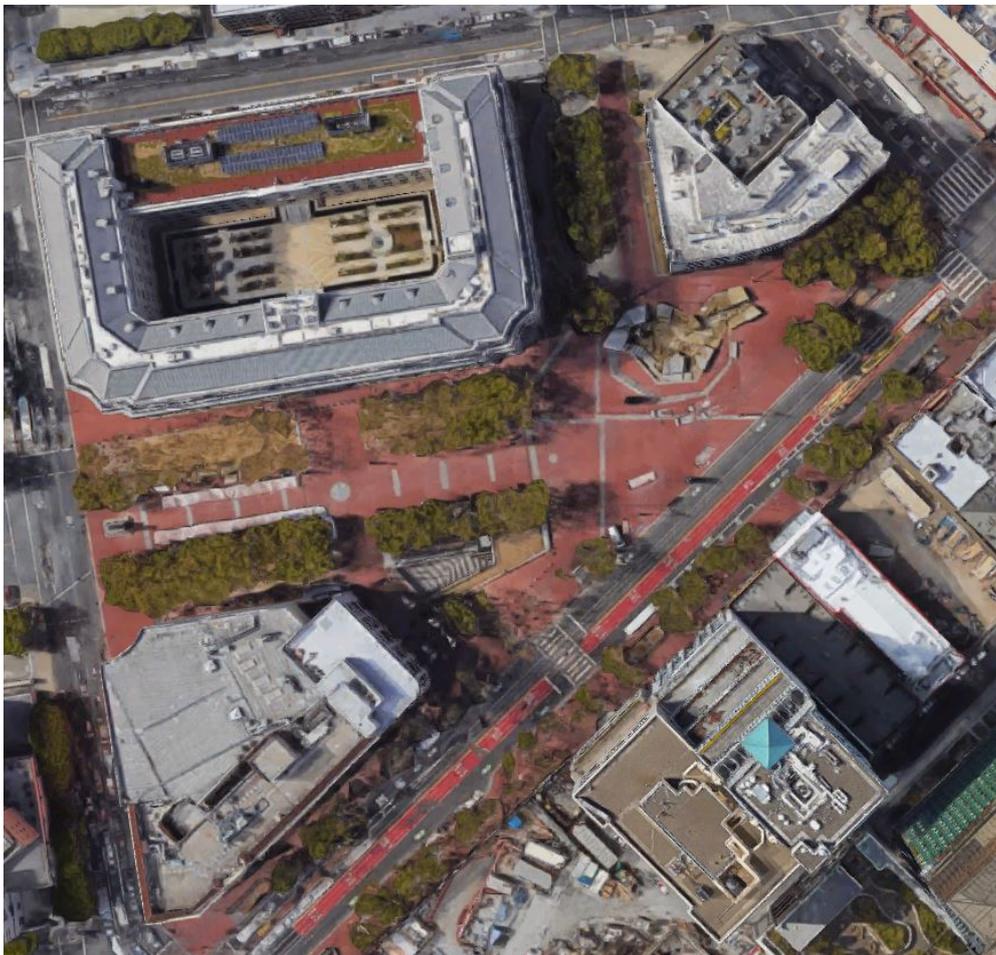


Figure 2. Aerial image of the United Nations Plaza (Image Source: Google, 2017).

The plaza and fountain (Figure 3) were designed by the Market Street Joint Venture Architects, which consisted of three firms: Lawrence Halprin and Associates, Mario J. Ciampi and Associates, and John Carl Warnecke and Associates (City and County of San Francisco, n.d.). The project was tied to the creation of BART, a regional train system to bring people to

the city center from the surrounding areas (Figure 4). Many municipalities saw the coming of BART as an opportunity to “create a new environment in the communities, to upgrade the communities, [and] to enhance their economic values” (Board of Supervisors, 1966, p. 7).



Figure 3. (Left) View of the Plaza from Market Street looking West toward City Hall. The Fountain is to the right, and the Federal Building is visible on the right. (Right) The United Nations Fountain (Photographs: Author, 2015).

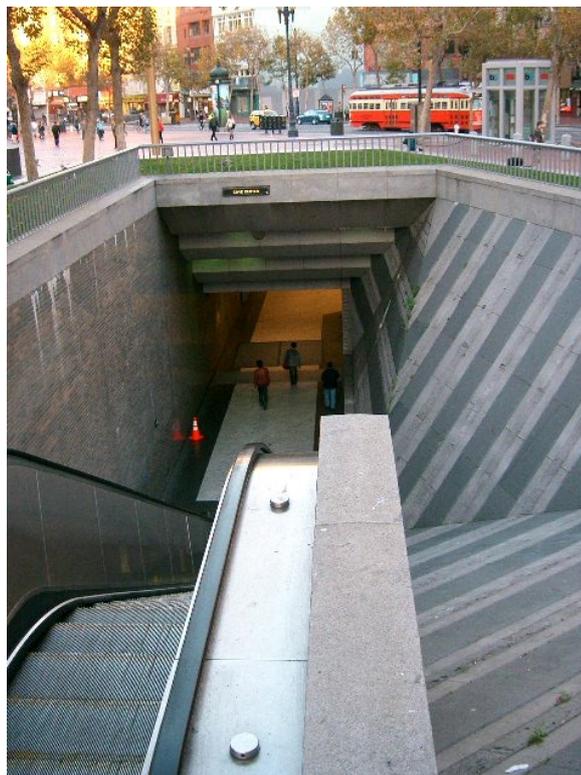


Figure 4. Entrance to the BART station (looking East-Southeast from the UN Plaza). Market Street is visible in the background (Photograph: Author, 2015).

AN ECONOMIC ARGUMENT WITH A DESIGN SOLUTION

While the topic of this paper is the United Nations Plaza, that project was just one part of a larger redevelopment project to bring business and tourists down to Mid-Market and the Civic Center area from the Financial District. Calls for reform along Market Street began in 1962 when the Market Street Development Project (MSDP) Steering Committee, a group of self-

appointed business leaders, commissioned a report called *What To Do About Market Street*. The neighborhood had been largely ignored in an urban renewal report on San Francisco in 1966 (Arthur D. Little, Inc, 1966), and the Steering Committee had decided to address the matter themselves. At the time, the area was heavily used—it is the populated spaces of a city which are the most interesting and alive (Crawford, 1999b), as it is the presence of people that most often draws more people (Whyte, 1980)—but used by people who were not prosperous enough in the eyes of the Steering Committee.

In its report, the MSDP Steering Committee identified a list of problems with Market Street, calling it “congested, dirty, unattractive...ugly and depressing...a barrier” between North and South San Francisco, and home to “penny arcades, risqué movies, and cheap merchandising outlets” with low property values (Livingston and Blayney, 1962, p. 1). Even though “it is within a few hundred feet of some of the city’s most valuable retail properties”, the report complains about the “poor quality tenants” who occupy the area (Livingston and Blayney, 1962, p. 5). The report cites “low-grade commercial uses”, including not only the aforementioned penny arcade and risqué movie theaters, but also magazine stands with “girlie” magazines, “low quality tenants”, vacancies, and “even a pawn shop”. According to the report, these low-quality tenants drew people who were “less prosperous-looking”, and that “the proximity of the tenderloin [a low-rent area of San Francisco] is fairly evident”. The young crowds, the report complains, consist mainly of servicemen and young women who use the area as a club (Livingston and Blayney, 1962, p. 5). The everyday uses of low-income and young people were seen as transgressive and degenerate.

In response, the Committee recommended improving four different areas: i) land use and transportation; ii) the environment, including better signs, street furniture, and plazas; iii) public action, including curtailing loitering, reducing litter, and improving street cleaning; and iv) public relations, including convincing property owners that they should contribute financially to the project, and to convince the public and the city that public funds should be used as well (Livingston and Blayney, 1962, pp. 2–3).

Four patterns emerge in the critique laid out in the report. First, the Market Street Redevelopment Project was financially driven. The problem was stated in terms of declining property values. The final page of the report declares that “investments in Market Street improvements will pay dividends” (Livingston and Blayney, 1962, p. 39). Private interests would contribute to making the street look better, but the re-paving and street furniture was something that the public would have to support, to “do their part” (“Market Street”, 1968) in cleaning up Market Street.

Second, these business interests represent a small group of relatively powerful people trying to convince other merchants and the city to go along with their project (Hartman & Carnochan, 2002). Not even all the local merchants were convinced of the plan: the MSDP asked the city to fine merchants who did not keep their sidewalks clean (“Market Street group,” 1975), and asked the city to “clamp down on pornographic bookstores and massage parlors in the Union Square area”, wanting to get rid of them before they became a problem (“Merchants call”, 1976).

Third, it was a top-down project. At no point were the opinions of shoppers, residents, or non-committee members included in the report. The only mention of including people other than those on the committee was in asking the city for funding to begin the work; they received \$350,000 (Tatarian, 1964, pp. 2–5). Instead of reporting on the opinions of the types of people who would be drawn to the space, or inquiring as to what the current users wanted, the report relies instead solely on the opinions of designers and planners to envision a new space.

Finally, the report emphasizes appearance—middle-to-upper class tidiness. A full 12 (of 39) pages are devoted to a section called “The Look of Market Street,” in which the visual sins of the street are catalogued, including things like signs obscuring buildings, rooftop billboards, a motley array of street furniture, and “miscellaneous visual mayhem” (Livingston and Blayney, 1962, p. 14). As a result, the scope of work to solve these perceived problems was primarily design-focused, and required an “overall spatial concept for Market Street including site plan for the entire street, with design of open spaces, architectural and landscape features, plazas, sidewalks, and station areas” (Tatarian, 1964, p. 1). With no attempts to understand the market in any sophisticated way, a group of designers proposed a physical solution to a financial problem. Like Daniel Burnham’s master plan for a great civic area (Scott, 1959), this was an attempt by designers to create an “*extraordinary landmark in a vast expanse of the ordinary*” (Upton, 2002, p. 709), invoking high design to distinguish the plaza from the ordinary and everyday landscape around it.

Symbols for the Plaza

Instead of inquiring as to the desires of their target audience or asking for participation from existing users of the area, the Steering Committee hired a design firm to monumentalize the space. The monumental design was intended to support a shift that is still underway today, what cultural critic Rebecca Solnit sees as a shift “from a blue-collar port city...to a white collar center” of finance, tourism, and knowledge (Solnit, 2004), to make the space attractive to global capital (Logan & Molotch, 1987). The steering committee used symbols to connect the plaza to more economically well-off parts of the city, and also to connect the area to global ideas, as a way to brand the area, creating an identity which could help build tourism opportunities and create a feeling of local belonging.

Some design elements symbolically connected this area to the rest of the city in an attempt to rejuvenate the area in the minds of San Franciscans. The intersection at Market and Fulton Streets was paved in brick and turned into a plaza to “functionally integrat[e] the flow of people from the subway levels to the streets, the Plaza is scaled to accommodate the daily crowds of office workers as well as the periodic demands of civic ceremonies, such as parades” (Transit Task Force, 1967, p. 21). The “ceremonial role” of Market Street was heightened by paving the plaza with the same brick as other parts of the street (Figure 5), connecting the Ferry Building, with its plaza, through nodal points at the Mechanics Statue Plaza, Yerba Buena, Powell Plaza, and the United Nations Plaza to City Hall (Transit Task Force, 1967, p. 7). Called “beautification by brick,” the re-paving project was the first part of the change, with bricks laid even before the rest of the Plaza construction (“Brick Beautification,” 1972; Britton, 1974).

The global symbolic content of the plaza—the idea of dedicating it to the United Nations, which had been signed into being in Herbst Theater in the Veterans Building just north of City Hall—was added only after the plaza had been funded by the voters. When it was part of the 1968 Beautification Plan and \$34.4 million ballot measure, the location was called Civic Center Plaza and the plans called for a “major piece of civic sculpture of monumental scale [to] dominate the major plaza space, and generate the character of the plaza” (Mario J. Ciampi and Associates and John Carl Warnecke and Associates, 1967). By 1974 when construction started, that “monumental sculpture” had become the UN Fountain, and the Plaza had become the UN Plaza. Between the plans and ground-breaking, the fountain became the “principle feature” of the plaza, designed to serve “as a focal point at the Civic Center axis and establish...a visual hub from the street to City Hall” (City and County of San Francisco, n.d., p. 2). It is made from the same Sierra white granite that City Hall and the other civic buildings in the area are constructed from, arranged into seven clusters to

represent the seven continents, and the water is supposed to display “...both jet action and tidal action, imitating the back and forth and up and down motion of the sea” (City and County of San Francisco, n.d., p. 2).

In another of the symbolic gestures made in the plaza, the trees were to be named after various UN “personalities,” from Dag Hammarskjold to Harry Truman (Market Street Joint Venture Architects, 1976). The first, an evergreen pear tree, was planted during the dedication ceremony in 1975, before the mall and plaza construction had even begun, during the UN 20th anniversary celebrations (Robinson, 1975).

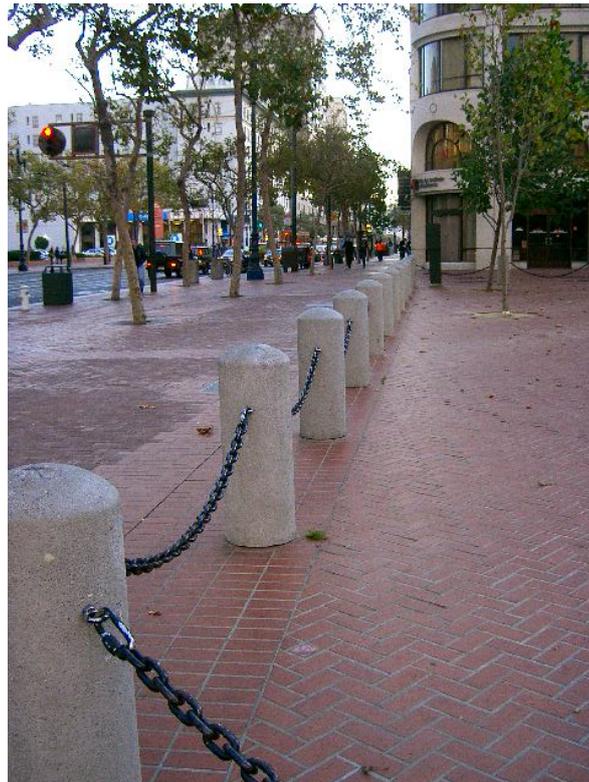


Figure 5. The United Nations Plaza (visible on the right side of this picture) is paved in a similar brick as the Market Street sidewalk (on the left side of the bollards in this picture). Originally, the bricks were exactly the same, but subsequent replacements have changed the brick somewhat. Regardless, though, the plaza maintains aesthetic continuity with the sidewalk of Market Street (Photograph: Author 2009).

MEASURING “GREATNESS”

Critically, the design met with mixed reviews. Architectural Forum praised Halprin’s work along Market Street (which includes the fountain), calling it “a cluster of kinetic human-scale experiences which make it architecture” (“San Francisco” 1973), and delegations from Atlanta, Miami, New Orleans and Chicago visited the city to study the changes, impressed with the MSDP association (Flynn, 1979). Yet local critics thought the “madly assembled granite fountain” was pompous (Temko, 1979) and too similar to the Villiancourt Embarcadero fountain, an unpopular fountain at the time (Bess, 1971) and now unused. Lawrence Livingston, Jr., one of the authors of the

original report, lamented the “bland” mall and abstract fountain, comparing it unfavorably with Halprin’s “exuberant plazas and graceful malls in downtown Portland and Seattle” (Livingston, 1981, p. 14). The arts commission vetoed the fountain proposal calling it “too blocky” (Craib, 1971), but after a few years’ delay, construction went ahead with largely unchanged designs.

But the true success or failure of a design explicitly created to change the fortunes and social life of an intersection is not in the critical response but in whether change occurred. For the United Nations Plaza, the results were again “decidedly mixed” (Market Street Advisory Committee, 1985, p. 2). The plaza opened with a dedication ceremony, which was combined with a welcome to the cast of “Raisin,” the first Broadway production to play in San Francisco, “...to help bring attention to the manner in which the area is being developed” (Averbuch, 1976). Local papers reported on the opening of a cafe in a small corner building and on the noon-time concerts in the Plaza (Waugh, 1978). To encourage people to visit the Plaza, the newly-created Market Street Development Association (MSDA) launched a variety of programs, including the People in Plazas concert series in 1976, and the Heart of the City Farmers’ Market (The Greater Market Street Development Association, n.d., p. 6). And the plaza did take on increased symbolic weight. The regional director of the Department of Health, Education and Welfare asked that the address of the “old’ Federal Building” be changed to Number One United Nations Plaza, from 50 Fulton St. The justification includes the building’s historical value as well as the 900 employees who represent “almost every San Francisco ethnic group” (Maldonado, 1976). The owner of 35 Fulton St. (now 1 United Nations Plaza) was similarly willing to endure what he called a “big hassle” to change his building’s address (Waugh, 1978).

But in spite of those early successes, the Steering Committee did not feel that the new space had created the desired social and economic changes. In the early 1980s, a decade after the plaza had opened, Skidmore Owings and Merrill was hired to undertake another report on the Mid-Market area. It said, “The United Nations Plaza fountain area is chiefly a focus for the social problems in the area. The conditions are a sign of the City’s neglect of a portion of the population” (Skidmore, Owings and Merrill and the San Francisco Study Center, 1982, p. 75). Changing the space alone had not changed the fortunes of local businesses: Mid-Market, one of the City’s major tourist destinations, was still home to “one of the seediest collections of disreputable riffraff this side of Port Said, dispiritedly hawking, praying, begging, drinking and sleeping among debris of every description” (Editorial Staff, 1985). Tourists complained about the “weirdos” that made them nervous, and merchants complained about the effects the “panhandlers, winos and street people” had on their business (Grace Harris, as quoted in Ginsburg & Waugh, 1985). Newspaper columnist Herb Caen called the area “*le grand pissoir*” because of the smell (Caen, 1985). In May of 1990, the Convention and Visitors Bureau released a report that said that “23 percent of two thousand tourists polled listed street people as the worst thing about the city” (Hartman & Carnochan, 2002, p. 378).

The formal strategies had clearly failed to evict the lower-income residents and everyday uses that the local business leaders found so problematic. They had

removed the social life of the Plaza without adequately replacing it with anything but bricks. The UN Plaza and nearby Market Street were no longer the everyday space of the young, but had become the site of citizens neglected by the government and the criminal, those left behind by Regan’s trickle-down economy. The 1980s was a period of disinvestment in social services by the Federal government; local municipalities were supposed to take over caring for the mentally ill and economically challenged, but often did not have the resources to. The Plaza, then, and the people who occupied it, represented a change in how much citizens could expect from their government. Homelessness doubled in San Francisco in the 1980s, because of increased rents, and decreasing availability of single-room occupancy hotels in the city (Hartman & Carnochan, 2002, p. 376).



Figure 6. (Left) The UN Charter carved into the back of the obelisk by the fountain.
(Right) The UN symbol carved into the obelisk (Photographs: Author, 2009).

Design was once again called upon to solve perceived social and economic ills. In 1995, the Plaza received a facelift, adding more “memorial” content to what was in essence simply a plaza and fountain, to commemorate the 50th anniversary of the signing of the Charter. In three short months in 1995, the words of the UN Charter were carved on the black obelisk (Figure 6), a quote from Roosevelt (chosen by Halprin, who was working on the Roosevelt Memorial at the time) was carved into the fountain, granite inlays were placed into the brick mall with chiselled words from the UN in the stone, the names of all the member countries and the year they joined the UN were carved on granite lamp posts, and the UN emblem in the center of the plaza were all added (Figure 7). The new design, by San Francisco landscape architect Andrew Detsch, cost \$400,000, all of which was paid for privately (Epstein, 1995). Halprin was commissioned to design a more permanent way to keep the homeless out of the fountain, instead of the cyclone fences and chain barriers that had been used and the total removal that had been proposed (Murphy, 2004),

Even today, the area is contested. Retail in the area continues to be dominated by adult stores and pawn shops, and other retailers are “quickly dissuaded by the open drug dealing and abusing, public inebriation and urination, and aggressive panhandling” (Temple, 2008). Christine Adams, manager of the Farmer’s Market, fears that the homeless drive away the customers (Baker, 2000). Because of the continued problem with the homeless and the many criminal activities in the Plaza, the benches in the plaza were removed in 2001, in the middle of the night (King, 2002). The MSDA claims that the space is successful: “The United Nations Plaza has

now become a different type of gathering place—it's classy but classless. The young and old, the well-to-do and those less well off, people from every social group and every occupation mix freely. The plaza is now perceived in a more positive vein” (The Greater Market Street Development Association, n.d., p. 6).



Figure 7. (Left) The sun sets over City Hall behind many newly added symbols, including a granite UN Seal embedded into the brick, and granite lamp posts with names of member nations. (Right) A granite lamppost with member nations carved into it (Photograph: Author, 2009).



Figure 8. (Left) The obelisk in use on Farmer's Market Day. (Upper Right) People shopping at the Farmer's Market. (Lower Right) People and pigeons enjoying the fountain at a close range (Photograph: Author, 2009).

The continued controversy about what to do to spruce up the plaza resulted in a 2005 plan to hold more events in the plaza as a way of creating activities to welcome everyone, from the homeless to tourists, to residents, to “everyone else”. The \$1.5 million project was paid for by a combination of federal transportation funds, city general funds, and a grant from the San Francisco Foundation, a non-profit (Fagan,

2005). The plan called for the removal of the fences and increasing activities in the plaza, as a way of reducing the criminal activities through continued and lively use of the plaza by a wide variety of people (Figure 8).

CONCLUSION

The need for social interventions in the UN Plaza is an admission that the Architecture, the monumentality of the space, failed in controlling the informal, self-organized everyday life within the Mid-Market area. However, that does not mean that the UN Plaza is an entirely failed space. The use of the Plaza is contested, but at least it is used. The history of the UN Plaza asks the question of what we want from our public spaces, and who we are willing to let design our urban environment. Urban identity is not only about monuments and formal spaces, but also about the meaning that places have in the minds of locals (Oktay & Bala, 2015). As a monument, the UN Plaza has generated ongoing discussion about who has a right to the city, who cities are designed for, and how people should behave in public. It is a source of conversation about what the UN stands for—human rights, civil rights, and dignity. In a series of newspaper articles, bond issues, police and citizen action, and stubborn inaction, the Plaza continues to spark debate about who uses the city, who has a right to public space. It is still a space under production whose territories have not yet been fully assigned. The Plaza is a physical manifestation of the forces that shape every city: attempts to draw global capital, contested designs, contested space, and questions of whose uses are the best uses of space. That the most entrenched social problems of the city manifest in what was supposed to be the culmination of a ceremonial way along the backbone of San Francisco, in spite of monumental attempts to make those people who represent the city's failure to provide for its citizens, is perhaps the greatest result of a plaza dedicated to the United Nations.

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- Al-Bishawi, M. A., & Ghadban, S. S. (2011). A methodological approach for reading urban open space. *International Journal of Architectural Research: ArchNet-IJAR*, 5(1), 73–85.
- Arthur D. Little, Inc (Ed.). (1966). *Community renewal programming: a San Francisco case study*. New York: F.A. Praeger.
- Averbuch, B. (1976, February 10). Memo: Ceremony to dedicate United Nations Plaza and to welcome cast of Broadway production of "Raisin" at the Orpheum Theatre.
- Baker, D. R. (2000, September 21). U.N. Plaza's uneasy mix: Farmers' market renews cleanup call. *San Francisco Chronicle*.
- Bess, D. (1971, June 8). UN Plaza: New fountain design is killed. *San Francisco Chronicle*.
- Board of Supervisors. (1966). Transcript of proceedings of October 24 meeting.
- Brick beautification and BART station tours soon. (1972, June 24). *San Francisco Examiner*.
- Britton, J. A. (1974, October 11). Market Street: Sprit of a public space. *The Daily Californian*, p. 17.
- Caen, H. (1985, July 11). Eau de Vie. *San Francisco Chronicle*.

- Caneparo, L., & Bonavero, F. (2016). Neighbourhood regeneration at the grassroots participation: incubators' co-creative process and system. *International Journal of Architectural Research: ArchNet-IJAR*, 10(2), 204–218.
- Chitrakar, R. M. (2016). Meaning of public space and sense of community: The case of new neighbourhoods in the Kathmandu Valley. *International Journal of Architectural Research: ArchNet-IJAR*, 10(1), 213–227.
- City and County of San Francisco. (n.d.). Report on the United Nations Plaza and fountain.
- Craib, R. (1971, unknown, but probably before). New fountain vetoed: "Too blocky" says art committee. *San Francisco Chronicle*.
- Crawford, M. (1999a). Blurring the boundaries: Public space and private life. In J. Chase, M. Crawford, & J. Kaliski (Eds.), *Everyday urbanism* (pp. 22–35). New York: Monacelli Press.
- Crawford, M. (1999b). Introduction. In M. Crawford, J. Kaliski, & J. Chase (Eds.), *Everyday Urbanism* (pp. 8–15). New York: Monacelli Press.
- Editorial Staff. (1985, July 18). Clean out the riffraff. *San Francisco Chronicle*.
- Engles, J. A. (1972, April 21). Halprin listed in a recent edition of who's who in America. *Washington Post*.
- Epstein, E. (1995, April 6). Work begins on memorial in U.N. Plaza. *San Francisco Chronicle*.
- Fagan, K. (2005, March 10). U.N. Plaza finally getting new look: Spruced-up site to have more events, outdoor markets. *San Francisco Chronicle*.
- Flynn, W. (1979, September 16). The City does know how. *San Francisco Examiner*, p. A-4.
- Ginsburg, M., & Waugh, D. (1985, July 18). S.F. tries sprucing up a blighted tourist spot. *San Francisco Examiner*.
- Halprin, L. (no date). Lawrence Halprin and Associates brochure.
- Hartman, C., & Carnochan, S. (2002). *City for sale: The transformation of San Francisco*. Berkeley: University of California Press.
- Hayden, D. (1997). Urban landscape history: The sense of place and the politics of space. In P. E. Groth & T. W. Bressi (Eds.), *Understanding ordinary landscapes* (pp. 111–133). New Haven: Yale University Press.
- Isenberg, A. (2004). *Downtown America: A history of the place and the people who made it*. Chicago: University of Chicago Press.
- Jacobs, J. (1961). *The death and life of great American cities*. New York: Random House.
- King, J. (2002, March 10). Common ground: By shooing vagrants, S.F. plazas have gone from bad to worse -- now planners plead for city to put out the welcome mat. *San Francisco Chronicle*.
- Lefebvre, H. (2011). *The production of space*. Malden: Blackwell.
- Livingston, L., Jr. (1981, April 26). My Love/Hate affair with Market Street. *San Francisco Sunday Examiner and Chronicle*.
- Livingston and Blayney. (1962, December 11). What to Do About Market Street: A prospectus for a development program prepared for the Market Street Development Project, an affiliate of SPUR: The San Francisco Planning and Urban Renewal Association.
- Logan, J. R., & Molotch, H. L. (1987). *Urban fortunes: The political economy of place*. Berkeley, CA: University of California Press.
- Maldonado, J. P. (1976, May 1). Letter to Quentin Kopp.
- Mario J. Ciampi and Associates and John Carl Warnecke and Associates. (1967, September 30). Market Street Design Study III: Schematic design documents.
- Market Street Advisory Committee. (1985). *Market Street Planning Project: Final Report* (Brochure). Retrieved from San Francisco History Room Archive. (SF Streets. Market. Plan For.)
- Market Street group fed up with the mess. (1975, August 7). *San Francisco Examiner*.
- Market Street has a lovely future--if voters say "yes". (1968, May 26). *San Francisco Examiner*.
- Market Street Joint Venture Architects. (1976, March). March 1976 Newsletter.
- Merchants call for porno crackdown. (1976, March 18). *San Francisco Examiner*.
- Murphy, D. E. (2004, July 18). A beautiful promenade turns ugly, and a city blushes. *New York Times*, p. 13.
- Oktaý, D., & Bala, H. A. (2015). A holistic research approach to measuring urban identity: Findings from Kyrenia area study. *International Journal of Architectural Research: ArchNet-IJAR*, 9(2), 201–215.

- Project for Public Spaces. (n.d.). UN Plaza - Hall of shame | Project for Public Spaces (PPS). Retrieved December 8, 2009, from the Project for Public Places hall of shame: http://placemaking.pps.org/great_public_spaces/one?public_place_id=910&type_id=2
- Robinson, G. (1975, June 27). U.N.'s Party in Its Plaza. *San Francisco Chronicle*.
- San Francisco. (1973). *Architectural Forum*, 138(3), 24.
- Scott, M. (1959). *The San Francisco Bay area: a metropolis in perspective*. Berkeley: University of California Press.
- Skidmore, Owings and Merrill and the San Francisco Study Center. (1982, April 15). Mid-Market Street conservation and development study: Draft.
- Solnit, R. (2004, January 11). The heart of the city: U.N. Plaza: the beating pulse of public space in San Francisco, from protests to pomegranates. *San Francisco Chronicle*. Retrieved from <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2004/01/11/LVG9J42OIA1.DTL>
- Solnit, R. (2002). *Hollow city: The siege of San Francisco and the crisis of American urbanism*. London: Verso.
- Tatarian, S. M. (1964, December 3). Presentation to Board of Supervisors for December 7, 1964.
- Temko, A. (1979, March 21). The "New" Market Street—an unfulfilled promise. *San Francisco Chronicle*, p. 4.
- Temple, J. (2008, April 26). New retail space for Market St.?: Developer plans building that could upgrade problem area. *San Francisco Chronicle*, p. C-1, C-2.
- The Greater Market Street Development Association. (n.d.). The Greater Market Street Development Association: A new role in downtown management and development. Brochure.
- The Wyman Company. (n.d.). Real estate brochure.
- Tonkiss, F. (2013). *Cities by design: the social life of urban form*. Cambridge, UK: Polity Press.
- Transit Task Force. (1967). *Market Street Design Plan* (No. Summary Report). City and County of San Francisco.
- Upton, D. (2002). Architecture in everyday life. *New literary history*, 33(4), 707–723.
- Waugh, D. (1978, September 13). U.N. Plaza stirs Market St. "renaissance." *San Francisco Examiner*, p. A-1.
- Whyte, W. H. (1980). *The social life of small urban spaces*. Washington, D.C.: Conservation Foundation.
- Wiley, P. B. (2000). *National trust guide—San Francisco*. John Wiley and Sons.



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DECIPHERING URBAN LIFE: A MULTI-LAYERED INVESTIGATION OF ST. ENOCH SQUARE, GLASGOW CITY CENTRE

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Keywords

urban space;
urban life;
social interaction;
city centre;
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Abstract

An urban space is a vital stage for social interaction and city life. Measuring the city life is always related to social, economic and cultural conditions of an urban context. Social gathering increases the quality of urban space and improves economic vitality. This paper aims to explore how successful urban spaces could impact the growth and performance of an urban context, not only as a physical urban reality, but also as a generator of social life. Utilising St. Enoch Square as a case study, a multi-layered methodological approach constituted in a series of tools was implemented, including behavioural mapping, visual preference survey, walking tour assessment, contemplating settings, and observing physical traces and by-product of use in order to interpret various forms of experiences that take place. Findings reveal various attributes of St. Enoch Square while highlighting different qualities that promote and support the overall vibrancy of the city life. Conclusions are drawn to emphasise that the physical and spatial characteristics of an urban space are critical factors for maintaining social interaction while creating essential opportunities that support the human experience in the public realm.

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INTRODUCTION: ASPECTS OF URBAN LIFE IN URBAN OPEN SPACES

Over centuries of city development and civic design public spaces have been considered significant components in urban contexts representing the most convenient places for sociability and everyday interaction where their vibrancy and usability depend on the physical quality and structure. Madanipour (2010) states that the richness of the physical quality of any urban open space plays a major role in attracting people and becomes an active built environment for multiple social activities. They have continually mirrored the integration of local cultural, social, and economic aspects revealing their memory, accessibility, and meaningfulness (Butterworth, 2000). Therefore, urban open spaces accommodate the settings and surroundings that enhance people's life and impact their perception, feelings and engagement in city life

Since social interaction is an important human need that when satisfied contributes to personal and social growth and development, public spaces are platforms that hold, generate and enhance this human necessity. Urban spaces are essential elements of urban form that intend to accommodate daily social activities, provide convenient settings, and offer different functions that improve the quality of life within urban context (Tibbalds, 2000). Throughout the history, urban spaces have contributed the most in accommodating various purposes including everyday societal interactions, trade activities, political demonstrations or special events. They have become venues for goods, knowledge, experience, culture, and entertainment. Despite the fact that suitability and functionality of any urban space are dependent on spatial composition and historical aspects; the common denominator is that most squares function as meeting places and gathering nodes in which where people spend time and perform a wide spectrum of activities (Canter, 1977) (Figure 1).

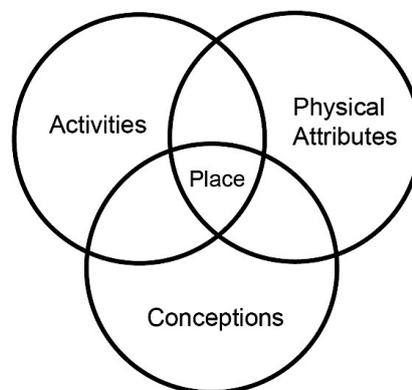


Figure 1. Basic elements of urban place (Canter, 1977).

While people are influenced by their urban environment and related stimuli, this influence takes place at different levels of human experience and has implications on the resulting behaviour. Consequently, researchers have introduced various approaches for defining the factors that determine these influences including perception, suitability of use, and human experience (Woolley, 2003). According to Carmona et al. (2010), there are two dimensions that characterise urban spaces: the first corresponds to the space and its settings whereas the second represents social activities that ensue within it. The two dimensions have a mutual relationship where the physical composition enables the social activity and ultimately the city life as a whole. Additionally, the social dimension is mainly based on the characteristics and quality of an urban space including accessibility, safety and security, proximity, diversity of functions and street furniture. Gehl (2010) indicates that the success of an urban space is strongly related to the level of possibilities for social engagements and the

variety of activities taking place in it. Moreover, Montgomery (1998) argues that the perception of an urban place is a result of people's feeling, sensations, reactions, values and impressions. However, people do not share the same perception of any urban space as this process is subjective and is based on various factors that include age, gender, cultural background, and past experiences. Therefore, the landscape of an urban space could be understood, experienced and perceived, and reacted to differently and in various ways.

Fotis (2015) states that public spaces allow people to meet intentionally or unintentionally within a convenient platform in order to interact, socialise, and share their feelings and experiences. By enabling this interaction, urban open spaces can contribute to the cohesion of communities. Furthermore, cities could not survive without urban spaces in which all kinds of personal, cultural and economic exchanges take place. Therefore, urban open spaces are important places for people to meet and interact, but their significance varies. Along the same line of thinking Amin (2008) argues, and rightly so, any urban street or square will impact on the performance of most social groups and its qualities determine the way in which it is used.

Another quality of urban open spaces pertains to the sense of individuality within collectiveness. Salama and Gharib (2012) note that privacy is, to an extent, a required feeling in public spaces as it reflects natural social behaviour of people's needs. Therefore, applying a range of settings with different layouts in a public place can provide a clear uniqueness of the physical structure of an urban space, offer positive perception and support privacy within social interaction in a public environment. The variety of landscape elements and the spatial subdivisions of a public space help accentuate the contrast with the adjacent surroundings and make it easier for the users to relax. The landscape elements include sculptures and plants; soften the rigidity and solidity of the surrounding buildings that edge urban streets or squares (Remali, 2014) and these can also contribute to the sense of individuality within collectiveness.

Following the work of Krier (1979), the richness of the urban domain is enhanced by adjacent façades that are architecturally subdivided and defined at both the ground and upper floors. This form of articulation promotes visual attractiveness and a comfortable pedestrian scale, which is meaningful and significant for an urban user. Articulation of building volumes and changes in fenestration patterns are effective strategies for diversity of façades while defining distinct modules. The body of literature developed over the past several decades continues to emphasise the relationship of urban landscape and social life and demonstrates the tools that could provide a better understanding of the usability of urban spaces and the way in which it can be improved and enhanced (Gehl, 1987; Gifford, 2001; Jacobs, 1961; Marcus and Francis, 1998; Rapoport, 1990; and Whyte, 1980). Knowledge of urban open space has expanded to include their role, usability and utilisation and has continued to stress the qualities required for a thriving urban space (Lang, 1987; Lynch, 1960; Nasar, 1998; and Rapoport, 1977).

The preceding discussion suggests that studying how urban spaces stimulate urban life continues to be fundamental in interpreting the relationship between users and their surroundings. The paper thus introduces a multi-layered investigation for examining one of the oldest squares in Glasgow City Centre, St. Enoch Square. Methodologically, the investigation is implemented in a number of layers that involve behavioural mapping, visual preference survey, walking tour assessment, contemplating settings, and observing physical traces and by-product of use in order to interpret various forms of experiences that take place. Such a mechanism enables a reflective discernment into the understanding of the fundamental characteristics of urban open spaces that stimulate urban life.

A BRIEF TALE OF ST. ENOCH SQUARE

St. Enoch Square is a public square located on the south side of Glasgow city centre at a central location where two important pedestrian streets meet, Buchanan Street and Argyle Street. It also links the city centre with banks of River Clyde. Prior to 1780s, St. Enoch Square was only a grazing area for sheep (Pollard, 1994). Initially, Buchanan Street was the dominant axis that stretches between the Merchant City and Blythswood New Town and links two major public spaces at that time, which are: Enoch's Yard and Caledonia Square. Enoch's Yard or St. Enoch Square as it is called today became a pivotal link between a riverside chain of diverse public places and the city centre (Reed, 1993) (Figure 2).

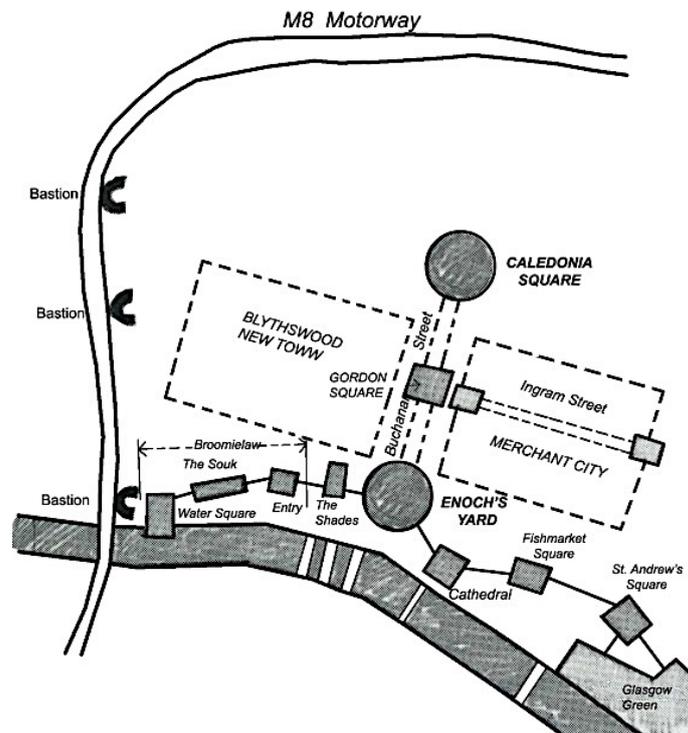


Figure 2. St. Enoch Square within Glasgow city centre in 1780s
 (Source: based on Reed, 1993).

During the decade of 1780s the square became a sacred ground accommodating a chapel and last resting place of St. Enoch (St. Thenew), mother of St. Mungo (the Patron Saint of Glasgow). In 1790 the grounds of the square were paved with stones, and the chapel was expanded to a larger church. In 1876 St. Enoch Railway Station was opened and three years later a hotel with 200 bedrooms was constructed as the most imposing structure in Glasgow (Senex, 2016). Both the station and the hotel were among the first buildings in Glasgow to be lit by electricity. However, St. Enoch church was demolished on 1926 in order to develop a bus station and a car park. In 1974 the hotel was removed in order to use the site as a car park until 1985 when construction works commenced to build St. Enoch Shopping Centre (Jones, 2010). (Figure 3).

In recent years Glasgow has established its new role as an important post-industrial European city and has become a vibrant hub for trade, education, culture, and arts. Despite urban sprawl, social segregation, and car dependency (Frey, 1999) the city displays a great deal of spatial and formal consistency, which makes it a thought-provoking place for urban exploration. Amongst the developments that took place over the past two decades were the

refurbishment of St. Enoch Shopping Centre in 2005 and the renovation of St. Enoch Subway in 2015 as part of the urban challenge to modernise the square and the city centre.



Figure 3. The evolution of St. Enoch Square from 1782 to present
(Source: 1, 2, 3 Jones, 2010, and 4 Authors).

METHODOLOGY

The study employs a multi-layered investigation mechanism in order to assess the way in which St. Enoch Square in its current form stimulates urban life. The analysis is based on both quantitative and qualitative procedures with the aim of interpreting the relationship between the physical composition and social activities. In order to reach a comprehensive understanding on the usability, efficiency and perception of St. Enoch Square, the investigation mechanism represents an assessment framework, which is based on tools derived from earlier studies that engage with the field of environmental psychology.

Constituted in a series of tools the mechanism includes behavioural mapping (Sanoff, 1991), visual preference survey (Nasar, 1988 and Rapoport, 1990), walking tour urban space assessment procedure (Salama and Azzali, 2015), contemplating settings (Salama, 2012), and observing physical traces and by-product of use (Zeisel, 1984) in order to construe various forms of experiences that take place within the square (Figure 4). The first layer involves behavioural mapping that provides a better understanding of how users engage with the square, the amount of people passing through or using the space, and the variety of activities they perform. The visual preference survey is undertaken to divulge how those who live, visit, and work in St. Enoch Square perceive it within its urban context. The walking tour assessment focuses on examining and assessing functional, social and perceptual attributes of the square. Contemplating settings procedure captures spontaneous situations of human behaviour that takes place in the square. The observation of physical traces and by-product of use is undertaken to examine various types of use that enable the verification of key outcomes of implementing other tools.

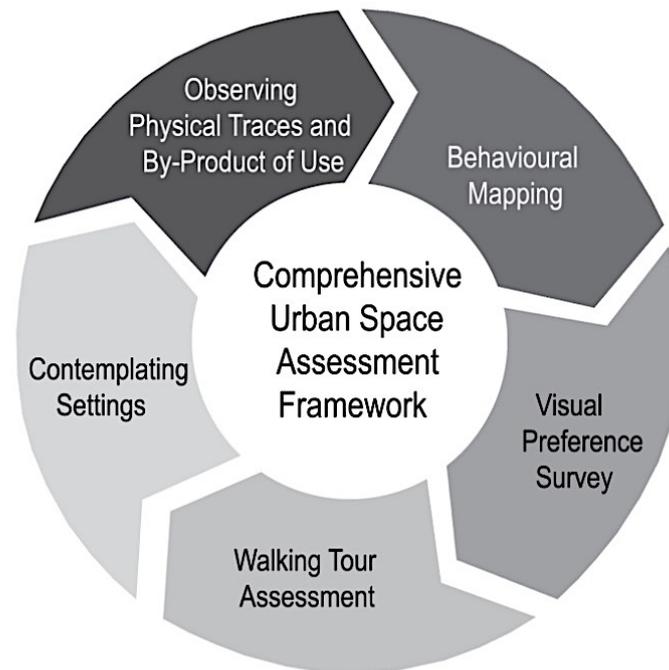


Figure 4 Comprehensive investigation mechanism for assessing St. Enoch Square (Source: Authors).

DISCUSSION OF TOOLS AND KEY FINDINGS

Behavioural Mapping

Given the scale of St. Enoch Square mapping was conducted by a team of three researchers at the same time while enabling effective observation of users and the range and type of activities. The study classifies urban users of the square into three categories: singles (male & female), couples (mixture & unisex), and groups (mixture & families). The categories were observed during their moving/dynamic and stationary/static activities at two different times of the week; midweek and weekend. Specifically, observations were conducted in the morning (10:30-11:30am) and afternoon (2:30-3:30pm) of the same representative days. It is recognised, however, that the profile of users and use within the space may vary if the observation was undertaken using other representative days or other times.

Although various types of use within St. Enoch Square operate and are available throughout the week, there are different degrees of variations of pedestrians' flow, type, and density. Principally, the analysis unveils that the space is more vibrant during afternoons than mornings for all types of users. However, there are only minor variations in the total number of groups and couples who use the space during weekends. While the analysis demonstrates that liveliness of St. Enoch Square during weekends is relatively high, it is noticed that intensity of use increases in afternoons and decreases in mornings. It is also observed that moving activities are very similar during a weekend morning and a midweek afternoon (Figure 5, Tables 1 & 2). The vibrancy of stationary activities follows the same pattern of moving activities, where the amount of people performing stationary social interaction in weekend decreases considerably during midweek. Apparently, both walking and stationary activities decline at the morning times.

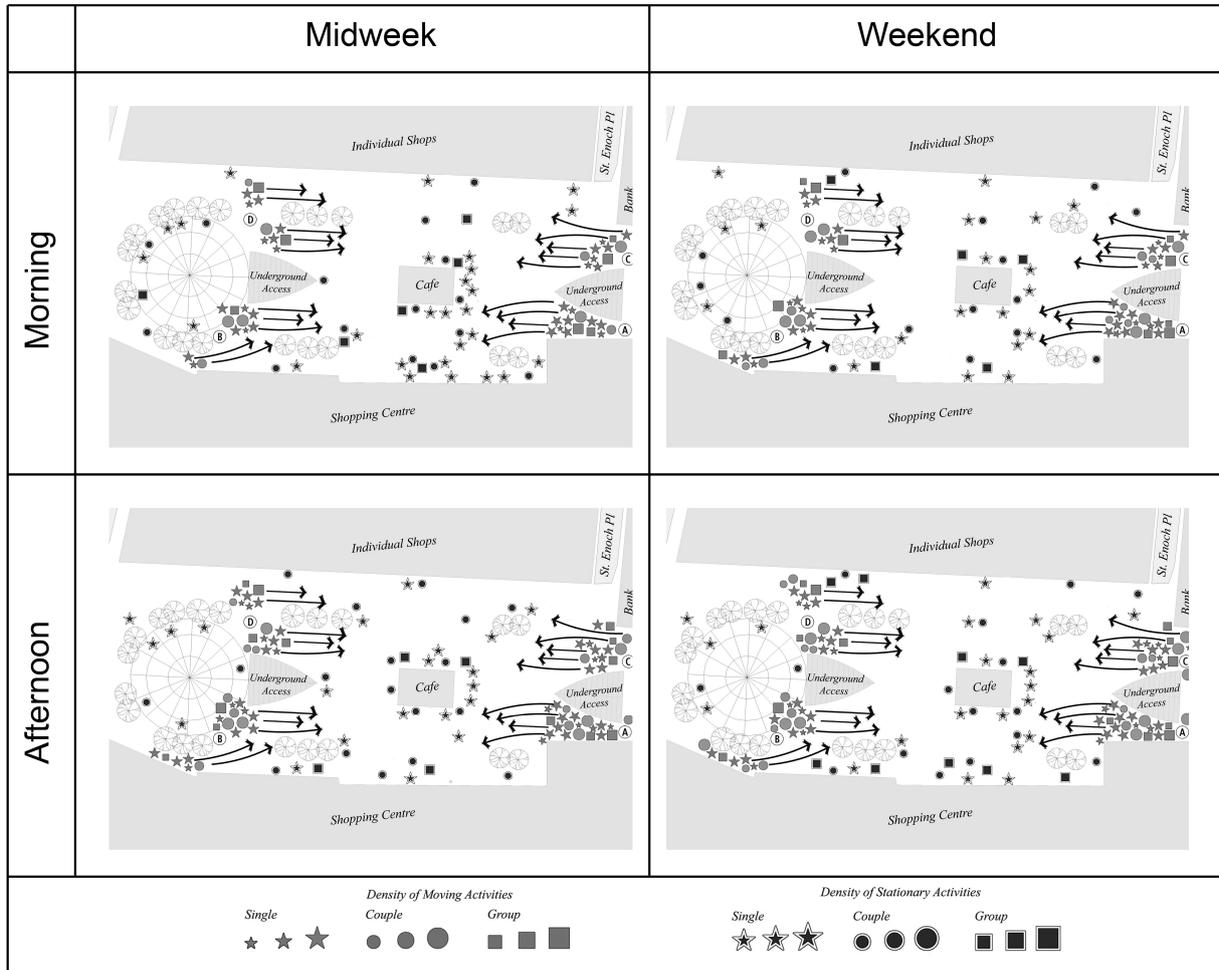


Figure 5. Moving and stationary activities in midweek and weekend during mornings and afternoons (Source: Authors).

Table 1. The total number of urban users according to social groups (Source: Authors).

	Midweek				Weekend			
	Group	Couple	Single	Total	Group	Couple	Single	Total
Morning	468	300	538	1,306	720	408	605	1,733
Afternoon	660	472	743	1,875	724	520	817	2,061

Table 2. The total number of urban users according to type of activities (Source: Authors).

	Midweek		Weekend	
	Moving Activities	Stationary Activities	Moving Activities	Stationary Activities
Morning	1,306	164	1,733	288
Afternoon	1,875	193	2,061	374

Visual Preference Survey

A photographic attitude survey was conducted to examine the way in which different types of users perceive St. Enoch Square and its spatial and visual qualities. This was part of a larger study that included examining user perception of nine spaces within Glasgow city centre (Salama, Remali, MacLean, 2017). The sample of users was randomly selected from the domestic urban users who visit St. Enoch square and the city centre of Glasgow on a daily

basis, the majority of which were known to the research team. Four categories of age groups were identified based on 35 responses out of 60 potential participants who received the survey questionnaire. They were divided into 16-25, 26-35, 36-45, and 46+. These age groups represent (37%), (14%), (09%), and (40%) respectively, and were further divided into two groups, males (51%) and females (49%) as shown in Table 3.

Table 3. The overall profile of respondents to photographic attitude survey (Source: Authors).

Group of Respondents	Categories	Number	Percentage	Total
According to Age	16 - 25	13	37%	100%
	26 - 35	05	14%	
	36 - 45	03	09%	
	46+	14	40%	
According to Gender	Male	18	51%	100%
	Female	17	49%	

Participants were given a week to respond to the survey and were offered the opportunity to contact the researchers for any clarification needed. The assumption was that all participants have experienced Glasgow city centre. Participants in the survey responded to the images of each space using polar adjectives that best describe it. The survey also included questions that enable the identification of the space as a most liked, most visited, most passed-by, and that which represent the city. Paired adjectives that demonstrate included the following:

- inviting/uninviting,
- iconic/ordinary,
- distinctive/indistinctive,
- vibrant/boring,
- urban/peripheral,
- familiar/unfamiliar,
- pleasing/unpleasing,
- restful/stressful
- usual/unusual,
- complex/humble and
- inspiring/uninspiring.

The analysis reveals that both genders consider that St. Enoch Square is characterised by urbanity, vibrancy and familiarity (Figure 6). This can be attributed to its qualities in terms of accommodating historical features or important buildings, or diversity of land uses. However, the Square is identified by a considerable percentage of males and females as ordinary and this is possibly a translation of its general spatial and architectural qualities. In addition, females believe that St. Enoch Square is unusual and distinctive, while male comprehend the Square as humble and indistinctive urban space (Figure 7). The majority of females perceive it as neutral in terms of invitation, simplicity, inspiration and being pleasing. This can be attributed to the degree of intensity of use and the crowding levels that characterise the space. Yet, the majority of males perceived only two attributes as 'neutral': restfulness and distinctiveness. This clearly corresponds with the essential characteristics of the Square as a transitional space that interconnects the busy urban life of the city centre and the river.

St. Enoch Square provides a direct connection with the city's Golden Z as the busiest shopping hub. This is coupled with hosting a direct access to one of key entrances of St Enoch shopping centre and accommodating a wide range of cafés, restaurants and shops. The survey, however, reveals that none of the age groups have expressed any degree of

likeability to this square. Inconsistent with the results of the mapping analysis which demonstrates intensive use, the Square has received a negative visual preference in terms of overall daily visiting. As well, none of the age groups have expressed any feeling toward St. Enoch Square as a preferred urban space to visit or as a destination within the city centre of Glasgow.

Only two age groups, 16-25 and 46+, identify St. Enoch Square as the most passed-by urban space in the city centre. This reflects that the primary use of St Enoch Square is more of a pedestrian route rather than a destination space. Surprisingly, the Square has received no response as a representative urban space for the city as a whole, even though it is one of the urban spaces that have evolved over two centuries and has witnessed many historical events and urban developments.

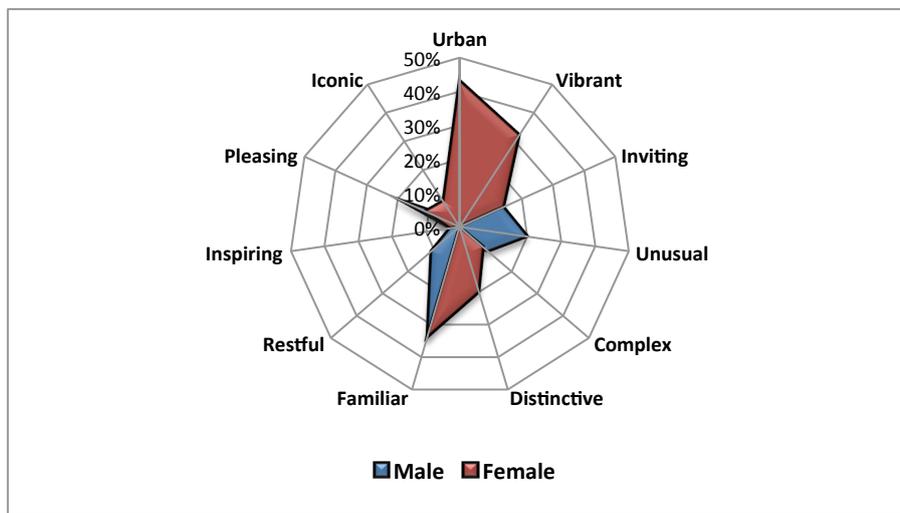


Figure 6. Positive qualities of St. Enoch Square as perceived by male and female respondents (Source: Authors).

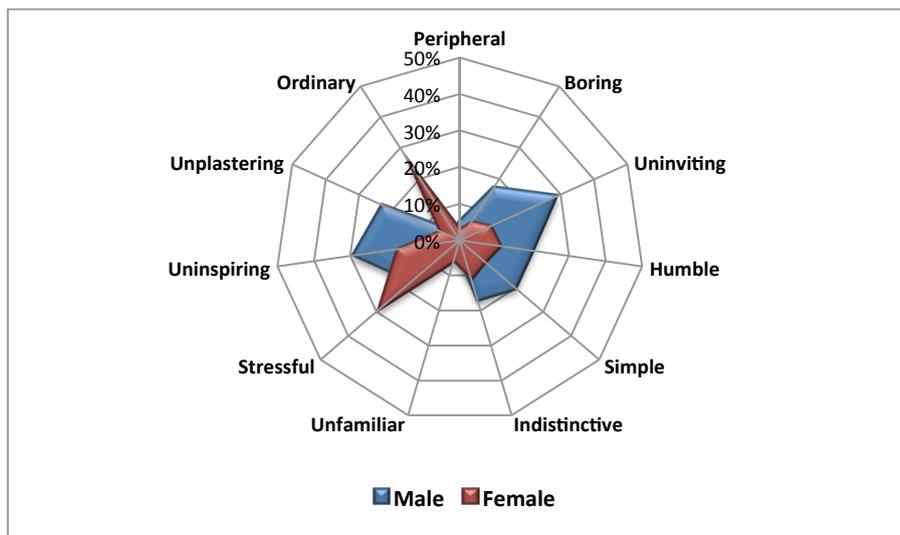


Figure 7. Negative qualities of St. Enoch Square as perceived by male and female respondents (Source: Authors).

A Walking Tour Urban Space Assessment Procedure

Following earlier scholarly explorations conducted in other contexts (Salama and Azzali, 2015) as well as for nine key spaces within Glasgow City Centre (Salama, Remali, MacLean, 2017), this layer of investigation includes an examination of functional, social, and perceptual attributes through a walking tour assessment procedure designed to facilitate a deeper understanding of St. Enoch Square. A tool is devised in terms of three checklists underlying three major sets of attributes namely: functional, social and perceptual. Each set includes 12 factors with a scoring system and a four-point scale, where scores are assigned against each factor in terms of degree of appropriateness. Scores are then averaged to reach a collective score for each set of attributes. The total 36 factors stem from urban literature and are developed to reflect the quality of an urban space underlying the three sets. It is recognized that some factors underlying one set of attributes may overlap with factors underlying another. In essence, this ensures a process of verification; that if one factor is misinterpreted in the scoring of one set, such a misinterpretation could be corrected when assessing a similar one under another set.

Functional Attributes: This set includes factors relevant to variety of uses; ecological quality; formal quality; accessibility; space subdivision; legibility; definition; richness of visual experience; richness and diversity of landscape elements; robustness and adaptability; proximity and continuity; and spatial quality. All indicators of this set have received highly appropriate scores. This is due to the fact that St. Enoch Square accommodates a wide range of uses and contains adequate street furniture that contributes to a variety spectrum of small settings (Figure 8). The square has clear and well defined boundaries and is legible and these qualities make it distinguishable with flexible access and connectivity. Although a mixture of eclectic architectural vocabulary edges and defines the Square it still demonstrates richness of visual experience and spatial and formal quality. The urban space's size, proximity to important attractions and its overall physical structure make it easy for adaptability, resilience and robustness. This confirms why the Square is one of the main urban spaces within the city centre of Glasgow that holds a range of markets and occasional events throughout the year and in essence demonstrates the key role functional attributes play in enhancing its usability. Receiving highly appropriate scores in these functional attributes clearly corresponds with the analysis of behavioural mapping and demonstrates the fundamental nature of these as indicators in stimulating urban life.

Social Attributes: This set encompasses factors or indicators that pertain to sense of interaction; inclusivity; diversity of age groups; diversity of activities; ethnic diversity, efficiency of use, functionality; reachability; accessibility for users with special needs; human scale, and harmony. The assessment reveals that all social attributes of St. Enoch Square are highly appropriate (Figure 9). The space is easily reachable by many options of public transportation in addition to accommodating a subway station within its premises, two main routes of buses pass by and two train stations are located within a very short walking distance; Central Station and Argyle Street Station. Since the Square is pedestrianized and is paved by one level of stone, it is easily accessible from the surrounding urban context for all types of users irrespective of their age or ability. This demonstrates that as an urban space, it is harmoniously integrated to the adjacent built environment in which mainstream pedestrian movement of the public is enhanced by the city's golden Z, diversity of activities, and efficiency of use. Social attributes demonstrate that St. Enoch Square is an intimate urban place that serves diverse groups from different ethnic backgrounds while offering sense of inclusivity by varied arrangements of street furniture elements. This enables settings to manifest, which fulfil the sense of human scale. Notably, the study conveys that

when social attributes are highly appropriate they help develop a general sense of social attachment to the physical place.



Figure 8. Space subdivision and diversity of use in St. Enoch Square (Source: Authors).



Figure 9. Vibrancy and diverse social experiences at different times of the day (Source: Authors).

Perceptual Attributes: This set includes key attributes related to suitability and desirability; relaxation and comfort; human needs for regular use; safety and security; memory; cultural diversity; attractiveness; noise acceptability; identity and history; distinction and recognition; night engagement, and density of users. The overall assessment of perceptual attributes of St. Enoch Square resulted in 3.02 score. The observation shows that it provides a sense of relaxation and comfort for all users where the feeling of privacy and personal distance are respected and valued. For the research team, this urban space independently delivers a memorable and attractive architectural character along with spatial experience. The square reflects, to some extent, the city's identity by accommodating the historical buildings and major buildings such as St. Enoch Shopping Centre, which consequently make it recognised as a unique destination within the city centre of Glasgow. It is important to note that cultural diversity, suitability, acceptability, and addressing user needs are clearly the most important perceptual attributes that contribute to enriching St. Enoch Square for social activities (Figure 10). In contrast with the photographic attitude survey results, attributes that pertain to history, memory, attractiveness and distinction have contributed to the recognition of the space as one of the most successful urban nodes within the city centre of Glasgow.



Figure 10. Efficiency and possibilities for various behavioural opportunities (Source: Authors).

After conducting the assessment of the 12 indicators of each set in St. Enoch Square, the survey conveys that as an urban space, it is highly appropriate (Table 4) as it has received a score of 3.37 in total with functional attributes receiving the highest scores of 3.60 indicating high degree of appropriateness followed by the social attributes that scored 3.50 while perceptual attributes received 3.02. Palpably, the overall results provide a clear evidence of how the Square operates and how various attributes contribute to its success.

Functional Attributes	Variety of Uses	Ecological Quality	Formal Quality	Accessibility	Space Subdivision	Legibility	Definition	Richness of Visual Experience	Richness & variety of Landscape elements	Robustness & Resilience / Adaptability	Proximity & Continuity/ Need	Spatial Quality	Total Average/space
Scores	4.00	3.25	3.75	4.00	3.50	3.75	3.75	3.50	3.50	3.50	3.75	3.75	3.60
Social Attributes	Sense of interaction	Inclusivity	Diversity of Age Groups	Diversity of Activities	Ethnic Diversity	Efficiency of use	Functionality	Reachability	Accessibility	Accessibility for Special Users	Human Scale	Harmony	Total Average / Space
Scores	3.75	3.25	3.25	3.25	3.50	3.25	3.25	3.75	3.75	3.50	3.50	4.00	3.50
Perceptual Attributes	Suitability and Desirability	Relaxation and Comfort	Human Needs	Safety & Security	Memory	Cultural Diversity	Attractiveness	Acceptability	Identity & History	Distinction / Recognition	Night Engagement	Density of Users	Total Average / Space
Scores	3.25	3.50	3.00	3.00	3.25	2.75	3.00	3.00	3.25	3.25	2.50	3.00	3.02
≤ 1.00 (Highly Inappropriate)		> 1.00 – 2.00 (Inappropriate)				> 2.00 – 3.00 (Appropriate)				> 3.00 Highly Appropriate			

Table 4. Scores received by various types of attributes which characterise St Enoch Square (Source: Authors).

Contemplating Settings

St Enoch Square is one of the busiest places in Glasgow city centre. Having a closer look at key identified settings within the space was an important process through which the research team can develop important impressions and assessment of the degree to which the space meets needs and expectations of those who use it, whether as a destination or as a pass by connecting space. By contemplating it is meant that the observer puts a conceptual and mental effort in interpreting the setting. This involves translating key behavioural phenomena such as privacy, territoriality, personal space, personal distance and turn them into concrete terms through description and analytical interpretations of what is observed. While many settings were identified and analysed as part of examining the spatial qualities of St. Enoch Square, four settings are selected to represent various actions and activities within the space

(Figure 11). The contemplation involves the development of statements that aim to answer the question: *Who is doing what, where, how, for how long, and with whom?*

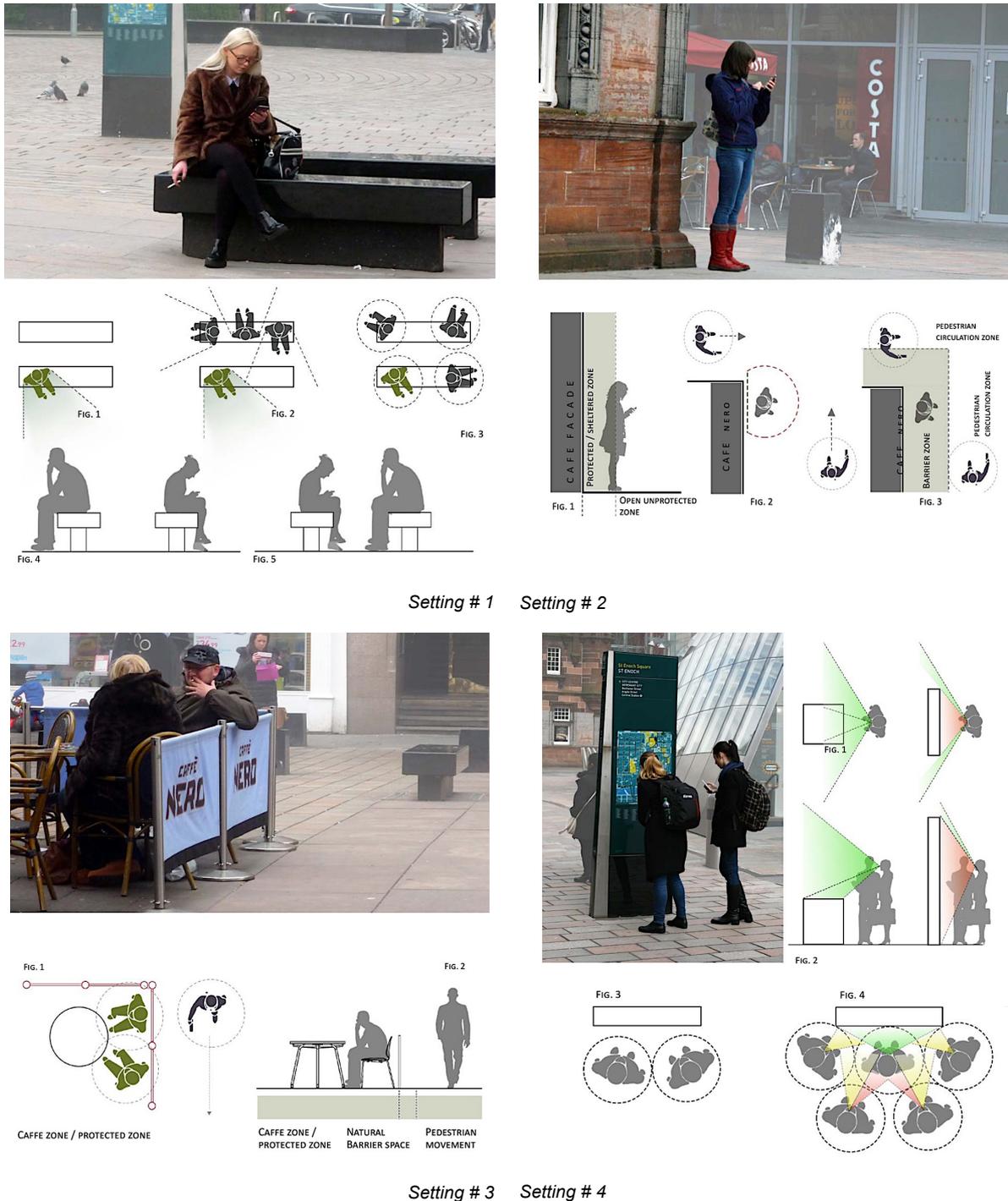


Figure 11. Settings that represent different actions and activities performed by the users of St Enoch Square (Source: Authors based on Scola et al. 2016).

Setting #1 which continued a fairly long period of time illustrates a single female sitting on street furniture while undertaking several activities (smoking; texting; waiting/resting). The

street furniture consists of two identical benches positioned on a close distance from each other, but allowing for sufficient personal distance. The person's position is on one side of the bench closer to the edge, which reveals there is no interest in establishing ownership over the bench. Her purse is attached to her arm instead of left to rest down which suggest that she may leave soon. Her back is turned against the second bench indicating that she does not welcome interaction with people potentially sitting there. Notably, if other individuals sit on the bench next facing any direction her personal space will not be invaded. One set of two benches provides sufficient space and distance for four individuals to sit in without intruding each other's personal space. In setting # 2 the nature of the activity is very different where a female is standing while undertaking a short period activity. Her attention and head position is turned towards her phone and the surrounding context is not of much interest. The visual connection with the pedestrians ahead is partially broken but can be regained easily. Her back is turned against the café wall using it as shelter, i.e., her position next to a wall provides sense of protection and partial isolation. The café's wall is further used as a solid barrier between her and the flow of pedestrian movement. It appears that her preference for this location is that it prevents her personal space from being infringed by those passing by in a close proximity.

Setting # 3 demonstrates a common activity that takes place in the space on a daily basis. Two individuals are sitting at a coffee table outside a brand coffee shop. They are positioned in close proximity and the personal space is small. The setting thus suggests that they are interested in the conversation which the positions their backs suggest no interest in the surrounding scene. The boundaries of the setting are clearly identified and are used as café signboard as well as barrier between stationary and moving activities. Despite the fence's height is only 60cm, it provides an excellent barrier and offers a feeling of protection from the open area. On the other hand the setting # 4 illustrates a setting that involve two passing by females standing in front of information post. While one of them is focusing on the 'you are here map', the other is using her cell phone. The two females are positioned in close proximity, which suggests that there is familiar relationship. Their position within the setting indicates that strangers would be unwillingly moving in close proximity in order to gain visual contact or access.

The analysis of the preceding four settings serves as only example of a broad range of settings that offer various functional and behavioural opportunities. it demonstrates the way in which interactions between people and the physical aspects of a setting takes place. The variety of physical objects and street furniture items provide a range of possibilities for engagement. The analytical reflection and contemplation delineates that various physical elements ranging from furniture to building walls play essential part in the behaviour and the overall comfort level of users.

OBSERVING PHYSICAL TRACES AND BY-PRODUCT OF USE

Due to its key position within the city centre and its close proximity to pedestrian streets with heavy pedestrian traffic, thousands of people pass through St. Enoch Square on a daily basis. Being one of the most relative spaces in Glasgow, St. Enoch Square is expected to meet the demands of a large number of daily users and to adequately address the needs of both passing pedestrians and those living or working nearby. This expectation can be met by efficient urban landscape and street furniture design that help enhance the environment by meeting diverse requirements. Furniture items and products, which are generally accessible for public use within the urban space, were examined as part of an observation study (Scola et al, 2016) (Figure 12). Key items assessed were assessed according to their number, physical condition, maintenance, product design, usability, functionality, accessibility, comfort

level, and aesthetics. This was followed by examining the relationship between the products and users and how street furniture affects the pedestrian behaviour enabling an additional layer of understanding the Square.

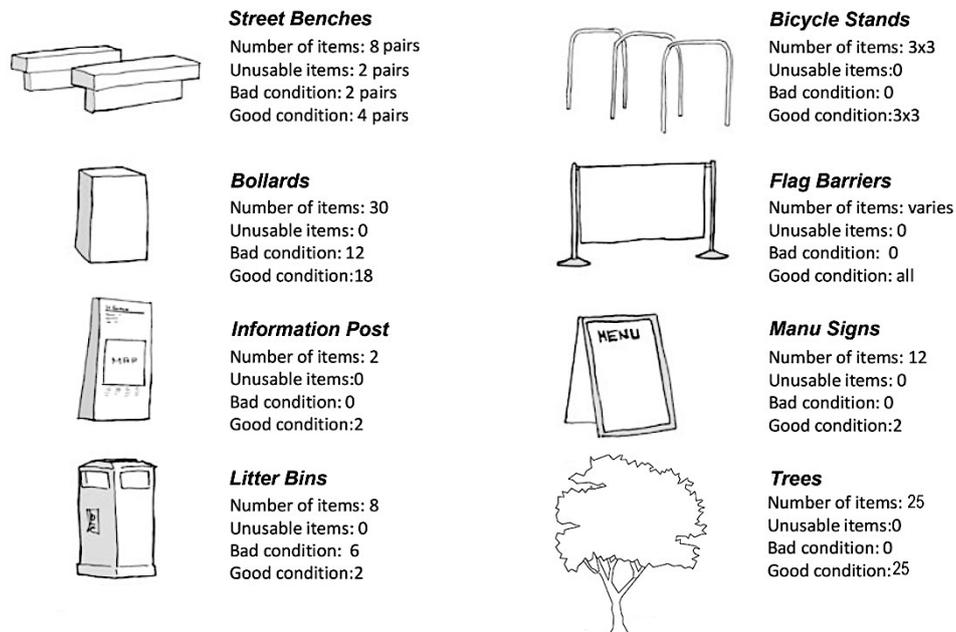


Figure 12. Identified furniture items and products in St. Enoch Square (Source: Authors based on (Source: Authors based on Scola et al. 2016).

Street Benches are located in close proximity from each other. While all the benches are clad with marble, there exist two types, one with curved edges and another with sharp edges. The curved ones are large and form a circular setting while the sharp edged ones positioned in two paralleled rows along the movement flow. The benches that are located along the shops are more likely to be used than those that are positioned adjacent to the cafés and restaurants. The benches are used most of time for seating and resting with intensity of use during lunchtime. The positioning of the benches emphasises the pedestrian movement pattern within the square. The benches are adequately placed in pairs allowing pedestrians to sit in privacy while at the same time offering opportunity for socialization. While the overall number of benches within the Square appears to be adequate, the choice of material does not seem to be so, especially in terms of comfort, colour and surrounding context. No rain drainage solution was provided and the surface is often wet, an aspect of discomfort in the space given the rainy Glasgow weather.

Bollards are designed in two different shapes and colours. The metal ones are placed in front of entrance and exit of subway station, while the marble ones are shaped a square adjacent to the brand café. The metal ones appear to be elegant in a sense and match the iconic glass and entrance canopies and therefore the spatial quality of the square is enriched. The marble ones are designed to support the social activities within the square but in fact their location is not well integrated within the square layout.

Information Posts appear in excellent physical condition. They are designed to allow more than 3 people to study the 'you are here map' without interrupting each other's personal space. The map size appears to be in adequate size and is legible and easy to read.



Figure 13. Various types of use of bollards in St. Enoch Square (Source: Authors).

Litter Bins are distributed throughout the square in different shapes, sizes, colours and material resulting in a wide range of heterogeneous street items and unattractive scene. Additionally, they do not seem to be well maintained with the majority of bin units is damaged, full or very dirty, aspects that do not contribute to the needs for public hygiene.

Bicycle Stands appear to fulfil their main purpose and are heavily used during the day. The location could have been more effective in terms of visual connection and rain protection. The bicycle stand consists of three to four units located with 1 m separating distance. The height seems to be adequate for locking the bikes without bending over to a low level. The overall number of stands seems to be insufficient to meet the demand especially during lunchtime in weekdays.

Flag Barriers are used by most of the cafes and restaurants within St. Enoch Square. They are used as signage to advertise the café; to outline the open café zone outdoors and to separate it from adjacent cafés and the pedestrian movement. Flag barriers are commonly used by all cafés and restaurants resulting in a sense of uniformity.

Menu displays and signage are part of space furniture with a strong presence in the Square as a traditional method of advertisement for catering places. As such, they attract the attention of pedestrians, for a shortstop and look. As the majority of signs are located within the pedestrian circulation zone, they become a focal point for many users to stop around them for a short and quick conversation.

Trees in St. Enoch Square appear to reduce the hardness of the surrounding buildings and add a natural feel to the spatial quality of the square. They are arranged along the movement paths and their position and size make them recognisable. The number of trees also appears to be very reasonable enhancing movement and stationary activities within the square.

Overall, the square has important features that serve the needs of users including benches, bicycles stands, bollards, litterbins and trees. However, there is a substantial a number of street furniture items that do not adequately fulfil the requirements of a public nor it corresponds to the value and history of the Square.

CONCLUSION

St. Enoch square is an urban space within Glasgow city centre which integrates different architectural vocabularies that have evolved throughout its history since 1780s. Using contemporary technology and emerging design trends resulted in the introduction of new shell structured glass entrances to the subway station; two sculptural access points developed in a style influenced by the classical style of the surrounding buildings. The evolution of the Square through time involved dramatic transformations in its use, from a market place, to a sacred ground, to a car park, to an urban node and a transitional space. Given its central location and that it accommodates the subway station as well as one of the largest shopping centres in the centre of Glasgow, the Square continues to demonstrate the presence of a dense urban life with a variety of restaurants, cafés and local shops surrounding it and where people can have many shopping, dining, and socially engaging opportunities.

The comprehensive multi-layered methodology applied in this study enabled various forms of understanding and deciphering urban life as portrayed in the Square. Behavioural mapping offered a better understanding of how users engage with the square as individuals and in groups, the amount of people passing through or using the space, and the variety of activities they perform. With a focus on females and males perception through verbal description of the qualities of the Square, the visual preference survey revealed an overall understanding of how St. Enoch Square is perceived by those who live, visit, and work in it and within its urban context. The walking tour urban space assessment offered a systematic examination and evaluation of functional, social and perceptual attributes of the Square which received highly appropriate scores indicating the overall success of the Square as an urban open space. Contemplating settings procedure identified spontaneous situations of human behaviour and engagement with a variety of smaller physical units of the Square. The observation of physical traces and by-product of use revealed the quality of space furniture and products and they way in which they support use.

Notably, the findings of the walking tour urban space assessment procedure reveals the significance of the functional attributes identified in maintaining urban vibrancy within the Square. The assessment of social attributes demonstrates that the Square offers a great sense of inclusivity and human scale. The assessment of perceptual attributes indicates that the Square offers its users a sense of relaxation and comfort and that the feeling of privacy and personal distance are respected and valued. While the majority of scores resulted from the walking tour urban space assessment correspond well with the findings of implementing others layers of investigation, key results appear to be in disagreement, especially with the outcomes of the visual preference survey.

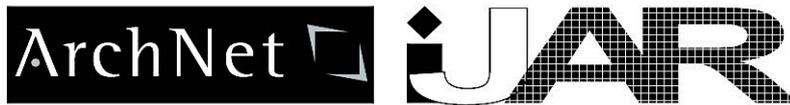
An important outcome of this study is that the implementation of one layer of investigation or limited number of information gathering techniques falls short of providing a complete understanding of how urban life is generated and maintained by the attributes and qualities of an urban space. Systematic assessment coupled with an exploration of users perception of urban spaces can be seen as a utility that facilitates the identification and the subsequent understanding of the spatial experience as it relates different types of attributes. While these procedures have resulted in important outcomes with respect to strengths or weaknesses in key qualities of St. Enoch Square, the engagement with knowledge about movement patterns and actual usability of various settings is critical in providing an enhanced understanding of urban life and how it is supported by the physical qualities of the Square. Direct observation and behavioural mapping is a systematic method for describing what visitors and users of the Square actually do there. It is a direct approach, unlike the two

preceding methods that require indirect involvement of users in seeking information about the understanding of setting preferences or urban movement, or the perception of public spaces. Observation and mapping are important tools for understanding the dynamics of human interaction with the physical environment; it is not a substitute to other layers, but an additional approach to data collection which views people as 'objects' by recording their periodic behaviour. Valuable information and observations have been obtained where behaviour was systematically recorded involving people, activities, setting or space, and timing. The results of implementing such methods combined would establish enhanced argumentation and rationalisations of various aspects of urban life in urban open spaces.

REFERENCES

- Amin, A. (2008). Collective Culture and Urban Public Space, *City*, 12 (1), 5-24.
- Butterworth, I. (2000). *The Relationship between the Built Environment and Wellbeing: A Literature Review*, The Victorian Health Promotion Foundation, Melbourne.
- Canter, D. (1977). *The Psychology of Place*, London: Architectural Press.
- Carmona, M., Heath, T., Oc, T., Tiesdell, S. (2010) *Public Places – Urban Spaces: The Dimensions of Urban Design*. Oxford: Elsevier Ltd.
- Fotis, J. N. (2015). *The Use of Social Media and Its Impacts on Consumer Behaviour: The Context of Holiday Travel*, PhD Thesis, Bournemouth University, Bournemouth.
- Frey, H. (1999). *Designing the City: Towards a More Sustainable Urban Form*. London: E & FN Spon.
- Gehl, J. (1987). *Life Between Buildings*, New York, NY: van Nostrand Reinhold.
- Gehl, J. (2010). *Cities for People*, New York, NY: Island Press.
- Gifford, R. (2001). *Environmental Psychology: Principles and Practice*, Colville, WA: Optimal Books.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*, New York, NY: Random House.
- Jones, C. (2010). *Glasgow History: Achievements and Archive Photographs of this Great Scottish City*, <http://www.glasgowhistory.com/st-enoch-square.html> [Accessed 6 May 2017].
- Krier, R. (1979). *Urban Space*, New York, NY: Rizzoli
- Lang, J. T. (1987). *Creating Architectural Theory: The Role of the Behavioural Sciences in Environmental Design*, New York, NY: Van Nostrand Reinhold.
- Lynch, K. (1960). *The Image of the City*, Cambridge, MA: MIT Press.
- Madanipour, A. (2010). *Whose Public Space? International Case Studies in Urban Design and Development*, New York NY: Routledge.
- Marcus, C. C. & Francis, C. (1998). *People Places: Design Guidelines for Urban Open Space*, New York, NY: John Wiley & Sons.
- Montgomery, J. (1998). Making a City: Urbanity, Vitality and Urban Design, *Journal of Urban Design*, Vol. 3, Issue 1, pp. 93-116.
- Nasar, J. L. (ed.) (1988). *Environmental Aesthetics: Theory, Research, and Application*, Cambridge: Cambridge University Press.
- Nasar J. L. (1998). *The Evaluative Image of the City*, Thousand Oaks, CA: Sage Publications.
- Pollard, A. J. (1994). *A Study of Marine Exploitation in Prehistoric Scotland*, PhD Thesis, The University of Glasgow, Glasgow.
- Rapoport, A. (1977). *Human Aspects of Urban Form: Towards a Man-Environment Approach to Urban Form and Design*, London: Pergamon Press- an Imprint of Elsevier.
- Rapoport, A. (1990). *The Meaning of the Built Environment: A Nonverbal Communication Approach*, 2nd edition, Tucson, AZ: University of Arizona Press.
- Reed, P. (ed.) (1993). *Glasgow: The Forming of the City*, Edinburgh, Edinburgh University Press.
- Remali, A. (2014). *Capturing the Essence of the Capital City: Urban Form and Urban Life in the City Centre of Tripoli, Libya*, PhD Thesis, The University of Strathclyde, Glasgow.
- Salama, A. M. (2012). Evaluation Research and Inquiry Based Learning (IBL) in Architecture and Urbanism: Consumption Versus Production of Knowledge, in *Enhancing Building Performance*, S. Mallory-Hill, W. Preiser and C. Watson (eds.), New York, NY: John Wiley and Sons, 277–284.
- Salama, A. M. & Gharib, R. Y. (2012). A Perceptual Approach for Investigating Urban Space Diversity in the City of Doha, *Open House International*, Vol. 37, Issue 2, pp. 24-32.

- Salama, A. M. & Azzali, S. (2015). Examining Attributes of Urban Open Spaces in Doha, *Proceedings of the ICE - Urban Design and Planning*, 168 (2), 75–87. DOI: 10.1680/udap.14.00011
- Salama, A. M., Remali, A. M. & MacLean, L. (2017). Characterisation and Systematic Assessment of Urban Open Spaces in Glasgow City Centre, *SPATIUM 37, The journal of "Institute of Architecture and Urban & Spatial Planning of Serbia: June 2017, [In press]*
- Scola, A., Milenova, D., Moodly-chetty, D., Minshall, R. & Uszynski, I. (2016). *Assessment of Socio-Behavioural and Spatial Aspects of St. Enoch Square*, Students' Material of the Class on Cultural and Behavioural Factors in Architecture and Urbanism, University of Strathclyde, Glasgow.
- Sanoff, H. (1991). *Visual Research Methods in Design*, New York: NY: Van Nostrand Reinhold.
- Senex, S. (2016). *Glasgow, Past and Present*, London: Forgotten Books,
<https://www.forgottenbooks.com/>
- Tibbalds, F. (2000). *Making People-Friendly Towns: Improving the Public Environment in Towns and Cities*, London: Taylor & Francis.
- Whyte, W. (1980). *The Social Life of Small Urban Spaces*, Washington, DC: The Conservation Foundation.
- Woolley, H. (2003). *Urban Open Spaces*, London: Spon Press.
- Zeisel, J. (1984). *Inquiry by Design: Tools for Environment-Behavior Research*, Cambridge: Cambridge University Press.



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HUMAN PERCEPTION IN THE LIBYAN BUILT ENVIRONMENT: AL- KHUMS AND BANI WALID CITIES AS CASE STUDIES

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Keywords

perception;
mental maps;
Space Syntax;
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Abstract

This paper is concerned with the identification of different influences on the built environment, and those which have a physical and psychological impact on people. The aim of this study is to analyze the impact of the built environment on the lives of people. The interrelationship between people and built environment is based on human perception. This research will explore this relationship further in order to develop a clear understanding of the ways in which architecture may influence peoples' perceptions and experiences. Additionally, the research entails a comparison between two important theories: the first is an Image of the city derived using the Mental Map Theory; the second is related to Space Syntax Theory. The two theories will be applied in two different cities in Libya with the aim of assessing the importance of their interrelationship and how it may be understood more clearly. The paper will also provide guidelines for improving urban design and planning standards with the end goal of producing a high quality perception by those who actually use the space. Moreover, it concludes with a number of research avenues that should be pursued to answer how the properties of built environment affect human perception.

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INTRODUCTION

The design quality of the built environment is reflected in the actions of people, and hence in the type and intensity of their various economic, social, leisure, cultural and family activities. Individuals invest a great deal of energy interacting with man-made situations, from the locations where they live and work to the locations where they relax and socialize. It is a fact that built environments are integral in all aspects of life and play a significant role in shaping their daily activities. A center of this human-environmental interrelationship is perception and experience of place. People's immediate awareness of the environment is given through the process of perception (Norberg-Schulz, 1965). This process allows people to understand, translate, and draw relationships with their surrounding environments. Various Environmental Psychologists like Rapoport (1990) believe that architecture has the potential to arouse people's thoughts, feelings, and emotions: people are affected both physically and emotionally by the built environment which surrounds them.

Urban psychology is the study of the reciprocal relationships between human beings and the built environment. This relatively new field entails components of studies related to urbanism, conservation of resources, and quality of life issues. Most environmental problems are caused by human perception, which makes the changes in these perceptions necessary in order to address such problems. Urban psychologists therefore focus not only on understanding the relationship between humans and the built environment, but also what motivates humans to improve these relationships.

The relationship between environment and behavior covers important topics such as beliefs, meanings and values, which are concerned with various environmental aspects, such as neighborhoods, transportation, routes, devices, recreational areas, and cities. The purpose of studying this relationship is to evaluate the effectiveness of environments that have been designed to achieve specific objectives. Planning and design aims to control and develop the environments in order to influence positive behaviors. This study will emphasize the fact that there is a strong relationship between urban spaces, the built environment, human perception, and human behavioral studies. Understanding human perception is essential towards improving the performance of the built environment economically, socially, and culturally. The interaction between the structures of spatial systems, mental maps, physical urban form, and changes in activities leads to changes in the method of human perception, which will consequently produce different behaviors. The differences of typologies, sizes and shapes of the elements comprising the built environment evoke different human perceptions. The relationships can be described as strong and direct. However, those built environments are shaped by human beings and will be shaped again, depending on the changes in people's perceptions of their built environments. Certain characteristics create an understandable environment which affects the behaviors and reactions of the people within that environment. This relationship between the human being and his/her environment is linked to experiences and human perception (Rapoport, 1995).

Individuals see their surroundings in a fluid manner. This perception fluctuates in accordance with their changing feelings, state of mind, memories, and other factors such as age, sex, race, and culture. This research considers the perception of two distinct built environments: one was established by a tribal society, while the other includes various groups of people who do not necessarily belong to the same clan. The differences in the perception of these built environments can be identified, and an understanding of these differences can be used to develop an appropriate design approach for a built environment that suits the physical, social and emotional needs of the users.

BUILT ENVIRONMENT AND HUMAN PERCEPTION

Built environment is a relatively new term to describe a holistic and integrated concept, encompassing the creative (and not so creative) results of human activities throughout time. This term first appeared in the 1980s and was used extensively in the 1990s (Boyer and Mitgang, 1996). The term 'built environment' forms a significant part of the new definition of landscape architecture approved by the International Federation of Landscape Architects in 2003 to cover their work of planning, designing, administration, and upkeep. It helps to check the functional and aesthetic formats of any built environments and it highlights the identification and the development of the appropriate solutions that concern the quality of the built environment in urban, suburban, and rural areas (Kilbert, 1999).

These were the state goals of a profession that was, for a long time, considered to only focus on yards and gardens. This is different from the profession in its current state, which is more community-based and is comprehensively applicable (Crowe, 1997). Current knowledge and understanding is derived from whatever is left in the built environment from previous civilizations. Similarly, current cultures will be judged through what they have created (Bartuska, 1981).

Many studies have been conducted to analyze the impact of the built environment and its diverse impacts; built structures, streets and recreational spaces influence the built environment where we live, work, learn, eat, and play. The built environment affects our social decisions, i.e. whether or not to go to a specific destination, whether or not to engage in a particular activity such as walking to work or school, or taking our children to parks. These are all daily behaviors impacted by the structure of how our neighbourhoods and built environments are realized.

Within the various studies that look at human activities (movement & stability), movement activity has had the largest share of these studies. Bandura (1989), in his Social Cognitive Theory, has proved that individual factors and the social physical environment can together impact human perception and behavior. The built environment is complex and multidimensional, and therefore presents challenges in deriving a system of measuring it. In fact, there have been several scientific papers, research works, and books which study the concept of the built environment as an influential factor on the physical, psychological and mental nature of human beings.

For instance, Bandura (1989) claims that the social and physical constructs of the built environment are unavoidably interwoven; that is to say, they are hugely affected by each other. Environments are generally constructed for certain social reasons, and accordingly designs have, intentionally or unintentionally, led to social consequences, and even minor interventions in the built environment still elicit social consequences. Halpern (1995) suggests that the types of environments which affect perception and behavior may be physical, i.e. the weather, the climate, and community resources; the built environment; or environmental and social information such as social support, norms, beliefs and attitudes. Sallis and Owens (2002) add that physical behaviors and activities are shaped by environmental constraints and therefore the environment will be considered as a strong behavioral determinant for them.

Owen et al. (2004) as well as William (2011) argue that the built environment has important effects on mental health and perception, as represented by the influence of crowded, noisy and unsafe places and areas. According to Bandura's (1989) Social Cognitive Theory, theoretical foundations have proved that environments have broad effects which influence the individual's behavior and may also reflect individual influences on their environment. In

this sense, it is noteworthy to state that the design of ordinary built environments relates purposefully to the use of such settings. Ordinary environments denote places, settings, or surroundings, where individuals commonly carry out day-to-day activities. Built environments are a result of purposeful design, where designers integrate social content with spatial conditions to generate a place that is consistent with its purpose.

In the same research, It is argued that the function of a place is dependent on its use and is a product of shared knowledge between people in a given social-cultural system. According to Lang (1994), 'perception' is the active and purposeful process of receiving information from nature by observation. 'Perception' is the procedure of observation that incorporates learning and recollection, comprehending, feeling, and depositing data, such as loving and disdaining (Downs and Stea, 2005). According to Hengartner (1999), the first element of city perception depends on material appearance. The next most significant characteristic is utilization. It is normal that these two components are significant impactors in the perception of urban areas and cities.

Perceptual space is a part of the physical environment that is consciously or unconsciously perceived by an individual while evaluating his or her surroundings. Heineberg (1999) believes that one's evaluation of environment originates from a selective subjective perception of the environment, and is called perceived environment. He offers cognitive and mental maps to investigate the spatial perception of a subjective mental image of the environment. Thus, the perception is related to the events and its process occurs because of the presence of an object (Downs and Stea, 2005). Then, perception can be considered a direct sensory experience and cognition an indirect one.

This perception may be connected with the past or the future. In fact, it is comprised of observation, consideration, and critical thinking alongside the organization of data and thoughts. In addition, Downs and Stea (2005) scrutinizes perception and cognition from a spatial context; according to their idea, cognition happens when the perceived object and event is larger than the field of view (Downs and Stea, 2005) and consequently, is organized mentally. From the perspective of spatial planning, the separation between the built and social spaces is no longer valued. One then has to seek well-balanced compromises.

Downs and Stea (2005) cite the architecture magazine 'Arch Plus' that discusses in its articles how important it is to adopt a new perspective in the field of urban planning quality. The magazine invites designers and planners to rethink their archaic planning dogmas; the meaning of space should be appreciated. On one hand, the spatial structure should be understood, while on the other; the designer should reflect his own dominance by identifying himself with the residents of the area. It is of particular importance to allow the inhabitants to participate and to design with them their new living environment. Through this participation, the life and identity of space will be designed in a sustainable way. A city and its components is produced by a complex creation process influenced by the overlap and interaction between the physical and social environments. This urban interaction, according to Hengartner (1999), consists of different factors. He argues that the built and designed world (buildings, streets, rows of houses, roofs, landmarks, gardens, and green spaces) is the localization of human influence in the city, and that the physical environment attains its importance only through social interaction in the space.

CASE STUDIES

Al- Khums City Location

AL-Khums City is situated in the Tripoli area. It has a key location on the Mediterranean Sea and covers an area of 374,000 sq. km, about 22% of the total area of the country. It has a population of approximately 3.6 million people, accounting for about 57% of the total population of Libya. The region is made up of seven sub-regions known as BalaDiyas, including Tripoli and AL-Khums (McKenna, 2011).

The AL-Khums sub-region is located in the northeast part of the Tripoli region and has a coastal location (See Figure 1). The city has Phoenician and Roman roots, and became the capital of the Roman province of Africa under the reign of Emperor Septimius Severus. The ancient Roman city of Leptis Magna is located approximately 3 km (1.9 mi) to the east of the AL-Khums city center. This coastal site is located 10 kilometers to the east of Tripoli, and is one of the largest archaeological sites located on the Mediterranean Sea (McKenna, 2011).

The tiny Phoenician port of Leptis was established around 1000 B.C. to establish trade links with the Germents people. Similarly the other trading posts on the Gulf of Sidra, such as Sabratha, had a distinguished purpose in the second century A.D. In the era when the Libyan Septimus Severus was chosen to the throne of Roman Emperor, Leptis became one of the most attractive cities in the Roman world and remained a good example of urban development. Leptis Magna was like Palmyra and Ephesus: it was a normal city that had an historic part, similar to other Tripolitanian urban communities, such as Sabratha and Oea (modern day Tripoli). It was the largest city in the Roman Empire outside of Rome. The modern AL-Khums City was established by the Ottomans as a garrison, and to serve as the main port of the Allies. In this city, only a few of the Ottoman and Roman buildings are left along the eastern part (Abu-Nasr, 1971).

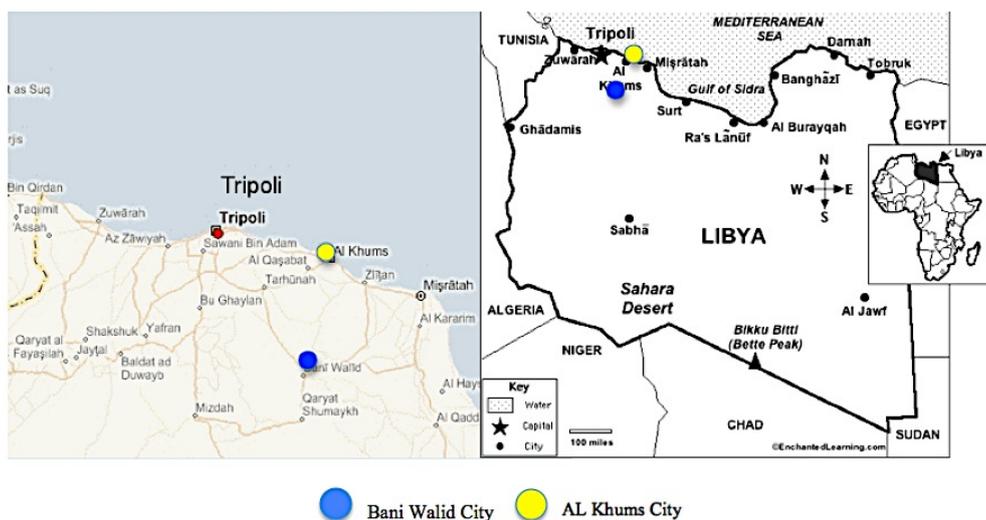


Figure 1. Al- Khums and Bani Walid location (Source: Arael, 2017).

Bani Walid City Location

Bani Walid City is also located within the Tripoli region and in the Misurata subregion. It is a city of one tribe (the Warfalla tribe) and strangers cannot live in, or cannot adapt to, the life of

that city. Now this tribe has become a group of sub-tribes, however, strangers still cannot live among them. All of the lands are divided amongst those sub-tribes with clearly demarcated borders, except the city centre; the city centre is referred to as *Asuqe*, which means 'market area' (Hahn and Muirragui, 1981).

Bani Walid City is situated between the rivers of two valleys, along what has been called Wadi Alblad. Due to the seasonal changes, Wadi Alblad often experiences dry spells or droughts. The dams in Wadi are rather old, and presumably were first assembled when the Romans developed the area in the third century CE as part of the creation of the frontier zone of the Roman Empire (Figure 1) (Abu-Nasr, 1971).

METHODOLOGY

The two Libyan cities utilized as case studies, AL-Khums and Bani Walid, will be used to further the analysis in order to identify the effects of these urban environments on human perception. The two methods used are Kevin Lynch's mapping methods (Mental Maps and "PENDL elements") and Bill Hillier's method of "Space Syntax". The structure of this process will span three steps: the first step is sketching mental maps. The mental maps are created from the results of interviews and asking people to sketch their mental map of their city. This step will be based on the process of creating mental maps, as detailed in Kevin Lynch's theory in the book "The Image of the City". Mental map sketches of both case studies are used to define the elements of the two cities and to record any existing activities and forms that could be used to make the place more legible. The mental mapping will divide the elements of the city into major and minor categories, according to significance and strength of visibility.

The second step is a syntactical analysis of the chosen cities using the Depthmap software. This step aims to understand the underlying relationship between the main open public spaces and the spatial pattern. Space syntax is derived from the hypothesis of the "Social Logic of Space" that introduces a general hypothesis positing that the manner in which an individual identifies space in the built environment affects their social behaviors.

The third step will overlap the first two analyses to understand the characteristics of the spatial formation and the built environment. By comparing the results of using Lynch's and Hillier's techniques, we will demonstrate the connections between the visual image and spatial structure of the city.

The goal of this analysis is to first identify the changes that have occurred in the urban spaces of these two cities; secondly, to identify the behavioral changes and the shifts in human activities that have occurred through the use of these urban spaces in accordance with the larger political, social and economic changes; and finally, to identify the relationship between human perception and the built environment. This study will identify the existence of the relationship between human perception and the built environment in these two cities and will further clarify the negative and positive impacts that the built form in these cities has on human perception.

HUMAN PERCEPTION IN TWO LIBYAN CITIES

Mental Map Method

Kevin Lynch is an important figure in the field of urban studies, exploring the relationship between the built environment and human beings particularly in his prominent work, "The Image of the City" (1960) which opened new perspectives in the field of urban studies. He

devoted himself to producing new forms of cities, both socially and spatially, against the present dynamics of urbanization. Although he believed in the potentials of the urban life, he did not enjoy the very idea of urbanization. According to Lynch (1973), the Earth is rapidly urbanizing and the skin of the Earth has been transformed. In "The Image of the City" (1960), Kevin Lynch says that individuals arrange themselves by a method for mental mapping when they are in urban situations, and he discusses how people orient themselves in these cities.

The theory behind the concept of legibility deals with the degree to which individuals who travel through the city partake in way-finding experiences, entailing a procedure of organizing urban variables in their minds. The mental picture is identified as the outcome of both immediate sensations and the memory of past experiences. To Lynch, these mental maps include five main elements: Landmarks, Edges, Nodes, Paths, and Districts. Through these five components, a generally effective distinction may be made in order to counter the fear of disorientation while conveying a sense of emotional security, and increasing the intensity of human experience in the urban environment.

Lynch says that these elements function as a framework for communication and conceptual organization, providing a clear mental map of the urban environment. This mental map is important because the city is a powerful symbol of a complex society. Lynch divides an environmental image of the city into three important components, identity, structure and meaning, which are connected through urban elements as separate entities and through the relationship of urban elements to other objects. According to Lynch, the city should give three related 'movements': mapping, learning, and forming. People should formulate a clear mental map of their urban environment, they should then learn how to navigate in this environment, and finally people must be able to act upon their environment.

It is the concept of 'legibility' that signifies the extent to which the people move through the city, engage in way-finding, or 'read' their environment. This theory is a valuable tool in understanding how people perceive and move in the urban environment, because urban space cannot be interpreted simply by its physical characteristics, nor can mobility be seen simply as free movement; it is essential to understand these concepts by structuring and identifying the environment through mental maps.

Lynch's work served as an introduction for others to build upon; Jameson (1991) said that according to Lynch, society needs a means to cope with the complexities of their environment, and a cognitive map is an ideal method to do so. Similarly to Lynch, Lefebvre (1974) has clarified that space is not simply 'out there' as a mathematical substance or a priori category, but is always a social construct. Waal (2009) has discussed "semantic way-finding" and the element of visibility. Lynch (1960) discusses the components of the city that appear to be obvious to all individuals; he highlights the clarity of the urban zones, investigation of and surprising experiences within new places, and individuals and our capacity for orientation and way-finding as something we learn, because he thought that disorientation is the cause of anxiety and fear.

The most well-known study employing Lynch's methodology of mental maps, as derived from "The Image of the City", is that in which he analyzes the three American cities of Boston, New Jersey and Los Angeles. In this study Lynch employs his developed a mental map method based on the five essential elements of the urban landscape: Paths, Edges, Districts, Nodes and Landmarks. Lynch describes the degree of compliance between the sketched and the real environment by assuming that most plans look like they were drawn on an elastic table (Lynch, 1960). Figure 2 and Table 1 show the results of the analysis using

Lynch's mental map method of Al Khums City and Bani Walid City: Figure 2 shows the image of the two cities and Table 1 shows the largest reading elements in these two cities.

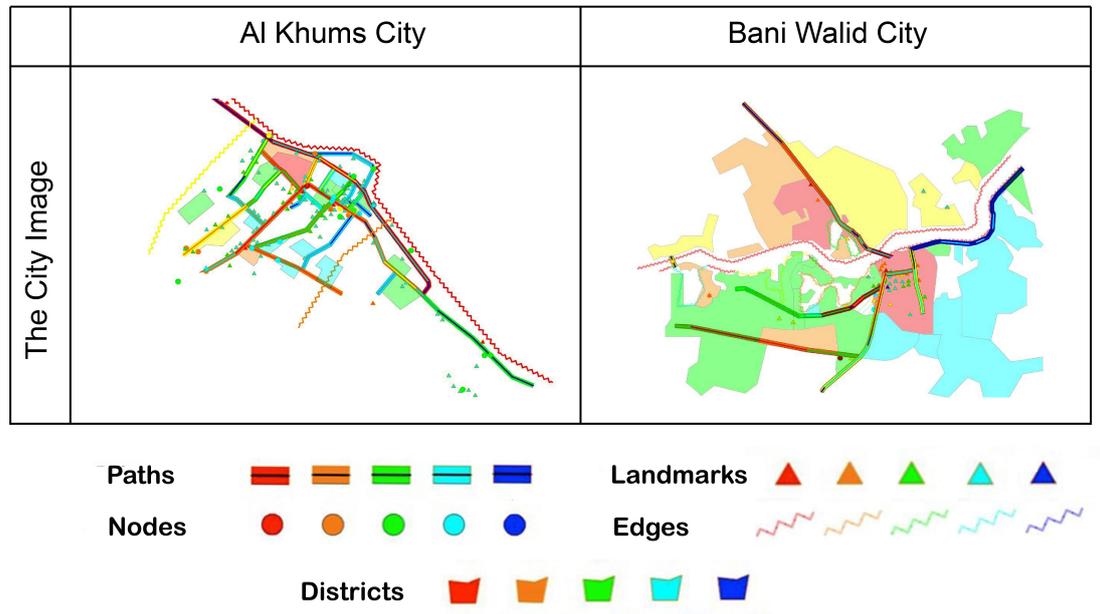


Figure 2. The image – AL-Khums & Bani Walid Cities (Source: Agael, 2017).

Table 1. The largest readings elements in the two cities (Source: Agael, 2017).

	AL-Khums City		Bani Walid City	
Paths	coast road	113	bridge	10
Edges	sea coast	92	valley	153
Districts/ tribes	haraty district	34	AL- manasla	45
Land marks	leptis magna	58	bridge	56
Nodes	the roundabout	75	Animal market	9

Space Syntax Analysis

Space syntax theory was first proposed by Hillier and Hanson in the book "Social Logic of Space" and is generally considered an effective and veritable theory, and methodological analytical apparatus, to examine how space impacts human development, by measuring spatial configuration (Hillier, et al., 1984). The theory of space syntax is founded on the hypothesis of the "Social Logic of Space", which introduces a general hypothesis of how individuals identify with space in built environments, and the effects of these spaces on perception, social behavior and relationships.

Space syntax is generally considered a significant hypothesis and analytical tool in examining how space impacts human development by measuring spatial configuration (Hillier et al, 1984). In space syntax studies, the basic methodology is to partition space by scale and human visual ability. From this perspective, space is divided into extensive and small-scale spaces (Montello, 1993; Egenhofer and Mark, 1995). The expanse of these

small-scale spaces in the city is beyond the human’s visual capacity and cannot be seen from a single vantage point. While small-scale space, for example a part of a room, is bigger than a human body, it may still be understood in its entirety (Jiang et al., 2000). Space syntax has also become a computer language to describe the spatial pattern of urban space. Urban space can be partitioned into two categories from the perspective of human movement: blocked space, and free space. Blocked space is comprised of spatial obstacles such as buildings, and within this space people cannot move freely. On the other hand, free space is the part of urban space where people can in fact engage in uninhibited movement. Space Syntax focuses on the links and syntaxes of space; it measures the patterns, connections and permutations of spaces that cannot be measured through simple Euclidean geometry (Hillier and Hanson, 1984). Space Syntax focuses on the topological relationships of spaces, including interconnectivity and reachability, but not the physical distances.

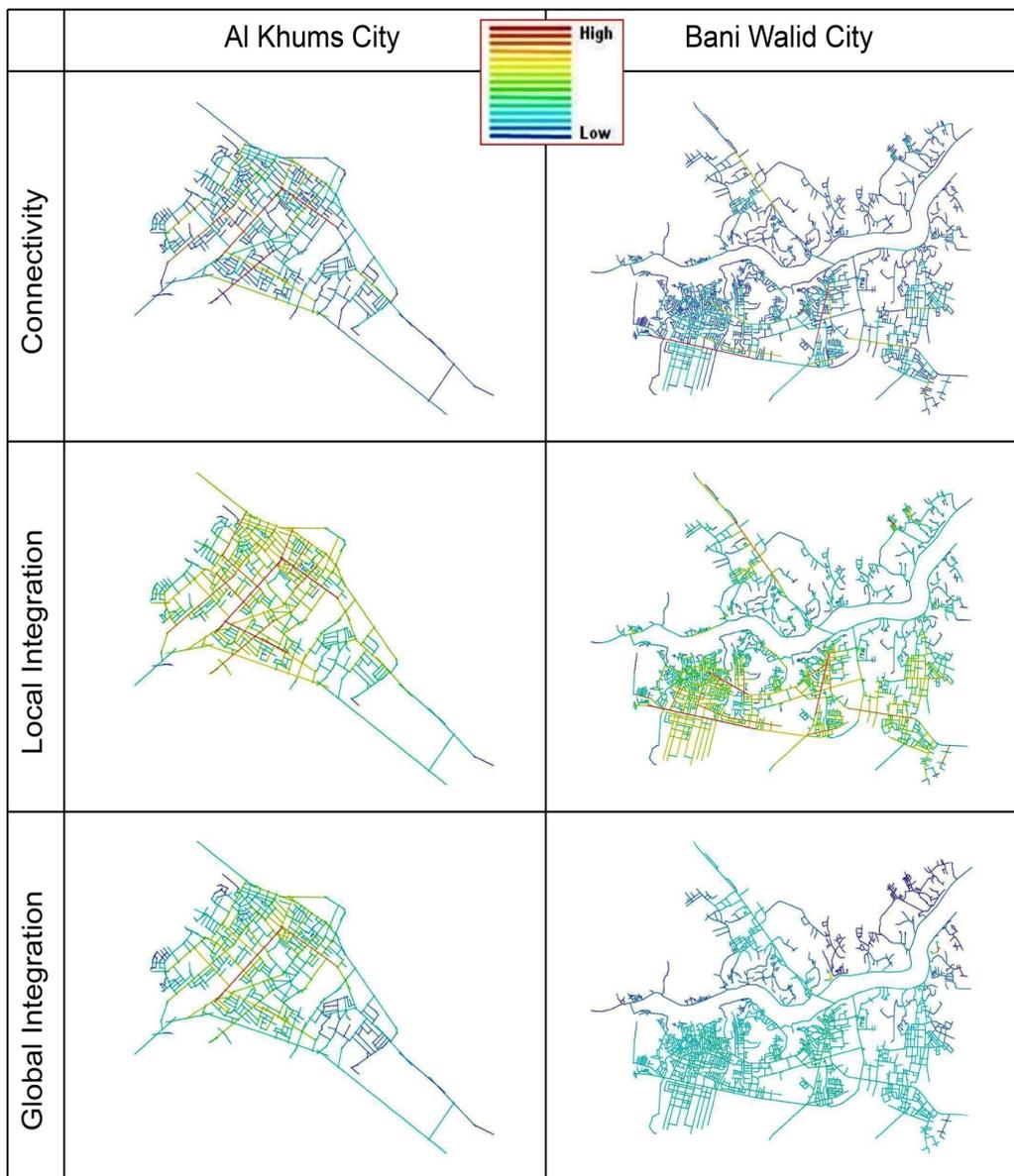


Figure 3. Space Syntax measurements (connectivity, global integration, local integration) (Source: Agael, 2017).

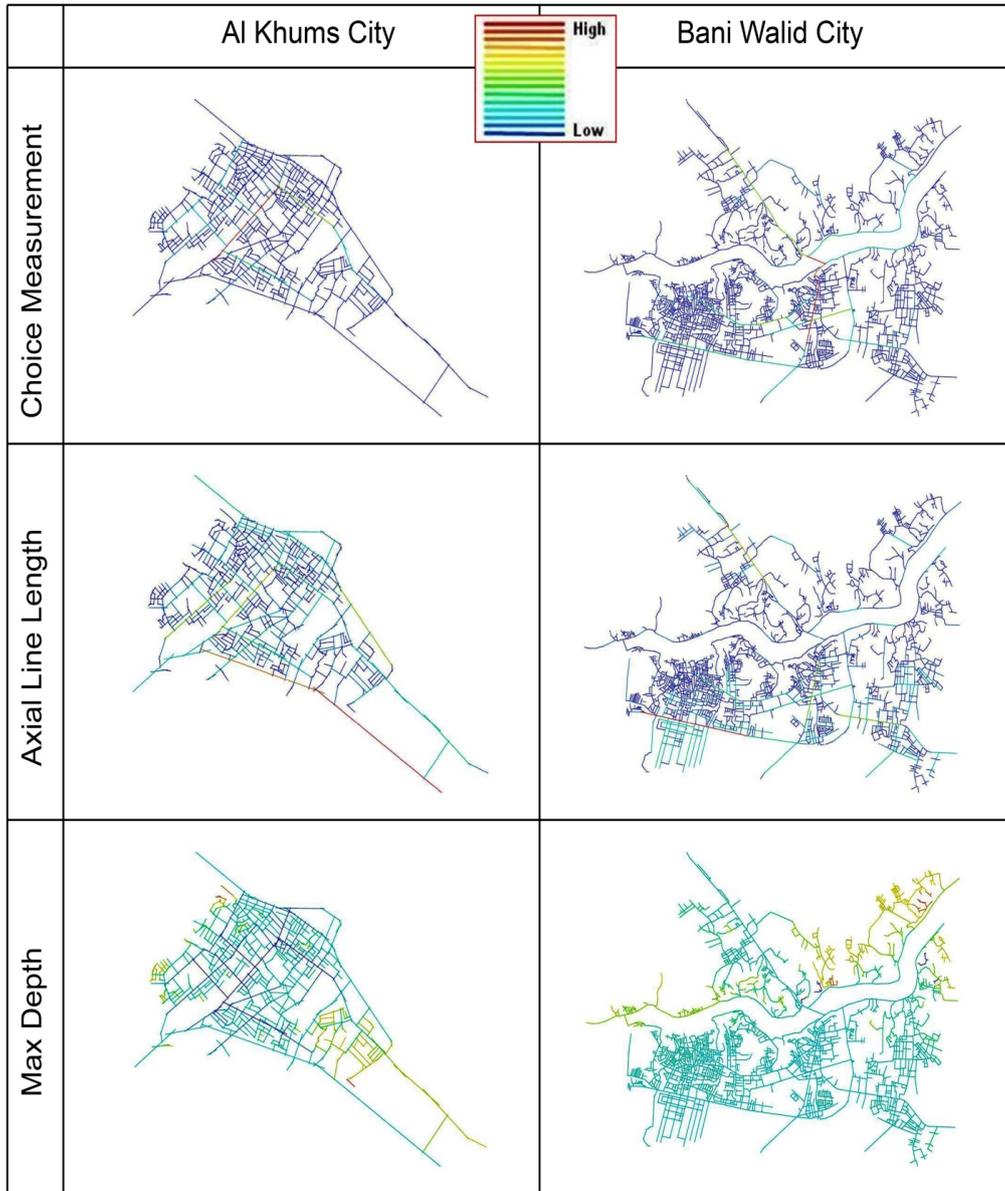


Figure 4. Space Syntax measurements (choice, line length, max depth) (Source: Agael, 2017).

A Space Syntax analysis has been undertaken as a part of the analysis of human perception in the built environments of AL-Khums and Bani Walid which is central to this research; the results will be used to help us to measure connectivity, global and local integration, choice, step depth, length of the axis, intelligibility, synergy and other measurements of parts and spaces of these cities. Moreover, it will assist us in explaining why people perceive places differently and why certain places may be meaningful and others may be easily forgotten (see Figures 3, 4 and Table 2). The aim was to characterize the syntactic configuration of AL-Khums & Bani Walid in order to analyze how each space in the spatial structure is related and connected to the others. The maps (longest and fewest axial lines) of the case studies were drawn in AutoCAD and imported as DXF files to the UCL Depthmap program. The idea of Intelligibility was firstly presented by Hillier et al. (1987). Intelligibility is evaluated as a second order measure; it is characterized as the degree of correlation between connectivity and global integration values of the axial lines in a spatial configuration investigation. Hillier

speculated that strong relationships amongst the global network arrangement guarantee that the spatial setup is reasonable and unsurprising for the person on foot or in a vehicle.

Measurements correlations

The idea of intelligibility was firstly presented by Hillier et al (1987). "Intelligibility" is evaluated as a second order measure. It is characterized as the level correlation between connectivity and global integration values of the axial lines in spatial configuration investigation. Synergy indicator represents the correlation factor between global integration value and local integration value, and explores whether spatial structures support or impede the flow of movement between local level and global level (inhabitants & visitors) (Hillier et al, 1987). Figure 5. shows the Intelligibility - synergy correlations of AL-Khums & Bani Walid cities.

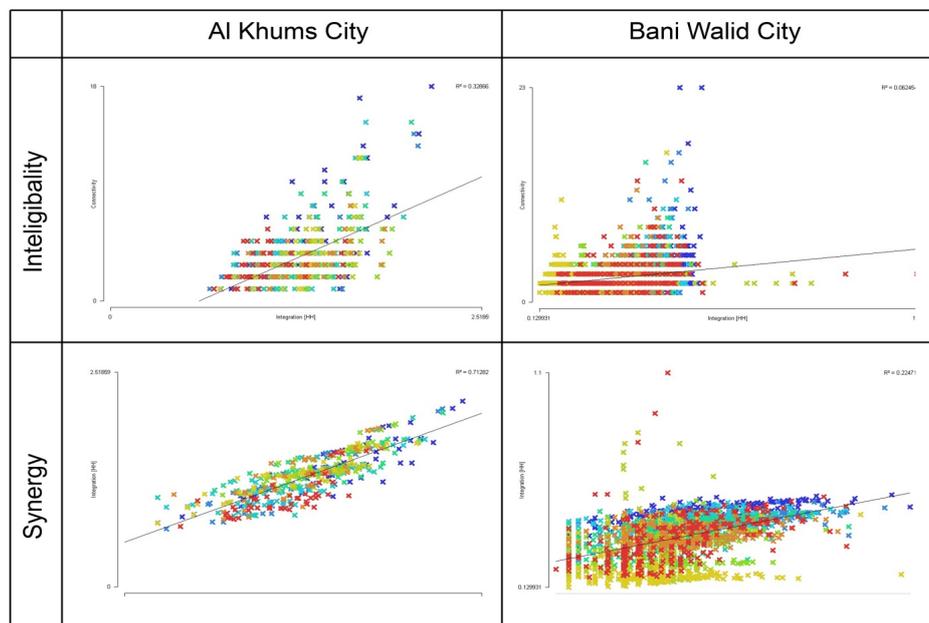


Figure 5. Intelligibility & synergy correlations (Source: Arael, 2017).

Table 2. Averages measurements of the two cities (Source: Arael, 2017).

Cities	Cases	Axial size	Connectivity C	Local integration R3	Global integration Rn	Intelligibility Rn/C	Synergy Rn/R3
AL-Khums City	1	486	3.745	1.842	1.293	0.3286	0.7128
Bani Walid City	1	2907	2.667	1.303	0.348	0.0624	0.2247

DISCUSSION

The property of understandability in a distorted network implies the extent to which what we can see from the spaces that make up the framework is what the different spaces are associated with – it is a reasonable manual for what we can't see, that is the mix of every space into the framework as a whole (Hillier, 1996, pp.94). The property of comprehensibility invokes parts of spatial discernment that relate to route, way discovering, movement and

spatial reference, memory, spatial relations and spatial inductions. The majority of present studies (Chang and Penn, 1998; Conroy and Bafna, 2001; Hillier, 2002) suggest that Intelligibility is a property that relates to spatial comprehension and patterns of usage, and guarantees the predictability of a system.

Although most findings from the mental maps and the syntactic analyses only correlate weakly (see Tables 3, 4), we can find them more correlated if we neglect some of Lynch's elements that are affected by other factors more than spatial factors. Lynch has listed three criteria of legibility for cities (1991). The first one is that the inhabitants should be able to fit the urban components; the structure must be legible not only at a metropolitan scale, but also at a finer scale. The second criterion is that the image of the city must be adopted for new developments and changes in the physical structure.

Table 3. AL-Khums (Paths-Landmarks)-(main axial lines measurements) correlations (Source: Agha, 2017)

Integration R3	Choice	Choice R3	Connectivity C	Integration Rn	Line Length	Mean Depth	Mean Depth R3	Landmarks	Paths		
.098	.102	.035	.025	.078	.294	-0.104	.048	-.331	1	Pearson Correlation	Paths
-.044	.046	.015	.028	-.206	.256	.218	-.389	1	-.331	Pearson Correlation	Land marks

Table 4. Bani Walid (Paths-Landmarks)-(main axial lines measurements) correlations (Source: Agha, 2017).

Integration R3	Choice	Choice R3	Connectivity C	Integration Rn	Line Length	Mean Depth	Mean Depth R3	Landmarks	Paths		
.156	.143	.206	.393	.410	.274	-0.317	.430	.183	1	Pearson Correlation	Paths
.336	-.092	.020	.103	.057	.172	-.164	-.020	1	.183	Pearson Correlation	Land marks

Rapoport argues that the 'material and biochemical aspects' of one's environment are the two most important indicators of the quality of the built environment. Particularly, air quality and environmental pollution reflect the physical quality of the environment (Rapoport, 1997). Similarly, he has mentioned the importance of biological health in defining lively and good environments. This means that good urban places should provide physical and psychological vitality that can be illustrated as per the following: first, consider the Paths in AL-Khums City. Many streets have received high ratings from people in the integrated and connected areas.

For instance, February 17 Street, Entrance Street, Haraty Street, 20th Street, Prison Street, City Stadium Street, Ben Joha Street, and University Street are among those which have received the highest rankings and also represent the more integrated and connected areas of the city. Interestingly, the coastal road that is located in a less integrated and connected area, has received the highest overall rating from people. Also, in Bani Walid city, AL-dahra

Road, Airport Road, AL-jazerah Road, and Tarhuna Road, which are located in areas between high and medium integration and connectivity, have received high scores. Furthermore, the bridge that is located in an area with low integration and connectivity has received the highest rating from people. Figure 6 shows the Paths-main axial analysis measurements relations. Thus, physical features may be more important in defining the Paths as salient elements.

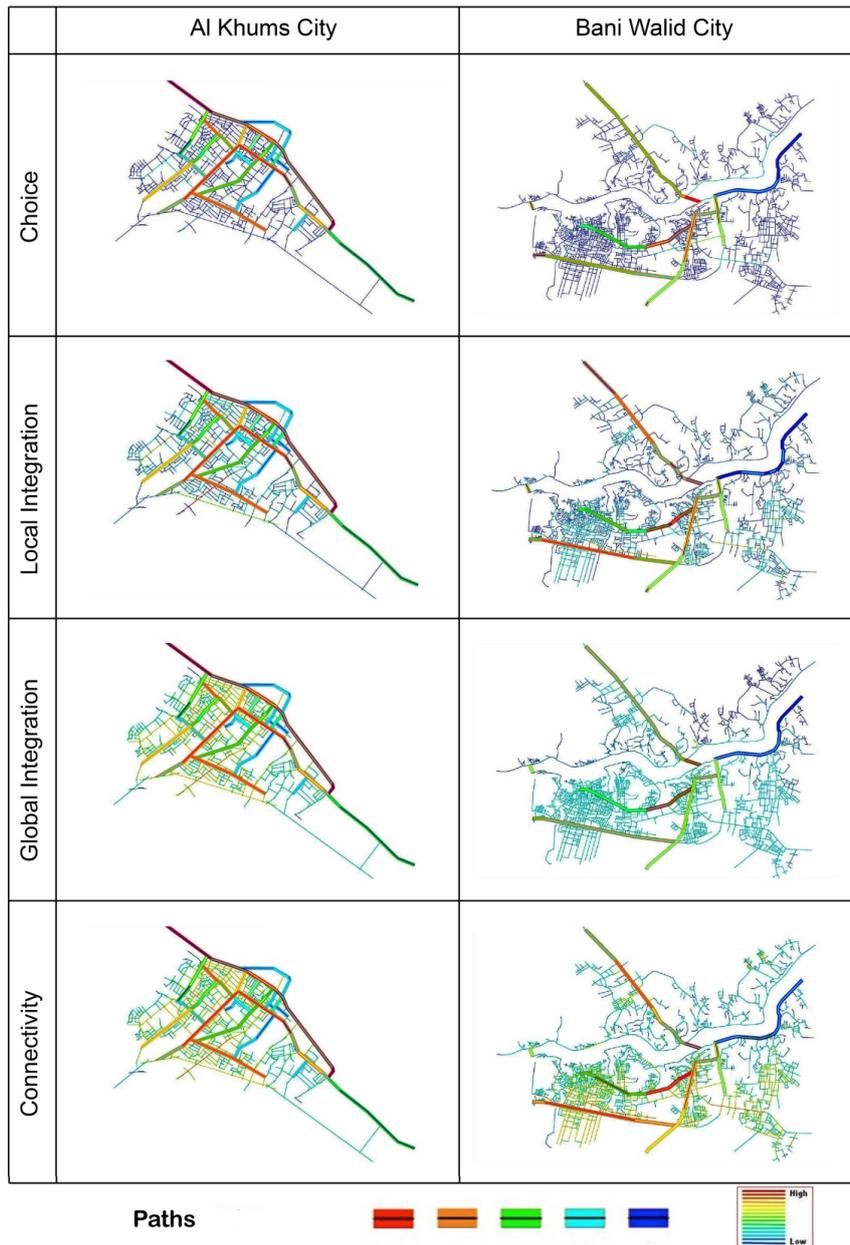


Figure 6. Paths-main axial analysis measurements relations (Source: Agael, 2017)

For example, the sea can be seen as a strong Edge in AL-Khums City, and the valley as a strong Edge in Bani Walid City (Edge Effect). It means the most integrated roads, which have the highest potential for through movement, are often considered the most perceivable and legible ones. Having a high integration within the whole system (at a global level) makes a

road easily recognizable. Furthermore, Edges can significantly affect both cities so that people in both cities adhere to natural Edges as they become part of their lifestyle.

The sea in AL-Khums City is a source of liveliness, inspiration and love. Likewise, the valley in Bani Walid City is not only a source of livelihood, but also the only place for agriculture. Both those places have scored highly. Besides its Paths and Edges, in AL-Khums City there is what are called 'Districts' on or between the more integrated and connected streets that have also received a high rating from people (e.g. the AlHara, Senan District, Kol Al Arab District, Mannubeya District and the 20th street District). The Districts that have received the highest ratings are the Haraty District and the Coastal District. These two Districts are located between the moderately integrated and connected streets and the sea.

Edges also have an increased importance in this city. In Bani Walid City, the circumstance is totally different; everything in the city is related to Districts (sub-tribes) such as Landmarks, places, streets and even some Edges which are themselves defined by tribes. Tribes are social units which have their own privacy, and they are closed. They are distributed by domination and property without any spatial characteristics. Society has a significant impact on life and urban planning; it is clear that many Landmarks in the AL-Khums City have received high ratings from people in the more integrated and connected areas. For instance, the complex administration, gas station, city clinic, police station, Haraty shops, Al-Basha mosque, and many others are Landmarks that are highly recognizable.

Another finding is that 'Leptis Magna' and 'The Port', both which are located in segregated areas, have received two of the highest ratings. Effectively, these findings indicate that while the location in the spatial configuration is one of the more significant criteria for a building to become a landmark, it is not the primary one. Over time, symbolic, financial or historical factors may prove to be more significant in assessing a building's significance as a Landmark. Nevertheless, it is completely different in Bani Walid City, where Landmarks are distributed and influenced either by Edge(s), such as the bridge, or Visual and Cognitive Landmarks. These Visual and Cognitive Landmarks, such as mosques, have symbolic and social values that are distributed by tribes.

Another interesting finding in Bani Walid City is that the each tribe forms a mental image distinct from the other tribes. Figure 7 shows the Landmarks-main axial analysis measurements relations. Nodes in AL-Khums city are also influential; the most mentioned Node is the roundabout that is located between more integrated and connected streets. A Node affected by its location on the sea coast is the AL-Khums Park. The city entrance is located at the beginning of the most integrated and connected Path, and the complex square is the place that symbolizes the revolution. This highly-integrated and connected square is referred to as the 'Animal Market' or 'Vegetable Open Market' in Bani Walid, and represents the place of the most significant economic interchange.

The AL-soque, AL-dahra and Zliten entrance roundabouts are located between the main streets. This likely indicates that not all cities are the results of mental mapping or spatial analysis, but instead depend on the quality offered by their urban environments and may consequently prevent us from analyzing the relationships between the results of these two types of analysis within these particular cities. However, we still must apply these analyzes to complement each other and address their relative degrees of success.

This case study illustrates that while one of the settlements may not appear intelligible in either the local or the global context, the other one is highly intelligible. Moreover, some of the more common features of these settlements, as identified by the mental maps, indicate conceptions of perception and configuration and how people perceive different environments.

They confirm that the structural analysis, or what is called space syntax, is highly important to achieve a clear image of the city elements, and that the mental maps are only limitedly applicable, as was affirmed by Lynch. He observed that while his method appeared to be good at accounting for the most significant elements, it is simultaneously weak in identifying the relationships between these elements.

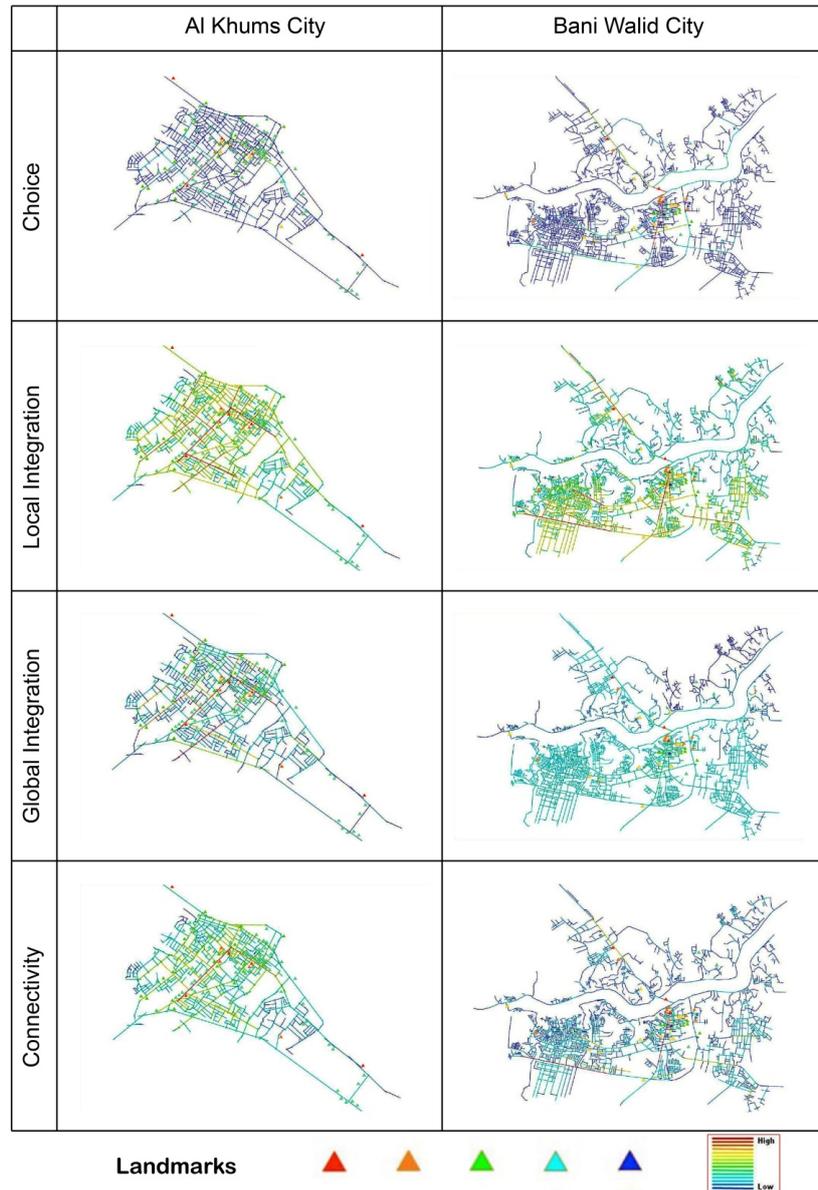


Figure 7. Landmarks - main axial analysis measurements relations (Source: Agael, 2017).

Lynch was too concerned with individual elements and under-emphasized the relationship between distinctive structural elements that demonstrate how both sets can be defined by himself and through space syntax terminology. As a result, we observed that there must be a complementary dependency between them (Lynch, 1960). In conclusion, there is an observed dependency of the Lynchian elements upon the fundamental space syntax, and that dependency exists in reverse. Therefore, this research does not intend to fuse or overlap Lynch's theory of neglecting the underlying structure and linking elements with Hillier's theory of space syntax and choosing to omit the role of differentiated spatial elements, but rather it

aims to demonstrate the interdependency of both spatial structures and distinctive visual elements.

CONCLUSION

The physical environment influences perception in significant ways. It appears that the cultural and societal needs, types of people, and their mentality in an urban environment is a critical indicator of the general quality of a city. What we have found is that there is a need, in urban design, to direct attention to both the visual and the hidden features of architecture, as well as urban design. The interesting discovery is how these buildings and places combine with other urban elements such as buildings, streets, and open spaces that should in turn be accompanied with the appearance of the buildings and places.

The design of urban interfaces and spatial relations is an important key in forming good urban environments; this is where the conditions for interaction are set. An urban environment designed to support exchange and encounters are also well suited to sustain a wide range of possible social and cultural interactions; the aim for engineers and urban architects is to develop spatial conditions which allow such interactions. In general, through our observations and notes during the research, we have found that in both cities, most people find it difficult to understand the task they are requested to undertake (draw a mental map), which we can attribute to the current events in the country.

There is a strong relationship between human perceptions and built environment; this relationship is determined by a combination of visual and structural factors and influences. For instance, space connectivity, space integration, culture, society, politics, history, natural Edges, lifestyles, types of activities and city form and structure together influence human perception of their built environment. All of these factors have an impact on how places are perceived and the degree to which they are perceived positively or negatively.

AL-Khums City is more visually and structurally legible than Bani Walid City; one can quickly and easily understand its details and features. Bani Walid City is less visually and structurally legible; it is difficult to identify the land details and features. The natural Edges have a significant effect on human perception in the two cities and consequently, mental map sketches in AL-Khums City were more detailed, whereas the mental map sketches in Bani Walid are less detailed.

In AL-Khums City, the most frequently mentioned elements in mental maps were Landmarks, comprising 60% of all mentioned elements, while the least mentioned elements were the Edges, which were only mentioned in 2% of the cases. The most noted factors in mental maps were the historic effect and the Natural Edge Effect as straight, long, and connected axes. The large size of the blocks' open gradient spaces and the few directional changes results in fewer axial lines necessary to represent the axial space in the city.

It is straightforward to understand why this occurs. It is easy to move from one part of the city to another. There is a strong link to the sea; in addition to being a source of food and a place of work (both currently and in the past), there is a strong affinity with the sea. It presents a very strong Edge, and the sea effect (Edge effect) makes the sea road (the most perceived Path) an element regularly included in mental map sketches, even though it does not signify high values of connectivity or Integration.

The second most perceived Path is the 17 February Street; it has the largest value of Connectivity in the city. The third most highly-perceived Path is Tripoli Street. Tripoli Street

has a high value of integration and it also has the highest value of choice. The fourth and fifth perceived Paths are most Connectivity values respectively. The Districts share similar properties with almost no differences between them and there is not a clear separation between them. The main roundabout is both the most perceived Node and connected between the two most connected and integrated streets. Its spatial structure encourages a good relationship between inhabitants and visitors. The significance of Leptis Magna has only increased over the course of its history. This city, ruled by the empire of Rome, has deep historical roots (History effects make it a strong Landmark). The main roundabout is the second most mentioned landmark after the sea, as it is connected between the two Streets with the highest connectivity values in the city.

For Bani Walid City, the most mentioned elements in mental maps were Tribes, constituting 39% of all mentioned elements. The least mentioned elements were Nodes, with 6%. The most affected factors in mental maps were Natural Edges and lifestyle affect. The short, curved axes, the small sizes of the blocks, the compact spaces and the high numbers of changes in directions results in a higher number of axial lines representing the spaces in the city.

This result may be more difficult to understand; there is a strong linkage with the valley that serves as a source of food and has a very strong Edge. The valley effect (Edge effect) makes the bridge (the most perceived Path) appears in many mental map sketches, although it does not have high value of connectivity and Integration. Its spatial structure impedes a good relationship between inhabitants and visitors because there is a high level of privacy between tribes.

The second most perceived Path is Al-Dahra road. It has the highest value of Connectivity in the city. The third, fourth and fifth most perceived Paths have the correspondingly highest values of connectivity. The Bridge gains its importance from the valley as the Edge impact makes it a strong landmark. The AL-Manasla mosque is the second most mentioned Landmark after the bridge, primarily due to its location at the entrance to Tarhuna-Tripoli road (Node effect), which has the highest connectivity values in the city.

People know and define all Landmarks, buildings, Edges, and places in terms of their tribes, as opposed to the names of the Districts, except in the central market (Al-Soque) area or in the industrial area. The most important Nodes are associated with the most historic activity in the city, occurring at the Animal Market, which has a strong link with the valley. The valley is the life and it forms a very strong Edge. It is used for agriculture, as a source of food, and it is the source of livelihood for farmers. There are no Districts in the minds of the people in Bani Walid, only tribes and their associated influences. Some Districts are divided into many tribes, while other tribes may be present in more than one District. When asking interviewees about a place or a building, we always receive the same answer; the place or building is described in terms of the tribe, which controls it.

Finally, it is clear that the mental mappings created by the people of AL-Khums and Bani Walid are not exhaustive in the quest to identify their emotional and mental states, however are important when trying to assess the perception of the environment and the extent to which this environment affects the perception of the people. The city should become more diverse, lively, and creative to bring an easy perception. The important aspects omitted from this work are the historical roots of AL-Khums City and how people love the sea, as well as the close link with natural elements in Bani Walid city. It is important to stress that this paper only provides a glimpse into how the method of combining mental maps with axial analysis can help explore the human perception in both physical and social environments.

REFERENCES

- Abu-Nasr, J. (1971). *A History of the Maghrib*. Cambridge: Cambridge University Press.
- Agael, F. (2017). *Relations between built environment and human perception*. PhD thesis. Okan university. Istanbul, Turkey.
- Bandura, A. (1989). *Social cognitive theory*. Greenwich: Stanford University, JAI Press.
- Bartuska, T. (1981). *Architecture and Context: The Emergence of an Ecological Approach to Architecture and the Built Environment*. San Francisco: Annual ACSA Proceedings.
- Boyer, E.L. & Mitgang, L.D. (1996). *In Building Community: A new future for architectural education and practice*. Princeton, NJ: the Carnegie foundation for the Advancement of Teaching.
- Conroy, D. & Bafna, S. (2003). *The syntactical image of the city*. London: Proceedings of the 4th International Space Syntax Symposium, London.
- Crowe, N. (1997). *Nature and the Idea of a Man-made World: An Investigation*. s.l. Cambridge: MIT Press.
- Downs, R. & Stea, D. (2005). *Image & environment: cognitive mapping and spatial behavior*. Aldine publication company, Chicago.
- Egenhofer, M.J. & Mark, D.M. (1995). *Naive Geography, in: Spatial Information Theory: A Theoretical Basis for GIS*, edited by A. U. Frank and W. Kuhn. Berlin: Springer-Verlag.
- Hahn, L. & Muirragui, M. (1981). *Historical Dictionary of Libya*. Metuchen, New Jersey: Scarecrow Press.
- Halpern, D. (1995). *Mental health and the built environment: More than bricks and Mortar*. London: Taylor & Francis.
- Hengartner, T. (1999). *For the fulfillment of the urban environment*. Zeitschrift für Volkskunde.
- Hillier, B. & Hanson, J. (1984). *The social logic of space*. Cambridge: Cambridge University Press.
- Hillier, B., Hanson, J. & Peponis, J. (1987). The syntactic analysis of settlements. *Architecture et Comportement/Architecture and Behavior*, Vol. 2, No. 3.
- Hillier, B. (1996). *Space is the machine: configurational theory of architecture*. Cambridge: Cambridge University Press.
- Hillier, B. (2002). A theory of the city as object: or, how spatial laws mediate the social construction of urban space. *URBAN DESIGN International (UDI)*. December 2002, Volume 7, Issue 3.
- Jiang, B., Claramunt, C. & Klarqvist, B. (2000). An integration of space syntax into GIS for modeling urban spaces. *International Journal of Applied Earth Observation and Geoinformation*.
- Kilbert, C.J. (1999). *Reshaping the Built Environment: Ecology, Ethics, and Economics*. S.l.: Island Press.
- Lang, A. (1994). *Measuring psychological responses to media messages*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Lefebvre, H. (1974). *The Production of Space*. Oxford, UK: Blackwell.
- Lynch, K. (1960). *The Image of the City*. Cambridge: MIT Press.
- Lynch, K. (1973). *City Some Childhood Memories of the City*. Cambridge: MIT Press.
- Lynch, K. (1991). *City Sense and City Design*. Cambridge: MIT Press.
- McKenna, A. (2011). *The History of Northern Africa*, Rosen Education Service
- Montello, D. (1993). *Scale and Multiple Psychologies of Space, in: Spatial Information Theory*. Berlin: Springer-Verlag.
- Norberg-Schulz, C. (1965). *Intentions in Architecture*. Cambridge: MIT Press, Mass.
- Owen, N., Humpel, N., Leslie, E., Bauman, A. & Sallis, J. (2004). Understanding environmental. *American Journal of Preventive Medicine*, Vol. 1.
- Rapoport, A. (1990). *The Meaning of the Built Environment: A Nonverbal Communication Approach*. Tucson, Arizona: Published by University of Arizona Press.
- Rapoport, A. (1995). *Culture, Architecture, and Design*. S.l.: Locke Science Publishing Company, Inc.
- Rapoport, A. (1997). The nature and role of neighborhood. *Urban Design Studies*. Vol. 3.
- Sallis, J. & Owen, J. N. (2002). *Ecological models of health behavior*. San Francisco: Jossey-Bass.
- William, S. (2011). *Mental Health and the built environment. Designing and Building for Health, Well-being, and Sustainability*, Island Press.



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APPLYING THE VERNACULAR MODEL TO HIGH-RISE RESIDENTIAL DEVELOPMENT IN THE MIDDLE EAST AND NORTH AFRICA

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Keywords

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Abstract

In the age of globalisation and continuous urbanisation, architects have a greater responsibility to design residential buildings with comfortable and sustainable environments. However, sustainable solutions should not concern themselves only with utilising technology, but also with creating synergies amongst a community's social, cultural, historical, and environmental aspects. This research focuses on the implications of this wider definition of sustainability within the hot-arid climates of the Middle East and North Africa. Most of the current high-rise residential buildings in these regions do not promote social cohesion as they have been constructed without consideration for local identity and lifestyle. In contrast, vernacular courtyard dwellings and neighbourhoods offer good examples of socially cohesive and healthy environments. Yet, vernacular houses might not be compatible with pressures of modern construction. The question then becomes how to maintain the relationship between the spatial, social and environmental aspects while employing the latest technologies and materials. This paper presents the different qualities of vernacular houses and neighbourhoods in the different regions of the Middle East and North Africa. Social and spatial relationships of different cases are assessed, through a typological analysis approach using a developed syntactic-geometric model, to trace the lifestyle and the cultural values of the society. The aim is a parametric exploration of appropriate sustainable solutions that facilitate the synergy of socio-climatic requirements, the well-being qualities of the residents, and the specifics of culture, time and people while designing sustainable high-rise developments.

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INTRODUCTION

Globally, statistics show that more people live in urban areas (54%) than in rural areas, and it is expected, by 2050, that the world will be two-thirds urban (66% = 5.2 billion) and one-third rural (34%), which is roughly the reverse of the global rural-urban population distribution of the mid-twentieth century (United Nations, 2015). The Middle-East and North-Africa (MENA) Region, which is currently home to 357 million people (Serageldin et al., 2015), has one of the world's most rapidly expanding population, with more than 60% (215 million) of urban inhabitants according to the statistics of the World Bank (2014). This number, which is expected to double by 2050, has been driven by several factors such as economic development, water shortages in rural areas, and displacement of people due to wars. These trends have a significant impact on the built environment and the building construction industry. For instance, global urbanisation, scarcity and high cost of land, increase the demand for affordable living and working spaces, and therefore push the emergence of high-rise and high-dense developments which could be considered as a hallmark of contemporary cityscapes, and the most viable solution for many urban centres (Hudgins, 2009; Yeang, 2012; Modi, 2014). More than 70% of high-rise developments in the world are located in Asia, the Middle-East and Africa (Kearns et al., 2012). Dubai, for instance, was ranked in 2015 as the ninth city in the world with more than 1025 completed high-rise buildings, while Abu Dhabi, Sharjah, and Doha ranked 32nd, 33rd, and 58th respectively (CTBUH, 2015).

The Concept of 'Sustainable Vertical Cities'

The surrounding structures and context is a major factor for considering a building to be characterised as a 'high-rise' or 'tall' (Kloft, 2002). For instance, if an urban setting has an average of two to three floor buildings, then a five-floor structure could be considered as a high-rise. However, different bodies define this term in various ways. According to the Emporis database on Buildings and the Real Estate Industry (2015), a 'high-rise building' is defined as 'a multi-story structure between 35 and 100 metre tall, or a building of unknown height from 12 to 39 floors'. These structures are also called 'tall buildings' in some countries, and 'tower blocks' in Great Britain and some European countries (Craighead, 2009). In the United States, the National Fire Protection Association (2015) defines a 'high-rise' as being higher than 23 metres, or about seven storeys. In India, the building codes of Hyderabad indicates that a 'high-rise' is a building of four floors (15 metres) or more in height (Narayan Reddy, 1996).

All of these definitions indicate that a high-rise building is a mass of built up spaces on a small footprint. However, there is a requirement for the architect to design a 'contemporary' building that represents the current time, to think holistically about all aspects affecting the output, and at the same time take into consideration the latest issues of technological developments (Dalziel, 2012). Ken Yeang (2012), a Malaysian architect who is considered the father of the sustainable and bioclimatic skyscraper, claims that this huge volume could be defined as a 'vertical city', which requires designers to take into account the different dimensions of sustainability (social, environmental, and economic) during the design process in order to improve the quality of life (see Figure 1). Social and cultural sustainability is about combining the design of the physical environment (spatial layout and form) with the social needs of users (Woodcraft, 2012; Berkeley-Group and UK-GBC, 2012). Moreover, it seeks to preserve traditional social and spatial practices against the imposition of a modern built environment that lacks cultural relevance (Pomeroy, 2014). In residential buildings, designers could achieve this relationship through providing interactive spaces and supportive environments for residents that maintain their privacy and reflect their identity. In terms of environmental sustainability, architects and engineers should consider the different

conditions of local climate, to offer thermal comfort and consume less energy. Finally, low operating costs and the use of local materials are major issues that need to be considered to achieve economic sustainability.

Benefits and Impacts of High-Rise Residential Buildings in MENA Region

High-rise developments create a challenging environment, with both benefits and impacts, as compared to other types of horizontal constructions (Ali and Al-Kodmany, 2012). Benefits such as preserving natural and green spaces in the city, and locating various services within suitable walking distances from units, could be achieved. Moreover, the small area of the envelope could reduce costs, materials, heat loss or gains, and the overall *heat island* effect (Yeang, 1999; Li, 2013). In terms of impacts, these buildings limit the contact views between users and the outside environment and sometimes create isolated and dull boxes. This is due to the marginal existence of nature and the limited hierarchy of open and semi-open spaces. Although there is a trend of inserting a central atrium, it is not exposed to the external daily life, so it seems to be lifeless, and as a result, these buildings depend on the use of cooling and heating mechanical devices in different spaces instead of natural resources such as wind and sun. Furthermore, most of the current developments are constructed as iconic buildings that ignore the specifics of the cultural context, lifestyle and living patterns, local traditions, or social and psychological effects on occupants (Wood, 2013; Al-Masri, 2010; Mitchel, 2010; Lotfabadi, 2014; Pomeroy, 2014) (see Figure 2). In addition, these contemporary buildings are more suitable for single-users than for families, the elderly, and children, and do not express the individuality and uniqueness of each family (Al-Kodmany, 2015; Losantos and Cañizares, 2007).

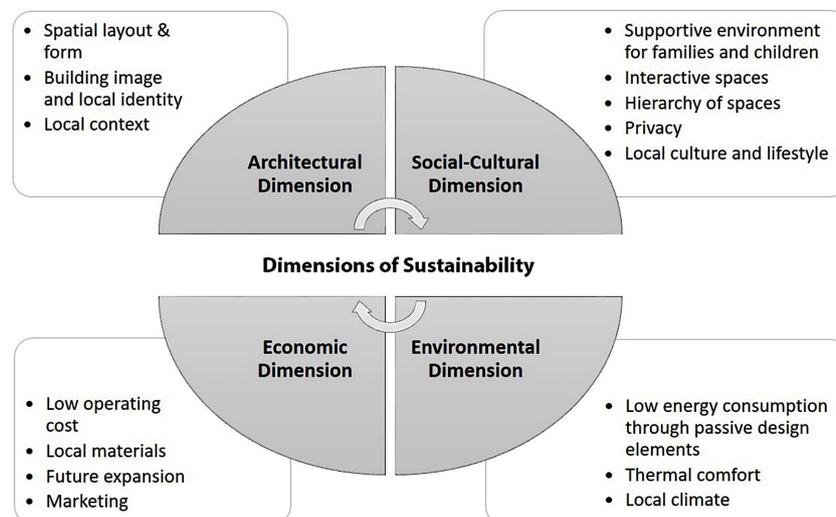


Figure 1. Dimensions of sustainability in high-rise residential buildings (Source: Authors).

Different scholars highlight the consequences and harmful effects of living in high-rise buildings (Wood, 2013; Kearns et al., 2012; Gifford, 2007). A major study, conducted by Professor Ade Kearns and his colleagues (2012) in Glasgow, examines the impact of living in high-rise buildings in comparison to other dwelling types. They measured different social outputs (such as cohesion, social contact with neighbours and friends, and social support), and concluded that high-rise flats have the highest negative impacts on residents (see Table 1). These impacts could be summarised in six categories:

- Fear, insecurity, and crime;

- Mental and physical health effects due to the small size of units and overcrowded spaces;
- Lower sense of community and familiarity with neighbours;
- Lower levels of social support and social development due to isolation;
- Impacts on families and children as parents keep their children indoors due to safety concerns and difficulties of supervision at a distance, which therefore causes psychological distress, behavioural and learning difficulties;
- Lack of identity for each unit due to the standardisation of floor plates.



Figure 2. A model showing the suggested designs of high-rise buildings to be constructed in the downtown of Amman, Jordan (Photo by Authors, 2015).

Table 1. The impacts of living in high-rise in comparison to other dwelling types
(Source: Kearns et al., 2012)

Social Outcomes	Dwelling Type	%
Poor cohesion	House	15.7
	Apartment buildings	15.9
	High-rise flat	26.3
Low social contact with relatives & friends	House	15.8
	Apartment buildings	16.5
	High-rise flat	20.3
Low social contact with neighbours	House	13.6
	Apartment buildings	15.5
	High-rise flat	29.3
No available social support	House	17.0
	Apartment buildings	18.0
	High-rise flat	24.2

TOWARDS A 'CONTEMPORARY VERNACULAR' HIGH-RISE DEVELOPMENT: A 'CRITICAL REGIONALISM' APPROACH

Generally, a successful design means that achieving an 'identity', which relates to the design of all components in harmony with context, climate, traditions, needs, and requirements of both the modern and future times (Mehrpooya et al., 2015). Therefore, socially-sustainable high-rise housing needs a smart and sensitive approach associated with the ideals and expectations of its users, and the ability to deliver the local lifestyles for residents (Kennedy

et al., 2015). One approach to deal with these issues is to incorporate the local tradition and its unique responses to spatial arrangement, place, and climate, in the design of contemporary buildings and creative forms (Lim, 2004, as cited in (AlHaroun, 2015)). This generates a 'contemporary vernacular' architecture that has symbolic identities. Ken Yeang, for example, bases his works on the adaptation of regional architecture 'a critical regionalism approach', through understanding traditional values, as well as the importance of progress, without the direct use of traditional forms and materials (Pomeroy, 2013). This way of thinking, which leads design to respond to specific context, is a balance between two views: the 'traditional' perspective, where designers see the loss of traditional ways and values, and the 'modern' perspective, where designers declare the inevitability of change in the age of globalisation (Ragette, 2003).

To achieve this balance, and to provide a continuity to the existing world, a 'typological analysis method' for understanding the space-form language and the different characteristics of locality and environment, is adopted. This type of analysis for historical cases is a helpful strategy to understand the space-form language (for both dwellings and neighbourhoods) and the different characteristics of the locality (contextual, typological, morphological and cultural-social needs) in an attempt to incorporate local heritage in future developments. Therefore, the researcher sees that collecting data from multiple historical cases might answer the main question of the study with regards to 'how could the local culture, lifestyle, and traditional techniques employed in vernacular architecture, be maintained and translated into an interactive environment for children and families in contemporary high-rise buildings?'

LEARNING FROM THE VERNACULAR MODEL: ANALYSING THE NEIGHBOURHOODS AND THE TRADITIONAL HOUSES IN MENA REGION

Learning from previous experiences is a good way to design with sensitivity as it provides continuity to the existing context (Assi, 2001), and the cultural roots of the society (Ragette, 2003; Rapaport, 1969; Ravetz and Turkington, 1995). Oliver (2003) expressed the vernacular environment as a '*theatre of our lives*', where different scenes of daily events are played out. With time, these vernacular dwellings became a 'tradition' and a 'philosophy of life' that passed on from one generation to the other within families and communities (Ragette, 2003). Most studies in the field of vernacular architecture have focused on describing the different patterns of houses, while studies on tall buildings have focused on energy consumption efficiency more than studying the social and cultural dimension, such as privacy and hierarchy of spaces (Galal Ahmed, 2011; Wood, 2013). However, linking the physical form of houses with all environmental, social and cultural aspects could be a useful way to achieve sustainable designs that respond to local context, community, and climate (Wood, 2008). Therefore, this study aims to understand, analyse, and encode such historical cases in the hot-arid areas of the MENA region, logically and mathematically, and then create a database with parameters and constraints that are useful for designing contemporary and sustainable high-rise residential buildings that trace the social and cultural values of the society.

Sustainability at the Scale of Residential Neighbourhood

Most modern and contemporary towns are characterised by a rational and rigid grid of streets and open plazas. In contrast, the layout of traditional neighbourhoods in the study area (e.g. Cairo, Tunis, Aleppo, Medina, Algeria, Fez, and Marrakech) usually form an irregular pattern and have more than one focal centre. However, the organic spatial configuration of these quarters produces a homogeneous urban fabric and balanced

townscapes that are determined by specific social and religious principles (Bianca, 2000). The traditional public squares allow for a high degree of social interaction between people, and reflect their sense of community (Al-Masri, 2010). The access from public areas to residential quarters is usually broken into hierarchal sections to increase degrees of privacy, and at the same time maintain a balance between isolation and interaction (Crouch and Johnson, 2001). This pattern has been gradually controlled by different intermediate tools, such as dead-end alleyways and hierarchal sequence of gateways, to protect private family domains, and prevent conflicts with the public realm (Bianca, 2000; Mortada, 2003). Moreover, it reduces external heat gain or loss, and blocks excessive air movement which carries sand and dust (Ragette, 2003; Maleki, 2011; Crouch and Johnson, 2001; Moossavi, 2014). In terms of social benefits, disputes with neighbours are avoided and the privacy and security of families are preserved through visual barriers, such as the principle of staggered entrances (Mortada, 2003), the use of high walls and setbacks between houses, and avoiding window openings towards neighbourhood roofs (Ragette, 2003; Bianca, 2000) (see Figure 3).

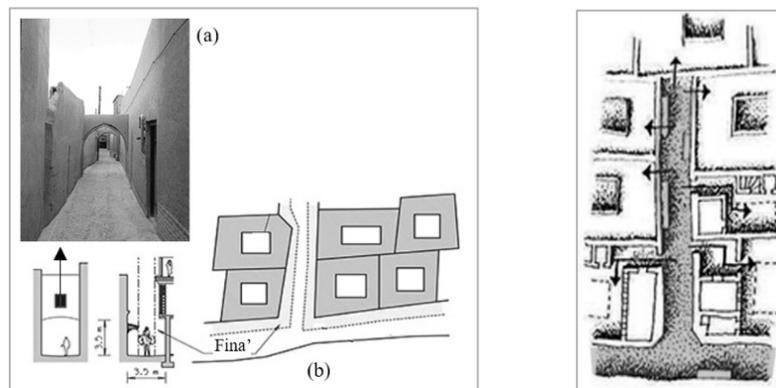


Figure 3. (Left) The use of covered pathways (*fina'*) in residential quarters (Source: (a) Moossavi, 2014; (b) Steyn, 2012); (Right) The principle of staggered entrances (Source: Ragette, 2003).

Sustainability at the Scale of House and Residential Unit

Broadly, the spatial configuration of dwelling layouts may be varied in different periods, regions and cultures (Mustafa, 2010). Traditional dwellings in hot-arid regions are inward-looking houses with living spaces organised around a central space (courtyard) and open to the sky. Most dwellings have one courtyard (atrium house), and sometimes more (patio house). The main courtyard is usually for the family, and located on the ground floor. The other acts as an entrance open-space with a staircase leading to upper floors. Many dwellings have porches, galleries and balconies that spatially connect the indoor environment with the outside while preserving their purposes as extensions of the domestic living space. Moreover, spaces are dynamic through the use of different techniques such as changes in levels, directions, and degrees of openness (Ragette, 2003). This relationship between indoor and outdoor spaces and the use of transitional zones between public and private areas are key qualities in the spatial arrangement of the house to maintain social needs (such as privacy) and environmental qualities for family members (Oliver, 2003). The following illustrates briefly the different dimensions of sustainability (social-cultural and environmental) at the scale of the house, in an attempt to reflect these issues in the design of high-rise buildings.

On a basic level, the overall social and environmental qualities of such traditional horizontal quarters could have the potential of being transferred into vertical arrangements through dividing it into layers as a representation of neighbourhood in a traditional fabric. This solution could highly promote the concept of hierarchy and clustering that creates a mutual responsibility for common spaces as semi-public areas in each segment for encouraging interaction between neighbours.

Social-Cultural Dimension

Several studies conducted by architects, planners and socialists outline that traditional houses afford many social rewards for people and families who occupy them.

- *Privacy and Spatial Hierarchy*: Spatial elements and treatments such as courtyards; arrangement of transitional spaces and internal circulation; proper distribution of openings; the bent entrance passageway from the street; hierarchy of spaces from public to private and from formal to less formal, are important considerations for family activities in residential units to attain maximum privacy (visual, acoustical and olfactory) (Mitchel, 2010; Taylor, 1985).
- *Social Interaction and Family Ties*: Social interaction between family members, and allowing children to play without disturbing their neighbours could be easily encouraged through courtyards and semi-private domains. In large houses, and in order to have strong family ties when offspring get married, the spatial arrangement could be extended horizontally in semi-independent sub-units, or vertically where each generation occupies a storey (Mortada, 2003).
- *Social Fairness and Integrity*: Most residential units are generally similar in their form and spatial arrangement. Nothing on the blank exterior walls of these houses shows celebration of the social or economic status, or the composition of the family inside (Mortada, 2003). Such a matter relates indirectly to the religious beliefs of the community which stresses the issue of not exhibiting differences between people.
- *Modesty*: Due to the small plot area, and to achieve the principle of modesty and humility, which is a prevalent cultural value in the region, spaces inside houses are modest in their sizes in relation to their actual use. The area of each space is neither small nor exaggerated. However, spaces with mixed-functions are the main feature in vernacular architecture. Rooms such as living and dining rooms serve different purposes at different times of the day and night. Moreover, eliminating excessive decoration in the house is another response to the principle of humility (Mortada, 2003).
- *Hygiene*: In most residential units, gates and thresholds define the private zones. This change in level protects houses from dust. Inside the house, steps that separate clean sitting areas from depressed floors where shoes and tools are placed, are also a response to that requirement.
- *Spirituality*: Sometimes, the orientation of spaces inside dwellings to 'qibla' (which is the direction that should be faced when a Muslim prays) has a symbolic and specific meaning of spiritual focus (Oliver, 2003).

Environmental Dimension

In hot-arid regions, where harsh environment, high temperature, and scarcity of water and plants are common features, residents prefer to close their dwellings to the outside through introducing a courtyard, which embodies most of the missing aspects and achieves a balance between the body and the environment (Noor, 1991). In terms of spatial distribution, rooms are placed according to their use during the year. Summer rooms are located on the

south side of the courtyard and oriented to the north direction. This solution protects these spaces from solar radiation and heat absorption (Foruzanmehr and Vellinga, 2011), and acts as a barrier to the north winds to reduce heat losses for the northern part of the house; this is where rooms for winter use are located to capture solar radiation from the southern direction (Ragette, 2003). Spaces for spring and autumn seasonal use are usually placed on the east and west sides of the courtyard (see Figure 4). Other treatments for cooling and humidifying the dry air include: the use of water features and jugs at the lowest part of the house; cooling plates which allow the water to drop on a marble surface; soft and hard landscaping; and inserting semi-open rooms (*iwan*) (Oliver, 2003; Şerefhanoğlu Sözen and Gedik, 2007; Crouch and Johnson, 2001). Furthermore, wind towers (*malqaf or badgir*), especially in the gulf area, are useful elements that prevent dust and noise from entering while encouraging the fresh, cool and clean air to transmit to the lower living rooms, and then pass to the courtyard.

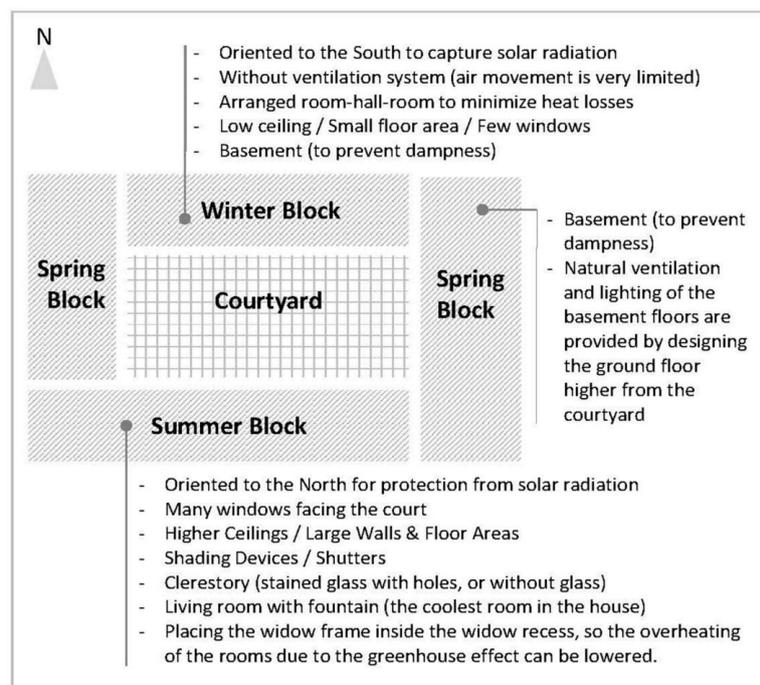


Figure 4. Zoning for a typical traditional courtyard house in hot-arid region
(Source: Al-Jokhadar and Jabi, 2016a).

Sustainability in Vernacular High-Rise Buildings

Historically, the need for preserving land in the city, achieving security for residents, and showing off prestigious status, are main factors shaping the trend of residential buildings with more than three to four storeys, and sometimes ten floors in traditional cities. One of the most notable old high-rise buildings in the world is found in *Shibam* in Yemen, South-Arabian Mountains, and Morocco (Ragette, 2003). *Shibam* is 'the oldest skyscraper city in the world' with more than 500 vertical houses, originating from the 16th century, and made out of mud-brick (see Figure 5). The whole building is a 'multi-floor family tower' and is occupied by one family. Each tower has a small yard at lower levels, and a vertical separation of functions. Storage areas and stables are located on the ground level with small windows, then a vertical sequence of kitchen and toilet on the first or second floors, then living spaces for the family, reaching to zones for men and their guests (Ragette, 2003; Abu Bakar and Abdul Razaq, 2012).

On each floor, there is one or two rooms with a semi-public stairway that segregates social and functional zones of the house. The roof contains a reception hall for men (*mafraj* or *majlis*) and an open terrace which is usually used for wedding ceremonies. As a transformation from a courtyard house to a vertical building, Ragette (2003) suggested that multi-storey buildings either share common green areas or have their own inward courtyards, with an L-shape form to achieve privacy (see Figure 6).



Figure 5. Vernacular tall residential buildings in Shibam, Yemen (Photo by Jialiang Gao, 1999) https://commons.m.wikimedia.org/wiki/File:Shibam_Wadi_Hadhramaut_Yemen.jpg, accessed on 28/4/2016).

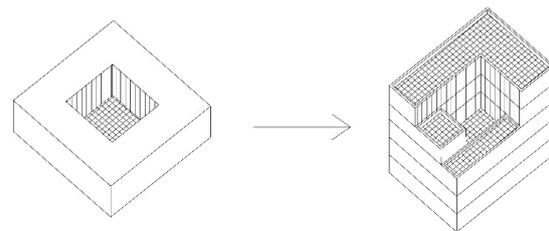


Figure 6. A proposal for inserting L-shape courtyard in a multi-storey building (Adapted by Authors, after (Ragette, 2003)).

A 'SYNTACTIC-GEOMETRIC MODEL' FOR ENCODING TRADITIONAL HOUSES AS A TRACE OF SOCIAL-SPATIAL QUALITIES

To integrate all of these potentials of a socially cohesive and healthy environment of traditional buildings and neighbourhoods within the design of a contemporary and sustainable high-rise building, architects need to have a database that includes vocabularies, parameters and rules that trace the social and environmental dimensions of dwellings. A model, which is presented in the next section, helps the designer in analysing such cases. The output of this model will be used in future studies from this ongoing research for identifying design briefs and parametric rules for generating different solutions. The developed model for 'syntactic-geometric analysis' depends on combining the 'space syntax method' with three aspects of design: (a) analysing the geometric characteristics of spaces (e.g. shapes, areas, and proportions); (b) identifying social indicators (e.g. relationships, users, privacy, patterns of movement, and distances between spaces); and (c) specifying environmental solutions (e.g. orientation, and type of enclosures) (Al-Jokhadar and Jabi, 2016a). This model has five components (see Figures 7 and 8):

1. *As-Built Plan*: showing patterns of movement, and actual distances (in metres) between the centre of the courtyard and the centre of spaces passing through doors.
2. *Visual Analysis Diagram*: showing the spatial organisation of spaces with visual connections between public, semi-public, and semi-private domains.
3. *Space Syntax Analysis*: calculations with two diagrams, produced from AGRAPH software, which is an online analytical platform (Manum et al., 2005), showing spatial relationships between spaces, courtyard, and entrance. Calculations showing the following measurements:

- a. *Connectivity (NCn)*, which measures the number of immediate neighbours that are directly connected to a space.
 - b. *Integration value (i)*, which describes the average depth from a space to all other spaces in the system. The spaces of a system can be ranked from the most integrated to the most segregated. The highest value indicates the maximum integration.
 - c. *Control value (CV)*, which measures the degree to which a space controls access to its immediate neighbours taking into account the number of alternative connections that each of these neighbours has.
4. *Depth and Hierarchy of Spaces*: which are represented through its actual shapes and proportions, and arranged to show the hierarchy (public, semi-public, semi-private, private, and intimate); orientation (West (W), East (E), North (N), South (S), North-East (NE), North-West (NW), South-East (SE), and South-West (SW)); shared surfaces between adjacent spaces; the entry access of each space; and the actual distance between the centre of spaces and the centre of adjacent rooms.
 5. *Spatial and Geometric Relationships*: showing different calculations which include proportion of each space (X:Y); percentage of the area of a space from the overall area of the house (%All); proportion of that space relevant to the courtyard (1:C); actual distance (D1) in metres from the main entrance (N1) to the centre of the space; actual distance (D2) from the centre of the courtyard (N2) to the centre of the space; and the dominant users of each space (Male (M), Female (F), or Both (M+F)).

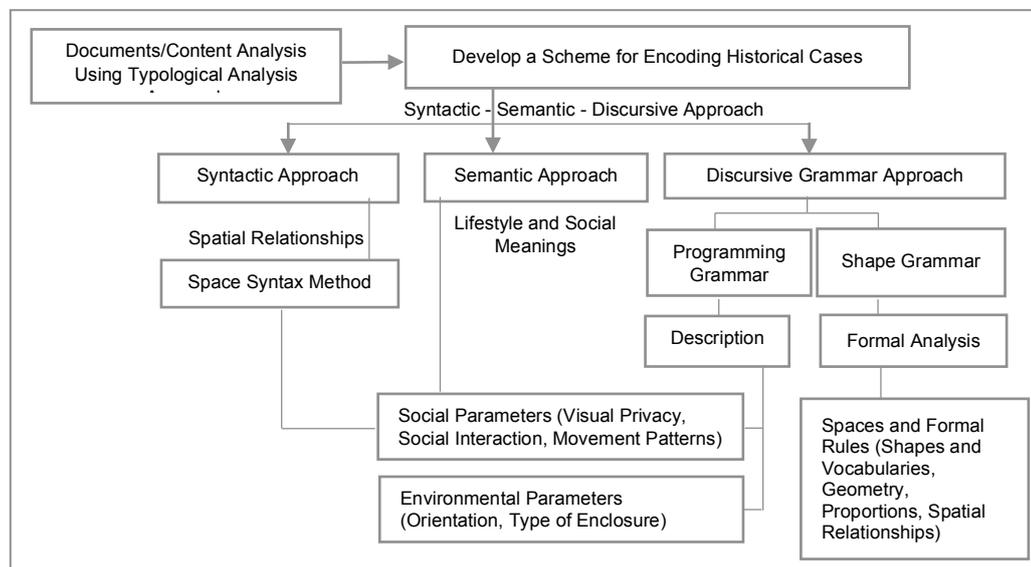


Figure 7. Components of the proposed 'syntactic-semantic-discursive' approach (Source: Authors).

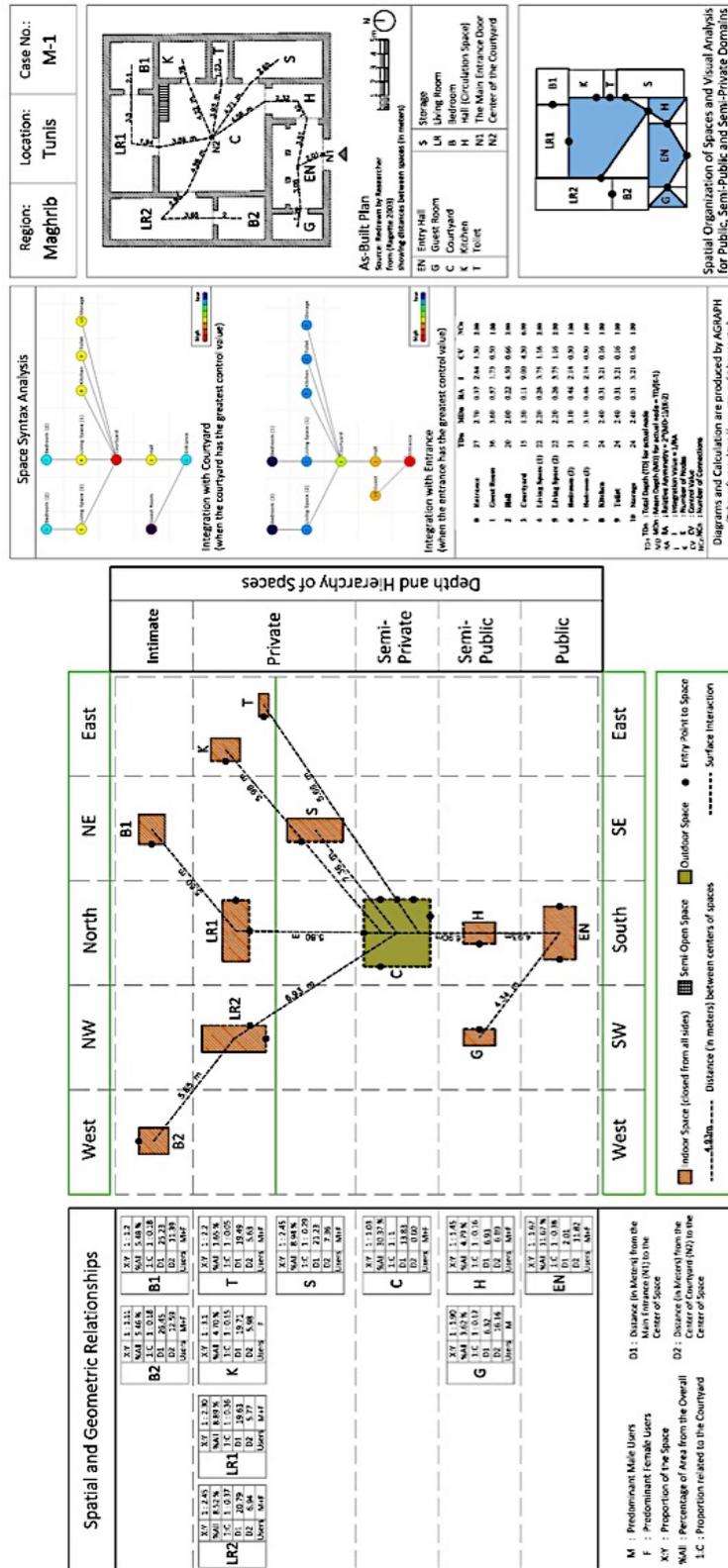


Figure 8: A syntactic-geometric model for analysing a vernacular house in Tunis (Source: Al-Jokhadar and Jabi, 2016a).

Discussion and Interpretation of Results

Based on the syntactical-discursive model of analysis, it is obvious that the human spatial behaviour, the social life inside the house, the hierarchy of spaces, and the segregation and seclusion of family members from male visitors are regulated by a series of syntactic elements. After applying the analysis on a vernacular courtyard house in Tunis, different qualities are observed:

- The space syntax analysis shows that the courtyard, which is a semi-private space, has both the greatest control value ($CV = 4.50$) and the greatest integration value ($i = 9.00$), which means that other spaces, mostly private zones, are controlled and accessed through the central space of the house, where most of the daily functions are located. This arrangement provides a protected and suitable area for family gatherings.
- The hall (H), which is a semi-public circulation space, connects the entrance with the main courtyard. It is a mediator between the inside of the house and the outside world. However, the bent entrance passageway preserve the visual privacy of the family.
- Guest reception room is a shallow space used for male visitors, and it has the lowest integration value ($i = 1.73$), as it is suited off the courtyard and next to the entry hall. There is no visual connection between this space and the semi-private and private domains, so the privacy of the family members could be achieved.
- Most spaces follow the geometric patterns of the courtyard with a symmetrical layout arrangement.
- All private spaces face the courtyard, and have approximately the same distance between the centre of the courtyard and the entry point of that space. This depth, which ranges between 5.65 and 7.30 meters, provides a suitable distance for the residents to live in a comfortable atmosphere.
- All intimate spaces (bedrooms) should be accessed through private spaces to give more privacy.
- Services (kitchen, toilet and storage) are placed on the east part of the courtyard, which protect other spaces from smells.

The results of analysis are translated into seven features (morphology, overall geometry, spatial description, geometric properties for each space, spatial topologies, social qualities, and environmental considerations) with 39 variables that will be used for constructing the grammar for vernacular courtyard houses in the study area (Al-Jokhadar and Jabi, 2016b). This type of grammar and model of analysis differs from shape grammar and space syntax method in many aspects. In terms of components, all geometric properties, proportions, functions, and type of enclosure are defined. Moreover, spaces are arranged according to the public-private hierarchal system and the solar orientation. In terms of relationships, the actual distances between spaces, the pattern of movement, and the physical-facial (wall-to-wall) relations are associated with rules. Finally, aspects related to the social dimension, such as visual privacy, interaction and the dominant users of each space are specified.

CONCLUSIONS

In general, the design of buildings is a challenge for the architect to be sensitive in reflecting the needs of users that are specific for the context, and at the same time providing them with comfort conditions. This study aims to create a database that helps the architect in designing a high-rise residential building that promote social, cultural and environmental sustainability.

The study shows that most of the current high-rise buildings in the Middle-East and North-Africa lack the identity of the place, while most of the traditional houses are good examples of a socially cohesive and healthy environment. Many aspects such as hierarchy of spaces; different degrees of openness and enclosures; the courtyard; the use of soft and hard landscaping; the specific use of spaces; patterns of movement; and geometric properties of spaces, could help the architect in specifying the social, spatial and environmental parameters that should be integrated in the design process of contemporary sustainable buildings.

The typological analysis of such historical cases using a syntactic-geometric model is a useful tool for identifying the design brief and the parametric rules for generating different solutions with respect to the identity of the place. All of these analytical information need to be translated into rules and constraints that are useful for generating parametric solutions. This process will be conducted in the next stages of this ongoing research, which aims to construct a socio-spatial grammar for high-rise buildings in MENA regions. Such a grammar will include (1) shape grammars that reflect shapes, vocabularies, proportions, geometric properties, and formal rules; and (2) programming grammars that define design briefs and descriptions.

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REFERENCES

- Abu Bakar, A.H. and Abdul Razaq, A. (2012). Sustaining the Design Elements Influence on the Comfort and Spatial Function in Traditional Yemen Houses in Old City of Sana'a. In: International Conference on Innovation and Technology for Sustainable Built Environment (ICITSBE 2012). Perak, Malasia.
- AlHaroun, Y. (2015). Contemporary Attitudes to Vernacular Elements in Kuwait's Domestic Architecture: A Mixed Method Study. University of Sheffield, UK.
- Al-Jokhadar, A. and Jabi, W. (2016a). Enhancing Social-Cultural Sustainability in Tall Buildings: A Trace from Vernacular Houses. In: Wood, A., Malott, D. & He, J. (eds.), *Cities to Megacities: Shaping Dense Vertical Urbanism: A collection of state-of-the-art, multi-disciplinary papers on urban design, sustainable cities, and tall buildings*. Proceedings of the Council on Tall Buildings and Urban Habitat (CTBUH) 2016 International Conference, China, 16–21 October 2016. Volume 1, Chapter 9, pp. 633-641.
- Al-Jokhadar, A. and Jabi, W. (2016b). Humanising the Computational Design Process: Integrating Parametric Models with Qualitative Dimensions. In: Al-Attili, A., Karandinou, A., & Daley, B. (eds.), *Parametricism vs. Materialism: Evolution of Digital Technologies for Development*. Proceedings of the 8th ASCAAD Conference of the Arab Society for Computer Aided Architectural Design, 7-8/11/2016, SOAS University of London, UK. London: Imperial House Publishers.
- Ali, M.M. and Al-Kodmany, K. (2012). Tall Buildings and Urban Habitat of the 21st Century: A Global Perspective. *Buildings* 2(4), pp. 384–423.
- Al-Kodmany, K. (2015). Integrating tall buildings in the sustainable city: Toward a comprehensive approach. In: *Eco-Towers: Sustainable Cities in the Sky*. Southampton: WIT Press, pp. 387–434.
- Al-Masri, W. (2010). The Courtyard House in Kuwait Today: Design Approaches and Case Studies. In: Rabbat, N. ed. *The Courtyard House: From Cultural Reference to Universal Relevance*. Surrey, England: Ashgate Publishing Limited, in association with the Aga Khan Program for Islamic Architecture, pp. 203–222.
- Assi, E. (2001). Typological Analysis of Palestinian Traditional Court House. In: International Congress of UNESCO-ICOMOS, Paris.

- Berkeley-Group and UK-GBC (2012). *Practical How-to Guide : How to Use a Social Sustainability Framework*. London.
- Bianca, S. (2000). *Urban Form in the Arab World: Past and Present*. New York: Thames and Hudson Inc.
- Craighead, G. (2009). High-Rise Building Definition, Development, and Use. In: *High-Rise Security and Fire Life Safety*. 3rd ed. Elsevier Inc., pp. 1–26.
- Crouch, D. and Johnson, J. (2001). *Traditions in Architecture: Africa, America, Asia and Oceania*. Oxford: Oxford University Press.
- CTBUH (2015). Height Statistics for Tall Buildings, from <http://www.ctbuh.org/TallBuildings/HeightStatistics> (accessed on 1/12/2015)
- Dalziel, R. (2012). The Idea of an Archetype. In: Battle, T. ed. *A House in the City*. London: RIBA Publishing, pp. 10–13.
- Emporis (2015). Definition of High-rise Buildings, from <http://www.emporis.com/building/standard/3/high-rise-building> (accessed on 14/12/2015)
- Foruzanmehr, A. and Vellinga, M. (2011). Vernacular architecture: questions of comfort and practicability. *Building Research & Information* 39(3), pp. 274–285.
- Galal Ahmed, K. (2011). Evaluation of social and cultural sustainability in typical public house models in Al Ain, UAE. *International Journal of Sustainable Development and Planning* 6(1), pp. 49–80.
- Gifford, R. (2007). The Consequences of Living in High-Rise Buildings. *Architectural Science Review* 50(1), p. 2.
- Hudgins, M. (2009). High-Tech Engineering Helps Skyscraper Developers Reach Record Heights. National Real Estate Investor.
- Kearns, A. et al. (2012). 'Living the high life'? Residential, social and psychosocial outcomes for high-rise occupants in a deprived context. *Housing Studies* 27(1), pp. 97–126.
- Kennedy, R. et al. (2015). Residents' Experiences of Privacy and Comfort in Multi-Storey Apartment Dwellings in Subtropical Brisbane. *Sustainability* 7(6), pp. 7741–7761.
- Kloft, E. (2002). Typology. In: Eisele, J. and Kloft, E. eds. *High-Rise Manual: Typology and Design, Construction and Technology*. Basel, Switzerland: Birkhauser, pp. 10–23.
- Li, C. (2013). Liveability of High-rise Housing Estates – Case studies in the inner city of Tianjin, China. Welsh School of Architecture, Cardiff University, UK.
- Losantos, A. and Cañizares, A. (2007). *Highrises Social Living*. Paredes, C. ed. Barcelona: LOFT Publications.
- Lotfabadi, P. (2014). High-rise buildings and environmental factors. *Renewable and Sustainable Energy Reviews* 38, pp. 285–295.
- Maleki, B.A. (2011). Traditional Sustainable Solutions in Iranian Desert Architecture to Solve the Energy Problem. *International Journal on 'Technical and Physical Problems of Engineering' (IJTPE)* 3(March), pp. 84–91.
- Manum, B. et al. (2005). AGRAPH, Software for Drawing and Calculating Space Syntax 'Node-Graphs' and Space Syntax 'Axial-Maps'. 5th International Space Syntax Symposium Delft 2005, pp. 97–101.
- Mehrpoya, H. et al. (2015). A comparison of 'identity' in vernacular (traditional) and contemporary (modern) houses. *WALIA Journal* 31(S5), pp. 69–75.
- Mitchel, K. (2010). Learning from Traces of Past Living: Courtyard Housing as Precedent and Project. In: Rabbat, N. ed. *The Courtyard House: From Cultural Reference to Universal Relevance*. Surrey, England: Ashgate Publishing Limited, in association with the Aga Khan Program for Islamic Architecture, pp. 223–238.
- Modi, S. (2014). Improving the Social Sustainability of High-rises. *CTBUH Journal (Council on Tall Buildings and Urban Habitat) (Issue II)*.
- Moossavi, S.M. (2014). Passive Building Design for Hot-Arid Climate in Traditional Iranian Architecture Climate of Iran. *Green Architecture and Arts Magazine* (1), pp. 1–20.
- Mortada, H. (2003). *Traditional Islamic Principles of Built Environment*. Oxon: RoutledgeCurzon, Taylor and Francis Group.
- Mustafa, F.A. (2010). Using space syntax analysis in detecting privacy: a comparative study of traditional and modern house layouts in Erbil city, Iraq. *Asian Social Science* 6(8), pp. 157–166.
- Narayan Reddy, K. (1996). *Urban Redevelopment: A Study of High-Rise Buildings*. New Delhi: Concept Publishing Company.
- National Fire Protection Association, USA (2015), from www.nfpa.org (accessed 14/12/2015)

- Noor, M. (1991). The function and form of the courtyard house. In: *The Arab House*. University of Newcastle upon Tyne, School of Architecture, Centre for Architectural Research and Department Overseas, pp. 61–72.
- Oliver, P. (2003). *Dwellings: The Vernacular House World Wide*. London: Phaidon Press Limited.
- Pomeroy, J. (2013). Internal Environment and Planning. In: Parker, D. and Wood, A. eds. *The Tall Buildings Reference Book*. Oxon: Routledge, pp. 123–132.
- Pomeroy, J. (2014). *The Skycourt and Skygarden: Greening the Urban Habitat*. First Edit. Routledge.
- Ragette, F. (2003). *Traditional Domestic Architecture of the Arab Region*. Sharjah, UAE: American University of Sharjah.
- Rapaport, A. (1969). *House Form and Culture*. Englewood Cliffs, New Jersey: Prentice-Hall.
- Ravetz, A. and Turkington, R. (1995). The High-rise Estate. In: Lane, B. M. ed. *Housing and Dwelling: Perspectives on Modern Domestic Architecture*. 2007. Oxon: Routledge, pp. 354–360.
- Serageldin, M. et al. (2015). *World Migration Report 2015* [Online] Available at: <https://www.iom.int/world-migration-report-2015> [Accessed: 11 April 2016].
- Şerefhanoglu Sözen, M. and Gedik, G.Z. (2007). Evaluation of traditional architecture in terms of building physics: Old Diyarbakır houses. *Building and Environment* 42(4), pp. 1810–1816.
- Steyn, G. (2012). Ideological and topological parallels in pre-colonial Tswana and Swahili architecture. In: *3rd Global Conference: Space and Place*. Oxford, United Kingdom: Mansfield College, pp. 1–19.
- Taylor, B.B. (1985). *Contemporary Houses Traditional Values: Tunisia, Egypt, and Morocco*. London: Zamana Gallery.
- The World Bank. (2014). *World Development Indicators* [Online]. Available at: <https://openknowledge.worldbank.org/bitstream/handle/10986/18237/9781464801631.pdf> [Accessed: 7 November 2015].
- United Nations (2015). *World Urbanization Prospects: The 2014 Revision*. New York.
- Wood, A. (2008). Green or Grey? The Aesthetics of Tall Building Sustainability. In: *CTBUH 8th World Congress 2008*. Dubai: Council on Tall Buildings and Urban Habitat (CTBUH).
- Wood, A. (2013). The Future of Tall. In: Parker, D. and Wood, A. eds. *The Tall Buildings Reference Book*. Oxon: Routledge, pp. 353–361.
- Woodcraft, S. (2012). Social Sustainability and New Communities: Moving from Concept to Practice in the UK. *Procedia - Social and Behavioral Sciences* 68, pp. 29–42.
- Yeang, K. (1999). *The Green Skyscraper: The Basis for Designing Sustainable Intensive Buildings*. Prestel.
- Yeang, K. (2012). *A Vertical Theory of Urban Design* [Online] Available at: <http://www.buildingfutures.org.uk> [Accessed: 7 November 2015].



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ASPECTS OF THE ARCHITECTURAL AND URBAN HERITAGE: FROM REGISTERS TO CONSERVATION FOR ADAPTIVE AND MODERN USE AT THE HISTORIC CORES OF SALT AND IRBID, JORDAN

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Keywords

urban heritage;
documentation; integrated
conservation approach;
tourism planning and
conservation; adaptive
reuse; collective memory;
modern use

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Abstract

This paper attempts to present and discuss the outcome of the results of the key different studies and projects carried out at Salt and at Irbid historic cores. It focuses on the executed urban heritage projects undertaken mainly by the Ministry of Tourism and Antiquities (MoTA) of Jordan in the last two decades. It discusses their different aspects through initial assessment of the loss and degradation of the cultural heritage assets of the two cities; the fragmentation and lack of connectivity between the modern and historic cores; issues of sustainability of architectural and urban heritage projects i.e. tourism planning and conservation; and reuse projects at the historic cores in relation to cultural, physical factors and development needs. It also addresses the behaviour and characteristics of the urban regeneration process in those two historic cities, starting from their documentation to examination of the different aspects of the currently adopted urban practices and policies, and their impact on the existing urban heritage, depending on the specific identity of the respective historic cores. Finally, it aims to define the main constraints and challenges for the reuse of the existing heritage fabric including the local community quality of life, while building on sustainable heritage activities accommodating tourism opportunities. This will give, at least, some indications from which we can identify a use or combination of uses, and practical steps needed for successful heritage conservation actions in Jordan, in order to retain the cultural significance of the place.

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INTRODUCTION

In many cities of Jordan and the Arab developing countries, as almost everywhere, the existence of an older city core represents a unique historic link with the past. However, due to their rapid growth and fast transformation, where land uses were rapidly misshaped and declined, their social structures and economics present a genuine threat to their natural and cultural resources.

Historic urban cores of the mid to late nineteenth century, with the traditional houses and open networks as seen in many Jordanian cities such as Irbid, Salt, Madaba and Kerak, can be considered one of the most important evidence of historic lifestyles. In fact, they, as in many historic cores, can be seen as "the physical manifestation of the social and cultural traditions which have developed to give the modern city and society its meaning and character" (Steinberg, 1996, p. 465). Traditions that have evolved through the collective memory and their related traditional forms can and must be widely used and re-used in contemporary architectural and urban design projects, with proper community involvement. Hence, re-functioning or conversion of traditional buildings to contemporary uses is a tool for carrying the traditional environments into the future, both physically and socially.

As in many cities of Jordan, these historic cores have an abandoned stock of built up heritage assets, which lies at their geographical centres, where the majority of these significant heritage buildings are still under the ownership of members of local families, and remain untouched by restoration efforts. Rapid urban growth has resulted in serious harmful effects on those urban heritage fabrics. In addition, the majority of the residents of those old buildings have left and migrated to Amman, the Capital, following the trend of notable Jordanian families all over the country during the 1950s and 1960s. Many of the buildings stand vacant while the families and communities living in the area are often too poor or ignorant to maintain the old stone houses.

Meanwhile the strategy of conservation of historic buildings for adaptive re-use appears to be the most effective approach for a self-financing and sustainable form of conservation, where protecting heritage buildings by having them obtain new or compatible functions, including accommodation, with authentic characteristics assists to save them and benefits the local economy, where conservation of urban heritage contributes to the quality of life of people. Cherchi (2015, p.269) argues that the reuse of abandoned buildings and comparatively open spaces "constitutes a significant opportunity for achieving more liveable and healthier cities through the regeneration of inner city areas". But in fact there are many challenges, obstacles and constraints to achieve this aim, including; private ownership constraint; people's perception; private and public coordination and partnership concerns; bridging the discourse of conservation versus local benefits; and planning and building legislative concerns including protection tools and financial incentives. According to (Giani et al, 2015, p.45), however, the real challenge is "to be able to imagine uses which offer intellectually stimulating options, in the belief that the production and consumption of cultural goods, of art, could constitute business, could ensure adequate economic returns, changing and evolving the common commercial standards".

The issue for the historic cores is not so much about the criteria of significance, but the much more politically charged process of who decides what is important. Cherchi (2015, p.257) states that "the potentialities of the reutilisation of forgotten urban spaces are remarkable: covered spaces offer new opportunities for regenerating a city, engaging in new relationships, building new squares, and activating new unexpected connections between the different parts of a city".

The success of conservation, however, still depends on political will backed up by available funds. Heritage conservation should also allow for an economic viability while maintaining the cultural values. Meanwhile, integrated heritage conservation should be a core effective factor in policies and strategies of revitalising old and historic areas, where efficient conservation policy takes into account public involvement, public and private initiatives, the planning process, cultural and economic needs and the maintenance of public openness during the decision-making process. According to Deslagen (2009) “The image of the cities that has grown historically over the centuries cannot be put on ice during conservation”.

In fact, socio-cultural sustainable regeneration of historic urban environments must make places for local people, rather than preserve certain traditional forms as cultural symbols. Still, traditional forms that evolved from the collective memory can be widely re-used in architectural and urban regeneration, if coupled with community involvement.

The two cities of Salt and Irbid were chosen not for the sake of conducting a comparison of similarities or differences at the level of the urban fabric. Salt was the *first* city in Jordan to conduct studies, in 1990, for the protection of its architectural and urban heritage, dated to the end of the nineteenth and early twentieth century. Although with limited implementation of related projects, currently the folder for its inscription on the World Heritage List has been submitted to the World Heritage Centre. As for Irbid, the historic core and its extended modern fabric to the North of Jordan serves more than 300 surrounding villages where Irbid also played a major role in the modern history of Jordan. Yet the protection initiative, the earliest in 2005, has been much delayed hence the protection of the core surrounding the mount of Irbid may present the last opportunity to preserve the identity of the city.

The methodological approach for this paper adopts a series of steps geared towards assessing protection actions on the ground as follows:

1. Review and assessment of the main findings for the proposed registers for urban heritage at the historic cores of the two cities;
2. General assessment of the negative effects of the current urbanisation practices and policies on Salt and Irbid cultural heritage significance;
3. Comparison between the main urban issues that affect both cores of Salt and Irbid, in order to understand the similarities and differences in terms of the obstacles and concerns facing the two cities;
4. Examination of the projects of conservation conducted to date and mainly those by the Ministry of Tourism and Antiquities at both cities.

The examination shall address the following questions, in order to have an informed basis:

- Can central government driven projects or local municipalities' projects play the main catalyst in driving the protection of the Cultural Heritage Project at urban city cores?
- Are participatory approaches or individual actions the main driver for the current protection endeavours?
- Were the problems facing the protection of the historic cores addressed within a holistic or integrated manner?

5. Finally the paper attempts to present suggestions and recommendations towards sustainable conservation actions for the two historic cores, enhancing the everyday quality of life while accommodating development based on:

- Reinstating the cultural identity of the core as a trigger for change;
- Enhancing a safe pedestrian network to enhance the quality of life at the core and as a catalyst for change using pedestrian linkages;
- Improve social interaction by creating a series of urban open spaces and interventions to promote common activities that could serve also tourists.

SALT CITY HISTORIC CORE AND ITS CULTURAL HERITAGE: ASSESSMENT OF THE URBAN HERITAGE FABRIC

Salt is located 30 km to the west of the capital Amman and is the 4th largest city in Jordan, with a population of around 140,000. The old city lies on three hills - Jada, Qala' and Salalem - with the central city Plaza (Saha) at the meeting points of the valleys (**Figure 1, a**). Most of the urban heritage residents and mansions date back to the period between 1890 and the late 1920's. These were mainly built in soft yellow marl-lime stone by local and migrating master builders using local technologies, and later introducing newly imported materials of metal I-sections and red tiles for roofing.

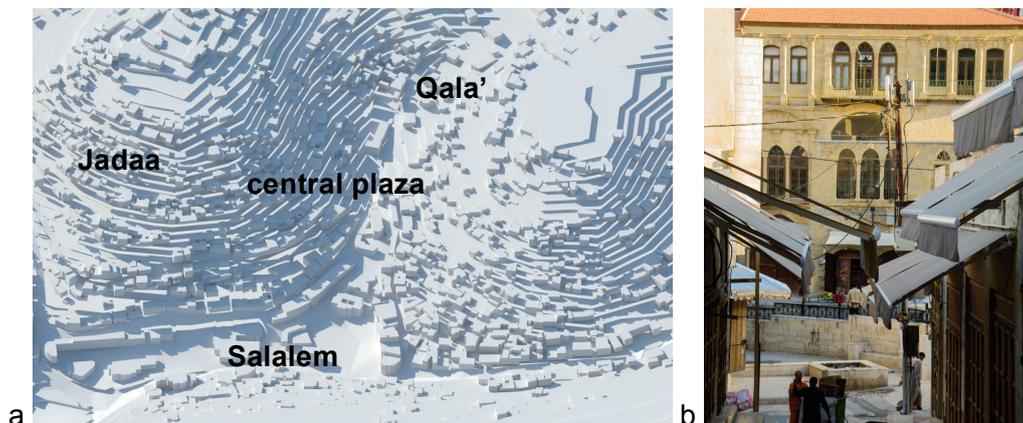


Figure 1 a. Salt topography model for its traditional setting at the valley and extending on the hills of the city. b. Abu Jaber mansion turned into Old Salt Historic Museum (Source: Authors).

The main heritage buildings in Salt include the urban merchants' and residents' houses from the turn of the twentieth century, commercial linear markets, and religious buildings, in addition to the oldest modern high school of Jordan of 1925. More than 600 heritage houses such as the Abu-Jaber mansion from 1890, which has been turned into the Salt historic museum (Figure 1, b), and the Al-Mo'asher and Al-Saket complexes are spread in the core, with a network of stairs that run all the way down from the hills to overcome the rigid topography of the city.

Salt and the Development of the Architectural Register of the City

The interest in protecting the architectural heritage of Salt goes back to the mid-1980s, and was triggered by the initiatives of Salt Development Corporation (SDC), when a masterplan

was developed in 1984 by Dar al Hadassah engineering firm who identified the importance of the traditional buildings of the city (Fakhoury, 1987). Table 1 presents a brief history of the main conservation and planning studies undertaken in the city within the last three decades.

Table 1. Main urban and conservation studies in Salt city (Source: Authors).

1990	Royal Scientific Society-Centre for Building Research: Volume I, Salt: A Plan for Action. Volume II, Salt: A Plan for Action. The implementation plan and projects. Volume III, Salt: A Plan for Action. Background reports and survey materials.	2014	CulTech (Cultural Technologies): Manual for the Conservation of the Historic Centre of Salt, including the Charter on the Safeguarding of the Architectural and Urban Heritage of Salt.
2010	JICA : Basic Survey of the cultural Resources in Salt	2014	Ministry of Municipalities and Rural Affairs: Salt City Core Special Regulations
2010	Euronet and Dar Al-Omran Consulting: Development of city core special regulations for Jerash, Karak, Madaba and Salt	2016	Inscription dossier presented to WHC /UNESCO (2016) As-Salt Eclectic Architecture (1865-1925); Origins and Evolution of an Architectural Language in the Levant

Major Conservation and Planning Studies at Salt Historic Core

The four major studies undertaken in Salt city core are summarised as follows:

1-Royal Scientific Study (RSS): Salt- A Plan for Action

The study, conducted by the Royal Scientific Study, started in 1989 and ended in 1990. It was commissioned by Salt Development Corporation (SDC) and financed by USAID. It explicitly set the groundwork for developing a full register of the traditional buildings of the city at that time. The study indicated the buildings prior to 1950 as being of heritage value and 657 buildings were listed. The study was conducted as a joint venture with an international company. Three volumes were produced in English with a summary in Arabic. One of the deterrents to its implementation was the absence of a national umbrella and appropriate legislation to protect architectural heritage after AD1700, in reference to the previous Antiquities Law of 1988, in which the age specified as Antiquity is pre-1750. The building of the capacity of the municipality through the technical arm of Salt Development Corporation was recommended. At that time, no GIS data was available for the city. The Action Plan was supported by three main plans: Implementation, Management and Financial. The implementation plan recommended the development of a revised masterplan which included a protection zone for the urban fabric, a green buffer zone in addition to the conservation area (Figure 2).

2. Basic Survey of the cultural Resources in Salt by JICA (2010)

This survey was conducted by Japan International Corporation Agency (JICA) volunteers. A catalogue publication of 1019 resources was set for the surveyed resources, using GIS for registering the different built up heritage components of the city with three levels of integrity 1, 2 and 3, (Figure 3).

3. Salt Special Regulation (SSR) Project/ Third World Bank Tourism Development Project (WB3)

The Salt Special Regulation (SSR) project was developed by the joint venture of Dar al-Omran and Euronet Consulting, and was financed by WB3. Evaluation forms were developed to establish the cultural significance of 120 traditional buildings with 20 selected buildings being fully surveyed and documented. Special Conservation Areas and Special Development Corridors were then proposed as part of a proposed masterplan; to include the heritage core, protected view-sheds, in addition to heritage corridors (Figure 4).

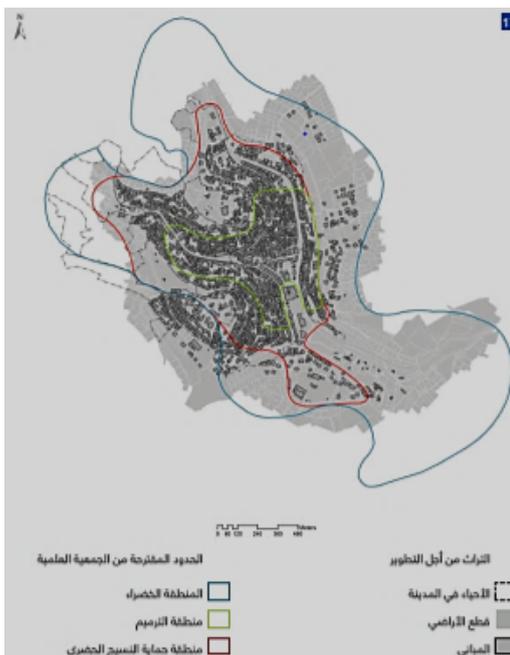


Figure 2. GIS for RSS study and the different protection Zones. (Source: Fakhoury and Haddad, 2014, fig17, 15).

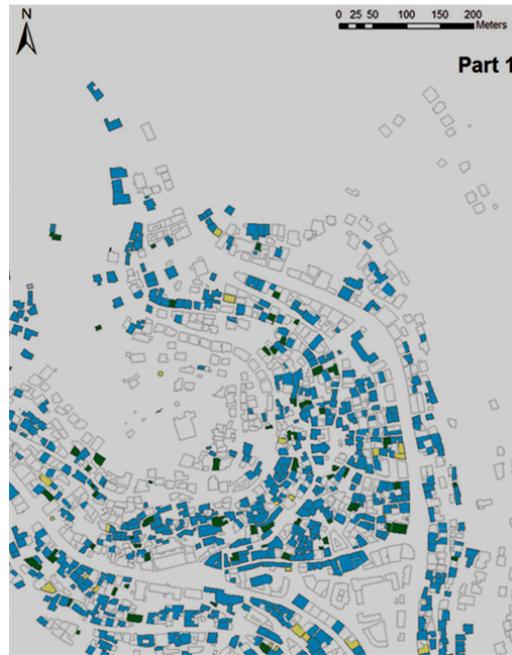


Figure 3. JICA integrity levels for the documented heritage buildings where blue indicates integrity1, Green for level 2 and yellow for level 3 (Source: Fakhoury and Haddad, 2014, fig 18, p16).

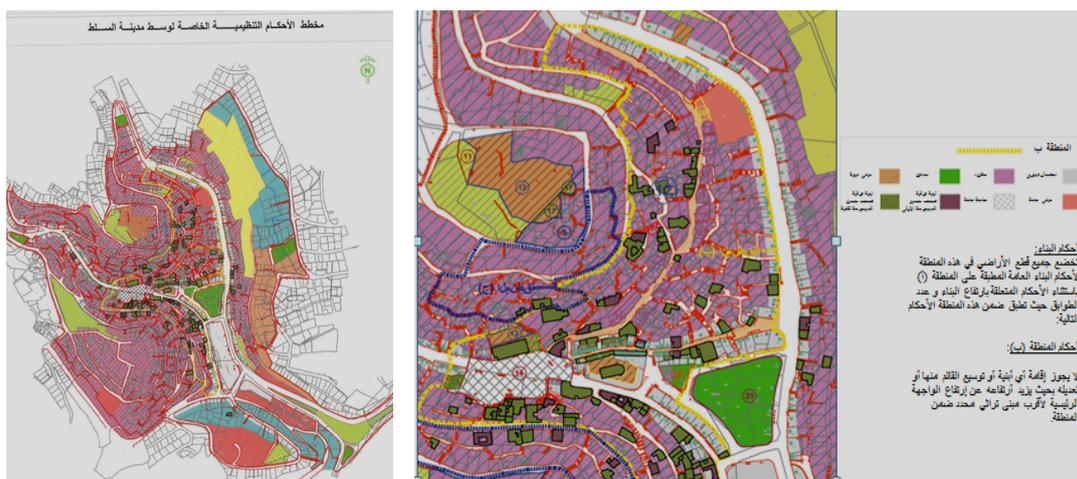


Figure 4. Salt City Core Special Regulations as proposed by Dar al-Omran consulting, where the olive green and dark purple buildings are proposed to be protected within a restricted 'area B' defined in a yellow dashed line (Source: after Fakhoury and Haddad, 2014, fig. 40, p. 56).

The results of this project were adopted, after an assessment by Cultural Technologies (CulTech) in 2014 and the Salt City Core Special Regulations (CCSR) were endorsed by Salt Greater Municipality, and eventually by the Ministry of Municipalities and Rural Affairs and the Higher City Planning Council of Jordan by 2014.

By July 2015 the final SSR for the historic core was published and the SSR was requested to be affiliated with the Prime Ministry. By January 2016 the nomination file for inscription on the UNESCO World Heritage List for “Salt Eclectic Architecture (1865-1925); Origins and Evolution of an architectural language in the Levant” was prepared and submitted (Figure 5). The dossier included more than 22 buildings, of which seven are completely or partially abandoned or vacant. In addition, a buffer zone for the nominated properties was suggested.

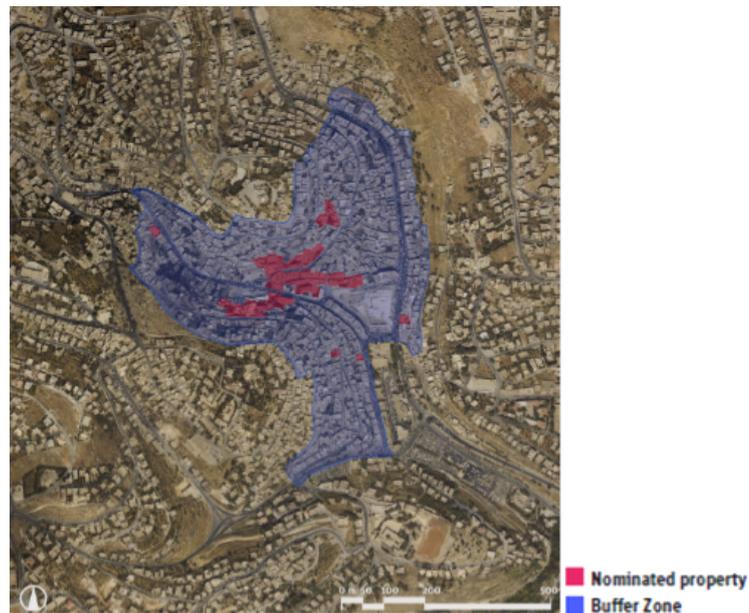


Figure 5. Aerial photograph indicating the boundaries of the nominated property and surrounding buffer (Source: As-Salt Eclectic Architecture, 2016, p. 6).

It is important to note that there is currently no official register of the traditional buildings of Salt, which have been estimated to number over 600 buildings by RSS study, while the 1019 resources documented by JICA included structures and wall remains. CulTech in 2014 revealed a GIS of the RSS register for the first time which provides the opportunity to compare the documentation results of all relevant studies. Unfortunately, the municipality and Salt City Development Projects Unit did not build further on this GIS comparison achievement.

It is clear that with the nominated dossier, detailed regulations for buffer zones will need to be implemented. This is a challenge for the local municipality and an opportunity to set the pace for integrated conservation actions where the protection of the heritage resources could lead to positive development and institutionalise a building register. In addition, it will set a plan for the reuse of many of the abandoned nominated edifices.

Rehabilitation of Salt Historic Landmarks: Buildings and Spaces

The enhancement of the facades of Al-Hammam Street was funded by USAID and was an early attempt in the early 1990s, followed by the conversion of the Toukan house into the

archaeological museum of Salt by Tahan and Bushnaq Firm and implemented by Amer Al-Khatib.

The traditional small mosque of Al-Hammam Street was another project for renewal, supported by SDC, where an extension for a women prayer hall was added to the upper floor and a new façade was built in front of the original façade. It is worth mentioning that the original facade still exists behind the later modern addition.

JICA, as part of the Tourism Sector Development Project, also conducted a project for the reuse of “Madafat Abu Jaber” into the Historic Old Salt Museum, in addition to the establishment of the panoramic outlets and refurbishment of Sahat Al-Ein (section closer to the congressional mosque), which followed in the year 2000 (Table 2). The JICA project in Salt identified 4 panoramic outlooks (1200m²), paths and stairs (7km), in addition to open spaces (4 public *Sahas*/ plazas, including *Al-Ein Plaza*) of 3850 m² to enhance the built-up environment. The total cost for implementation was JD 4,500,000 not including studies and management. The following table assesses the contribution of the project undertaken by JICA to Heritage tourism infrastructure and community benefits.

Table 2. Heritage tourism infrastructure developed by JICA and related community benefits (Source: After Fakhoury, 2010).

Project	Contribution to Heritage Tourism	Major stakeholder	Year /Studies undertaken	Current users
Salt	-Refurbishment of Panoramic look-outs/open spaces as physical network developed for tourism.	MoTA	Studies1999-2001	Assets used by the community and tourists
	- The Historic Old Salt Museum (HOSM), also currently the Core Museum for the Salt Eco-museum (SEM)	MoTA	Studies1999-2001 Implementation and the opening of Abu Jaber Historic museum were only by 2010	Assets are mainly used by visitors and tourists and can be used by the community.

Assessment of the new design for Al Ein plaza and the facelift for the surrounding heritage complex and Congressional Mosque (WB3) project, 2007-2010: strengths and weaknesses

It is clear that the earlier projects attempted to address and conserve the grand or traditional landmark buildings of Salt by turning them into museums while the earlier attempts by the USAID Funded project of Al-Hammam Street tackled the enhancement of the commercial facades of the vibrant artery of Al- Hammam Street, with a rather coy interactive approach.

On the other hand, the later WB3 project built on a partnership between the Ministry of Tourism and Antiquities (MoTA) and the local municipalities to develop the historic centres of five Jordanian cities including Salt, and demark them on the Jordanian Tourist Map.

The project for the core of Salt consisted of the removal of three modern administrative buildings that were erected in the 1960s, the documentation and clean-up of 3 traditional

building complexes' facades that defined the upper edge close to *Sahat al-Ein*, in addition to the facelift of the modern Congressional Mosque of Salt to extend and enhance it (Figure 6).

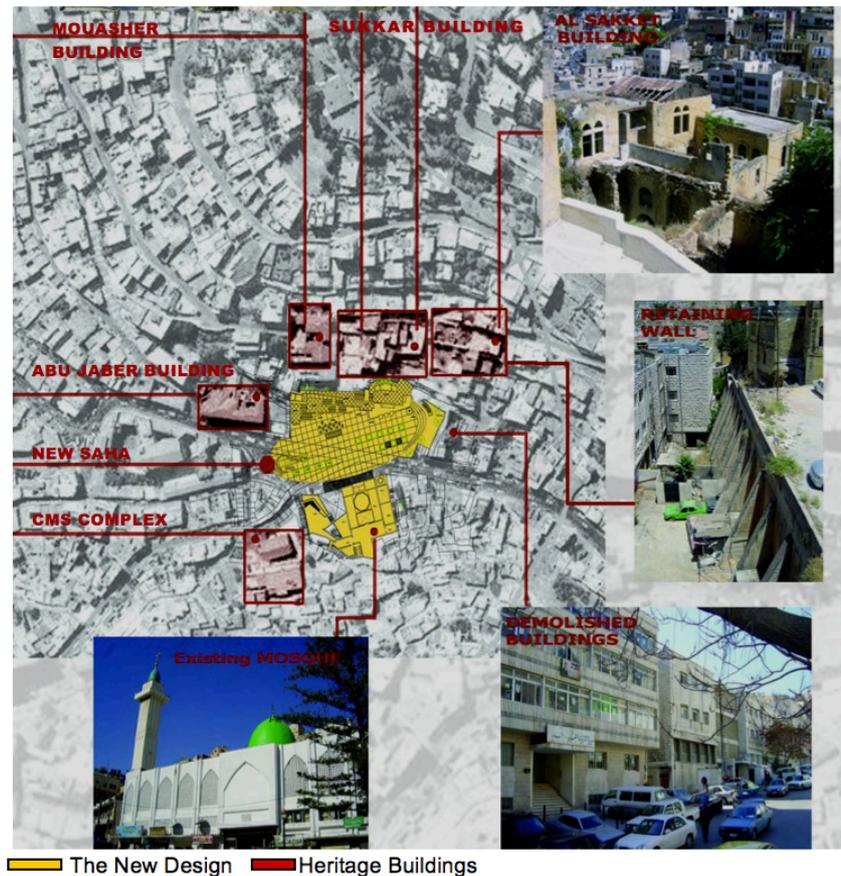


Figure 6. Al Ein-Plaza-Salt project (Source: After Bitar Architects).

The JICA project, led by MoTA, targeted the visitors trail and the main city square while the World Bank Project WB3 (2007-2010), administered by a local unit, expanded the investment in redefining the main open space of the city core and surrounding heritage buildings' facades.

The WB3 projects aimed to 'beautify' and 'sanitise' the downtown core of Salt by the demolition of the modern administrative buildings of the late 1960s and 1970s (directorate of education, the governorate and police station, and the old post office) that replaced the Ottoman Saraya of the nineteenth century in the late 1960s; its great mosque and As-Sukkar commercial bureau (*Wakaleh*) were also demolished to widen the streets. MoTA set the terms of reference and proposed strengthening a link between the *Saha* and the three Heritage houses. However, the project had a limited understanding of the collective memory of the city centre.

The Documentation for the surrounding buildings was detailed and included written, graphic and photographic documentation; also a detailed description of the existing conditions for the detected deterioration was also noted. New techniques for cleaning the soft nature of the stone were applied in cleaning. However, the restriction of intervention on the complexes' external facades fell short from bringing further adaptive use for the complexes which still stand vacant.

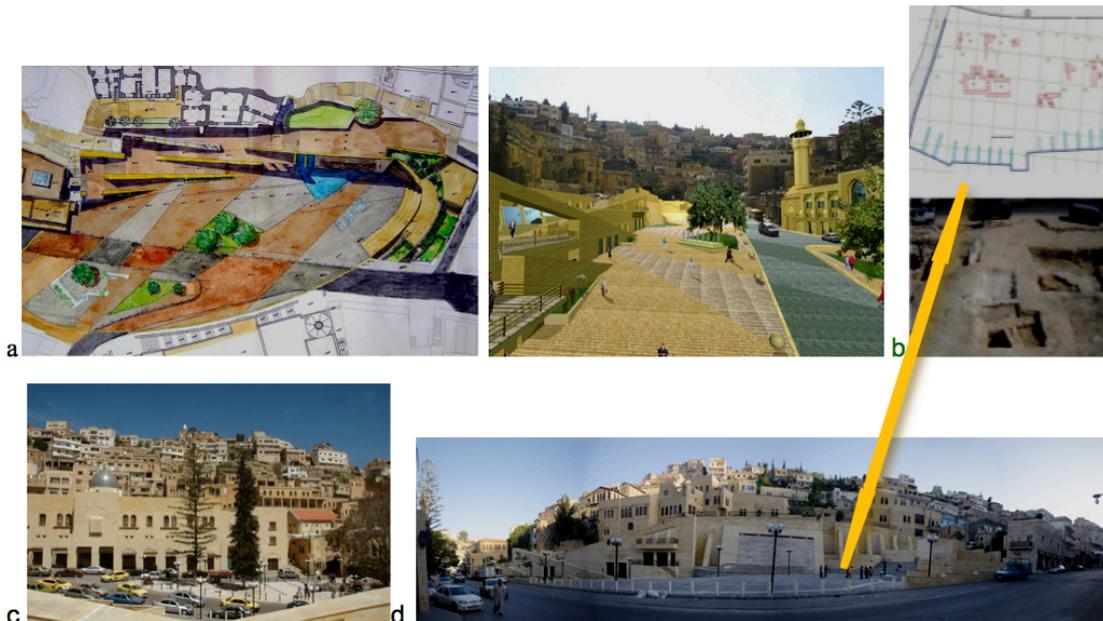


Figure 7a. Oval design for the Ein Plaza and facelift project of the congressional mosque (Source: Bitar Architects 2009), b. Archaeological excavations and findings under the present Plaza (Source: Department of Antiquities), c. The out of scale congressional mosque (Source: Authors), d. A new water feature at Ein Plaza (Source: Authors).

The open public space was expanded to acquire a potential role as the 'reinstated hub for the Salt centre urban life'; however the adopted approach of 'sanitising' the downtown core of Salt mainly remained as a beautification scheme. The urban space was designed based on a purely aesthetic priority divorced from the socio-economic needs of its inhabitants and had a limited understanding of the collective memory of the city core and its past. The oval design/ baroque approach of the proposed *Saha* also did not take into consideration the traditional urban texture of Salt City and it appears more alien than complimentary to the centre of the city (Figure 7a). Furthermore, the archaeological findings under the present site were not taken into consideration as a trace to enhance the historic memory of the city core (Figure 7b).

Some of the downtown workers (from the local community) held a strike on 2010 to stop the acquisition and demolition of the commercial buildings where their shops were located. In fact, the only strength was in the reduction of traffic. But the weaknesses are many; the link between the Saha and the heritage Buildings could have been done without the need for completely demolishing all of the governmental buildings. As to the Mosque Enhancement scheme, the new facelift for the Mosque with added floors exaggerated the scale of the building. Its scale is not in harmony with the traditional buildings and fabric of Salt city (Figure 7c).

IRBID CITY HISTORIC CORE AND ITS CULTURAL HERITAGE: ASSESSMENT OF THE URBAN HERITAGE FABRIC

Irbid is located in the northern part of Jordan and is the capital of the Irbid Governorate which has an area of 1,572 km², with a total of about 1.137 million inhabitants. In the past few decades, Irbid city has witnessed excessive urban growth rates associated with the large increase in its population (Figure 8). Due to its unique geographic location, Irbid has become

an important commercial and administrative centre in the North of Jordan; the city centre/core attracts all kinds of commercial activities serving the population of the larger city and nearby towns, and more than 300 villages around it.

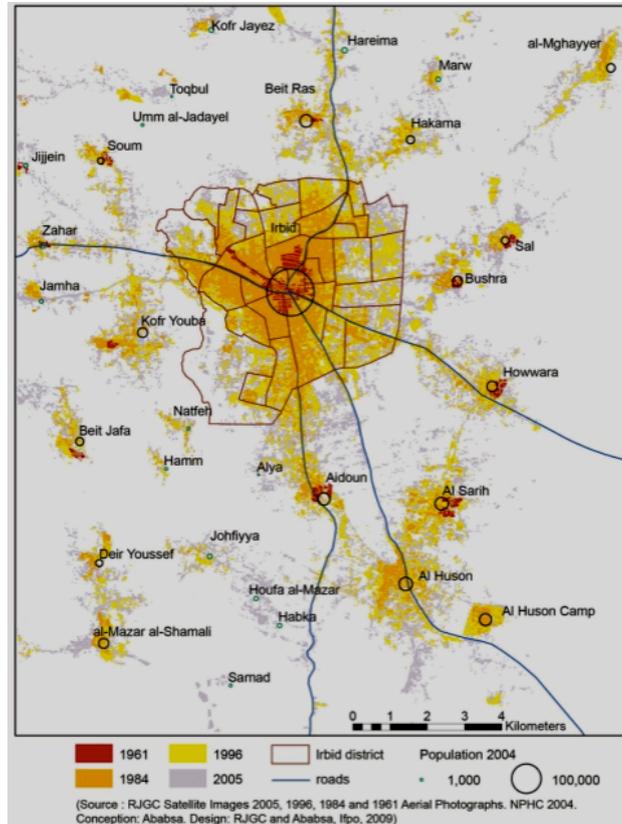


Figure 8. Map illustrating rapid urban growth for Irbid city
(Source: Ababsa, 2014, fig. 39, p 405-406).

The core provides also an urban space in which a multiplicity of social, economic and cultural practices operated at different levels. The historic core of Irbid including the mount (Tal), shown in Figure 9, houses institutional buildings such as the *Saraya* (1886) (formerly an Ottoman prison and seat of governorate), which was turned into an Archaeological Museum (Figure 9b), and other public buildings established in the early to middle twentieth century including religious buildings, educational facilities, and unused open spaces (Figure 9 a, b).

Irbid city urban fabric was formed at the end of the nineteenth century and the beginning of the twentieth century around one nucleus- the Tal. Interestingly, besides the existing archaeological site at the Tal, Irbid core is preserving 1920's and 1930's building styles of the region, especially those of the wealthy migrants from Damascus. Figure 10 illustrates the present distribution of heritage buildings in the study area with a total number of 85 buildings. The city has constantly developed after 1930. Presently, the city centre attracts new poor migrating families and working foreign labour force. The middle-class families moved to the southern part of the city. Thus, the old neighbourhoods became a transitional node for its new inhabitants and the influx of Palestinian and later 300,000 Syrian refugees over the last five years. Several traditional buildings were also deserted or torn down.

The main heritage study was conducted as part of the project launched by the Ministry of Tourism and Antiquities of Jordan (2005-2006) and in conjunction with the Municipality of Greater Irbid. It proposes regenerating Irbid city centre and revitalising selected heritage

buildings within the urban core of the city that is heavily urbanised. The proposed project aimed to provide special attention to significant locations within the study area. The project team for the study was formulated by Consolidated Consultants (CC), and the authors of this paper as the historians and urban heritage experts. It also aimed at developing key heritage buildings and related open spaces (Consolidated Consultants Reports 2005, 2006, Abujaber, 2009).



Figure 9. General views of Tal Irbid; with part of the city ancient wall (a) The Saraya (1886) turned into a Museum for antiquities (b), General view of the Tal in the background within the modern city (c).
(Source: After Haddad and Fakhoury, 2016, fig.1 a, c, d).

The area under study consisted of the Tal of Irbid and the adjacent urban area, of 500 dunums, forming the historic core (Figure 10). The built-up area occupies 44% of the total surface area with major arterial roads and streets forming its edges. Al-Hashimi Street is the only arterial road penetrating the mid-section of the study area. The field study included data collection, on-site evaluation of physical and structural components, and a detailed photo survey of the relevant components in the urban environment. A social profile for the area under study was developed together with surveys to identify the needs of the local community.

The main culturally significant elements of the urban fabric of Irbid historic core are identified as the *Tal* as the city's main landmark dominating the skyline of the city, in addition to two market areas (*suqs*); *Suq Irbid al Qadim* (old) and *Suq al-Khamis* (Thursday), and the residential quarters (Figure 9c) with four significant religious buildings and a meandering pedestrian network.

The Old neighbourhoods (*al-Harat*) were formed from three main neighbourhoods (Figure 10b). The neighbourhood reflected the social fabric of the city. Al-Nabulsi house, a well preserved example of the Damascene courtyard house typology (turned into a cultural centre) (Figure 11a, b), Al-Sharairi house, a traditional courtyard house category (turned into a political museum) (Figure 11 c, d) and many large town houses and buildings, such as the prominent example of *Jumah* family house, a mixed-use (commercial-residential) townhouse (Figure 11e) were constructed to accommodate the main families of Irbid, leading the economic power of the city.



Figure 10. a. Heritage buildings distribution in the study area with a total number of 85 buildings marked in orange, b. the three neighbourhoods of Irbid (*Harat al Qasbah*) in relation with the Tal in 1876 (Source: After Haddad and Fakhoury, 2016, fig.4).

In the south area of the Tal, three buildings of heritage significance were expropriated by Irbid Municipality for the purposes of restoration and reuse, and financed by MoTA. Two of those buildings were former residences. The Nabulsi house (Figure 11a, b) represents the dominant residential building typology during the 1920s at the historic core. The house was turned into a museum of residential heritage on the lower level. The museum features the traditional urban lifestyle of the Irbidi society. The upper level of Nabulsi house houses a community development project which was planned to offer the local women the opportunity to produce traditional embroidery for sale to tourists.



Figure 11. (a) Al-Nabulsi house and *Fo'ara* square before intervention (2009). (b) Al-Nabulsi house and *Fo'ara* square after intervention (2014) (Source: After Haddad and Fakhoury, 2016, fig. 6 d, e). (c) Al-Sharairi house before the intervention. (d) Al-Sharairi house turned into a museum of local political history (2014). (e) Jum'a mixed-use building townhouse.

Meanwhile, Al-Sharairi house (Figure 11 b, c) dates back to the 1900 – 1920s and was home to a famous local military commander, and later a famous politician. The house was turned into a museum of local political history. The third building, the Juma'a building of three floors,

dates back to the 1930s and is located on Al-Hashimi Street. It is a mixed-use (commercial/residential) townhouse structure, where the Juma'a family lived and the street level shops were used for trading in spices and aromatic herbs. In addition, the upper two residential levels were used as an inn for a period of time (Figure 11d), and were proposed as an inn.

Following the above study, in 2010 a masterplan was developed for Greater Irbid by the Amman Institute and Planning Alliance but has not yet been approved. Protecting heritage areas including natural and cultural heritage, for current and future generations, was one of the planning and development principles identified as a result of the public forums and informed by the vision and community aspirations (Irbid Growth Strategy, 2009).

GENERAL ASSESSMENT OF THE NEGATIVE EFFECTS OF CURRENT URBANISATION PRACTICES AND POLICIES ON SALT AND IRBID CULTURAL HERITAGE SIGNIFICANCE

The following presents a brief discussion of the current conditions of the urban environment, based on a rapid assessment of the different studies undertaken in the two cities and scholarly observations by the authors of this paper, who were involved in different activities or studies concerning both cities during the last two decades. Like other cities in Jordan, Salt and Irbid historic cores have a stock of built-up heritage assets that lie at its physical centre (Figure 10a, 3), where the majority of these key heritage buildings are still under the ownership of local families and remain untouched by restoration efforts. However, the majority of the owners of these old buildings do not continue to live in them. The remaining families and communities living in the area are often too poor or ignorant to maintain these heritage stone houses.

The adopted urban practices and policies, including their impact on the existing urban heritage, were reviewed to understand the urban process in those two cities. Indeed, the land use changes at the core enable us to examine the rapidly developing centre and its connection with the conservation process.

In Irbid, 41% of buildings in the core site has commercial uses, 17% are residential, and 19% are of mixed use (residential and commercial) (Consolidated Consultants Reports 2005, 2006, Abu Jaber, 2009). The concentration of the different types of uses divides the site into three districts): commercial, residential, and cultural.

In Salt, the majority of the approved land use is residential and a commercial linear land use indicated in light blue occupies no more than 15% of the core, while the mixed commercial use and public use occupies very small percentages (Figure 12 a, b).

Another concern was to evaluate if the recovery of abandoned buildings could represent good practice for the role that public landmarks can play in social revitalisation and urban regeneration. In Irbid, from the eighty-five heritage buildings and houses that were evaluated according to their exterior and interior architectural characteristics (shown in **Figure 10**), only a handful of key heritage buildings were reused and by mainly formal initiatives, including the museum at the Saraya.

In Salt, the other landmark investment was in the adaptive reuse of two key heritage buildings into two museums during the last three decades, and the preservation of religious buildings of the English hospital of the CMS (Christian Missionary Society) and Catholic Church in addition to the small mosque. Very few private family initiatives, as part of the

adaptive reuse of landmark residential buildings for Madafas (family house used for guests), have been undertaken by the current or previous owners of such key buildings as in the reuse of Mouasher house.

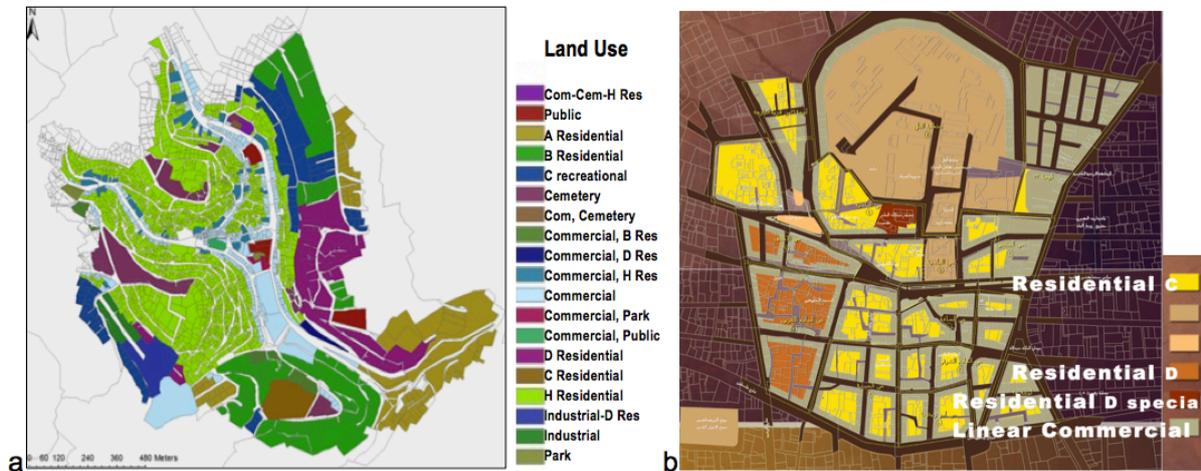


Figure12. Landuse plan a) for Salt – b) for Irbid (Source: Authors).

The condition assessment of the historic core monuments can be determined mostly along with their present function and use. It was observed that heritage building conditions range from well-maintained to derelict. In Irbid, 75% are considered in moderate condition and above while 25% fall within the derelict or abandoned classification.

In Salt, it is hard to specify the general condition of more than 650 buildings but in the most recent study of CulTech-2014 out of the 49 buildings surveyed 18.5% were in good condition, 66.7% in medium condition while 14.8 % were in bad or derelict condition (Figure 13). In Salt, the good condition of buildings in the CulTech study area is related also to the resident being the owner.

However, the buildings which have no further utilisation tended to decay rapidly, while the buildings which are still in use have a better chance of being maintained. Clearly, the buildings which have a new function through "adaptive re-use" are also better maintained.

From the conducted survey and reviewing the current organisational plans for the two cores, several main constraints and challenges for the existing heritage fabric, for the local community quality of life and or a tourism destination, were defined as follows:

- 1- *The severe and rapid urban change of the two historic cores (1950-2000) is very noticeable in Irbid and As-Salt.*

By 2000, the core in Irbid was greatly occupied by modern out of scale structures dispersed or replacing the heritage buildings (Figure 14). The improper and rapid urban development process encouraged the construction of many new large commercial and residential buildings at the historic Irbid core which caused traffic problems. Hence, the Tal of Irbid lost its place identity that once promoted the visual image of the city. The negative results of the inner city slum pockets also spread throughout the core of Irbid due to the permission for multi-storey buildings along the periphery of street blocks. The newer commercial sprawl extended along the main commercial arteries creating urban pockets of threatened derelict urban vernacular buildings and remains behind the new development



Figure 13. Condition assessment of 49 buildings within the CulTech study area (Source: Fakhoury and Haddad, 2014, fig.1, p.20).

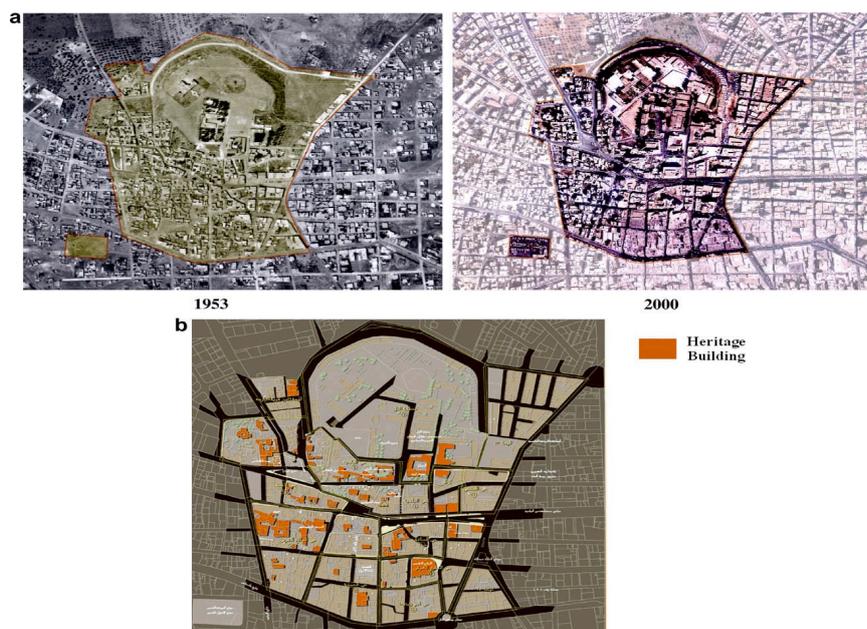


Figure 14. Two aerial photos illustrate the rapid urban growth in a comparison between 1953 and 2000 for the shaded area of Irbid historic core. (Source: After Haddad and Fakhoury, 2016, fig. 2).

The newer higher buildings caused fragmentation to adjacent heritage structures due to scale variations; partial or complete blocking of street view and public open spaces; obstructed physical and visual connectivity; and disrupted walkability and pedestrian accessibility. Thus it has contributed to the isolation of such heritage pockets behind modern multi-storey façades. Some of those new multi-storey buildings are even constructed in place of heritage buildings after being removed. An example from Irbid historic core is the old market area, where the remaining abandoned buildings of this market are located within an urban pocket between the Al-Hashimi Street and the Farmers' market (Figure 15). Usually,

these places are inaccessible, separated from the city core by high walls. Poverty in slum pockets reflected in the lack of maintenance of traditional buildings and public services also require urgent concern.



Figure 15. Examples of the spread of derelict and abandoned heritage buildings in inner-block locations of Irbid core. (After Haddad and Fakhoury, 2016, fig. 11 b, d).

However, in the heart of Salt, modern white blocks mushroomed along the main Ein Plaza and replaced the Ottoman Saraya and old congressional mosque with new governmental buildings and a new mosque during the late 1960s and early 1970s to ease car traffic (Figure 16).

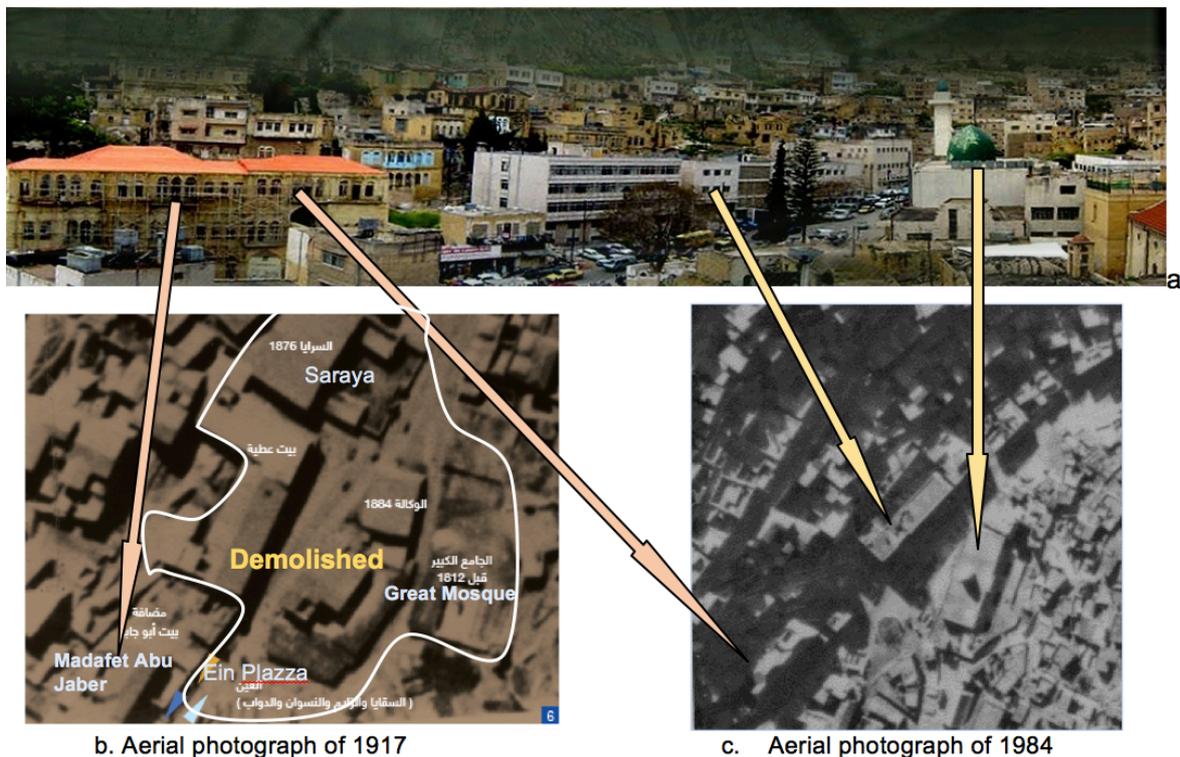


Figure 16. a. Modern buildings dominated the city centre of Salt replacing the landmarks of the Ein Plaza of the beginning of the twentieth century up to a few years ago. b, the Ein Plaza of the beginning of the twentieth century. c. Ein Plaza of 1984, mostly demolished but for the heritage building of Abu Jaber (Source: Authors).

This replacement extended through the commercial arteries along the valleys. Still, the new multi-storey commercial strips could not suffocate the traditional fabric because the grand mansions of the early twentieth century rose up to three and four floors. In addition, the mountainous topography could still showcase the abandoned traditional ensembles of the different mountain slopes towering above the new commercial buildings of the valley. In spite of this, the new commercial strips at the foot of the hills greatly affected the main Ein Plaza and commercial arteries of the flat areas at Al-Maydan and Deir Street. These created a heavily urbanised mix of mainly commercial with minor residential uses, in addition to abandoned heritage locations, which are currently challenging to sustain (Figure 17).

Many heritage residential buildings are neglected or abandoned in both cores, as evident in the different field surveys. In addition, façades on streets and pathways in the commercial districts of Irbid are heavily covered by shop signs and advertisements of different size and colour varieties that make perceiving the form and aesthetics of those buildings difficult (Figure 19). New restrictions on façade shop signs and advertisements alleviated some of those problems in certain commercial arteries in Salt, but the problem is still evident in other parts of the city core.



Figure17. New developments hiding partially vacant or used heritage complexes, but can still be seen because of the topography at As-Salt (Source: Authors).



Figure 18 Al-Hashimi Street elevation with modern large structures such as the intruding City Hall visible in the centre (Source: Authors).



Figure19. a. Signage of commercial streets near the main Plaza of Salt. b. Advertisement board and signage of a commercial street in Irbid (Source: Authors).

One of most intractable problems in the historic cores concerns the connection between the traditional and modern physical forms and treatments. Modern developments disregarded the heritage value and contributed to fragment heritage assets in the core. In Irbid structures of enormous height and mass introduced in recent decades are grossly out of scale amidst one and two-storey historic buildings with narrow streets. The introduction of multi-storey buildings in most cases destroys the human scale. Another critical problem is the large majority of these traditional buildings are poorly- maintained and invariably with illegal, top-floor extensions, as reflected in Salt and Irbid city (Figure 17, 18).

2- Lack of urban heritage protection plans and related urban policies; in the two cities approved Master (land use) plans did not consider the heritage cores; this resulted in the destruction of the identity and authenticity of main parts of the historic area.

During recent decades, many heritage buildings were removed in Irbid (Figure 15) meanwhile, many of the isolated heritage buildings are still threatened while they became fully encircled by modern urban structures. This also decreases their significance as they become very hard to view and reach, thus they become abandoned. Figure 15 illustrates examples of the isolation concern, where the heritage building becomes buried within the urban area of mixed-use at Irbid.

On the other hand, the implemented urban laws and policies do not take into consideration the traditional uses and the particularity of these heritage buildings. Lack of effective protection measures can still encourage people to remove some of the existing heritage buildings or parts of them and to replace them with modern multi-storey buildings. This issue represents a real challenge for the traditional buildings at Irbid city historic core.

While the protection of heritage buildings in Salt is hoped to be achieved by the recent declaration of the core of Salt as an area with Special Regulations, that is still to be implemented.

3- Lack of public awareness activities to rebuild the sense of belonging and lead the conservation and reuse of Irbid & Salt traditional buildings.

In terms of public awareness, no clear action was undertaken until the present CC Irbid project and study of 2005 was tendered, when several consultations were undertaken. No awareness activity or city consultation was conducted earlier to encourage the public to restore and reuse their existing urban heritage with compatible activities such as for a (*Madafa*) except for a singular case of Madafet Arrar in Irbid, where the family of a national

poet undertook this project. The lack of understanding and appreciation of the historic value of the collective core's memory is a critical issue. It explains why the owners overlook the need of carrying out proper and regular maintenance works for their properties (**Figure 15**). Though, the question remains, 'How can these traditional buildings affect the Irbidi and Salt contemporary society and people who inhabit those dwellings?

As for Salt, the number of heritage and planning studies is large with strong support and back up from Salt Development Corporation (SDC) and leaders of the society, which in reality only means more of an elitist awareness, divorced from the popular masses. This limited public awareness about the cultural significance of this heritage and greater demand on land for commercial investment, supported by increased land prices, had resulted in either destroying many of the existing heritage buildings in Salt or isolating them from the existing urban tissue and identifying them as ruins (*kharabeh*) (Figure 16,17).

Recently MoTA undertook several initiatives with JICA in Salt to raise local community awareness and training as part of the 'Salt Eco-Museum' for the Abu-Jaber residence and Salt Trails: "The Japanese grant is currently used to train tour guides and residents on how to receive tourists and promote their city's sites and local products. With this programme, many women living here can host groups during their tour around the city and make them lunch," (Goussous, 2016). The momentum of this training is still not evident in the city since the number of tourists to Salt does not exceed 3300 visitors a year, based on the number of tourists that visited the Historic Old Salt Museum (MoTA, 2012).

Conclusively, this participation could not empower the inhabitants of the two cities to stop the deterioration of some of the main landmarks of both cities where the authenticity of parts of the historic areas was and can still be clearly affected.

4- The insufficient services and systems managing the pedestrian movement in the historic core cause a risky traffic-pedestrian interaction.

In Irbid, this is noticeable at the Al-Hashimi Street, the major arterial road, (Figure 20b) connecting the different commercial activities with its surroundings.

The centre of Salt also suffers from congestion and dense traffic during the day. Congestion nodes spread along al Maydan Street connecting with Al-Deir and Hammam Street, where an additional lack of parking and triple car sparking practices leads to serious traffic congestion (Fakhoury and Haddad, p. 36) (Figure 20a).

In addition, lack of traffic management is another issue clearly unaddressed, by the traffic police and local municipalities at both city centres. Several traffic rapid assessments, researches and public meetings have indicated that double and triple parking, for example at al-Maydan Street in Salt, is not ticketed by the local police. A questionnaire in Irbid reflected that the lack of public services such as car parking spaces impacts the attractiveness of the downtown during the day (Tarrad, 2014, p.4279).

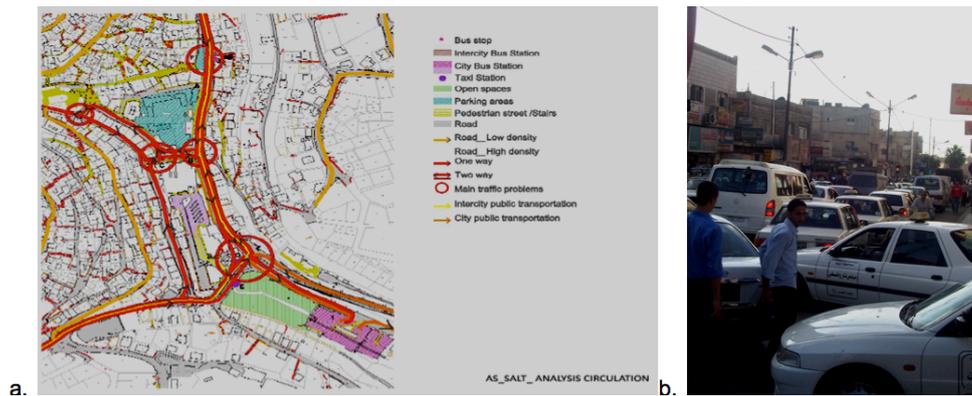


Figure 20, a. Congestion nodes and high-density traffic at main arteries of the historic core of Salt b. Congestion and unsafe interactions with traffic in Irbid (Source: Authors).

Table 3. Urban phenomena and constraints at the core of Salt and Irbid cities (Source: Authors).

Urban phenomenon at the core	Salt	Irbid
Ownership and tenants impact	Multiple building owners who mainly migrated to Amman. Several waves of resettlement took place and lately the foreign labour force working in Amman is attracted to live in part of the traditional old neighbourhoods. Minimal investment by private sector in the heritage assets.	Multiple building owners where some migrated to Amman, or outside the old quarters, where several waves of resettlement took place and lately Syrian migrants are attracted to live in the old neighbourhoods. No investment by private sector in the heritage assets.
Urban sprawl due population increase	The population increase was not severe after the establishment of Jordan. A good percentage of the residential buildings at the core are vacant while the traditional commercial streets continue to be used at the core.	Continuous population growth, currently the third largest city in population in Jordan. This had a great impact on the heritage fabric although some heritage buildings still stand vacant while the commercial uses thrive.
Traditional fabric and new urban policies; - Mixed land use strip development -Vacant buildings	-The traditional urban fabric of the city was clearly more developed, before the establishment of modern Jordan. -More than 650 heritage resources are documented. -The topography showcases the remaining traditional ensembles on the different mountain slopes, hence the new commercial strips and buildings did not suffocate the traditional fabric visually completely but greatly affected the main Saha and commercial arteries of the valleys. -Vacant key buildings are a main phenomenon of the traditional core.	-The villages' ensemble around Irbid later formed together with Irbid's urban fabric of suqs & main neighbourhoods the traditional fabric of the present city. -More than 85 heritage resource is documented. -Presently the traditional structures are mainly surrounded by strips of mixed use or modern commercial buildings, creating derelict unattended pockets of traditional fabric in the heart of the city. -Vacant traditional buildings are a main phenomenon of the traditional core.
Lack of political will at the municipal or central government	-Several studies for planning, protection and development were sponsored by SDC and MoTA during the last 25 years and lately by the Greater Municipality of Salt -financed mainly by foreign donors or loans-, where currently the Mayor and Prime Minister adopted the nomination of Salt on the World Heritage List. -The number of studies was enormous with implementation mainly to the facades upgrade and open space development for tourists' trails and mainly by MoTA. -Reuse projects of two museums were undertaken in key buildings by MoTA & SDC.	- MoTA sponsored a study for the development of the traditional core in the city in cooperation with the municipality. -Mainly the project for the reuse of 2 heritage buildings and plazas were implemented by MoTA.

Limited tourism opportunities	Salt since the late nineties sought to incorporate tourism as an economic pillar for its development. Still tourism opportunities are not a main economic opportunity. -Investment in Tourism infrastructure; tourists' trails and reuse of 2 key buildings into two museums, mainly by MoTA. - Minimal investment by a private sector investment or community-based initiative.	The surrounding archaeological attractions encouraged Irbid to incorporate tourism opportunities to its economic development in the last decade. -Investment in Tourism infrastructure; the reuse of two key buildings as museums and plazas implemented by MoTA -No investment by the private sector or community-based initiative.
Congestion & traffic	Very high congestion through the day and not enough parking at the city core.	Very high congestion through the day and not enough parking at the city core
Pedestrian network within the core	Pedestrian mobility is affected through the core affecting the quality of life.	Pedestrian mobility is affected through the core.

The key question is whether, through preservation and adaptive reuse of the two historic cores, we can create a civic landmark, capable of strengthening the dynamic relationships in the lives of the two cities' citizens. In fact, living in the two cores is presently not favourable and what is needed is a direct intervention to reinstate the two cores for 'people instead'.

A more progressive approach to developing a sustainable heritage conservation action plan for the two historic cores needs to rethink the role and intentions of conservation and restoration, and the importance of housing in the conservation action plan process. Meanwhile, incorporating public participation into integrated conservation and planning policy should be beneficial to all parties (Yung and Chan, 2011).

In general, there is also an incredible shortage of funds for the upkeep and maintenance of the heritage buildings, according to the municipality. Hence, much of the conservation work in the historic cores is anticipated to be undertaken by the private sector in partnership with the public sector.

The urban heritage strategy needs to deal with the gentrification process and the population's attitude to its cultural heritage assets and address the demands of the local community about the economic value of the historic assets in addition to discussing openly benefits for the local community. Several initiatives in engaging the public in Salt have been undertaken but the challenge of protecting up to 600 resources - eight times the number of resources at Irbid - and a large number of studies, necessitate institutionalising the effort and planning campaigns of awareness, as part of any ongoing conservation initiative.

While it is clear that several private initiatives invested in the reuse of heritage buildings for tourism activities in other cities of Jordan, such as in Madaba and Fuheis traditional cores, this is not evident in Salt or Irbid. In the 1990s, a visitor and craft centre opened at Salt Zaman and closed by the mid-1990s and only recently a private kitchen opened in parts of a traditional building in Salt to accommodate visitors. Until today no proper full-time restaurant or entertainment place exist in the city core, but for al-Amad traditional authentic barbecue shop, representing the legacy of the last century. As for Irbid, the universities' city, no private investment in tourism has been associated with the traditional buildings and the related open spaces. However, there is a core existing infrastructure of museums in both cities. This can support the potential visitor's attraction.

Hence, enhancing the pedestrian network at Irbid core can benefit not only the local community quality of everyday life but also its potential visitors. This also means that the road infrastructure, pedestrian services, and safety, may need major rehabilitation.

Still, it is only by infusing the historic core with its full role as a place of living, of socio-economic and cultural creation, and shared enjoyment and memory, and by means of compatible activities that we can enhance the historic cores of both cities. Attracting the youth and university students to live back in the core and arouse their interests to contribute further to the local cultural identity could thus restore the cores' collective memory and authenticity.

The main concerns, obstacles and *challenges* to the implementation of any conservation strategy are:

1-Private ownership of monuments constraint; most of the heritage buildings are privately owned monuments with multiple owners. Therefore, a dialogue with the local community in the city and residents outside the city about the benefits of conservation or investments should be given higher priorities.

2- People's perception about conservation and local benefits. A majority of heritage buildings stand vacant and the main investments are driven by the government. There is also a need for pilot projects to encourage heritage building owners to invest in similar uses and attract the middle-class families, including the youth, to come back and live in or engage with the city core. Adopting and encouraging small to medium investment projects, and not only thinking of any "Urban mega phenomena of investment" as the cornerstone for success, is crucial. Concurrently, incentive programs need to be put in place, to increase the sense of belonging and encourage the building owners at the two cities to contribute to their city through investing in new public-private partnerships, upgrading their heritage properties, and initiating community development projects. There is a need to demonstrate a practical mechanism to increase local participation in heritage conservation, such as financial incentives (tax exemptions), or small loans to house owners and tenants for maintenance of their houses, with very little interest.

3- Physical planning and landscaping- environment challenge; conserving the urban/cultural & natural heritage landscape of the two cores require declaring entire sites as regulated heritage districts. Salt has declared the city centre an area with special regulations with planning restrictions on certain areas for visual protection of the setting, but not in relation to protecting the natural assets of the valley and its cultivated lands. Moreover, in the absence of a declared register for the traditional buildings, only marked on the land-use plans and with no proposed detailed building regulations for heights and densities per plot, no progress can be achieved. On the other hand, Irbid's historic core has neither legal protection nor special regulatory status for its historic core and its related heritage assets of surrounding natural and agricultural lands.

A balance between the needs for urban renewal and protecting the landscape morphology of the old cities' cores should be respected within its environmental and natural significance. The study of Shafa Balqa 2030 -published in 2012- recommended that the city of Salt be developed as a tourist destination by protecting not only the cultural heritage core but also the natural valley system as well as its surrounding cultivated lands, but no relevant plan has been approved to date.

Strategic planning for future urban growth necessitates using tools such as a GIS system to develop comprehensive land use plans and create applicable buffer zones (Al-kheder et al., 2009) in order to protect the heritage core of the city while linking it

with its surrounding environment. Such plans should include not only all the heritage buildings, stairs, open spaces but the valleys, water springs, trees and natural assets.

4- Accessibility/mobility enhancement challenge; Regarding the traffic problems at the historic cores, there is an urgent need for enforcing measures to reroute the traffic to reduce the pressure on the historic cores of the two cities. Pedestrians are forced to use narrow congested sidewalks of heavily trafficked streets during the day to move between the pedestrian. It is obvious that discontinuity of the pedestrian flow would hamper any proposed visitor or touristic experience.

TOWARDS CONSERVATION ACTION PLANS AND PROGRAMMES

A conservation plan can enable people living and working in the historic area to preserve their traditional buildings and spaces while creating an urban environment that is in tune with today's requirements (Smith, 1988). There are two main aspects, often considered to be contradictory, that direct the framework of an action plan for the historic cores; those of economy and culture. Consequently, the conservation strategy should be formulated as an alternative to the much more common pattern of development versus heritage (Mohit and Kammeier, 1996). Ultimately it is only with this more democratic, participatory process that a more meaningful and sustainable conservation and restoration programme for the two historic cores can succeed and be developed.

The priority objectives of a sustainable rehabilitation for the core should aim towards *Improving residents' quality of life; Valorisation of cultural & natural heritage; Improving social cohesion;* and *Promotion of economic vitality and environmental efficiency* (RehabiMed, 2008). In summary, the recommended action plan can generally be classified into quantified actions affecting the *physical territory* and *sectorial policies* to be carried out (social, environmental and economic actions) at the service of an objective, which is to achieve the desired scenario. The rehabilitation/conservation action plan based on RehabiMed framework includes:

Actions for modification of the structure and fabric of the core area can include: Different forms of protection; Specification of compatible functions and uses; Developments of infrastructures and services; Mobility and accessibility plans; and Linking with bordering areas.

Projects of intervention on architecture and open spaces can include: Rehabilitation projects of existing buildings; Guidelines for the insertion of new architecture; and Projects for the linkage of public open spaces.

The *economic, social and environmental policies;* i.e. tax-exempts for owners restoring their buildings; training policies, greening policies, etc.

However, the task for architects, planners and municipal administrators is not only to preserve prominent façades of traditional built environments and adapt them to conform to the more positive aspects of modern life, but also preserving the integrity, values and collective memory of the community itself, while upgrading the elements to comply with modern life standards and expectations.

Although several studies and projects assessed the heritage buildings in As-Salt, mapping of the collective memory was not a major concern for planners in the rehabilitation of the Ein Plaza. Even the remaining seeping water of the spring (Ein) from which the plaza took its

name has not been recovered and was pushed back by pouring concrete when the congressional Mosque underwent a facelift recently by 2010.

Hence, actions for the modification of the structure of the present cores should include as a priority:

Reinstating the traditional and cultural identity of each traditional neighbourhood of the two cores by:

Encourage the use of the abandoned buildings, even for compatible temporary activities instead of being nodes for waste collection.

Reinstate the traditional residential use of the different neighbourhoods (Al-Khader in Salt and Al-Mamluk at Irbid for example).

Provide new attractions such as refurbishment of neighbourhood plazas and provide public services and inject appropriate activities at night. For example, Irbid Fo'ara Square (Figure 11a, b) provides an introductory open space to the residential cluster and ensures easy pedestrian accessibility and flow. Small open spaces in neighbourhoods can also be turned into small gardens as proposed for Al-Khader at Salt (Figure 20).

More strict regulations on demolishing buildings, which must not be done unless as a last resort. Where replacement of buildings is necessary, it is essential that replacement or infill buildings are of appropriate scale; otherwise, the units will lose their identity even if the street lines remain unchanged (Whitehand et al, 2011).

The introduction of a safe pedestrian network. Altering the existing street network to enhance pedestrian connectivity and introduce new pedestrian paths, as proposed at the historic core of Irbid including the available open spaces (Figure 22) and in the new development plan for the Oukbat bin Nafee area at Salt (Figure 23), is crucial.

There are real obstacles and problems in accessing the heritage sites with the current road system which contributes significantly to the isolation problem they are suffering. The major issue affecting continuity is the heavy traffic along the main streets at the two cores. In addition, enhancing security measures is required such as in using surveillance cameras feeding into the closest police kiosks. Figure 22a proposes a safe pedestrian network between the Northern and Southern part of the core of Irbid with an underpass at al-Hashimi Street, a solution to heavy traffic while linking the Tal with the rest of the enhanced pedestrian network of the heritage city core. Activation of the role of the different traditional suqs while also enhancing the residential neighbourhood of the western Mamluk mosque can enhance the pedestrian network (Figure 22b).

The project of developing the Oukbat bin Nafee area at Salt also proposes allocating underground parking space and strengthening a safe pedestrian access to the core. Additionally it proposes maintaining a green lung in memory of the cultivated lands of Salt while activating the water recharge of the valley (Wadi As-Salt) within a comprehensive vision for reinstating the role of the Wadi of Salt as an integral element of the city development (**Figure 23**). Currently provision for parking and allocating an open space is being implemented in the city but without a comprehensive vision for reinstating the role of the valley, in relation to the cultural assets of the city and its collective memory.

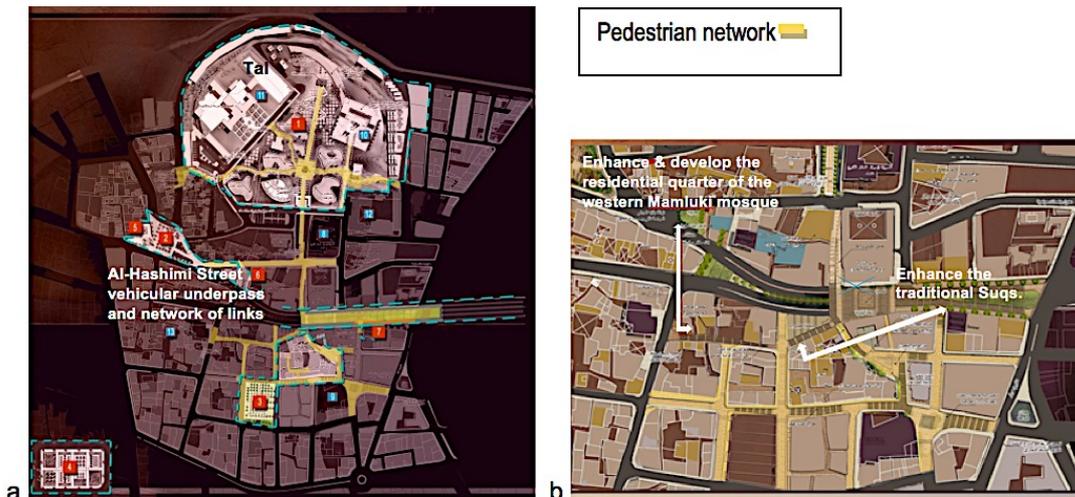


Figure 22. Proposed areas for intervention at the historic core of Irbid a. The introduction of a safe pedestrian network and open spaces between the Northern and Southern part of the core, and underpass at Al-Hashimi Street. b. Actions for the enhancement of the traditional Suqs and residential quarter of the Mamluk mosque (Source: Authors).

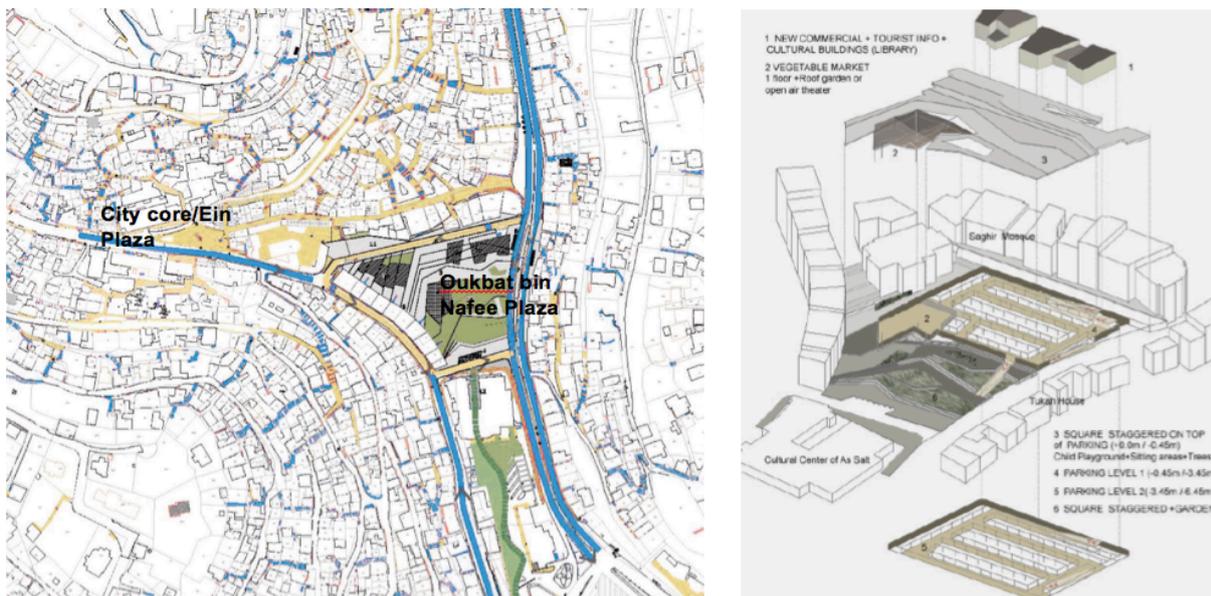


Figure 23. Reinstating Oukbat bin Nafee area as part of the vision for rehabilitating the valley of Salt, while allowing for city parking, easy pedestrian accessibility to the core, in addition to a vegetable market and green park. (Source: Fakhouri and Haddad, 2014, fig. 11, 12, pp. 40, 41).

While 'Projects of intervention on architecture and open space' could include:

Setting an outreach technical office to residents for the rehabilitation of the traditional buildings. Although technical information cards have been developed to direct the building owners to common conservation and maintenance for their buildings, as part of CulTech project, the municipality, and related authorities still did not, to date, distribute the information cards to the relevant owners or users to guide them on maintenance procedures.

Introducing simple natural landscaping elements at some neglected open spaces with good views can contribute to the open spaces to serve both the local community and visitors-tourists. Creating neighbourhood playgrounds, public parks, and open spaces or enclosures, such as proposed for Al Khader/Rummanat neighbourhood in Salt. (see Figure 24).



Figure 24. Left over spaces to be developed as green spaces between the residential heritage buildings of Al-Khader neighbourhood of Salt. (Source: Fakhoury and Haddad, 2014, fig 25, p 48)

SUMMARY AND CONCLUDING REMARKS

The urban heritage should be considered as a basis for urban planning and development projects at the historic cores of Salt and Irbid, so as not to be ignored and neglected further, as has been done. Those two core areas have unique cultural features and there is an urgent need to avoid further fragmentation caused by modern structures. Therefore, exclusion of such urban heritage would lead to the loss of integrity and further urban degradation. Thus while conservation of the urban heritage must contribute to the quality of life of people, the recovery of the abandoned buildings in the two historic cores can trigger the beginning of new regenerative programs, contributing to the sense of belonging and identity for the communities at Salt and Irbid historic cores. It actually can play a genuine role in an emerging pattern of interactions between modern and urban heritage sites, with its rich traditional buildings and historic landscapes.

In Salt and Irbid, the key issue is related to the existing urban policies, and the absence of a comprehensive masterplan to organise the various land use activities, vis a vis their heritage properties. This is actually causing an excessively negative urbanisation process at different places, where some significant heritage buildings and units can still be replaced with modern inappropriate scaled structures, and thus, the units lose their identity, authenticity, and collective memory. Selected key houses appropriated by the municipalities were turned into museums interpreting the collective memories or local history. It is stressed that these need to be seen as part of conservation action areas, so that their sustainability and revival will be most feasible.

Lack of planning, research, and public awareness about the cultural significance also caused major drawbacks in Salt and Irbid historic cores. Meanwhile, engineering contractors responsible for the rehabilitation of heritage buildings must be certified according to the quality of their previous work and experience (training on restoration techniques).

Conserving the original zoning in the heritage blocks can help avoid residential gentrification, which in part keeps heritage buildings within a block inhabited and protected. The lack of active public participation and available applicable legal, financial and technical mechanisms suggest the urgent need for a conservation action plan with sufficient technical and training programmes. This should be coupled with tax incentives to encourage owners to restore their residences and encourage new partnerships with local non-governmental organisations, amongst others, to strengthen the local initiatives for the creative reuse of these assets and strengthen their sense of ownership.

The local community, thus, must be treated as a major stakeholder of the development project. However, more specific regulations must be carried out to protect heritage buildings from any intervention made by owners. Any conservation strategy should create certain tools to engage the public and attract the middle-class families to come back to the historic cores to solve the current urbanisation problems at the two study areas.

In spite of some differences between the urbanisation phenomenon at the two heritage cores of Salt and Irbid (mainly in relation to the number, spread and density of heritage buildings and scale of the historic core, the number of population, the role of the municipality and central government, etc.), still we can confirm that the challenges are similar. This supports the hypothesis that a sound strategy for the sustainable conservation of traditional cores in Jordanian cities is urgently needed for a sustainable conservation of the Jordanian historic city cores. In conclusion, the two historic cores provide an excellent opportunity to embark on a bold conservation strategy that can put these city cores on the map of innovative city planning in the 21st century. The collective memory will become an agent for linking generations through which it is possible to give further importance to the place where the events unfolded for the past, present and future inhabitants of those two historic cores.

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REFERENCES

- Ababsa, M. (2014). *Atlas of Jordan: History, Territories and Society*, Presses de l'IFPO, Institut français du Proche-Orient, Beyrouth, <http://books.openedition.org/ifpo/4560>
- Abujaber, F. (2009). *Towards a Walkable Heritage Landscape*, Dalhousie University, School of Planning PLAN 6000: Independent Project (Unpublished thesis).
- Al-kheder, S., Haddad, N., Fakhoury, L. & Baqaen, S. (2009). A GIS analysis of the impact of modern practices and policies on the urban heritage of Irbid, Jordan, *Cities*, Vol. 26(2) 2009, pp. 81-92.
- As-Salt Eclectic Architecture. (2016). *Origins and Evolution of an architectural language in the Levant, (1865-1925)*, As-Salt City Development Projects Unit (unpublished report for the nominated dossier for inscription on the World Heritage List)
- Cherchi, P.F. (2015). Adaptive Reuse of Abandoned Monumental Buildings as a Strategy for Urban Liveability, *Athens Journal of Architecture*, Vol. 1, No. 4, pp.253-270.
- Consolidated Consultants Engineering and Environment Company (CC) Reports and studies for "Development of Irbid Centre and Restoration of Heritage Buildings Project: 2005, 2006", (unpublished).
- Fakhoury, L. (1987). *Salt; A Study in Conservation*, University of York, UK (unpublished Master thesis)
- Fakhoury, L. (2010). 'The Architectural Heritage of Jordan and the Tourism Project; a 'Commodity' or a living legacy', *First International Conference for Urban & Architecture Heritage in Islamic Countries: Its role in Cultural & Economic Development*, organised by the Saudi Commission for Tourism and Antiquities, in cooperation with Research Centre for Islamic History, Art and Culture (IRCICA), Riyad-Saudi Arabia, 2010 (unpublished paper)
- Fakhoury, L. & Haddad, N. (2014). *Manual for the conservation of the Historic Centre of Salt*, (in Arabic), CultTech, Amman. https://issuu.com/asociacionrehabimed/docs/manual_as_salt
- Giani, E. & Carnevale, G. (2015). Enhancing Urban Heritage: Industrial Culture and Cultural Industry, *Athens Journal of Architecture*, Vol. 1, No. 1, pp.35- 49.
- Goussous, S. (2016, March 7). JICA supporting 'eco-museum' in Salt to showcase daily life, Traditions, *Jordan Times* (<http://www.jordantimes.com/news/local/jica-supporting-eco-museum-salt-showcase-daily-life-traditions>).
- Haddad, N.A. & Fakhoury, L.A. (2016). Towards Developing a Sustainable Heritage Tourism Action Plan for Irbid historic core, *International Journal of Architectural Research (Archnet IJAR)*, Volume 10, Issue 3, November 2016, pp. 36-59.
- Irbid Growth Strategy. (2009). Prepared by: Irbid Technical Team (MOMA) Greater Irbid Municipality, Amman Institute, Planning Alliance, Draft II – September 2009
- Mohit, S.R. & Kammeier, H.D. (1996). The Fort : Opportunities for an effective urban conservation strategy in Bombay, *Cities*, Vol. 13, No. 6, pp. 387-398.
- RehabiMed, (2008), *RehabiMed Method, Traditional Mediterranean Architecture: I Rehabilitation Town and Territory*, RehabiMed, Barcelona. <http://www.rehabimed.net/>
- Smith, R.A. (1988). The role of tourism in urban conservation: The case of Singapore, *CITIES*, August, pp.245-259.
- Steinberg, F. (1996). Conservation and Rehabilitation of Urban Heritage in Developing Countries, *Habitat International*. Vol. 20, No. 3, pp. 463-475.
- Tarrad, M. (2014). Urban Planning Response to Population Growth in Jordanian Cities (Irbid City as Case Study), *Research Journal of Applied Sciences, Engineering and Technology* 7(20): 4275-4280.
- The Ministry of Tourism and Antiquities of Jordan (MoTA). (2012). *Tourism Statistical Newsletter 2012*, http://www.mota.gov.jo/Contents/Tourism_Statistical_Newsletter_2014.aspx
- Whitehand , J.W.R., Gu, K., Whitehand, S.M., & Zhang, J. (2011), Urban morphology and conservation in China, *Cities*, 28 :171–185.
- Yung, E.H.K., & Chan, E.H.W., (2011). Problem issues of public participation in built-heritage conservation: Two controversial cases in Hong Kong, *Habitat International* 35: 457- 466.



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INVESTIGATING THE EFFECT OF EMPLOYING IMMERSIVE VIRTUAL ENVIRONMENT ON ENHANCING SPATIAL PERCEPTION WITHIN DESIGN PROCESS

Rawan Abu Alatta*, Ahmed Freewan

Keywords

*virtual reality;
immersive virtual environment;
design studio;
architectural education;
design process;
human experience*

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Abstract

The recent developments in Information Technology (IT) and digital media have introduced new opportunities to design studio and new dimensions to design and architecture. The current research studies how the immersion of Virtual Reality (VR) in architectural design studio affects spatial perception through the design process. The aim of this study is to investigate the effect of using such environments on changing the way how to design for human experience: how it will improve students' spatial understanding of Three Dimensions (3D) volumes, and how it will enhance their imagination, enrich their creativity and promote their ability to experience their design's sensations. This study hypothesizes that using an immersive virtual environment in design studio will empower students' imaginations and give them the ability to understand and experience their ideas. It will give them the opportunity to check their design's validity with greater 3D exploration, understanding and comprehension of spatial volumes. Within a framework of an experimental design research, a series of experiments was conducted to evaluate what had been assumed. The research used teaching, monitoring, explanatory observation and evaluation methods. The results showed that VR can not only enhance spatial perception and improve the design, but also it can affect the design process and make changes in the architectural design way of thinking. It can help designers to incorporate human experience within the design process.

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INTRODUCTION

Everything in life has never been as it is from one instance to another. Nothing in life stays as it is (Özersay, 2003). Learning in the twenty-first century has developed as a result of technological application expansion. Design and architectural teaching must therefore use up to date technologies to improve design quality, and to accommodate the needs of modern society and new teaching requirements. Architectural design is an essential part in architectural education. Recently, it has undergone rapid developments which reshape the way designers think and design (Al-Ali, 2012). The recent developments in IT and digital media have changed design thinking, and introduced new opportunities for the design process, and new dimensions to design and architecture (Al-Ali, 2012).

Architectural Design

Architectural design is a complex and dynamic (Ismail et al., 2012) collaborative process, in which the designer develops his imagination to find and express a solution to a design problem, and collaborates in most cases with other people such as other designers, clients, and suppliers. (Alraouf, 2006). The architectural design process is “a sequential process to develop a product” (Ku, 2007). These products revolve around making spaces and places to provide a more comfortable human life (Ismail et al., 2012). The design process is mainly composed of three phases: analysis, synthesis, and evaluation (Wodehouse and Ion, 2010; Nalkaya, 2012; Gharib, 2013). Through the design process, a designer starts with defining a certain design problem, trying to identify one or more design concepts or solutions, and then evaluates the selected solution or idea. Understanding design process’ different phases is the beginning of good design understanding. Good process leads to good design (Maher, 1990).

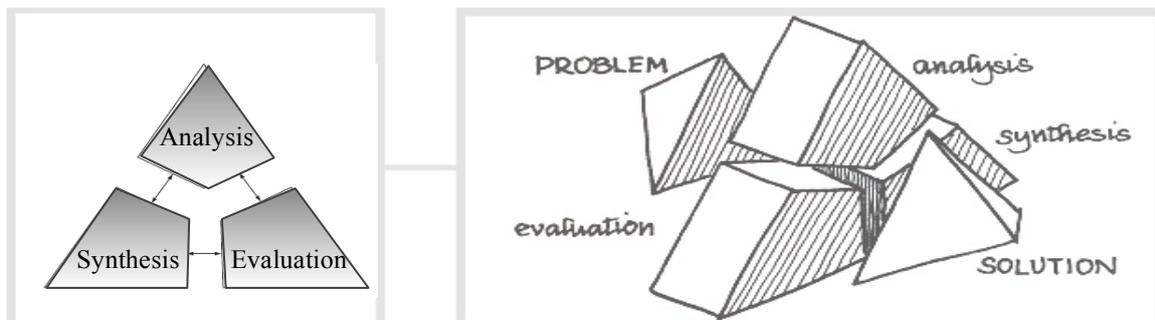


Figure 1. Modes of conceptual thinking (Source: Segers et al., 2000).

Expression Techniques in Architectural Design

Recently, as previously noted, the profession of architecture had gotten more complicated than in any time before. The increasing complexity of architecture causes a great divergence between the way architects imagine an idea and how they express and perceive it. Architects and designers tend to express what is in their minds to overcome this problem and to check that their ideas can be applied. Chosen tools, media and environment affect the design process (Schnabel, 2004; Abdelhameed, 2013) and its products. Therefore, architects have always used different media to express their concepts, translate their ideas and collaborate with others. (Schnabel, 2004). These tools have altered and developed over time in parallel to the changes in the field of architectural design.

Traditional (conventional) expression techniques

Students of architecture in many schools are still employing sketching, manual drawings and physical models to express their intentions (Hadjri, 2003; Schnabel, 2004). Although traditional media are useful, its methods can be time and effort consuming (Amireh, 2013) in addition to its shortcoming in expressing some issues such as light effect, material and color effect, and structural systems (Wodehouse and Ion, 2010). These issues are considerably worse when talking about 3D complex spatial volumes which are hard to be imagined, understood and presented. Although 3D sketches and perspectives are useful to give designers a hint about how a certain design's interior spaces are, they are still fixed and rigid. They determine the designer's field of view and restrict their choices to look anywhere they want (Henry and Furness, 1993, Wodehouse and Ion, 2010).

On the other hand, physical models are three dimensional, but it is in reality small and cannot be entered. So, to assess human spatial experience, feel and spaces' functional relationships, designers have no choice but to imagine themselves in that mini-model. Hence, it is difficult for some designers due to scale problems and the models therefore don't give the same experience of the design being actualized, and walking through that space (Henry and Furness, 1993). So there is an urgent need to find new techniques with new characteristics that may overcome these flaws, while at the same time responding to other aspects (Segers et al., 2000).

Digital (computerized) expression techniques

Computers could be considered as “giant brains;” (Jones and Thornley, 1963) that could enhance the quality and quantity of human production with both reduced costs and time (Andia, 2002). Computer-Aided Design (CAD) systems were born from the necessity to help designers to do what they previously couldn't by using the conventional tools. Complex architectural representations and designing with computers, designing with more 3D spatial understanding, and improved finishing with more graphic details are what was obtained from these new products. On the practical side there is no doubt that computers became major tools in the architectural design process with the employment of CAD systems. But the real use of these systems is restricted in the post-conceptual phase as drafting tools, not as innovative design tools (Yi Zhu, 2007). Dealing with CAD menus and toolbars hinder the generation of creative ideas by concentrating on how to use tools rather than how to accomplish tasks and design actions (Okeil, 2010): that's why Lawson called CAD tools “Computer Aided Drafting” rather than “Designing” (Reffat, 2006).

Within CAD technology the designer could visualize and understand form, volumes and spaces (Ismail et al., 2012) more efficiently than with traditional techniques (Reffat, 2006). They enriched the designers' understanding of the human feel inside a design's spaces by providing multi-camera viewpoints and the ability to walk through these digital models (Henry and Furness, 1993). However, digital models' viewing perspectives have reduced the designers' real sense of scale of spaces. They have displaced the problem of scale, rather than resolved it. The actual size of objects seen on the monitor has no relationship to the size of the monitor and the object itself. Furthermore, the designer doesn't have a real interaction with the digital spaces because he looks at them from a distance and they control their view position using a control device such as a mouse. Thus, computer animations are indeed dynamic, but they are also pre-determined by a designated path that the camera will follow which restrict the views (Henry and Furness, 1993). As a result CAD has made many designers tend to concentrate on external form and “geometry creation” rather than designing a space suitable to live in as a “spatial creation” (Anderson et al., 2003).

There is no doubt about the usefulness of using CAD systems in modeling, presentation, rendering, drafting and detailing. But they “did not generate a new architectural language” (Hadjri, 2003) and don’t support designing with computers. Thus, what is needed is a new approach with innovative tools and techniques that could be used to develop designs using digital media, and support the evaluation stage which is neglected through the design process, allowing designers to judge human spatial experience through design spaces to design for inhabitable space, not just exterior forms.

Virtual expression techniques

Norman (2001) discussed that “the creation of new forms and the expression of complex imagination comes with a responsibility of seeking new forms of representation” (Reffat and Arabia, 2007). In other words a new environment should be found to cope with the great changes that have occurred in design education and its practice. Therefore the use of virtual environments (VE) in architectural design is an urgent need that desires to make changes in the design process and overcome the shortage of current systems (Anderson et al., 2003). Many assumptions have made about the benefits of integrating such environments in to the design process, concerning educational and practical sides (Reffat, 2005), and if it has great potentials in the design process and architectural design way of thinking related to geometry creation and spatial perception (Kalisperis, Otto et al., 2002).

Virtual Reality (VR)

The integration of computers and digital media into teaching design was an urgent need. Through literature much research is directed to examine Virtual Reality (VR) integration's effectiveness in architectural design education. Virtual Reality are the systems and techniques to generate computerized environment (Okeil, 2010) for one or multi users to visualize, navigate and interact with a world that mimic the real physical one. Therefore, there are increasing number of publications that illustrate the impact of these new technologies on design studios and particularly the application of virtual environments (VEs) (Schnabel, 2004). Schnabel (2004) concentrated on the influence of using VE on the design process in relation to a volume's exploration and understanding. Schnabel and Kvan (2003) examined spatial understanding and perception of spatial volumes within virtual environments and compared them with expression by utilizing other conventional media. They conducted a series of experiments on students to identify how designers perceive space in VEs. The experiments were designed to investigate and compare students' understanding of 3D spaces by using different techniques. As a result of these experiments and similar research, it was found that VEs have important contributions to the design process by increasing a designer's understanding of 3D volumes. Virtual reality applications in the architectural studio could help students to accomplish their complex real-world tasks (Cobb et al. 2002) and may minimize the divergence between the idea and its representation. Therefore, designers may express, explore and display their concepts with fewer variations (Schnabel, 2004).

Virtual reality and learning

“Virtual Reality environments have an experiential nature that derives from three sources: immersion, interactivity and multi-sensory feedback” (Abdelhameed, 2013). This experimental nature makes it a suitable environment and an “attractive platform” for learning (Reffat, 2005, 2006; Reffat and Arabia, 2007). Learning in this context is “the activity or

process of gaining knowledge or skills” by which studying, practicing, being taught or experiencing something happens (Alraouf, 2006). VR “supports a constructivist approach to learning”; Constructivism is a theory of knowledge which argues that humans can construct knowledge from the interaction between their own experiences and already generated information (Abdelhameed, 2013). Walker (1990) suggested that a virtual environment "provides users a three-dimensional interactive experience that includes the illusion they are in a world rather than observing an image", which enhances teaching by providing a real experience in any educational field conditions rather than imagining them from afar (Abdelhameed, 2013).

Architectural design in virtual environment

During the architectural design studio, students learn how to explain and crystallize their concepts and improve their ideas. In virtual environments architects are able to visualize, recognize and interact with their designs' spaces by actually experiencing and feeling them. Digital media, especially VE immersion, in the architectural design studio can change the practice of the design process and the way by which architectural design is being educated (Schnabel, 2004). Thus, what is expected from utilizing VEs in architectural design teaching is to integrate the concept of designing with computers, assisting designers to evaluate architectural spaces before they are built (Henry and Furness, 1993) and supporting designing for spatial experience.

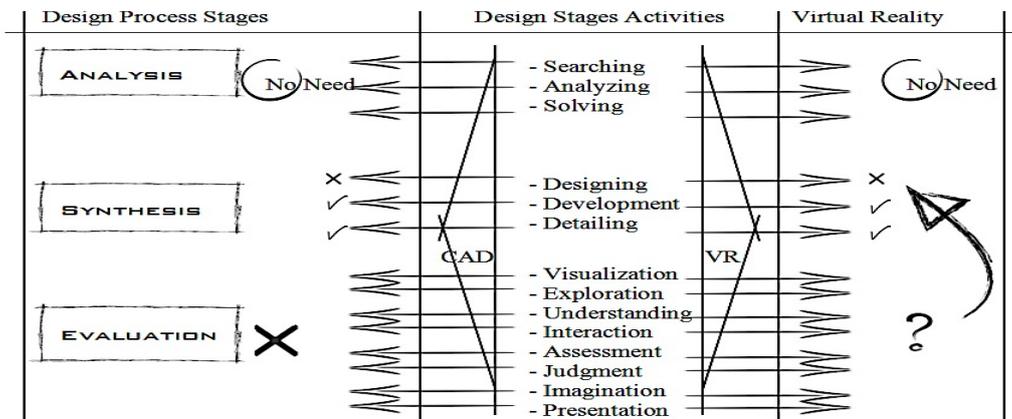


Figure 2. Design Process versus virtual reality (Source: Author).

Unfortunately, on the practical side, VEs are rarely used in real creation, form-finding, and collaboration in architecture (Sun et al., 2014) because they lack the proper tools to do such activities (Reffat, 2003). All available software systems support design simulation, viewing and presentation. Therefore, VR still takes a passive role in the design process when talking about the creation activity in the virtual world. The main challenge is to enable architects to design inside or with the assistance of the virtual environment (Okeil, 2010). Here the researcher supposed immersive virtual environment (IVE) to be as a new media that provide new tools, which not only affect the design but also support the design process. It is also supposed that it will improve designers' perception and enhance their thinking to design for human experience.

Therefore, the main goal of this study is to develop a new approach that can enhance spatial perception and improve architectural design thinking. It is to support the evaluation stage to

be not just an ending point, but as an essential part of "entire creation/feedback/modification cycle"; and to enable students to design and modify their models with the assistance of IVEs tools to fit human experience.

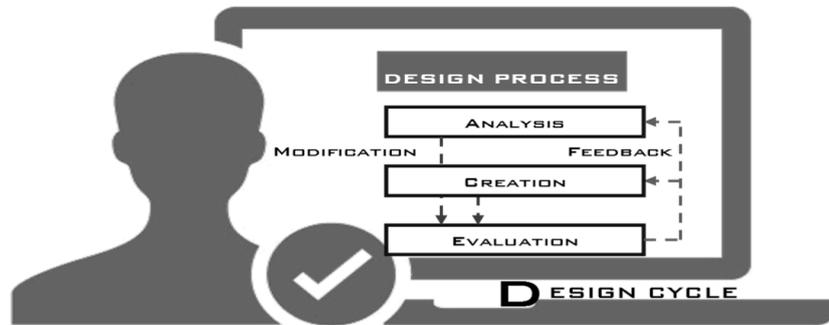


Figure 3. Design process cycle (Source: Author).

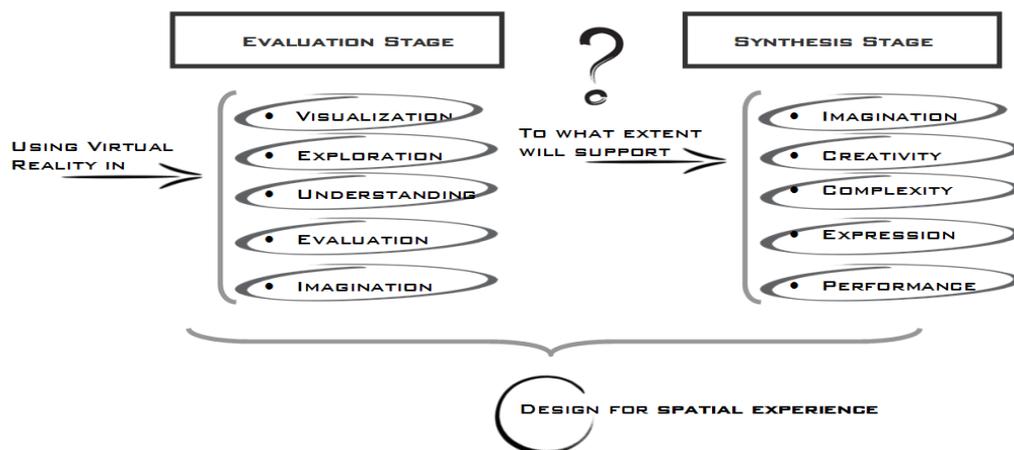


Figure 4. Study question and framework (Source: Author).

METHODOLOGY

Within a framework of an experimental design research, real experiments sought to determine if using 3D virtual environment techniques in design studio will enhance students' performance, perception and understanding of 3D volumes in their design. In order to achieve this study goal, experiments were applied by highlighting the changes that students made in their designs as a result of VR immersion. Students were chosen randomly from volunteer students who were officially finished the third year of study (identified as the intermediate level of studying architecture, and as having at least a good knowledge of digital tools) and higher from the Bachelor program at the Department of Architecture and Design of Jordan University of Science and Technology. Students worked in the same design environment using conventional and digital tools. Then their designs evaluated in different ways (by experts and by using one of virtual reality assessment's tools) to judge the effect of evaluation in their designs modifications.

A group of 40 students participated in this research experiment. Half of them were to design a modern vacation house and the other half was to design a sensational corridor. These tasks were mainly to make students aware of space as an experience. Students accomplished their required tasks by using digital modeling software as both a drawing and presentation tool. Thus, they were also immersed in a smart virtual environment by using one of IVR systems composed of 3D Unity 5 and the Oculus rift DK2 to explore, visualize and evaluate their designs. At the same time, students' designs were evaluated by experts. Students changed their initial designs after each stage and they were asked to record these changes step by step. Students were given a designed questionnaire after each stage. In addition to the questionnaire and students work explanations, a series of observation operations were conducted to monitor design workflow.

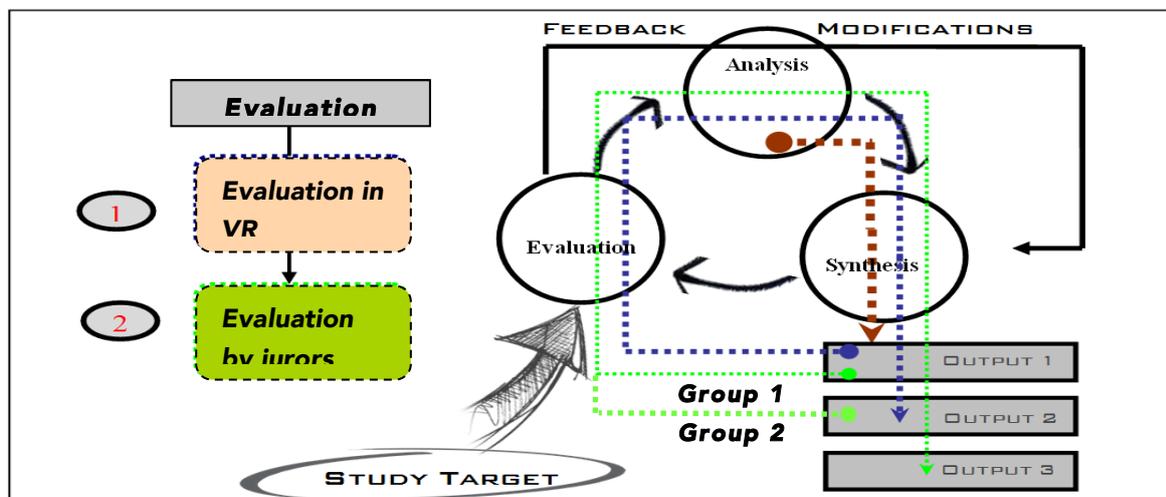


Figure 5. Experiment design process (Source: Author).

Thus, collected data from the experiment's stages could be described as follows:

- A. Observation during experiments;
- B. Questionnaire with participants after each experiment stages;
- C. Semi-structured interviews with Jurors;
- D. Students' textual records to design modifications.

Questionnaire and interview responses, students' textual records, various design documentations and the output of observations were classified and analyzed to explore the findings.

RESULTS AND DISCUSSION

Experiments and Observation

The conduction of both experiments and observations showed that students who were immersed in IVEs interacted in an effective way while they were visualizing their design's spaces and exploring their 3D volumes.



Figure 6. Students interacting with their design's models within VE (Source: Author).

It was observed that the medium being used affected the creation and generation of new ideas. Therefore, the researcher validated that students could successfully think and design within IVEs or with the assistance of VR applications in an interactive process. A review of the experiment's outcomes shows that the participants' design outcomes after experts' evaluation and after they used the VR system, were different from their designs and a result of using the ordinary software. Every design change or development is evidence to the effect of design media in students' performance during the conducted experiments.



Figure 7. 3D Shots of the three stages of students' design (Source: (By Sketch-up)).

A deep analysis of students' textual modifications to their designs and to the digital files outcomes was conducted to discover the number, type and flow of modifications made to the initial designs.

Digital Documentations

Numbers of modifications:

The amount of visual information (model complexity) received from each design and its modifications could be concluded by finding the number of faces (which contain elements' vertexes and edges) and the number of materials (which contains colors and textures).

Most of students modified their design either forward or backward. It was observed from the change of the quantity of faces in students' designs that around 80 percent of students modified their designs dramatically after using VR, while 20 percent of students slightly changed their designs. On the other hand around 65 percent of students made greater changes to their designs after the jurors' evaluation.

Almost 100 percent of students modified their designs using colors, materials and textures. It was observed that using VR directed students to care more about materials because they

really felt them and recognized their effects on them not just as designers but also as inhabitants. It is noted from the chart above that a smaller ratio of students changed what is related to materials after jurors' assessment.

SketchUp Entities processed:	SketchUp Entities processed:	SketchUp Entities processed:
2458 Groups	569 Groups	2726 Groups
1609 Instances	21413 Instances	1939 Instances
207211 Faces	254631 Faces	152437 Faces
36 Materials	48 Materials	16 Images
9 Textures	12 Textures	61 Materials
		28 Textures
FBX Entities exported:	FBX Entities exported:	FBX Entities exported:
217227 Faces	261836 Faces	161214 Faces
36 Materials	48 Materials	61 Materials
9 Textures	12 Textures	28 Textures

Figure 8. Number of components to one of the student's design and its modified ones (Source: (From Sketch Up)).

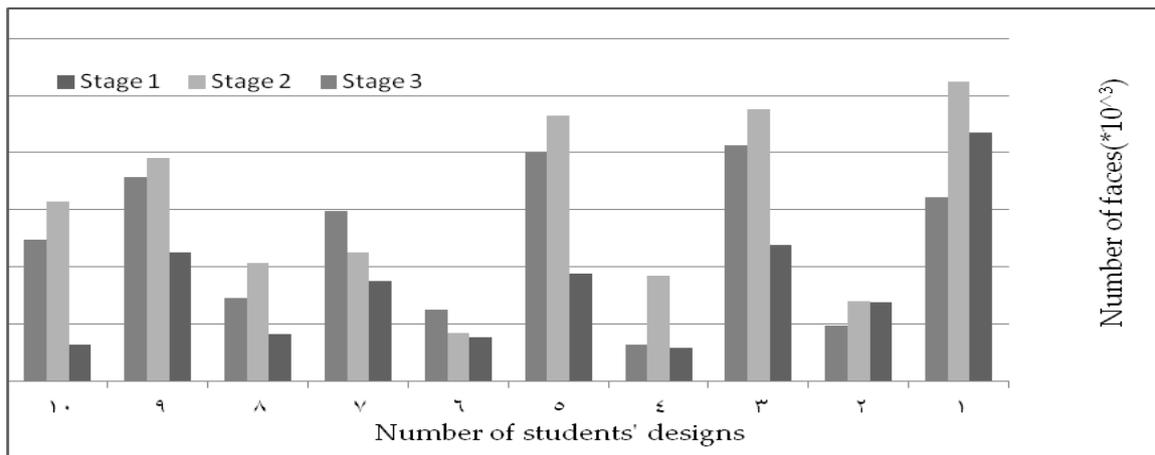


Figure 9. Number of faces to some of students' designs in three stages (Source: (By Microsoft Excel)).

This study demonstrates that the integration of VR techniques during the design process increases the number of ideas generated by students to edit or develop their designs. The findings illustrated that the students who immersed in IVE scored a higher level to develop and change their initial designs' ideas compare to the conventional methods design and evaluation. Therefore, VR immersion to an architectural design studio can enhance students' performance and enrich their imaginations to develop, modify and generate creative ideas to their designs,

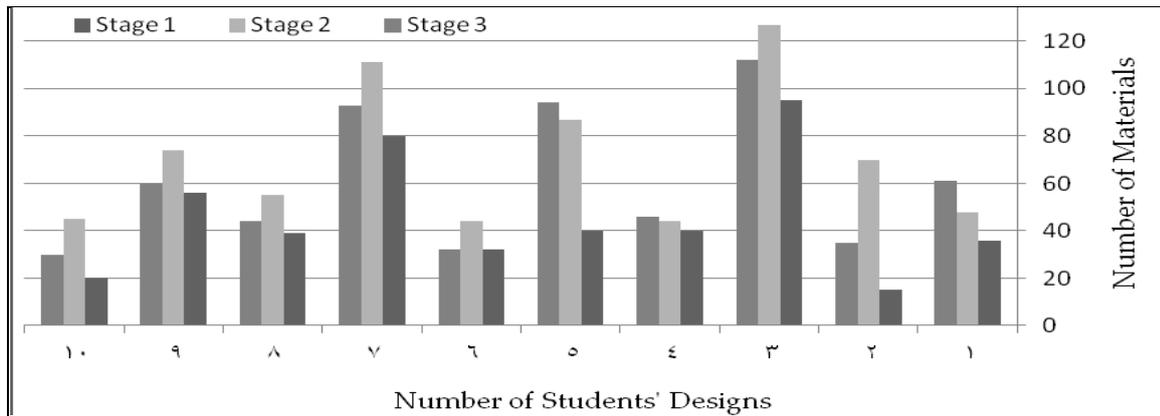


Figure 10: Number of materials to some of students' designs in three stages
(Source: (By Microsoft Excel)).

Students Textual Records

Types of modifications:

From students' textual records and self-explanations to their designs' modifications, the types of ideas generated by them were observed. Students pointed out the areas in which they modified their designs within VR and the reasons behind such modifications. Their designs' changes and justifications were arranged, classified and coded to assign key words of design modification areas that students made to their designs and reasons for such changes. The following diagram summarizes all students' design changes and their justifications, in addition to the relations between them.

It is observed from the above chart; almost 100 percent of students modified their design elements to get a certain human experience, while 80 and 75 percent of students edited materials and site respectively for the same reason. Approximately 90 percent of students modified light because of its effect on human experience in addition to inhabitants' comfort and space quality. 70 to 75 of students modified the spaces' functions and furniture because of their effect on human behavior.

From the previous analysis, it is clear that students within VR were more aware of spatial relationships and human experience, and almost everything related to them. They understood the spatial experience effectively and realized the effect of light, color and materials on changing human moods and the effect they play in users' comfort in a certain space. In conclusion, the used techniques in the VR system not only increased the number of solutions to the design problem, but they were also able to change students' thinking in architecture and direct them from designing for form to designing for human behavior and spatial experience. The results demonstrate that students took advantage of virtual design tools: they modified their designs' 3D volumes in a more comprehensive way. On the other hand, their modified designs after jurors' evaluation also differ from the original ones which indicate that the experts' comments opened other prospect for students to change the original design.

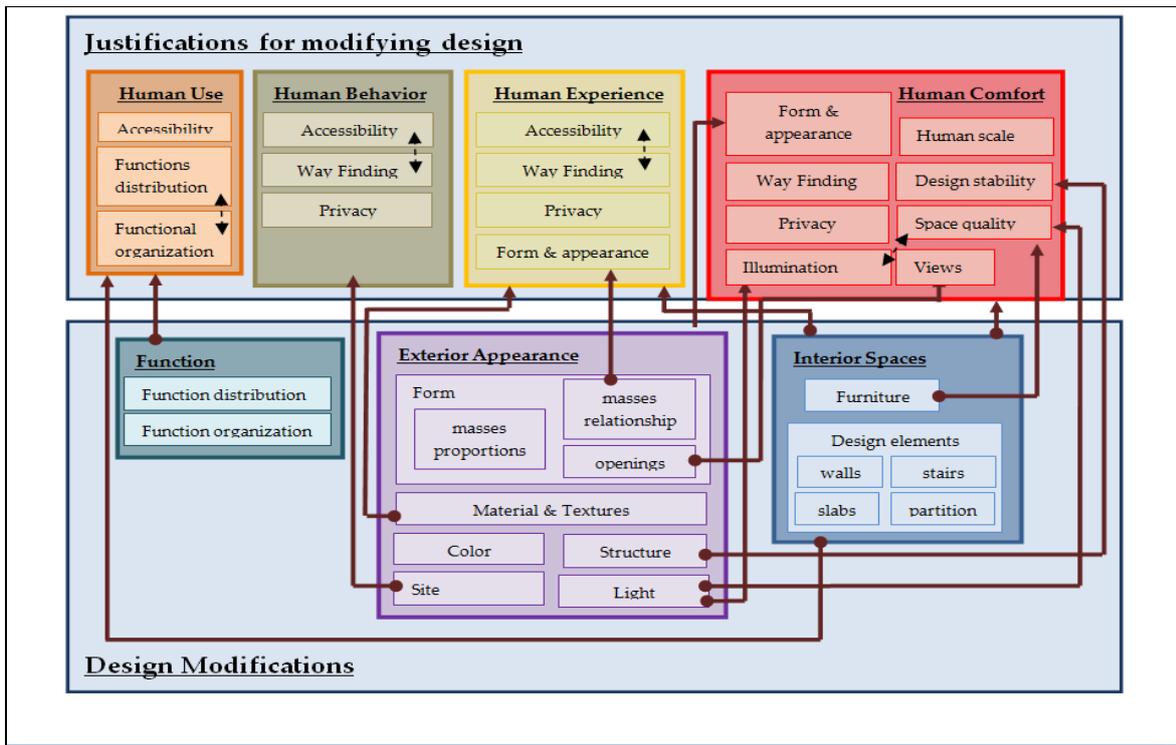


Figure 11. Relationships between students' design modifications and their justifications (Source: Author).

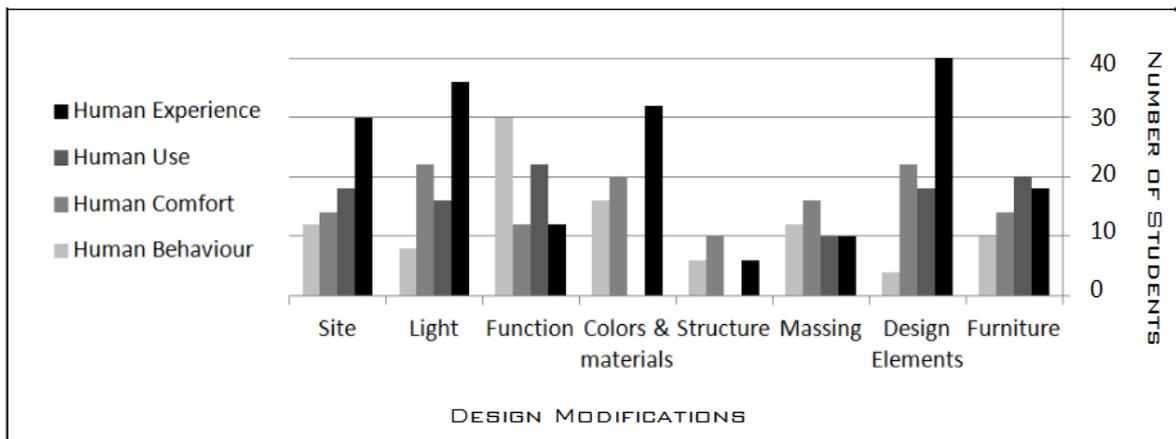


Figure 12. Number of students' modifications relationship with reasons (Source: (By Microsoft Excel)).

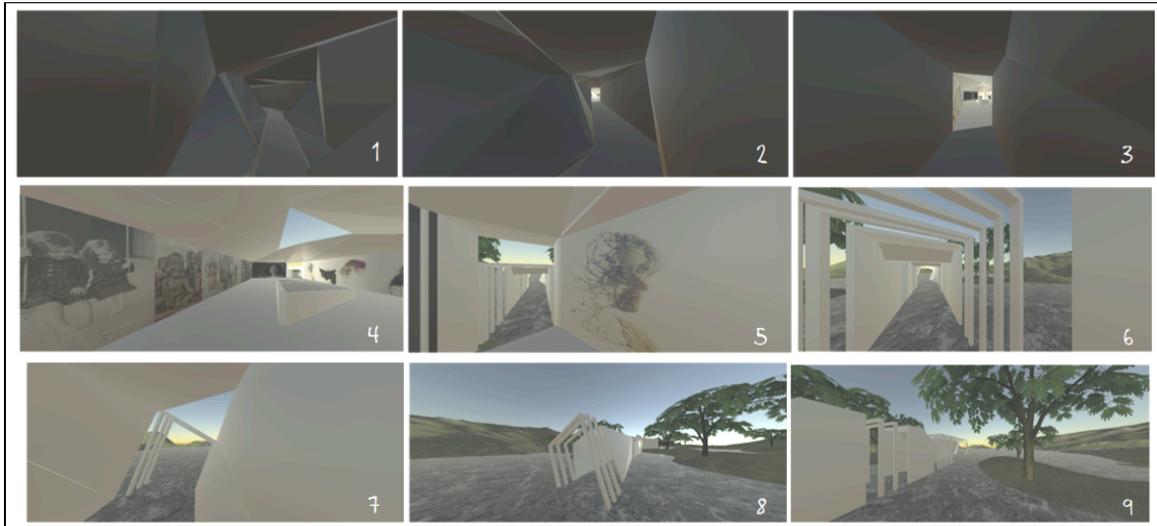


Figure 13. One of students' virtual corridor to experience the feeling of hope stages (Source: Author).

Digital Documentations, Textual Records and Jurors' Evaluation

Flow of modification:

It was observed from the previous study, that all students changed their design elements to get a certain human experience. The following diagram will illustrate the design (modeling) elements divisions that were modified by students in the modern house experiment rather than the corridor experiment because it is considered the more holistic study.

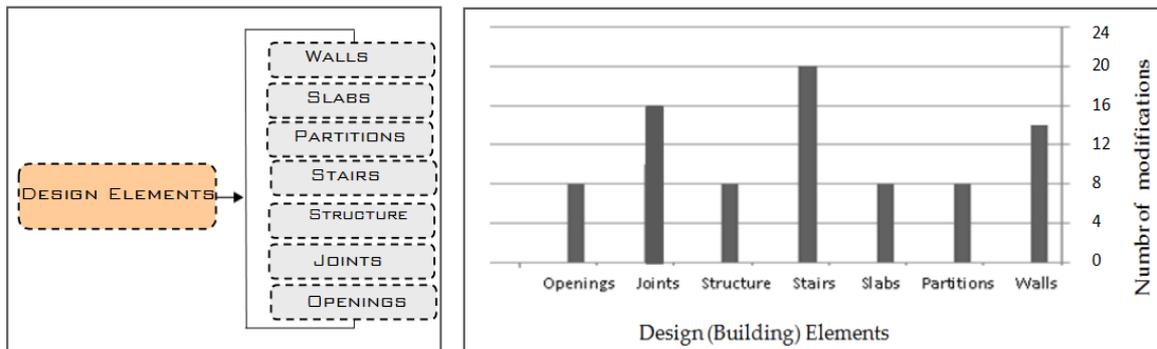


Figure 14. Design elements and students' modifications relationships chart (Source: (By author), (By Microsoft Excel)).

It is noted that all of the students who participated in designing the house, modified their design's circulation system because they considered them as the spirit of any project and the main controller for the users' circulation, movement and experience within spaces. Around 80 percent of them modified their model's massing joints and relationships. A case study from students' designs that mainly changed the stairs through the three stages, was undertaken to study the effect of design and evaluation media in this modification.

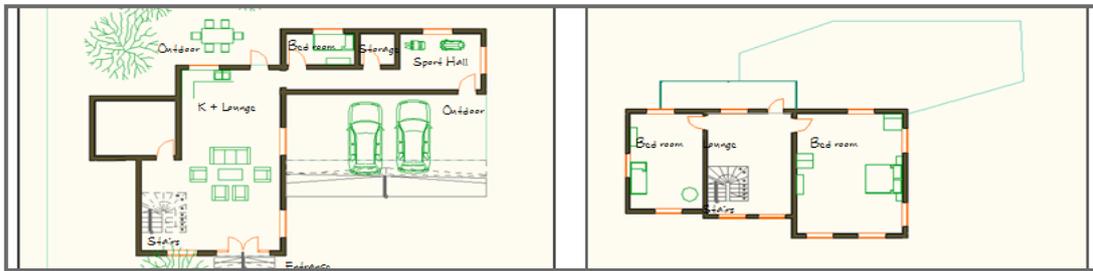


Figure 15. Ground and first floor plans for one students' initial design (Source: (By AutoCAD)).



Figure 16. Ground and first floor plans' analysis for the initial design (Source: Author).

From the previous analysis, student textual explanations and from jurors' evaluation, it is noted that in the initial design, massing and proportions need more study and the relationships between massing (joints) and the transitional spaces are weak. Furthermore, the stairs' role is passive and does not affect human behavior regarding experience and movement.

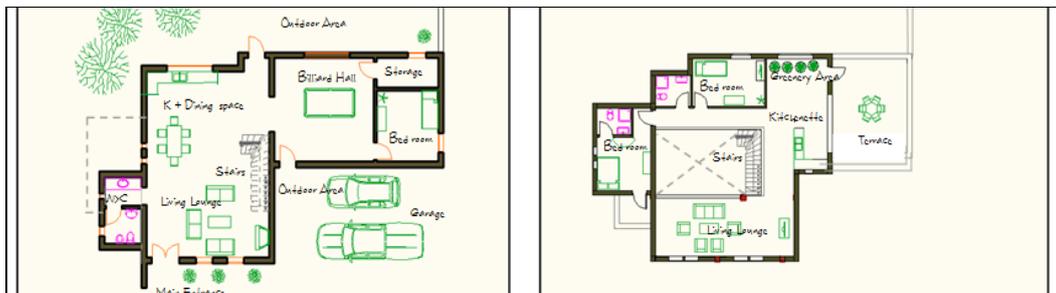


Figure 17. Ground and first floor plans for the first modification (Source: (By AutoCAD)).

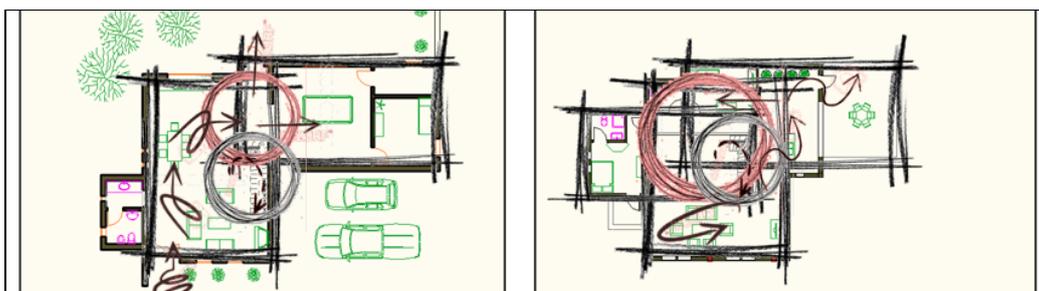


Figure 18. Ground and first floor plans' analysis for the initial design (Source: Author).

At the first modification of the same design (after VR immersion), it is obvious that the massing proportions and relationships are better, and the stair location has an integral part of the circulation. This stage's main design changes served to guarantee a good flow of movement on the ground and first floor plans. Therefore, the student's decision was to modify their design not just for the change per se, but to give the user a better sense of the spaces and to get a flow of experience from indoor to outdoor and within the transitional zones between spaces.

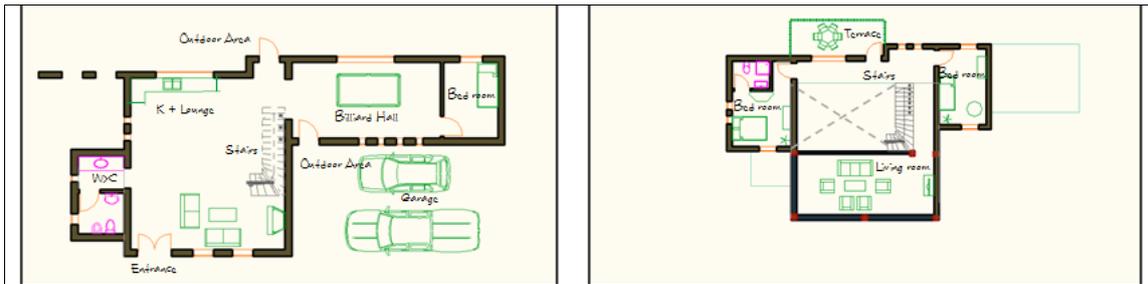


Figure 19. Ground and first floor plan for the second modification (Source: (By AutoCAD)).

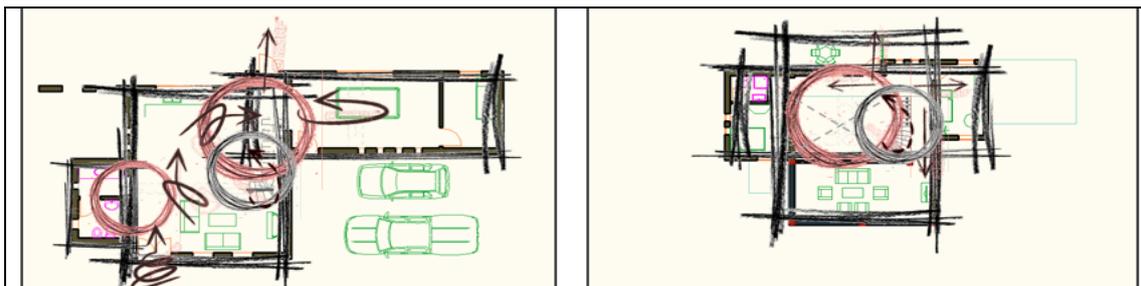


Figure 20. Ground and first floor plan analysis for the second modification (Source: Author).

On the other hand, the second modification to the same design (after examiner assessment), it is obvious that the massing proportions and relationships become better again, and stairs were shifted to be a part of the circulation system. The changes were made by the student to provide a better flow of movement in the ground floor plan. However, it is noted that this flow of experience is interrupted on the second floor plan to find the upper space and double volume became just as much a distributor to closed spaces, and is not moving users to another experience or other transitional zones. Therefore, the student's decisions to modify were a lack of better understanding and imagination of how the users perceive, recognize and experience spaces to get a good flow of movement to them while inhabiting the design.

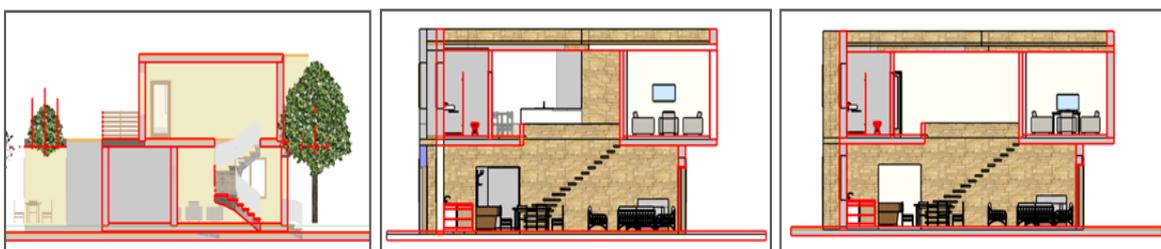


Figure 21. Sections on the main spaces of the student's initial design and its modifications (Source: (By Archi-CAD)).

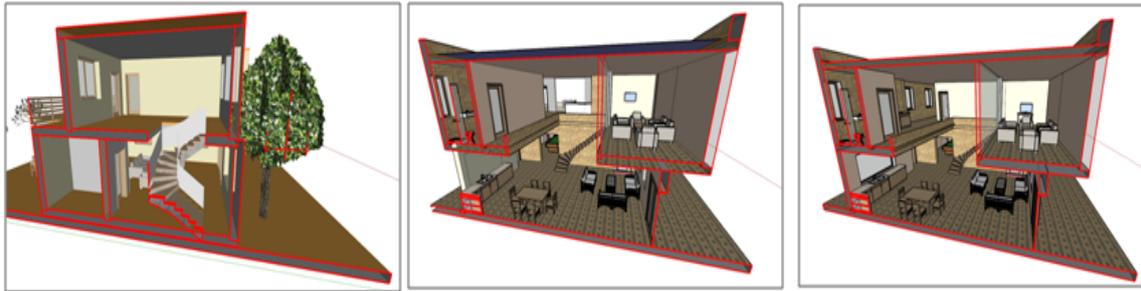


Figure 22. 3D sections on the main spaces of students' initial design and its modifications (Source: (By Archi-CAD)).

Therefore, it is obvious that designing within VEs stimulate students to think, concentrate, care and strengthen the transitional zones in their designs even they are joints, spaces or stairs. These zones unfortunately, were almost neglected by students in most of their designs. Results clarified that students' changes on their designs within VE were not only focussed on solving and modifying each space by itself, but they also had a holistic image to change the whole design and modify it to get a flow of experience internally and externally.

Interviews

Instructors and external jurors were met in order to investigate their opinions about the virtual tools used, and the effect of using such a system in the design process in general and in the evaluation process in particular. Jurors expressed that the used system allowed them to feel the space and the environment of the presented designs. It gave them a better perception of spaces and a real judgment to design spaces and added other dimensions of evaluation and feeling of space. It also allowed them to test project details, users' sensation of space and check the quality of space before the real construction of a certain building. It is very important for both architects and designers to begin their designs with experience in addition to investigating their design decisions. It provides clear spatial experience and circulation through designed spaces which would help students to imagine (imagination is not easy to be educated; it is improved by practice) and generate new and creative ideas while exploring their designs in such a medium. Examiners added that the system used helped them to get out of the habit of being just designers or observers to users within the designed space, in addition to its usefulness in breaking the habit of concentrating on form and aesthetic issues rather than human experience and the quality of the designed spaces.

CONCLUSION AND FUTURE WORK

Every design tool has its shortcomings. Developing an effective design environment that avoids the imperfections seen in available design media, should be the ambition of the designers which they set out to achieve. This design environment should have a positive impact on the design's comprehension, and its development and modification.

The paper identified the problems underlying perception of complex 3D spaces when represented using available traditional tools like sketches and physical models. It also confirmed the inability to use CAD systems in the early beginning of the design process.

Virtual reality can support the early design process better than the conventional computerized interfaces. It achieves this result by offering immersive interactive computer generated environments. Despite its advantages, VEs are rarely used in real creation, form-

finding, and collaboration in architecture because they lack the proper tools to do such activities. All available software systems support design simulation, viewing and presentation, but do not provide a real interaction related to creation and manipulation of a design's objects.

This study aims at investigating the effect of immersive virtual environments immersion in architectural design studio on affecting the design process and how to design for human experience. This study has confirmed that VR immersion within design environments increases designers' involvement with the design itself, enriches their imagination and creativity, enhances their performance and increases their design's complexity. It affects the creation and generation of ideas of a certain design through the design process and improves its users' self-evaluation and critical thinking. Thus, the researcher validated that virtual reality is an effective design environment which increases the awareness of designers during thinking and designing in terms of the spatial relationships and spatial experience of complex 3D spaces. This research has demonstrated that technology may affect the design methodology and that IVE is an effective design medium that stimulates designers to think with a holistic image of the design while in the problem solving stage of the design process. VR provides an excellent environment to guarantee a flow of experience while designing internally and externally. This study confirmed that designing within IVEs is possible for both thinking from Bottom to Up or from Up to Bottom (from solving small design problems within a certain design to large and vis versa).

It may be of interest to direct some studies to further study the effect of using such technology for analyzing site and case studies. More investigations should be also directed to searching for an interactive program that may allow designing while experiencing design within immersive virtual environments.

ACKNOWLEDGMENTS

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REFERENCES

- Abdelhameed, W. A. (2013). "Virtual Reality Use in Architectural Design Studios: A case of studying structure and construction." *Procedia Computer Science* 25: 220-230.
- Al-Ali, A. (2012). "Framework for the implementation of an enhanced virtual design studio in the architecture education curriculum of the United Arab Emirates: the virtual creative and collaborative studio."
- Alraouf, A. A. (2006). "To e or not to e: virtual design studios, The Impact of E-Learning on Contemporary Architectural Education: A New Paradigmatic Trend." The proceedings of *First International Conference of the E-learning Center*, University of Bahrain. Kingdom of Bahrain.
- Amireh, O. M. (2013). "An Introduction to Creative Thinking in Architectural Design." *International Journal of Engineering & Technology* 13(5).
- Anderson, L., et al. (2003). A virtual environment for conceptual design in architecture. *Proceedings of the workshop on Virtual environments 2003*, ACM.
- Andia, A. (2002). "Reconstructing the effects of computers on practice and education during the past three decades." *Journal of Architectural Education* 56(2): 7-13.
- Cobb, S., et al. (2002). "Development and evaluation of virtual environments for education." Handbook of Virtual Environments. Mahwah, NJ: Erlbaum Associates: 911-936.

- Gharib, I. (2013). "Integration of sketch-based ideation and 3D modeling with CAD systems." Brunel University School of Engineering and Design PhD Theses.
- Hadji, K. (2003). "Bridging the gap between physical and digital models in architectural design studios." *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences* 34(5): W10.
- Henry, D. and T. Furness (1993). Spatial perception in virtual environments: Evaluating an architectural application. *Virtual Reality Annual International Symposium*, 1993, 1993 IEEE, IEEE.
- Ismail, M. A., et al. (2012). "Digital Studio vs. Conventional in Teaching Architectural Design Process." *Procedia-Social and Behavioral Sciences* 64: 18-25.
- Jones, J. C. and D. G. Thornley (1963). "Conference On Design Methods In: The Conference On Systematic And Intuitive Methods In Engineering Industrial Design, Architecture And Communications (London, Sept. 1962)."
- Kalisperis, L., et al. (2002). "Virtual reality/space visualization in design education: the VR-desktop initiative." *Proceedings of eCAADe2002, design education: Connecting the Real and the Virtual*: 64-71.
- Ku, D. C. (2007). Integrating Sketch-based 3D Modeling and Personalised Sketchy Rendering into Conceptual Design, Brunel University.
- Lawson, B. (2006). *How designers think: the design process demystified*, Routledge.
- Maher, M. L. (1990). "Process models for design synthesis." *AI magazine* 11(4): 49.
- Nalkaya, S. (2012). "The Challenge Of Complexity And Creativity Factor In Architectural Design." *Open House International* 37(3): 38-47.
- Norman, F. (2001). Towards a paperless studio. Proceedings of the ARCC Spring Research Meeting Architectural Research Centers Consortium.
- Okeil, A. (2010). Hybrid design environments: immersive and non-immersive architectural design, ITcon.
- Özersay, F. (2003). "A Post-structuralist Analysis of the Architectural Education-Technology Relationship."
- Reffat, R.K. and S. Arabia (2007). "Revitalizing architectural design studio teaching using ICT: Reflections on practical implementations." *International Journal of Education and Development using ICT* 3(1).
- Reffat, R. (2003). "Semantic-based virtual design environments for architecture." Proceedings of Education of Computer Aided Architectural Design in Europe (eCAADe).
- Reffat, R. M. (2005). Collaborative Digital Architectural Design Learning within 3D Virtual Environments. *The 10th International Conference on Computer Aided Architectural Design Research in Asia*.
- Reffat, R. M. (2006). "Computing in architectural design: reflections and an approach to new generations of CAAD." *Journal of Information Technology in Construction (ITCON)* 11: 655-668.
- Schnabel, M. A. (2004). *Architectural Design in Virtual Environments*, the University of Hong Kong.
- Segers, N., et al. (2000). A comparison of computer-aided tools for architectural design. *Design and Decision Support Systems in Architecture—Proceedings of the 5th International Conference*, the Netherlands, Eindhoven University of Technology: 325-340.
- Sun, L., et al. (2014). "Differences in spatial understanding between physical and virtual models." *Frontiers of Architectural Research* 3(1): 28-35.
- Walker, J. (1990). "Through the looking glass." *The Art of Human-computer Interface Design*. New York: Addison-Wesley.
- Wodehouse, A. J. and W. J. Ion (2010). "Information use in conceptual design: Existing taxonomies and new approaches." *International Journal of Design* 4(3): 53-65.
- Yu, J. and H. Zhang (2007). A Prototype Sketch-Based Architectural Design System with Behavior Mode. EUROGRAPHICS Workshop on Sketch-Based Interfaces and Modeling, (Eds.) van de Panne, M. & Saund, E.

APPENDICES

Appendix A: Questionnaire

It is about Virtual Environment immersion in a design studio. And to solicit opinions about the effect of using virtual tools on enhancing architects' ability to visualize, understand and explore 3D design volumes. Most of the questions require either short answers or selecting from several options, examples are shown.

Did using the virtual glasses allow you to inhabit experience and enjoy the spaces you designed?

- ✧ No change
- ✧ Little
- ✧ Slightly
- ✧ Quite some
- ✧ Radically

Did VE help you to judge and evaluate the human experience within design's spaces?

- ✧ No change
- ✧ Little
- ✧ Slightly
- ✧ Quite some
- ✧ Radically

Did VE help you to judge and evaluate your design?

- ✧ No change
- ✧ Little
- ✧ Slightly
- ✧ Quite some
- ✧ Radically

Do you think that VE change the way how you think about architectural design?

- ✧ No change
- ✧ Little
- ✧ Slightly
- ✧ Quite some
- ✧ Radically

Did using the virtual glasses stimulate you to develop your design with new ideas?

- ✧ No change
- ✧ Little
- ✧ Slightly
- ✧ Quite some
- ✧ Radically

APPENDIX B: INTERVIEWS WITH EXPERIMENTS JURORS' SAMPLE

After visualizing one of students sensational corridor within virtual environment

Q1. What is your opinion about the experiment that you had just experienced?

I was very interested. It was really a great and a unique experience to see the design in all its details and within its environment before the real construction. It was a great idea to use such system that allowed me to feel the space and the environment of the presented design. I really tested the project details and visualized through its spaces in a manner which is very close to reality. It is very important for both architects and designers to begin their designs with experience.

Q2: Did you feel the sensations and the experience that the student wanted to get to his/ her design users?

I perceived the designed corridor as a user in addition to be a designer and evaluator. Therefore, yes I got the message and the concept of this student corridor, in addition to inhabiting the same experience that he designed for.

Q3. Do you think that virtual reality used system affects your evaluation to students' designs?

Surely, the used system assisted me to make an evaluation for the presented design clearly and easily. And as I said previously, I felt perfectly this corridor message and experience. While I did not sense the same feeling when I visualized it in sketch up. I was to reject this student's corridor design, but I am now completely in favor of the same design after I experienced it within the VE. Because, I felt student design used materials, light concept, colors, shadows, corridor spaces' dimensions and the environment. This is due to the better perception of spaces and the real judgment to design spaces that the used system provided me as a user and as a designer as well.

Q4. What is your opinion about virtual reality used tool (the Oculus headset)?

The Oculus headset is an excellent tool which is very important as immersive imagination, visualization, evaluation and presentation tool that may abbreviate drawing sections, perspectives, making physical models and other conventional representation design methods because it replaces them and give a clear image about the immersive experience. And it is for more than design exploration, investigating spatial experience, sensations and emotions, It should be used to investigate the design problem if it is solved or not and check the available solutions.

Q5. What do you think the effect of using such environment on students learning during the design process?

I think students' visualizing to their designs within virtual environment will help them to read, understand, evaluate and develop their designs multi, time during the design process in an interactive and enjoyable way. I really wish to provide such tools within design studio which enable students to wear the headset and design through immersive environment. It will give students a better imagination of the spaces they create, because most of them unfortunately have a problem with proportion, dealing with human scale in addition to lack of design for experience in several projects they design.

It will conclude many tools and methods to allow students imagine their own design experience and think about their designs' decisions. In addition to its usefulness in getting out of concentrating on form and aesthetic issues rather than human experience and the quality of the designed spaces.

Q6. Suggest ideas or any comments for improvements ...

Access to this stage in teaching design is considered in itself a great achievement. But, the used system needs easier tools to deal with the program (3D Unity) and much development to reduce the side effects of using the mentioned headset such as; personal injury, blurred vision, discomfort or dizziness. On the other hand, I recommended in the future to search for new tools that allow designing while experiencing the design within virtual environments (interactive program to support the design process within VEs).



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BOOK REVIEW: THE SOCIAL ECOLOGY OF BORDER LANDSCAPES

Florian Wiedmann

Keywords

border landscapes;
social ecology;
post conflict;
contested space

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Abstract

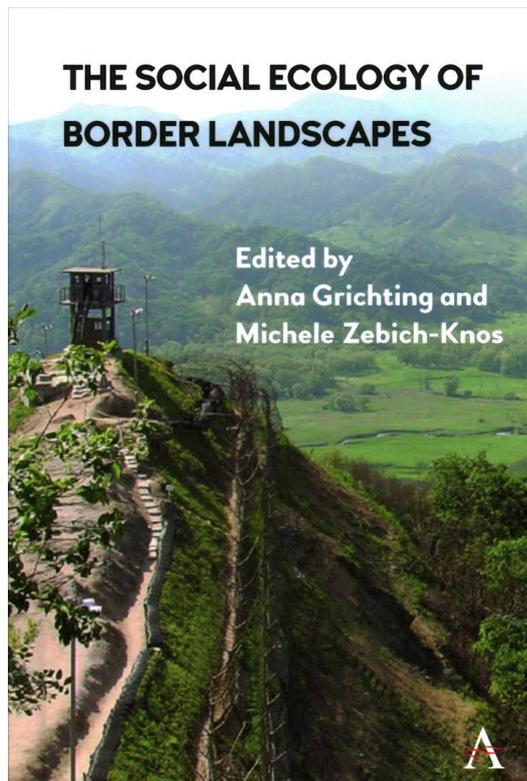
The Social Ecology of Border Landscapes, edited by Grichting and Zebich-Kros, is part of the Anthem Series on International Environmental Policy, which seeks to provide new evidence-based insights on global environmental governance. The book attempts to address this objective by inviting a wide variety of authors from various disciplines to contribute international case studies on border landscapes. All these studies are situated in the field of critical social theory and social ecology in particular – a subject that is focused on the complex interrelationships between nature and society. The wide range of scientific perspectives on social-ecological systems is categorised into four main parts: Frames, Bridges, Corridors and Portals. This structure functions as a suitable guide to distinguish major focal points within the rather complex discourse.

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The Social Ecology of Border Landscapes, edited by Grichting and Zebich-Kros, is part of the Anthem Series on International Environmental Policy, which seeks to provide new evidence-based insights on global environmental governance. The book attempts to address this objective by inviting a wide variety of authors from various disciplines to contribute international case studies on border landscapes. All these studies are situated in the field of critical social theory and social ecology in particular – a subject that is focused on the complex interrelationships between nature and society. The wide range of scientific perspectives on social-ecological systems is categorised into four main parts: Frames, Bridges, Corridors and Portals. This structure functions as a suitable guide to distinguish major focal points within the rather complex discourse.



After an insightful introduction of the overall topic and the book's contents, the first part (Frames) establishes some general frameworks about how social ecologies can be mapped in border territories. In Chapter 1, Brunet-Jailly states the basic notion that borders are continuously evolving worldwide and that a large share of the total of 10 million square kilometres of borderland are very difficult to access and use. Chapter 2 introduces transboundary conservation strategies in the form of peace parks as best-practice solutions for conservation and social exchange. After a discussion by Cunningham and Bede Scharper of the gated ecologies concept, which is a response to the various social and ecological issues of security fencing, Part II (Bridges) commences with an exploration of the Balkans Peace Park (Chapter 4). This is followed by studies on a crane habitat restoration project across the Korean Demilitarized Zone (Chapter 5) and on the San Pedro River along the Mexico-United States border (Chapter 6), which are important examples of how border landscapes are shaped by various factors and how strategies can be launched.

The second part of the book ends with Grichting's chapter introducing newly emerging landscapes along former borders in East Germany and in Cyprus, where the Military Buffer Zone has been regained for Cypriot communities. The author argues that any shared space can only emerge if there is a shared participatory process co-creating the surrounding environment and thus reflecting all social groups and their particular needs. After this last chapter focusing on Bridges, which reach out to access and re-use open borderlands, Part III (Corridors) comprises various chapters that examine the narrow, congested and still conflicted spaces along borders experienced in South Lebanon, Palestine and Northern Ireland. Shibli (Chapter 8) examines the border between Israel and Lebanon and the adaptive use of small spaces as the direct result of human interaction to make life more bearable in conflict zones. In the following chapter, Bulle investigates the Shu'fat Refugee Camp in East Jerusalem and how the erected Israeli security wall has impacted day-to-day politics in a confined space. The final chapter of this third part of the book is an essay by Murtagh on urban alternatives and collaborative economics in Belfast. It includes an important outlook on how challenging it is to dissolve the

borders of long-lasting conflicts and to establish less divisive spaces, which can only be achieved with the participation of the communities.

The last part (Portals) consists of three main chapters that examine various angles on what borderlands are and how they can be regained for society. Borderlands in this context are not only rooted in physical walls but also intangible walls, such as the barriers created by Aboriginal coping mechanisms and the white population in Australia. This social ecological resilience is explored by Birrell and Hill via an essay written as a spoken dialogue between two people discussing allegories and stories. After this unconventional approach that highlights the borderlands in people's subjective experience, Tavares focuses in his chapter on the rather concrete implications of re-legislating the soil along the borders in Amazonia in Peru. The author presents the various consequences and threats of a new forest law for indigenous populations. In his view, the resistance to the neoliberal concept of land as a commodity is more important for the preservation of socio-ecological diversity than the defence of abstract land rights. Thus, a recognition of customary rights that have historically shaped territories instead of following neoliberal enclosures is often the most essential way to support communities as well as to preserve the environment.

The thirteenth and last chapter is Conley's analysis of the reterritorialization of natural and social ecologies by exploring a park in Algeria, which was previously reserved for foreigners during colonial times. Today, this park is used by social groups, who were once excluded from its confines. Thus, as in previous chapters, attractive and accessible public realms are highlighted as the most crucial factor and a symbol for the restoration or at least the healing of conflicted spaces. The book is concluded by Zebich-Knos and his summary of the book as well as a small outlook on future implications. The summary is an important attempt to integrate and interrelate the essential outcomes of all contributions within this broad, diverse and complex theme. After stating that borders are not only physical divisions but also lines of separation between people and their mindsets, the author moves on to the overall observation that borders are so diverse in their composition and structure that they should be studied using more than one approach. In this context, economic activities are highlighted as crucial indicators for how local developments can evolve in bounded spaces before a brief glimpse on the future role of governance concludes the entire book.

This carefully selected array of essays has achieved two major objectives. The book identifies the social ecology of border landscapes by introducing an intuitive approach rather than a strict definition, which enables new ways of exploring this important topic. The structuring of the book in simple but clear themes guides readers to a fluid understanding of how border landscapes can be perceived and studied. Secondly, the book covers a wide range of aspects with its rich selection of international cases and various disciplines and thus perspectives. The only thing that could be criticized is the rather generic conclusion that the two main lessons for future policy making and border management are the integration of local needs and behaviours, and that border environments should be seen as part of a large global community and not as an isolated ecosystem. Such obvious conclusions are limited and thus contribute little to any dynamic and interesting discourse on how border landscapes can be discovered as new spaces that can generate opportunities to end conflicts between humans, and between humans and their natural environment.

REFERENCES

Grichting, A. & Zebich-Knos, M. (Eds.) (2017). *The Social Ecology of Border Landscapes*. London: Anthem Press.