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Ashraf M. Salama

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**Regular Refereed Papers
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From Susannah Dickinson, March 2013

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CHANGING PARADIGMS IN SPACE THEORIES: Recapturing 20th Century Architectural History

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Abstract

The concept of space entered architectural history as late as 1893. Studies in art opened up the discussion, and it has been studied in various ways in architecture ever since. This article aims to instigate an additional reading to architectural history, one that is not supported by "isms" but based on space theories in the 20th century. Objectives of the article are to bring the concept of space and its changing paradigms to the attention of architectural researchers, to introduce a conceptual framework to classify and clarify theories of space, and to enrich the discussions on the 20th century architecture through theories that are beyond styles. The introduction of space in architecture will revolve around subject-object relationships, three-dimensionality and senses. Modern space will be discussed through concepts such as empathy, perception, abstraction, and geometry. A scientific approach will follow to study the concept of place through environment, event, behavior, and design methods. Finally, the research will look at contemporary approaches related to digitally supported space via concepts like reality-virtuality, mediated experience, and relationship with machines.

Keywords: Space theories; architectural history; modern space; place; digitally supported space.

INTRODUCTION

The present epoch will perhaps be above all the epoch of space. We are in the epoch of simultaneity: we are in the epoch of juxtaposition, the epoch of the near and far, of the side-by-side, of the dispersed. We are at a moment.

Michel Foucault (1967)

In his talk for the RIBA Annual Discourse of 1996, Anthony Vidler makes an architectural overview reexamining the last two centuries in three categories: For him, the common interest of the architectural theorists of the 19th century is time, temporality and history, including historical styles and narrative. Foucault agrees: history is the obsession of the 19th century (1967). At the beginning of the 20th century, a critique of temporality starts directing architects and critics from the concept of time to space: "Space' rapidly replaced time, and specifically time as represented by historical 'style'" (Vidler, 1996: 181). Space -as a timeless time, an eternity- becomes the new concept of the last century of the second millennium, which witnesses competing ideas of space (Vidler, 1996: 178-82). Elsewhere Vidler explains, "In historical-cultural terms, like the body, or like sexuality itself, space may be considered not so much as a constant, but as a concept that shifts and changes over time and according to the conceiver" (1998: 53). The third period, "the second machine age" includes what he calls the spaceless, the spatially absent, or digital space as a result of cybernetics and digitalization (Vidler, 1996: 183-84):

[I]n its fundamental form, [digital space] has nothing to do with space at all, or rather not with space conceived in modernist terms... After all, what is spatial about an endless string of 0's and 1's, a string that for the purposes of display has to be looped around a screen; an endless line, without direction, displayed on a screen without depth? While the representation of information might well have spatial cognates, information itself seems to have no inherent spatiality. Nor can we return to the comforting terms of a temporal discourse. ... For narrative itself, temporality itself, has been collapsed, like space, into no-time and no-space (Vidler, 1996: 183-84).

The reflection of this shift in architecture is “counter-space,” a rejection or elimination of space that Vidler sees, for instance, in the work of Daniel Libeskind (the extension to Victoria and Albert Museum, 1996) and Rachel Whiteread (‘House’, 1993-94) (1996: 186). Later, he takes digital space more seriously declaring it a form of space: “Digital space, installed rather than designed, is already all around us; it envelops us in the virtual forms of media. It fights our wars, controls our consumer habits, and ensures the security of our houses” (2001: 72).

The way Paul Virilio locates the concepts of space and time historically contradicts with Vidler’s three-partite classification: the dominance of time in the 19th century, the appearance of space in the 20th century, and the disappearance of both after the 1980s. Virilio argues that contemporary architecture does not witness spacelessness and timelessness; on the contrary, a concept of temporal space dominates our times. Just like space itself, the definition of time is changing *in time*, and the concept of time takes over the concept of space in contemporary architecture and philosophy: “Here no longer exists; everything is now” (Virilio, 2000a: 125). In the foreword of Virilio’s *A Landscape of Events*, Bernard Tschumi writes, “space itself becomes engulfed in time. Space becomes temporal; ... time has finally overcome space as our main mode of perception” (2000b: viii-ix). Unlike 19th-century historicism, this understanding of time is a conceptual interpretation rather than stylistic.

Though Vidler and Virilio disagree in their theories, there is one fact that the critics share: The concepts and conception of space, and time, have changed radically by the end of the second millennium. Accordingly, this research aims to create an additional reading, one that is not supported by “isms,” to the architectural history in the 20th century. We will base this history on diverse space theories, which have had a significant effect on architecture in the previous century. In this context, the objectives of the article are to bring the concept of space and its changing paradigms to the attention of architectural theoreticians, to introduce a conceptual framework to classify and clarify the first theories of space, and to enrich the discussions on the 20th century architecture through theories that are beyond styles. In this study, the theories of space between 1890 and 1930 are categorized as to Cornelis van de Ven’s *Space in Architecture* (1978). The theories between 1960 and 1990 are sorted as to Atilla Yücel’s model in two of his lecture series at Istanbul Technical University, *Space Analysis in Architecture* and *The Techniques of Typological Analysis*. The study will focus on space and time in the discipline of architecture following Vidler’s advise (1996: 178) on avoiding stylistic terms, and speaking of paradigms, or frames of reference that cut through these surface descriptions.

THEORIES OF SPACE: A CONCEPTUAL FRAMEWORK

[A]ny definition of architecture itself requires a prior analysis and exposition of the concept of space.

Henri Lefebvre (1991: 15)

Everything exists and moves in space (that Panofsky would call mathematical or geometric space). “Space and time are the framework in which all reality is concerned. We cannot conceive any real thing except under the conditions of space and time. Nothing in the world, according to Heraclitus, can exceed its measures - and these measures are spatial and temporal limitations,”

(Cassirer, 1953: 42). People would be lost without space and time. Paradoxically, space theories are not an ancient part of architectural history and theory. Space becomes a subject of architecture only by the end of the 19th century through the treatises of art historians and the formal experiments of the avant-garde. It has not been considered the essence of artistic experience before the 1890s (van de Ven, 1978: 80). Before the industrial revolution, as a metaphysical concept rather than architectural, space was a subject of philosophy and science. Besides, what is meant by space in this relatively short period -from 1890 to the present- varies from text to text, and from time to time. As soon as it becomes a part of architectural theory, this multi-dimensional concept begins to gain different meanings and keeps on altering. Like their designs, architects' conceptions of space vary. It is discussed within different (aesthetic, technical, functional, formal, social, cultural, political, philosophical, historical and economic) contexts, through different paradigms, and via different viewpoints. One may come across various types of space in architecture:

Abstract space, artificial space, Baroque space, capitalist space, Cartesian space, cinematic space, conceptual space, communicational space, cosmic space, cubist space, cultural space, differential space, digital space, divine space, ecological space, egocentric space, epistemological space, Euclidean space, existential space, expressionist space, family space, fantastic space, felicitous space, formalist space, functionalist space, galactic space, geographical space, geometric space, global space, Hegelian space, heterogeneous space, ideological space, industrial space, ineffable space, infinite space, irrational space, Kantian space, literary space, local space, Marxist space, mathematical space, mental space, metaphysical space, mobile space, modern space, montage space, musical space, natural space, neutral space, Nietzschean space, non-Euclidean space, organic space, perceptual space, peripheral space, personal space, perspectival space, physical space, psychological space, pictorial space, plastic space, poetic space, political space, postmodern space, pragmatic space, public space, real space, religious space, representational space, semiological space, social space, socialist space, strategic space, symbolic space, tactile space, textual space, topological space, urban space, virtual space, visual space, warped space... There is no single definition of space.

Table 1. A classification of 20th century space theories
(Source: Authors).

Space	Dominant Influence	Related Theorists	Period
Space	a new concept	von Hildebrand, Schmarsow, Riegl, Wölfflin	1890-1900
Modern space (interval)	Architecture as art	Worringer, Spengler, Brinckmann, Frankl, Sörgel, van Doesburg, Gropius, Wright, Le Corbusier, Lissitzky (Giedion, Zevi)	1900-1930 (1930-1960)
Place	Architecture as science	Rossi, Alexander, Lefebvre, Norberg-Schulz, Rapoport,	1960-1990
Digitally supported space	Architecture as technology	Rajchman, Virilio, Vidler	1990-present

In this context, the conceptual framework in Table 1 will be introduced in an attempt to classify and clarify spatial theories of the 20th century. The introduction of space in art and architecture will revolve around subject-object relationships, three-dimensionality and senses, and the development of modern space will follow in the first half of the 20th century. This artistic period will be discussed through concepts such as empathy, perception, abstraction, and geometry. A more scientific approach to architecture will follow to discuss concepts of place stating in the 1960s. This period will revolve around concepts like environment, event, user, behavior, and design methods. Finally, the research will look at contemporary approaches under the topic digitally supported space. Within the context of a technological approach, the discussion will include

concepts like reality and virtuality, mediated experience, and relationship with machines. This additional reading of 20th century architectural history is likely to open up a new discussion that is beyond styles.

1890-1900: WHAT IS SPACE?

It is not space in particular that interests the art historians of the late 19th century; they are more concerned with the relation between the observer and the artwork. Subject-object connection leads them to the relation of people with their environment, the space within. The concepts theorists come up with to unfold the relation of the subject with the other, such as light, viewpoint, scale, direction, depth and enclosure, are spatial aspects. Thus, as soon as the concept of space appeared in art in the 1890s, it is related to senses, perception, and psychology. Human body is considered as the generator of the three-dimensional extension of space -width, height and depth. Not only visual but also tactile senses are taken into account; space is perceived through the movement of the body as well as through the eyes (van de Ven, 1978: 71-93).



Figure 1: Loie Fuller, “Serpentine Dance” Performance, 1890s: 3-D space as the extension of human body
(Source: <http://www.erinwylie.com/2012/08/loie-fullers-the-serpentine-dance>).

In *The Problem of Form in the Visual Arts*, which includes the artistic musings of Adolf von Hildebrand, the German sculptor clarifies this approach with two ways of seeing: pure and kinetic visions. von Hildebrand relates vision to the perceptual form of the object as opposed to its actual form, its physical reality. The pure vision of a distant object creates a unified two-dimensional image of the object and the background that the observer perceives at a single look, whereas the kinetic vision of closer objects requires the perception of a mobile body to create successive two-dimensional impressions that give a plastic idea of the three-dimensionality of the object. The permanent movement of the glance is similar to touching. It is the task of art, for von Hildebrand to merge these two visions (Barasch, 1998: 133-42). Austrian art historian Alois Riegl supports the idea that vision and touch work together; he also distinguishes optical (distant, objective) vision from tactile (close, subjective) vision (Iversen, 1993: 9-16).

Similarly, von Hildebrand's contemporary August Schmarsow deals with the psychology of space, however, approaches the same issues from a different angle. German historians von Hildebrand and Schmarsow introduce the concept of space in art both in 1893. Their analyses are not limited to subject-object relationship like some of their contemporaries' theories but include space in the real sense of the concept for the first time in art history.

For Schmarsow, architecture is composed of three-dimensional space -as the extension of the human body- and time through the movement of the observer. The sense of space is perceived via the experience of muscular sensations, the structure of the body, and the sensitivity of the skin. He distinguishes space (the contained) from mass (the container), which will be an important part of spatial discussions soon after. Architect August Endell, for instance, sees space as a void expanding rhythmically between walls that define it. Purpose leading to space, for Schmarsow, is a fundamental in architectural aesthetics (van de Ven, 1978: 90-93). Riegl, on the other hand, rejects any utilitarian motivation and defines space as the source and the aim of *Kunstwollen* (artistic will); not necessity but the architect's volition drives him to space-making. "I see in the work of art the result of a specific and purposeful *Kunstwollen* that asserts itself in conflict with practical purpose, material, and technique," (Riegl in Iversen, 1993: 71). This is not the will of a single artist rather *one* orientation of the artistic will governs plastic arts in every period; it is a cultural and collective attitude (Riegl, 2000: 94). These two theories are the basis of another long-term opposition in architectural criticism about the foundation of space: functionality versus aesthetics (van de Ven, 1978: 90-93) (Table 2).

Table 2. Dominant approaches to architectural space in the first half of the 20th century
 (Source: Authors).

	Functionality	Aesthetics
Starts with:	August Schmarsow	Alois Riegl
Followed by:	Berlage, Frankl, Bauhaus, Le Corbusier, ...	Worringer, Lissitzky, Cubism, de Stijl, ...
Focusses on:	Abstraction/Geometry	Empathy/Nature
Designed as:	Geometric space	Organic Space

As part of the early space theories in art and architecture, von Hildebrand, Riegl and others concentrate on the fear of space, especially agoraphobia, the fear of large open spaces. This psychological illness concerning space leads art historians like Heinrich Wölfflin to focus on mass instead of space as early as the 1880s. Wölfflin sees architecture as the art of physical mass, and studies matter and form in relation with the theory of empathy that uses form and mass to overcome the fear of space. His formal analysis of art history depends on planar vision; for him, architecture is composed of two-dimensional images set up by mass. History of art is the history of form (van de Ven, 1978, 94-98).

The fact that architectural theories mainly deal with physical aspects of buildings until late 19th century emphasize the significance of the ideas of von Hildebrand and Schmarsow in the 1890s. Form and mass have not been the only concerns of architects ever since. A new concept -space- and discussions related to the spatiality of architecture enrich and inform theories behind architectural design.

1900-1960: ARCHITECTURE AS ART AND MODERN SPACE

The 20th century starts with a background in which the ideas of mostly German art historians based on psychology and science, including visual and tactile space, mass, time, function, and aesthetics, guide the theorists, artists and architects of the new century. Modern space starts to form with the early ideas and applications in architectural practice (Berlage, Endell, and Art Nouveau) supported, as always, by theory. The concept of space continues to be the center of attraction until the 1920s. Studies on space do not improve much in the 1930s up until the 1960s when reactions against the modern movement are intense. Modern space of the first half of the

20th century is rational, geometrical, abstract, functional, mathematical, and transparent in character.

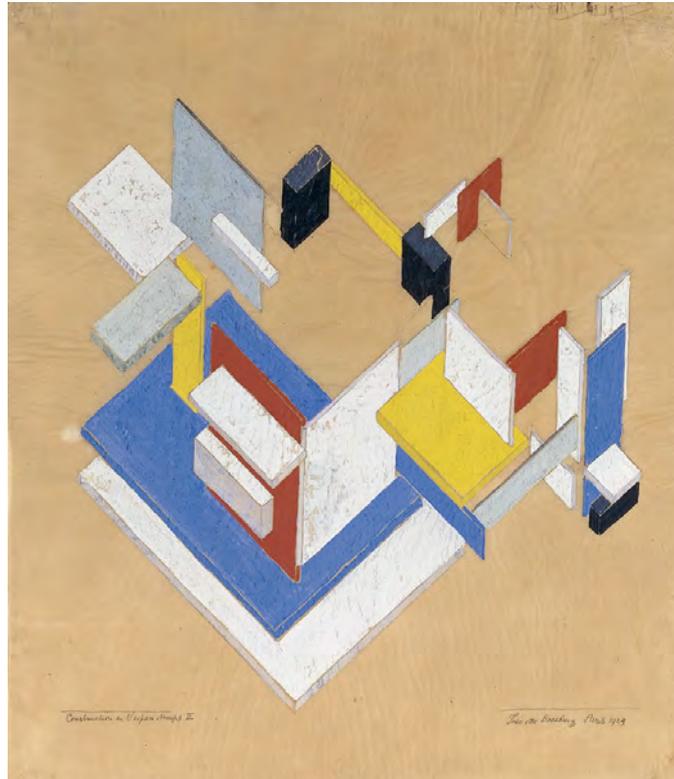


Figure 2: Theo van Doesburg, Construction in Space-Time II, 1924

(Source: <http://paintings-art-picture.com/paintings/archives/1618/theo-van-doesburg-construction-in-space-time-ii-1924>).

In the first decade of the new century, an opposition, which Wilhelm Worringer uses in *Abstraction and Empathy: A Contribution to the Psychology of Style* (1908) to clarify some of the earlier discussions, guides the ideas of the forthcoming avant-gardes: empathy and abstraction as the two poles of a pendulum of art. Some artists follow the organic, naturalistic forms of empathical theory for space-making. Empathy as a projection of one's feelings onto an object seen is considered as a natural intuitive human ability. The tendency to purify the chaos of the universe, on the other hand, directs others to abstraction and inorganic, crystalline, stylized regularity of geometry. They believe abstraction (as a result of self-protection, introversion and leaving life behind) is necessary to overcome the fear of space. Worringer believes both abstraction and empathy are crucial for an understanding of space creation (Barasch, 1998: 171-87).

In the late 1910s, Oswald Spengler defines two expressionist spaces following Worringer's theory: organic and geometric spaces. Organic space, for example Erich Mendelsohn's Einstein Tower, is related to empathy, destiny, and anthropomorphism, whereas geometric space, for instance Bruno Taut's Glass Pavilion, is related to abstraction, causality and the crystalline. Comparing the space conception of Western culture with Classical space, he outlines a transition from plastic, physical mass to three-dimensional pure space, from static and finite space to dynamic and infinite space, from designing from the outside-in to the inside-out (van de Ven, 1978: 154-67). On the other hand, Albert Erich Brinckmann who adds several terms

to the vocabulary of space in the 1910s -space-formation, spatial effect, spatial design, and feeling of space- focuses on three concepts of space: mass surrounded by space, space surrounded by mass, and the combination of the two. For him, architecture is the unity of space and mass, whereas the aim is creating space (van de Ven, 1978: 110-17).

In the same decade, Czech architectural historian and theoretician Paul Frankl studies the morphology of space for the first time. His categories of architecture are space, mass, light, and purpose. He classifies form in four categories accordingly: The first is spatial form categorized due to the organization of spatial parts: spatial addition of single spaces versus spatial division of one space. The second is corporeal (mechanical) form categorized due to the generators and transmitters of physical force: the structural where forces are expressed versus the textural where forces are covered. The third is visual form categorized due to light, color, surface and optical effects: frontality (unity) versus diagonality (multiplicity), one image-like perception (single viewpoint) versus many image-like perceptions (multiple viewpoints). This is similar to pure and kinetic visions of von Hildebrand. For Frankl, the stylistic principles of Romanesque architecture are addition, frontality and structure whereas of Gothic architecture are division, diagonality and (at first structure, later) texture. His fourth category is purpose related to human activities that support spatial form: spaces of repose (necessary activities) versus spaces of movement (circulation) (Frankl, 2000: 9-50).

Herman Sörgel, on the other hand, sees architecture as a spatial art and supports the idea of the unity of space and mass. He classifies space concepts as actual, perceptual and effectual spaces in his aesthetical theory of architecture in the late 1910s. The actual space, for him, is the objective, physical space; the perceptual space is the physiological impression of this space on the retina of the eye, and the effectual space is the architect's underlying aesthetic idea of space and the perception of this idea by the observer. He sees plane, mass, and space as the perfect triad (van de Ven, 1978: 110-17).

Relating the concept of space with continuity, movement and time has been the tendency of historians as early as the 19th century. However, time is not considered as a dimension of space before the 20th century. Despite Futurist Filippo T. Marinetti who claims "time and space died yesterday" (Caws, 2001: 187), space-time becomes a new concept in art and architecture with the influence of Albert Einstein's theory of relativity in physics and the mechanical improvements in technology. Four-dimensional space replaces Euclidean space first in Cubism. The concept of simultaneity brings forth the coexistence of more than one point of view expressing aesthetic experience in time. Representation of the visual memory of a moving observer is preferred to optical vision in Cubist paintings.

The spatial ideas of architect and painter Theo van Doesburg are worth mentioning, even though he contradicts with painter Piet Mondrian, the other significant figure of De Stijl, who supports an abstract planar understanding of space. van Doesburg says, "The modern painter's task consists in creating with the aid of color a harmonious whole in the new four-dimensional realm of space-time -not a surface in two dimensions" (1970: 80). In the 1910s and 1920s, he deals with the floating aspect of space, composition of rectangular planes extending infinitely, objects in motion, immateriality, abstraction and designing from inside-out (1970: 79). He declares, "The pure expressional means of architecture are plane, mass (positive) and space (negative). The architect expresses his aesthetic experience through the relationship of planes and masses to internal spaces and to space" (1969: 15). He is after a non-Euclidean, neo-plasticist space through the unity of space and time (1970: 79).

In the 1920s, Walter Gropius accepts space as the core of the artistic research in Bauhaus. In "The Theory and the Organization of the Bauhaus," he claims, "The objective of all creative effort in the visual arts is to give form to space." Looking for a science of space, he defines four aspects of the concept: illusory space as an immaterial space generating from one's intuitive and metaphysical power, mathematical space as a measurable space of the intellect, material space as a real, tactile space, and artistic space as an emotional, spiritual space combining one's soul and spirit with actual reality (van de Ven, 1978: 135-44).

Frank Lloyd Wright, on the other hand, focuses on organic space in the late 1920s and defends the concept as his design principle all his life. The five integrities of his architecture, as he describes in *The Natural House*, are firstly the unity of the interior and exterior, and the house as a whole (destruction of the box, wall as a screen, form and function as one, association with the ground, planes parallel to the ground, and horizontality), secondly glass as a new material that makes unity and integration possible, thirdly continuity (plasticity, continuous physical movement, flow of space, free plan, depth as the third dimension, and use of cantilever), fourthly the nature (and natural use) of materials, and lastly integral ornament (as the expression of inner rhythm of form, as structure expressed as a pattern, organic simplicity) (1973: 13-66). He believes, "Architects were no longer tied to Greek space but were free to enter into the space of Einstein" (1973: 21).

Though surface, mass and plan are key concepts for Le Corbusier; space begins to dominate in his architecture in the early 1920s. Space as he describes in connection with promenade architecture, is related to the temporal experience of the viewer as in Cubism. It is composed of the images perceived by a mobile observer. The concept of ineffable space that he defines in the 1940s is about the emotional state in which one experiences spaces. That includes all senses of the observer whether or not they can be described. Vidler calls it inexpressible, indefinable, or indescribable space (2000: 53-54).

Russian Constructivist Eleazer Lissitzky who deals with the aesthetics of space perception defines four space concepts in the 1920s: Planimetric space is composed of two-dimensional surfaces, planes; perspective space is the cubic box of three-dimensional Euclidean geometry; irrational space (space-time) is composed of the multiplication of perspectives creating a four-dimensional space. Here, the observer experiences time through movement. Finally, imaginary space is film space with the immaterial representation of depth and movement/time. It can be argued that this classification summarizes the different approaches to the conception of space during the modern period (van de Ven, 1978: 209-20).

Two books published in the 1940s are worth mentioning especially because they are still widely referred to: Siegfried Giedion's *Space, Time and Architecture* and Bruno Zevi's *Architecture as Space*. These studies move space to the core of architectural discussions by rewriting the history of architecture based on space. Some of the concepts Zevi makes use of to understand space are interior-exterior, form-content, space-mass, solid-void, architectural-urban, romantic-rational, horizontal-vertical, light-shade, function, empathy, relativity, time, movement, continuity, unity, rhythm, balance, symmetry, proportion, scale, color, perspective, and line-plane-depth. These concepts are still widely used in architectural practices and schools. Although we believe in their importance deeply, we argue that contemporary theoreticians need new concepts to understand and create the space of the 21st century.

As discussed above, most of the spatial discussions of the first half of the 20th century take place between 1900 and 1930. The second thirty-year period up until 1960 is not as productive in terms of space theories. This inertia changes when architects look for a more scientific approach to the discipline.

1960-1990: ARCHITECTURE AS SCIENCE AND PLACE

In the 1960s, architecture begins to look for scientific methods to improve. It can be considered that architecture as a form of art is replaced with architecture as a branch of science. In the early 1960s, the concept of space-time is replaced by existential space under the influence of the philosophy of Martin Heidegger, while the 1970s witnesses a return back to the concept of mass. Terms like environment, place, location, and site begin to be used more than space itself. Architectural theoreticians study and integrate diverse philosophical approaches like structuralism, phenomenology, and semiology; they analyze design methods, typologies, syntaxes, and relationships between environment and user behaviors.

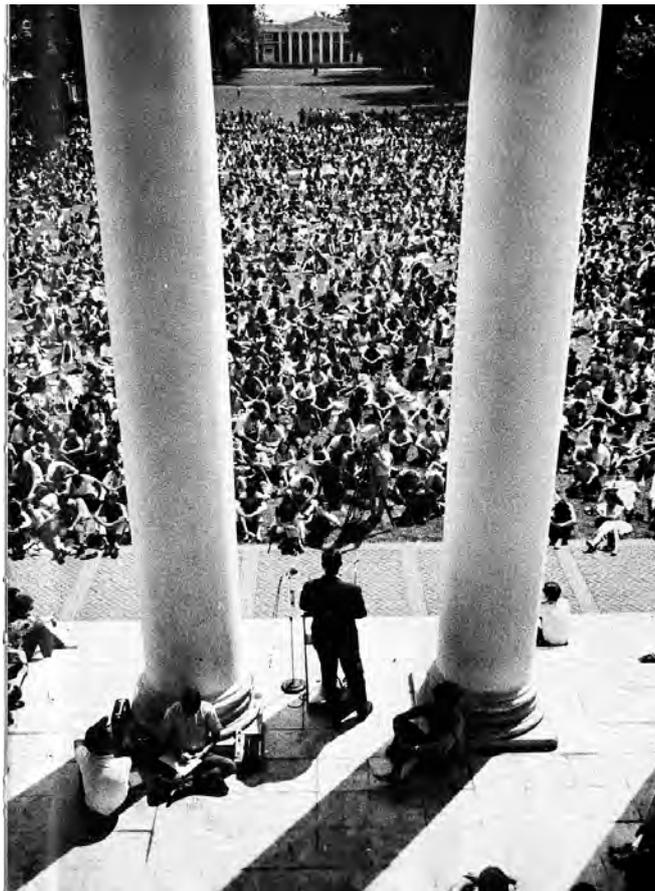


Figure 3: Andy Stickney, May Days: Student Strike on the Lawn, 1970

(Source: <http://faculty.virginia.edu/villagespaces/essay>).

Italian Neo-rationalist Aldo Rossi is one of the architect-theorists dealing with architecture as science. He designs buildings, mainly in the 1970s, which are monumental, minimalist and abstract with simple basic geometries. He believes in evaluating architecture in itself, without applying to other disciplines. He uses an analytical method to study the physical forms of buildings and cities. He looks at the elements cities are composed of and the ways they are grouped together. In *The Architecture of the City*, published in the 1960s, he talks about typology as “the study of types of elements that cannot be further reduced, elements of a city as well as of an architecture” (Rossi, 1982: 41). Being independent of place, time and function (rejecting Sullivan’s “form follows function”), type remains constant and unchanging, underlying all built examples. It is a logical principle, permanent and timeless, that is prior to form. Besides typology, Rossi deals with concepts like place (*locus*), memory, monument, logic and analogy in his lecture notes. Place gives an architectural entity its condition of being: “The *locus* is a relationship between a certain specific location and the buildings that are in it. It is at once singular and universal,” (Rossi, 1982: 103); it is singular because of its position, time, topographical dimensions, form and memory of successive ancient and recent events (Rossi, 1982: 107). For Rossi, logic and memory -not history- are much related. Monuments are the memory of a city. Either personal or collective memory is set into motion through the essence of types and the analogous design process.

Another scientific approach to architecture belongs to Christopher Alexander who bases his analytical design method on users, communal participation and context, in which synthesis (design) follows analysis (programming) (1960s-80s). In *A Pattern Language*, published in the

1970s, he analyzes similar spaces using the same logic, technique and scale. The book includes more than 250 patterns, each as a fragment of the environment in one of the three scales he writes about, town, building and detail (construction). Alexander states “every place is given its character by certain patterns of events that keep happening there. These patterns of events are always interlocked with certain geometric patterns in the space” (Caws, 2001: 658). He not only deals with geometric criteria but also relates the events taking place in spaces with the layout of the space. For him, there is a connection between activities and form, event patterns and spatial patterns. Space is actually a context for events. The physical environment makes up space together with the experienced actions. Using patterns, Alexander aims to create a common language for different experts like architects, planners and engineers.

Well-known French architectural theoretician Henri Lefebvre who starts writing as early as the 1930s sees space from a political, scientific and sociological standpoint (1960s-70s). Dealing with Marxist theory, revolutionary politics, urbanization and social processes, he is involved in the production of space more than its elements. He talks about social, absolute, abstract, contradictory and differential spaces. As a social product, as the space of society, “social space is constituted neither by a collection of things or an aggregate of (sensory) data, nor by a void packed like a parcel with various contents, and that it is irreducible to a ‘form’ imposed upon phenomena, upon things, upon physical materiality,” (1991: 27). For Lefebvre, space is at once perceived, conceived, and directly lived. The perceived-conceived-lived triad leads to three concepts concerning social space that he discusses in *The Production of Space* published in the 1970s: materialized spatial practice in relation with social practice, and the process of spatial production and reproduction (abstraction), representations of space as conceptualized space in relation with production, order and knowledge, and representational space as space directly lived in relation with the underground side of social life (Lefebvre, 1991: 26-40).

Christian Norberg-Schulz, a follower of Heidegger, deals with existentialism, psychology, phenomenology of environment, behavior sciences, and concepts of place, house, dwelling, area and settlement (1960s-80s). In *Genius Loci: Towards a Phenomenology of Architecture*, published in the late 1970s, he defines places as the spaces where life occurs. Space is a system of places. Place (locality) as an integral part of existence is a concrete term for environment. A place is a space with a distinct character, not abstract, scientific or mentally constructed but qualitative and phenomenological. Dwelling is the purpose of architecture; architect’s tasks are to create meaningful places and to help one to dwell. “When man dwells, he is simultaneously located in space and exposed to a certain environmental character.” The environment influences people, and place gives them their identity. Norberg-Schulz talks about four elements of space: The first is physical space (center, place) that is physical existence as it is; the second is perceptual space (direction, path) which is the temporary space as it is perceived by the user; the third is existential space (area, domain) that is related to the basic relationship of one and his/her environment. Existential space, for instance, the meaning of the concept of home, is abstract and permanent; it does not change with changing conditions. It “exists independently of the immediate situation, possessing its own order and stability.” It stands for one’s concept or image of the environment. Architecture is a concretization of existential space. Finally, he defines conceptual space that is the space concept of specialists like architects, economists, mathematicians. The conceptual space of an architect is different, for example, from the space of a physicist (Norberg-Schulz, 1988: 14-29).

Environment-behavior studies that Amos Rapoport deals with are a science-based design theory related to environmental design, cultural context, communication, and the user (1970s-80s). He differentiates perceived environment from built environment and talks about environmental evaluation, cognition, and perception. As he mentions in *The Meaning of Built Environment*, published in the 1980s, elements organized in designing the environment are space, time, communication, and meaning; “space is the three-dimensional extension of the world around us, the intervals, distances and relationships between people and people, people and things, things and things. Space organization is, then, the way in which these separations

(and linkages) occur and is central in understanding, analyzing, and comparing built environments” (Rapoport, 1990: 179). In this humanistic approach, he uses the term environment instead of space, built environment instead of architecture, and environmental design instead of architectural design.

A scientific understanding of space-making dominates theories of space in the 1970s and 1980s. This is a fundamental shift from previous artistic approaches. In this period, there is a stronger connection between architectural and urban space; the scientific theories respond to urban problems. The scientific period turns into a mediator between the artistic theories of the past and contemporary technological theories.

1990-2000 AND BEYOND: ARCHITECTURE AS TECHNOLOGY AND DIGITALLY SUPPORTED SPACE

There has been an uninterrupted relationship between space and technology since the industrial revolution. It can be argued that the major source of the musings about the concept of space in the industrial age is technological changes. Giedion says “the seeds of the architecture of our day were to be found in technical developments little regarded at the time of their appearance” (1967: 211). Vidler talks about “two of the major themes that characterized both modern architecture and the history of architecture in the first fifty years of this century -the question of technology and the problem of space” (1999: 483). He believes without spatial thought modern movement would not be able to integrate the new technological structures and systems (1998: 54). Just like the 1890s, the 1990s is a time when architects and theoreticians face the inevitability of a search for a new approach to architecture. The search in the 19th century ends up with the addition of the concept of space to architectural theory, whereas the output of the 20th century seems to be the concept of virtuality.

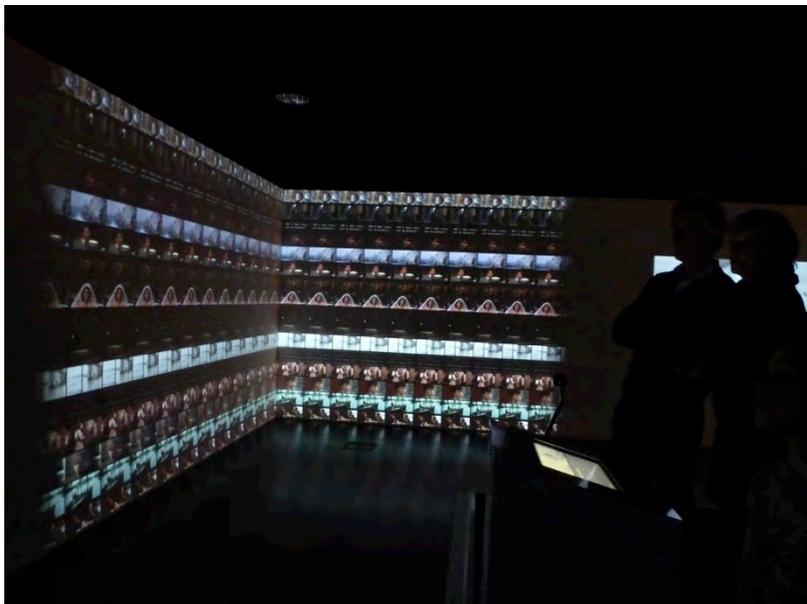


Figure 4: “Panorama” Room, Delugan Meissl Associated Architects, Eye Film Institute, Amsterdam, 2012

(Source: by the author).

John Rajchman who has a philosophical approach to architecture is a theoretician who deals with the concept of virtuality. He believes the virtual has “multiple potentials for new connections or unseen relations” (1998: 115). In *Constructions*, Rajchman claims (1998: 119):

A virtual construction is one that frees forms, figures, and activities from a prior determination or grounding, of the sort they have, for example, in classical Albertian perspective, allowing them to function or operate in other unanticipated ways; the virtuality of a space is what gives such freedom in form and movement. Thus virtual construction ... constructs a space whose rules can themselves be altered through what happens in it. (Rajchman, 1998: 119).

Architect and city planner Paul Virilio who studies the concept of time has a philosophical and political approach to architecture. He writes about concepts like technoscience, technoculture, real-time technologies, technologies of synthetic vision, and data, game and signal theories. He replaces architectural space with digital space based on computer-generated virtuality:

The new office is no longer a separate room, an architectural section, but has become a single screen, the space reserved for work and study has become the terminal of an office/viewer where the data of teleinformation appear and disappear instantaneously, the three dimensions of built space being transferred to the two dimensions of a screen, or rather of an interface which not only replaces the volume of the old room with its furniture, its layout, its documents and its work plan, but also saves the occupant having to travel nearer or farther. This transmutation ... would if necessary explain the present great 'post-industrial' deployment (1998: 6-7).

Anthony Vidler who has a psychological and technological approach to architecture is a notable theoretician and critic. He talks about Foucault, Sigmund Freud, Jacques Lacan, Friedrich Nietzsche, or Franz Kafka as long as their theories help him to clarify his points. Dealing with the concept of the uncanny, he goes back to a psychological idea of space related to spatial fear that was popular when space theories were just beginning to dominate in architectural theory. He uses contemporary terms like cyberspace, hyperspace, virtual space, imaginary space, or immaterial space interchangeably. He refers to the term virtual as opposed to the real (that which exists). Especially in his later work, he is searching for a new understanding of architectural space, which is under the influence of new technological transformations. He claims "the very rapidity of image manipulation and projection, merging with the reality represented, changes fundamentally the context of life and vision. A history of architecture that takes these, and previous, paradigm shifts in visual and spatial analysis into account is in this context, an urgent need" (1999: 485).

We agree with the necessity of taking action in studying the relationship of architecture and technology. As the architects and theoreticians of the early 20th century search and find their concepts, we should look for ours. The concepts of the 21st century will be different from that of the 20th. "I think there is reason to believe that the digital revolution is forging a truly new kind of architecture, one that, for better or worse, will gradually enter the mainstream of 21st-century practice" (Vidler, 2001: 71). Similar events take place in the 1890s and 1990s: Humanity faces two revolutions, first the industrial, then the digital. In both cases, the revolution comes with technological transformations -in the former, machine (hardware) technology and in the latter, information (software) technology (supported with hardware). The changes influence not only architecture itself but also the way humans live and interact with their environment; computer space transforms into office space as in Virilio's example.

Vidler reminds that "space and technology, always linked in the ideology of Modernism, have emerged as inextricably joined in the techniques of digitalization" (1999: 483). Space and technology are together in the digital age. The key to a new discourse in architecture is within the confines of the integration of architectural space and digital space.

CONCLUSIONS: DIGITALLY SUPPORTED ARCHITECTURAL SPACE

Indeed, in the present moment, where the question of space is itself being revised under the influence of digital technologies, as Michael Benedikt has shown, it becomes even more important to develop a critical practice of spatiotechnological history. For the new technologies are more than simply shifts in representational techniques.

Anthony Vidler (1999: 485)

To go beyond the spatial theories and designs of the 20th century, and to define the conception of space in contemporary architecture, digital spaces that are the outcomes of computer science and information technologies, are significant. They did not exist before the mid-1970s. Compared to the history of architecture, which is almost as long as the history of humanity, this is a relatively short period. However, the changes in the discipline in the second half of the 20th century, especially in the last quarter, it is possible to say, are more than the changes that took place in a few centuries. The traditional understanding of space-making is being transformed through the changes in technology as well as in daily life. Vidler explains the spatial transformation as follows (2000: 243-44):

... the infinite mutability, the seemingly endless permutations and rotations of digital constructions, the speed of virtual travel within the image, not to mention the complexity of the networks of communication themselves, all lead to the suspicion that some transformation in subjecthood is under way, ... the relations between image and experience have nevertheless been changed beyond recognition within the processes, if not the outer forms, of spatial design (Vidler, 2000: 243-44).

To discover the new criteria of space in contemporary architecture, architects could and have begun to look through the relationship between architectural space and digital space. Concepts that are significant in the understanding of digital spaces and their relation with architectural space are reality and virtuality of space, (im)materiality of space and body, (dis)continuity of space and time, mobile versus static space, and introverted versus extroverted space. Different from the concepts discussed in the industrial age, the spatial concepts of the digital age are linked to one's musings about the computer and digital technologies, and their influences on his/her relation with space. The digital technologies have opened up a big debate in philosophy, art and architecture about reality. They have developed an option to the materiality of being. They have broken the ultimate continuity of space and time. They have shaken the foundations of the architectural product. They have withdrawn people into themselves. We are just at the beginning of these discussions.

Digital spaces have spatial qualities; they are forms of space, but none of them can be considered as architectural space. Features of architectural space contradict with these spaces. Digital spaces are like the opposite of architectural space; they have features that are the reverse of architectural space. They are actually "the other" for architectural space. Industrial revolution has given architecture the concept of space, digital revolution its other. Contemporary architectural space is supported by digital technologies. It is digitalized gradually as new technologies develop. This way, architectural space blends with and gets closer to computer space. The architectural starts to include the digital. Contemporary architectural space is digitally supported.

As the theoreticians dealing with the outcomes of the industrial revolution concentrate on subject-object relationships, contemporary theoreticians concentrate on body-mind-space relationships. Since mind itself is immaterial (within a material world), it can "survive" in a digital

space unlike the body. Digital space puts the body in a virtual position in the form of an avatar. It separates the mind from the real body. The mind moves freely in space without the body. This creates a new way of being. The subject becomes a bodiless spectator. Diverse body-mind-space relationships inevitably influence the relationships in architectural space. They may even change our relationship with our bodies. Physical distance and orientation lose their significance. Digital spaces create a different reality from the actual real -not a single reality but a variety of realities and possibilities. The Internet is a gigantic cybercity with no physical existence (and boundaries). Worlds within worlds, new spatial and temporal forms of being are created. Through new ways of being and contact, digital space has the spatial potentials to change real/architectural space, which is now a digitally supported space.

The discussion of architectural space in the digital age has just begun. By reading the 20th century architectural history through the development of spatial theories, we have tried to provide a background for this discussion, which, it seems like, will continue for a while in the first decades of the third millennium.

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OUTDOOR ENVIRONMENTS AT CRISIS SHELTERS

User needs and preferences with respect to design and activities

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Abstract

The aim of this study was to identify implications for the design of outdoor environments at crisis shelters for women and children survivors of domestic violence. To address this aim, landscape analyses and interviews with staff were conducted at three Danish cases. The findings are presented in descriptions of the three cases in terms of the number of residents, context, building type and the characteristics of outdoor environments. Furthermore, a thematic content analysis of the interviews resulted in five categories that offer a nuanced insight into how the different types of outdoor environments support crisis shelter functions. The categories are: Protection against perpetrators of violence and helping residents to feel safe; Accessibility in the design, straightforward activities and staff guidance; Being outside and the positive distractions of nature; Space for all; Room to play and relieve children's feelings. Finally, the findings were summarized to give an overview of implications for design.

Keywords: Children; crisis shelter; design of outdoor environments; domestic violence; women.

INTRODUCTION

Through landscape analyses and interviews this study explores implications for the design of outdoor environments (OEs) at crisis shelters (CSs) for women and children survivors of domestic violence. First, the problem of domestic violence is introduced which is followed by a discussion of the CS setting as a background to the study.

Domestic Violence

Based on the recommendations made by the United Nations (UN) for legislation on violence against women, domestic violence can be defined as any form of physical, sexual, psychological or economic violence involving individuals who are or have been in an intimate relationship, individuals with family relationships to one another; and members of the same household (UN, 2010). In Denmark with its 5.5 million inhabitants, an estimated 28,000 women are exposed to violence by their partner or ex-partner (Helweg-Larsen & Frederiksen, 2007) while 22,000 children grow up in homes with violence (The Body Shop/UNICEF, 2006). Every year, approximately 2,000 women and 2,000 children flee to a CS (Helweg-Larsen & Frederiksen, 2007) which entails stays of 24 hours to over one year (Barlach & Stenager, 2010).

When seeking help at a CS, women and children are in a state of crisis and they can be affected by numerous mental and physical health consequences including depression, post-traumatic stress disorder and chronic pain (Plichta, 2004; Coid et al., 2003; Wolfe, Crooks, Lee, McIntyre-Smith & Jaffe, 2003; Campbell, 2002; Diaz-Olavarrieta, Campbell, Garcia de la Cadena, Paz & Villa, 1999; Fantuzzo & Mohr, 1999; Campbell & Lewandowski, 1997).

Crisis Shelters

CSs in Denmark offer protection from perpetrators of violence and help women and children cope with their crisis, helping them to start a new life without violence.

The women and children live in temporary, unfamiliar housing often in close proximity to strangers. This can make the CS a potentially stressful setting capable of contributing negatively to their state of crisis. The design of the setting should provide an environment that is secure, controllable and predictable with minimal sources of stress (Refuerzo & Verderber, 1989; Verderber, 2001). The OE can be seen as an essential part of the CS. It offers respite from the indoor environment and additional space as well as the benefits of being outside with an opportunity for contact with nature.

Health-Supporting Outdoor Environments

An increasing number of research studies show that contact with nature can support health and improve well being (for a review see Ward Thompson, 2011). Research has addressed the benefits of viewing and being active in nature. It has focused on various groups, settings and health outcomes (e.g. Cooper-Marcus & Barnes, 1999; Grahn, Tenggart Ivarsson, Stigsdotter, & Bengtsson, 2010; Stigsdotter et al., 2011; Ulrich, 1984). A study by Ottosson & Grahn (2008), which focuses on people in crisis, shows that people who are in frequent contact with nature are less affected by their crisis compared to those who have less contact with nature. Some studies on OEs at CSs focus on the activities that are organized for the specific user group and take place in a setting specially designed or chosen for the purpose of the activity (nature-based activities). These studies indicate several health benefits for the women and children in terms of improved self-esteem, mood, stress-coping and social competence (Lee, Kim, & Suh, 2008; Stuart, 2005; Keeley & Leigh, 1999; Pierce & Seals, 2006; Seals & Pierce, 2007).

This research suggests that the OE has the potential to play an important role in supporting the health and well-being of the women and children and to the general success of CS functions. The specific design requirements are, however, less evident. The aim of this study is, thus, to find implications for the design of OEs at CSs that can enhance their use. To address this aim, a two-phased qualitative study of three cases was conducted with the following research questions:

- What is the appearance of OEs at CSs?
- From the staff's perspective, what are the user needs and preferences with respect to outdoor design and activities?

MATERIALS AND METHODS

Definitions

In this paper, a CS is defined as a place which offers temporary accommodation, care and support to women who have been exposed to domestic violence. The women may be accompanied by children (based on § 109 of the Danish Consolidation Act on Social Services).

The term OE is used to cover the great variety of outdoor settings such as gardens, courtyards and roof gardens. OEs can have different amounts of vegetation and can either be designed or spontaneously developed.

Case Selection

The data were gathered at three Danish CSs. The selection of the three cases was based on a different study covering 31 of Denmark's 38 CSs (Lygum, Stigsdotter, Konijnendijk, & Højberg, 2012). This study used data from a questionnaire survey, CS homepages and aerial photos to explore the extent, general satisfaction, characteristics and use of the OEs.

Based on the results of this study, the following selection strategy was applied: it was important to get as much and as varied information as possible without compromising the depth of the study. Therefore, an information-oriented selection with a relatively small sample of cases each with their different qualities was chosen. On the basis of expectations about their information content, the study focused on "especially good" cases (Flyvbjerg, 2004, p. 426). A case was evaluated as being especially good if the OE was described as having a rich content and a high number of activities organized by the staff. Indications of extra activities, a high level of satisfaction with the OE and unique aspects of the setting or use were also considered positive. For the cases with the highest scores, the shelter location was taken into consideration with regard to access for the researchers. Based on this process, six cases were chosen and visited. Visits included an unstructured individual interview with a staff member and an overall assessment of the OE to clarify results from the questionnaire survey and obtain further knowledge. The six CSs were reduced to three, which were assessed to be the best in terms of rich and varied information content.

Data Collection and Analysis – Phase 1

Each of the three cases included an unstructured individual interview with the shelter leader to gather further information and to organize the subsequent data collection. Furthermore, several types of landscape analysis were conducted including an analysis of the OEs and their surroundings based on the theory of mental maps by Lynch (1960). The 'therapeutic garden audit for acute care hospital' developed by Clare Cooper Marcus and Marni Barnes was also applied (C. Cooper Marcus, personal communication, October 4, 2010). The tool was used as a checklist in combination with findings from prior research on the development of a supportive OE at a Danish CS (Lygum & Stigsdotter, in press). This helped to direct attention to design details in the OEs. Furthermore, an observation of physical traces (Zeisel, 2006) was conducted to obtain information regarding usage. All in all, the landscape analyses resulted in a greater understanding of the CSs as organizations and of the physical environments in which they are placed. This knowledge was used as a basis for carrying out the group interviews described in the following.

Data Collection and Analysis – Phase 2

The last part of the case study consisted of interviews. The seven stages of an interview inquiry by Kvale and Brinkmann (2009) assisted the planning. A semi-structured group interview was conducted with three to four staff members selected by the leaders at each CS. These staff members included night and day porters, childcare workers, a counselor, contact/support persons, a handyman and a leader. The group interviews were recorded and lasted approximately an hour and a half each. Each group was provided with a site illustration of the OE as well as paper and pens to support the discussions. The overall goal of the interviews was to identify the employees' experience regarding the needs and preferences of the women and children concerning outdoor design and activities as well as the employees' own needs and preferences. Questions revolved around the use of the OEs, their positive and negative aspects, their significance for the different users, and the participants' idea of what constitutes the ideal OE.

The recordings from the three group interviews were transcribed and analyzed. The analysis was based on a 'thematic content analysis' which is a method adapted from the 'grounded theory' approach and from research on content analysis (Burnard, 1991). In the analysis, the themes addressed in the interviews concerning needs and preferences with respect to outdoor design and activities were systematically registered. Moreover, the themes and interviews were linked together according to a category system. The results from the initial phases of the re-

search, such as notes from the individual interviews and the findings from the landscape analyses, supported the overall analysis.

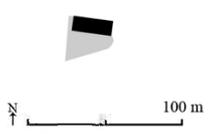
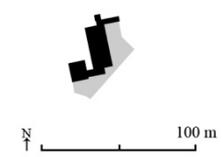
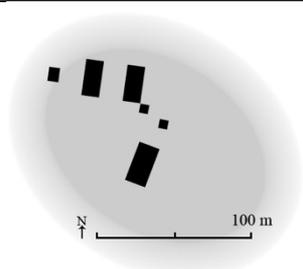
To reinforce the validity of the results, notes were made after each group interview regarding the topics discussed. Furthermore, a preliminary analysis of the transcripts was carried out several weeks before the final and more detailed analysis was completed. The use of NVivo 8 (computer-assisted qualitative data analysis software) ensured that both interview recordings and transcripts were used in combination at all times throughout the analysis and facilitated access to the other types of data collected at the cases. The quotations presented as part of the results were slightly modified to clarify their content and then translated from Danish to English by the authors with the assistance of a native English translator.

RESULTS

Description of the Three Cases

In Table 1, the three cases are described on a general level by using the findings from the data collection in phase 1 outlined above.

Table 1. Description of the three cases in terms of number of residents, context, building type and characteristics of outdoor environments
 (Source: Authors).

Characteristics	Case 1	Case 2	Case 3
Number of residents (max. capacity)	10 women and 15 children	16 women and their children	7 women and 12 children
Context	Suburban area	Urban/Suburban area	Rural area
Type of building	Two-story institutional building	Three-story institutional building	Two-story building formerly used by a chief forestry supervisor
Type of outdoor environment	Back garden	Courtyard	Surrounding garden with the characteristics of a park
Approx. size	1000m ²	1,500m ²	15,000m ²
Building foot print and outdoor environment			
Short description	The common dining room opens out onto a patio with garden furniture. From here there is a view of most of the garden which includes a lawn, a play area, and a shed. There is a great variety of plants in pots and small beds as well as bushes and trees near the	Access is possible through several doors including one from the common dining area, which opens out onto a terrace with tables and chairs. From the terrace a paved path leads to an area which is visually separated from the terrace by the building. This part includes a play area, sets of garden	A series of lawns of varying sizes and openness are separated by the buildings and wooded areas, including a small campfire. There are two main areas. One is connected to an annex and includes garden furniture. The other is connected to the main building. Here the common dining room

	boundaries.	furniture and a greenhouse. There is a variety of plants in pots as well as some bushes and trees	opens out onto a patio also with garden furniture from where it is possible to overlook a lawn, which has a play area.
Demarcation, level of screening and other security measures	Enclosed by the building, a locked gate and a 1.90m high wire fence, which is partly covered by vegetation. The door from the building to the garden is locked at night. The garden is visible from its surroundings.	Enclosed by the building and a solid wooden fence approximately 2.5m high with two locked gates that face the neighbors. Residents are advised not to open the doors to the courtyard at night. The courtyard is visible from its surroundings.	Fluid transition to surrounding forest. Doors from the outside to the building are under video surveillance and locked, and residents' keys are deactivated during the night. The garden is visible from its surroundings.

Categories Derived from the Group Interviews

The analysis resulted in five categories consisting of themes concerning needs and preferences with respect to outdoor design and activities. The results are presented in the following with summary descriptions and illustrative quotes.

1. Protection against perpetrators of violence and helping residents to feel safe: This category is about the possible causes for the residents feeling unsafe and how it is dealt with by the staff and taken into consideration in the OE.

Participants from all three cases mentioned that on a few occasions they have encountered men who wanted to contact women and children at the CSs. The men walked around the surroundings, looked through the fences, jumped over a fence into a closed courtyard or entered the building with the help of their children. A participant from Case 3 said that men can travel from one CS to another hoping to find their girlfriend, wife, children or whoever they are looking for. Participants from all three cases also pointed out that there have only been a few incidents of unwelcome men at the CSs in the past few years.

Participants from Case 1 liked the fact that their garden is protected by the CS building and is delimited by familiar neighbors, who can alert the staff if there are suspicious individuals in the area. There is, however, also a public path next to the garden at Case 1, and the participants mentioned an episode where a father stood on the path and saw his children through the wire fence. Therefore, participants from Case 1 said that the screening vegetation by the fence is important at their CS. See photo 1.

Participants from Cases 2 and 3 both discussed the security measures at their CSs and how far one should go in protecting residents. Participants from Case 2 were aware that it is possible to kick in their wooden fence or to climb over it with a ladder, if someone really wants to get in to their courtyard. On the other hand, the participants thought that the inclusion of security measures such as barbed wire on the fence or video surveillance would be going too far, and they were concerned that this would change the residents' experience of the courtyard in a negative way. One participant from Case 2 said the following about their fence: "A fence as large as ours has a certain symbolic value...it simply says 'keep out' - there isn't more to this fence, and if someone really wants to break in, it's possible". See photo 2. At Case 3 there is no fence around the garden and the transition to the surrounding forest is fluid. Staff and residents enjoy the large amount of space and the experience of nature. However, the lack of demarcation and overview can create anxiety among residents, which a participant expressed in the following way: "That's the downside of it. They [the residents] can feel that they are being secretly watched. And if there is a strange noise, they wonder if it is the deer. Those who have lived there for some time learn to tell the different types of sounds apart. Then, when it suddenly sounds different - well, is there then someone out there? That's a negative aspect of not having an enclosing fence - it makes them feel unsafe". Participants from Case 3 said that the employees encourage residents to stay close to the door of the main building when they are in the garden. They do this to keep children

away from the traffic on the private road which leads to and from the CS, but also to make sure that they can quickly gather the residents inside the building if something suspicious occurs. The employees have also got personal attack alarms, which they can take with them when they are outside with the residents, or which a woman can carry with her if she feels unsafe.

The use of different types of lighting directed out into the garden was also discussed, and a participant from Case 3 mentioned that it would be good to have spotlights, which could be turned on during the night if something suspicious occurs.

The possibility for visual contact between mother and child in the OE was pointed out as being important. A participant from Case 1 explained it as follows: "It is this issue that they often have when they [the mothers and their children] come here – their attachment to one another isn't pure or clear – there are difficulties and it is very important for the children that they can see their mothers and that the mothers can keep an eye on their children". A participant from Case 2 said that it is not possible to overlook their courtyard from a single point, which is an issue when there is only one member of staff to look after the children outside. On the other hand, the participant also argued that the shape of the courtyard, being split up into two parts that are not visually connected makes it more interesting and also provides the opportunity for different kinds of activities.



Figure 1: Although the wire fence is covered by vegetation, it is still possible to faintly see the public path next to the garden at Case 1 (Source: Authors).



Figure 2: The signs of wear and tear make the wooden fence at Case 2 seem even more vulnerable (Source: Authors).

2. Accessibility in the design, straightforward activities and staff guidance: Residents may be prevented from using the OEs for different reasons. This category is about initiatives taken by the staff to get residents to go outside and the design aspects which make it easier for residents to use the OEs.

Residents feel unsafe not only because of fear of what they have fled from, but also because of the process of moving into a new temporary home and their uncertain future. Partici-

pants from Cases 1 and 3 mentioned that women can feel so unsafe that they prefer to stay indoors. Moreover, women might not have the energy to go out especially during wintertime when it is cold. The fact that some women do not go out may also be because of their cultural background or because they are not used to having the possibility of making use of an OE. Such obstructions to women's use of the OEs may also have an influence on the children's use because there must always be an adult present when children play in the OEs at all three cases.

At both Case 1 and 3, the main door to the garden opens out onto a patio. Participants argued that a patio is an advantage for residents, because it feels like a safe area to be outside at the beginning of their stay. A participant from Case 1 said that it also makes it possible to overlook the garden that may ease access to the rest of it. See photo 3.

To enhance accessibility participants from Case 2 recommended the inclusion of play facilities, which the children are familiar with from kindergarten or after-school activities. One participant said the following: "Some things are given – 'oh, there's a bike and a path, so I can bike around' or 'there's a swing, so I can swing' – one must be able to switch off the brain whilst still being together with the others". See photo 4.

Participants from Cases 1 and 3 stated that the initiative to organize outdoor activities should be taken by the staff because the women do not always have the resources themselves. On the other hand, residents often want to participate when activities are arranged by the staff, which can subsequently act as a catalyst for activities among residents. This was described by another participant from Case 3 as follows: "Sometimes there are groups that are good at having barbecues together – after trying it out and becoming familiar with it - it is very enjoyable for them". Furthermore, a participant from Case 2 mentioned that social interaction between residents often takes place in the courtyard. Participants from Case 3 said that residents really appreciate social activities and each other's company during certain periods, which a participant explained in the following way: "They feel extremely lonely or have been very isolated – that is why it is an important part of the support we give".

Participants from all three cases mentioned examples of how different elements in their OEs are used as a starting point for activities with residents, e.g. the collection of fruits, berries and herbs which are then used in the preparation of common meals. Participants from Case 2 described how a group of women during the summertime were given the opportunity to buy plants for pots and the greenhouse and to take care of them. A participant from Case 2 pointed out that activities in the courtyard can be used as a means to unwind and relax: "Many of them [the women] have this itch in their fingers if they have had to leave their house and garden. They miss the mental benefits of being in their garden and tending their flowers...I think it is mental hygiene that works. There is a specific group of women that I think of – for them it was great that they had the possibility to be outside and sweep or go into the greenhouse and trim or plant and so on – it was quite simply therapy for some of them".

In relation to this, participants from Case 3 discussed whether horticultural activities with residents would be a good idea in their OE. A participant pointed out that it might be an issue that residents only stay at the CS for a limited and varying amount of time. She also mentioned that staff would have to develop a good way of working with the residents in order for them to get something out of the activities. In relation to this, a participant from Case 1 stressed that it is important that the garden be easy to maintain, and that the activities in it be kept simple.



Figure 3: The patio at Case 1 is a safe transition area between the inside of the CS and the OE (Source: Authors).



Figure 4: At Case 1, there are bikes for children of various ages and a circular path to bike on (Source: Authors).

3. Being outside and the positive distractions of nature: This category is about the experiences that the OEs can provide and how they benefit staff, women and children. At all three cases, participants described how the OEs can offer opportunities for positive distractions for residents.

A participant from Case 2 expressed the positive aspects of just being outside in the following way: “It is spacious, the sounds are different – there are a lot of things about just being outside – especially for the women who have their children with them – then it is very different to be outside on a summer evening than to stay inside and stare at the wall”. A participant at Case 3 mentioned that both women and children have a different energy when they have been outside and that the family dynamics are also positively affected.

Participants from all three cases recommended that an OE at a CS should offer many different sensory experiences such as colors and scents. Participants from Case 3 said that the staff enjoys the nature around their CS, and one of them mentioned that in her experience the women often also learn to appreciate nature after living for some time at the CS. She described it in the following way: “In the summertime there are bats and it is really fascinating for the women – many of them are town-dwellers. They sit out there and then ‘oh my god, there is a bat!’ – And then there is a little squirrel in the big tree and the deer. In the night, owls hoot and that’s scary. It gives them experiences that they have not been close to before and they realize - well, this is also what life is”. A participant from Case 1 said that children discover ants, woodlice and squirrels and that the fauna in general contributes to making their garden interesting and inviting. See photo 5.

A participant from Case 3 argued that by going outside, residents have the opportunity of distancing themselves from the crisis they are in. At Case 3, the staff are aware of the importance of sharing their nature experiences with the residents, as supported by the following statement

from one of the participants: “When the snow lay really heavily on the fir trees and we [the child-care workers and the children] were out on a walk, we imagined that in a moment she would come – the ice queen – and I told some great tales about her. Or the special light in the autumn that is reflected in the warm colors of the leaves - we share it with the women”. See photo 6.



Figure 5: At Case 1, the staff and the children feed the birds almost every day (Source: Authors).



Figure 6: The big old trees at Case 3 are fascinating for both residents and staff (Source: Authors).

4. Space for all: This category is about the differences in users’ needs and preferences. Participants from all three cases described the different functions of the OE for both staff and residents. Participants from Cases 1 and 2, where the OEs are relatively small compared to the one at Case 3, pointed out that it is important that the OE is a place for activities for adults as well as a play area that offers challenges for children of different ages. Furthermore, as a participant from Case 1 pointed out, there should also be places where the children can retreat once in a while.

An aspect of potential conflict is the varying need for order and tidiness. A participant from Case 1 explained it in the following way: “Some women are used to orderliness and others are used to a little more ‘laissez-faire’ – more chaotic conditions. When they are in crisis these characteristics are magnified – those who are used to orderliness want more order and those who are used to more chaotic conditions become even more disordered. It is often here that conflicts are provoked... some women want everything in place which is also what the staff prefer, while others just forget about tidying up – they are so filled up with everything else”. The same participant said that the responsibility for tidying up is delegated and that sometimes, with the mothers’ acceptance, she gathers the children to tidy everything up together. The participant also recommended the inclusion of a shed in the garden for storage. See photo 7.

Participants from all three Cases said that the OEs have been used for meetings and counseling. A participant from Case 3 mentioned that she has held several meetings about the planning of common meals with women outside while their children were playing nearby. A partic-

ipant from Case 2 said that she has had counseling sessions in the courtyard, and she expressed the advantages in the following way: “When we have counseling with the mothers it can sometimes be hard to find someone to look after their children in the meantime. But if it is possible to create a space where you can be alone with the mother, and her children can play nearby then one can manage to talk a little with her”. See photo 8. On the other hand, another participant from Case 2 pointed out that using the garden for counseling can also be problematic: “If I’m in the middle of a deep conversation with a woman and she is maybe getting affected by the things we are talking about and we are outside – and maybe the woman starts to cry – then other people walking around next to us are always a disturbance”. As a solution to this, the participant suggested the inclusion of a glass pavilion where it would be possible to ensure the necessary privacy needed in a counseling session.

One participant from Case 3 said that staff often uses the garden by themselves. However they keep to a certain area not used by residents to ensure that the residents have their own area but also because staff need a place to have their lunch or to talk as co-workers. A participant from Case 1, where there is no specific staff area, mentioned that the problem with having staff meetings outside is that they are not private and they are therefore unable to have confidential conversations. Participants from Cases 1 and 2 also said that it can be difficult to take a break in the OEs, because they still have to be contactable if one of the residents needs them. At both cases, participants expressed the need for a specific staff area, which a participant from Case 2 put in the following way: “We are just asking for a little corner where it is possible to go outside to get some air after a tough conversation with a resident”. The participant recommended a screened area in which staff can keep to themselves.



Figure 7: The shed at Case 1 (Source: Authors).



Figure 8: The seating areas at Case 3 make outdoor meetings possible while allowing the adults to keep an eye on the children playing nearby (Source: Authors).

5. Room to play and relieve children’s feelings: This category concerns the potential of the OEs to allow children to express themselves in different ways than when they are indoors. The

category also concerns how conflicts can occur between children, and examples are given as to how this is handled by the staff and considered in the design.

A participant from Case 1 mentioned that some children spend a lot of their time indoors. Another participant from Case 2 said that for security reasons, certain children are not allowed to leave the CS at the beginning of their stay. She pointed out that if these children didn't have the possibility of going out into the courtyard, they could easily spend days on end indoors. A participant from Case 1 also pointed out that children find each other and connect in the garden by playing together, thereby establishing relationships, which they can continue indoors.

Another participant argued that it just would not work if the staff did not have the possibility of letting the children out every once in a while, which she explained in the following way: "Many of them feel restless or total despair – passivity. They are affected by the crisis their mothers are in which can be reflected in shouting, being noisy, rushing around and bicycling extremely fast – there is something that needs to come out of their system". In relation to looking after the children, a participant from Case 2 also stated: "It goes much more smoothly when we are outside". See photo 9.

The OE gives the children the opportunity to make noise and move around to a higher degree than when they are inside. It is a place for the children to relieve their feelings if they need it. Participants from all three cases mentioned how conflicts occur between children and how their aggression can sometimes be directed towards each other or elements in the OE. A participant from Case 2 described it in the following way: "Children who move into a CS have often been exposed to many different things. Maybe they have been used to a lot of arguments between the adults and maybe physical violence. They have a different set of limits – many of them are without limits. Often they do not have an awareness of others than themselves and it can be difficult to show empathy for others and to wait one's turn and things like that. The children can have a really hard time and therefore many of them need a lot of guidance and can benefit from having an adult close by". Besides the possibility for good contact between children and adults in the OE, child safety is also an aspect which is in focus at all three cases. In relation to this, a participant from Case 1 recommended the following: "One should in any case choose play equipment which isn't too dangerous. Nowadays you can find all sorts of exciting play equipment at nature playgrounds – also things that are a little dangerous. When I think of the children here at the CS some of them do not have those limits – they throw themselves out into anything and adults need to be around. This isn't always the case here – there is less surveillance because mothers do not always have the energy it requires". A participant from Case 2 also recommended that the play elements and toys be robust and added the following: "Sometimes we go outside and everything is messed up". Participants from Case 1 have had bad experiences with objects which can be used as weapons such as plastic swords, and they recommended avoiding such objects. See photo 10.

Participants from both Cases 1 and 2 discussed whether it would be responsible to keep domestic animals in the gardens due to the potential for creating conflicts but also because of concerns over the animal's well-being. At Case 1, the participants agreed that keeping animals would need a staff member with an interest to take responsibility. At Case 2, the participants argued that having domestic animals visit the CS once in a while would be a manageable solution for the staff. At both cases, the participants felt that children would benefit from the contact with domestic animals and that they would be able to learn something from this experience.



Figure 9: The play area at Case 2 (Source: Authors).



Photo 10: At Case 1, some children pulled out willow sticks to play with but unfortunately ended up hurting each other (Source: Authors)

DISCUSSION

Discussion of Results

The aim of this study was to find implications for the design of OEs at CSs for women and children survivors of domestic violence. Table 2 lists the implications for OE design derived from the five categories.

Table 2. Implications for design (Source: Authors).

Number and title of category	Implications for design
1: Protection against perpetrators of violence and helping residents to feel safe	<ul style="list-style-type: none"> ➤ Safe demarcation ➤ Screening off from surroundings ➤ Surveillance lighting ➤ Good visual contact between adults and children
2: Accessibility in the design, straightforward activities and staff guidance	<ul style="list-style-type: none"> ➤ Safe transition area from the inside to the outside ➤ Locations which provide an overview of the area ➤ Familiar facilities ➤ Opportunities for social activities ➤ Starting points for straightforward activities
3: Being outside and the positive distractions of nature	<ul style="list-style-type: none"> ➤ Many opportunities to experience nature
4: Space for all	<ul style="list-style-type: none"> ➤ Activities for adults as well as children of different ages ➤ Elements and layout which facilitate tidiness ➤ Possibility for gatherings with children playing nearby ➤ A secluded area for confidential conversations ➤ A secluded staff area

5: Room to play and relieve children's feelings	<ul style="list-style-type: none"> ➤ Play facilities with possibilities for physical activity ➤ Child safety including robust facilities that do not provoke dangerous behavior ➤ Controlled contact with domestic animals
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The existing studies on nature-based activities at OEs at CSs point to a few results concerning design including safety (safely enclosed space, visual contact with children, safe facilities) and accessibility (for children and wheelchair users) (Lee et al., 2008; Stuart, 2005; Keeley & Leigh, 1999; Pierce & Seals, 2006; Seals & Pierce, 2007). These results also emerged in this study. When concentrating on design, a three year long study of women's CSs with an architectural perspective generated several guidelines specifically for the OE (Verderber, 2001; Refuerzo & Verderber, 1993, 1990, 1989, 1988). Many of the results are similar to the design implications in this study and concern aspects relating to secure enclosure, screening, surveillance, indoor/outdoor connections, nature qualities, facilities for the different user groups including play areas and the need for a controllable OE with opportunities for both social and private use. The similarity in results between the existing studies and this study strengthens the design implications in question.

Since this study explored the staff's view on user needs and preferences with respect to outdoor design and activities, the design implications differ from existing results insofar as there is much more focus on how OEs should be designed in order for staff to use the OEs actively in their work, combining a focus on design and nature-based activities. Examples of this include starting points for straightforward activities, many opportunities for experiencing nature, elements and layout facilitating tidiness, possibilities for gatherings with children playing nearby, secluded areas for confidential conversations, secluded staff areas, opportunities for physical activity (as a means to control the children's energy levels) and controlled contact with domestic animals.

Discussion of Methodology

The repetitive interplay between the collection and analysis of data, which is a common approach in qualitative research, was to some degree limited in this study. This was due to the special characteristics of the CSs, which are closed settings, and the staff's workdays which are busy and unpredictable. Furthermore, the residents are in crisis and may be vulnerable to situations that can make them feel unsafe. These characteristics were taken into consideration when planning the data collection. The implications for the CSs were clearly communicated to the CS leaders and the data collection involved a certain number of fixed appointments. By conducting group interviews with staff members, it was possible to obtain information based on long-term experience with a great variety of user needs and preferences concerning the OEs. On average, the participants had worked at the CS for a period of six and a half years – with employments ranging from six months to sixteen years. Furthermore, the staff had the opportunity to explain and clarify the complex situation that the women and children find themselves in and were able to relate this to the CS functions from a professional perspective.

Implications for Practice and Future Research

This study can be seen as a contribution to the qualification and development of guidelines for the design of OEs at CSs with the perspective that they have the potential to strengthen CS functions by supporting the health and well-being of their users. The study provides insight into the complexity of the topic and shows the importance of the context in that each case is unique with its own setting and practice. The results and the summarized implications for design should be seen in direct relation to the context of the three cases. The findings can be applied to other contexts to the extent that the descriptions of the cases are taken into consideration with a reasoned judgment about transferability (Guba & Lincoln, 1982).

Research in this area is at an early stage and further qualitative and quantitative studies are needed. Firstly, there is a need to further investigate outdoor design and activities to accom-

moderate users' needs and preferences. Subsequently, the effects of specially designed OEs with nature-based activities to support health and well-being and thereby CS functions could be explored.

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TURKISH MODERN AND POSTMODERN HOUSES: Evaluative Differences Between Design and Non-Design Students

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Abstract

Perceived quality of building exteriors has been an important research area in the field of environmental psychology since the 1960's. Although a voluminous number of studies have analyzed the influence of personal factors and architectural style on building exterior evaluations, previous studies have overlooked the physical environmental features. This study examined the effects of (1) participants' major, (2) buildings' architectural style, and (3) physical environmental factors (roof type, window size, amount of open space, and level of complexity) on aesthetic evaluations of building exteriors. Twenty planning students, twenty architecture students, and twenty students from general university population evaluated the photographs of 18 high style modern and postmodern houses. Results showed that physical environmental factors including roof type, window size, amount of open space, the level of complexity have a stronger effect compared to participant's major. Informed by research, which objectively evaluates the effect of physical features on preference judgments of building exteriors, designers could improve the physical quality of neighborhoods and design better environments.

Keywords: Environmental aesthetics; building evaluation; architectural style; residential buildings; design education.

INTRODUCTION

Environmental aesthetic judgments may vary across time and individuals' biological, personal, social, cultural characteristics. Yet, research showed that evaluative responses to built environment have some commonalities across groups of people (Berlyne, 1972; Hershberger, 1969; Hubbard, 1996; Nasar, 1983; 1989; 1992a; 1992b; 1994; Stamps, 1995a; 1996; Stamps & Nasar, 1997; Wohlwill, 1976) and within a person (Wilson 1996).

Despite subjective characteristics of aesthetic judgments, empirical research into an understanding of potential factors affecting people's aesthetic evaluations clearly has major importance to designers, architects, planners and public. Among the broad range of issues that can be studied about environmental aesthetics, many studies have been devoted to the similarities and differences in aesthetic preferences of design professionals and 'lay' people (Brown & Gifford, 2001; Cubukcu & Akgul, 2007a; 2007b; Devlin 1990; Devlin & Nasar, 1989; Duffy et al., 1986; Gifford et al., 2000; Groat, 1982; 1994; Groat & Canter, 1979; Hershberger & Cass, 1974; Hubbard, 1996; Leff & Deutsch, 1973; Nasar, 1989; Nasar & Kang, 1989; 1999; Purcell, 1986; 1995; Purcell et al. 1998; Stamps, 1991; 1993; Vischer & Marcus, 1986; Wilson, 1996; Wilson & Canter, 1990). Although limited number of these studies found that design professionals and lay people share some meanings about the physical environment (e.g. Hubbard, 1996; Groat, 1994), most studies argue that design professionals think and evaluate the physical environment differently. Given that, this study aimed to investigate the influence of design education on aesthetic evaluations of house exteriors.

A number of studies have focused on architectural styles to understand why some buildings are more liked than the others (Hubbard, 1996; Nasar, 1989; Nasar & Kang, 1999; Wilson, 1996). For example, Hubbard (1996) focused on high-tech, vernacular, and postmodern commercial buildings, Wilson (1996) focused on modern, postmodern, high-tech, and neo-vernacular buildings, Nasar (1989) focused on Farm, Colonial, Salt box, Contemporary, Mediterranean, and Tudor style houses, and Nasar and Kang (1999) focused on house exteriors representing 15 architectural styles including Garrison Colonial, Farm, Greek Revival, Georgian, Spanish, French, Italianate, Tudor, Post Modern. Furthermore, some other studies categorized buildings into two classes; 'high' and 'popular' architectural styles (Devlin & Nasar, 1989; Nasar, 1989; Nasar & Kang, 1989; Purcell, 1995; Purcell et al. 1998; Stamps & Nasar, 1997). Buildings that were less typical, likely to be published in architectural magazines, and had more concrete surfaces, more flat roofs, more off centered windows and entrances were defined as 'high style buildings.' Buildings that were more typical, likely to be published in popular magazines, designed under the influence of developers were defined as 'popular style buildings' (Stamps & Nasar, 1997; Purcell et al. 1998). Such studies consistently showed that design professionals tended to like 'high' style buildings, whereas other professionals tended to like 'popular' ones. In light such studies, this study aimed to compare people's preference for "high style" modern and postmodern detached house exteriors. We selected these two styles (modern and postmodern styles), because these two styles are referred as contradictory styles in preference judgments. For example, Wilson (1996) found that if a person admires mostly postmodern buildings, she/he may like some buildings of neo-vernacular and high-tech styles but she/he dislike modern buildings. In addition, there are two contradictory views suggesting a difference between design professionals' and lay people's aesthetic evaluations of modern and postmodern styles. Advocates of post modern style argued that, modern style is solely admired by architects and post modern style is accessible, understandable and appreciable to both lay people and design professionals. On the other hand, critics of postmodern style argued that, lay people would dislike postmodern style, because postmodern style failed to achieve the goal of meeting the desires of the lay people (see Nasar, 1989 and Wilson, 1996 for an extensive review). These two contradictory views (advocates and critics of post modern style) suggest that postmodern and modern buildings could be evaluated differently by designers and non-designers.

Although the effects of personal factors and architectural styles on aesthetic judgments have received much research attention, the effects of physical environmental features on evaluative response have been overlooked. A limited number of studies considered the effect of physical environmental features, such as complexity, roof type, window size, and amount of open space (Brown & Gifford, 2001; Gifford et. al. 2000; Nasar, 1983; 1992; 1994) on aesthetic judgments. Nevertheless, understanding the effect of physical features on aesthetic evaluations have more practical value for designers (Nasar, 1992) and the effect of physical environment on evaluative response might be stronger than the effect of personal factors (Stamps, 1995b). Thus study aimed to investigate the influence physical environmental features on aesthetic judgments in addition to other factors of interest (architectural style and design education).

Note, studies on environmental aesthetics were often conducted in developed countries. Whether the findings of such studies apply to different cultures in developing countries remains to be seen. Having a target population of young students in Western Turkey, this study has a secondary aim as testing the generalization of the findings of environmental aesthetic studies conducted in developed countries to developing countries.

METHOD

Participants

60 undergraduate students at Dokuz Eylul University, Izmir, Turkey, volunteered to participate in the study. Students were from three different groups: 20 second-year planning students (12 males, 8 females, median age of 19 years old); 20 third and fourth year architecture students (8

males, 12 females, median age of 21 years old); and 20 students from general university population including the departments of medicine, education, engineering, and statistics (10 males, 10 females, median age of 18 years old). Planning and architecture students were informed about the study during a course, and the remaining during a dinner. As in previous studies (Purcell, 1995; Purcell & Nasar, 1992), planning and architecture students were assumed to represent professional designers and students from general university population were assumed to represent lay people (or non designers).

Stimuli

We used color photographs of buildings because previous studies showed that responses to color photographs accurately reflect on site response (Cubukcu, 2003; Stamps, 1990). 40 color-photographs of houses were selected from an architectural journal to represent high style examples which fall broadly within two architectural styles: modern and postmodern. All houses were from Turkey. Yet, it is unlikely that those houses could be recognized by the participants, as they are not iconic. They are private houses located in different cities. Two professional architects were asked to name the architectural style each building represents and rate the goodness of example (1 = very bad example of the style, 7 = very good example of the style). The buildings which were rated as a bad example of the style (received less than 5 as the mean score) were dropped from the sample. This process left 18 color photographs to be used in the study (Figure 1). All images included the whole building view and were cropped to eliminate or minimize neighboring buildings and land uses where possible.

Procedures

As in previous studies experts evaluated the physical features of the building exteriors. Two academicians teaching in the faculty of architecture categorized the roof type as 'gable', 'flat', 'round' or a combination of these categories; the size of window area, the amount of open space, and the level of complexity as 'low', 'moderate', or 'high'.

Researchers tended to focus on two components: pleasantness and interest to study aesthetic response, they also looked at desirability as a place to live and friendliness (Brown & Gifford, 2001; Nasar, 1983; 1989; 1994; Nasar & Kang 1999). However, studies using these four measures simultaneously have been scarce. Thus, the present study used these four measures of evaluative response (pleasantness, desirability, interest and friendliness) simultaneously. Sixty undergraduate students rated color photographs of 16 buildings on pleasantness (1 = very pleasant, 7 = very unpleasant), desirability (as a place to live in) (1 = very undesirable, 7 = very desirable), interest (1 = very boring, 7 = very interesting), and friendliness (1 = very friendly, 7 = very unfriendly). Note, the participants rated only 16 of 18 buildings because the survey forms included 16 questions instead of 18 to fit to one page. This is a methodological shortcoming of this study. Future studies should control the number of pictures each participant would see in relation to total number of stimuli.

Participants took part in the study in groups of four to six people. They were sat at a table facing a 17-inch LCD monitor and the investigator checked to make sure each participant could see the screen adequately. Throughout the test, the participants were not allowed to interact with each other or with the instructor. The participants were told to give their honest opinion, as there were no right or wrong answers and were reminded to evaluate the quality of the building exterior, but not the picture quality. Each building was presented for 15 seconds and the participants were asked to evaluate each building via four seven-point adjective scales: pleasantness, desirability, interest, and friendliness. Participants were allowed to pick the order of the scales they wanted. Buildings were presented in one of the four different simulation orders. Thus, every building appeared in an early and late position at least once.



Figure 1: Participants evaluated 18 house exteriors representing high style examples of modern and postmodern buildings (Source: personal archive of second author).

RESULTS

The effects of participant's major, physical characteristics of the building (the level of complexity, roof type, the amount of open space, and the size of window area), and architectural style on judgments of pleasantness, desirability, friendliness, and interest were analyzed. A variable to identify the responses for each participant was included in the analysis to test the effect of individual differences (Stamps & Nasar, 1997). Tables 1 through 4 show the effect of each personal and physical environmental factor on evaluative judgments after accounting for others. For each evaluative response, the effect of physical environmental features achieved significance, and the effect of the individual differences was found to be insignificant.

For pleasantness, physical characteristics of the building (complexity, roof type, amount of open space, and window area), and the interaction variables between major and complexity, major and roof type, major and open space produced a significant effect. However, the main and interaction effect of major and architectural style did not achieve significance. While moderate complexity of the façade and moderate amount of open space (balconies) produced higher pleasantness for planning students and students from general university population; higher complexity and higher amount of open space produced higher pleasantness for architecture students (Figure 2). As the amount of window area increases, the pleasantness increased for all groups. ‘Gable’ roof type was the most liked roof type for all groups. However, ‘round’ roof type was more liked by the students from general university population than architecture and planning students. When a building has ‘flat, gable and round’ roof types simultaneously it received positive scores from planning students and other students; but negative scores from architecture students.

Table 1. Analysis of Variance testing the simultaneous effect of personal and physical environmental characteristics on “pleasantness” (Source: Authors).

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Participant ID	2.487	1	2.487	1.202	.273
Major (architecture, planning, general)	3.827	2	1.913	.925	.397
Complexity (low, moderate, high)	88.585	2	44.292	21.404	.000
Roof Type (gable, flat, round, flat&gable, flat&round, flat&gable&round)	51.104	5	10.221	4.939	.000
Amount of Open Space (low, moderate, high)	28.677	3	9.559	4.619	.003
Amount of Window Area (low, moderate, high)	66.784	2	33.392	16.136	.000
Architectural Style (Modern, Postmodern)	4.724	1	4.724	2.283	.131
Major X Complexity	21.993	4	5.498	2.657	.032
Major X Roof Type	92.891	10	9.289	4.489	.000
Major X Open Space	23.772	6	3.962	1.915	.076
Major X Window Area	5.342	4	1.335	.645	.630
Major X Architectural Style	2.835	2	1.417	.685	.504
Error	1897.603	917	2.069		

For desirability, Table 2 shows that physical characteristics of the building (complexity, roof type, amount of open space, and window area) and the interaction between major and roof type produced a significant effect. Although the main effect of architectural style achieved significance, the interaction effect between major and the architectural style did not. Figure 3 shows that the mean scores of desirability ratings for different levels of each factor were parallel to that of pleasantness ratings. Moderate complexity, larger window area, moderate or high amounts of open space were the most desired physical features for all groups. ‘Gable’ and ‘round’ roof types received higher scores from general university student population than architecture and planning students. When a building has both ‘flat, gable and round’ roof types, it received positive scores from general university student population, average scores from planning students and negative scores from architecture students. Modern style was more desired than the postmodern style.

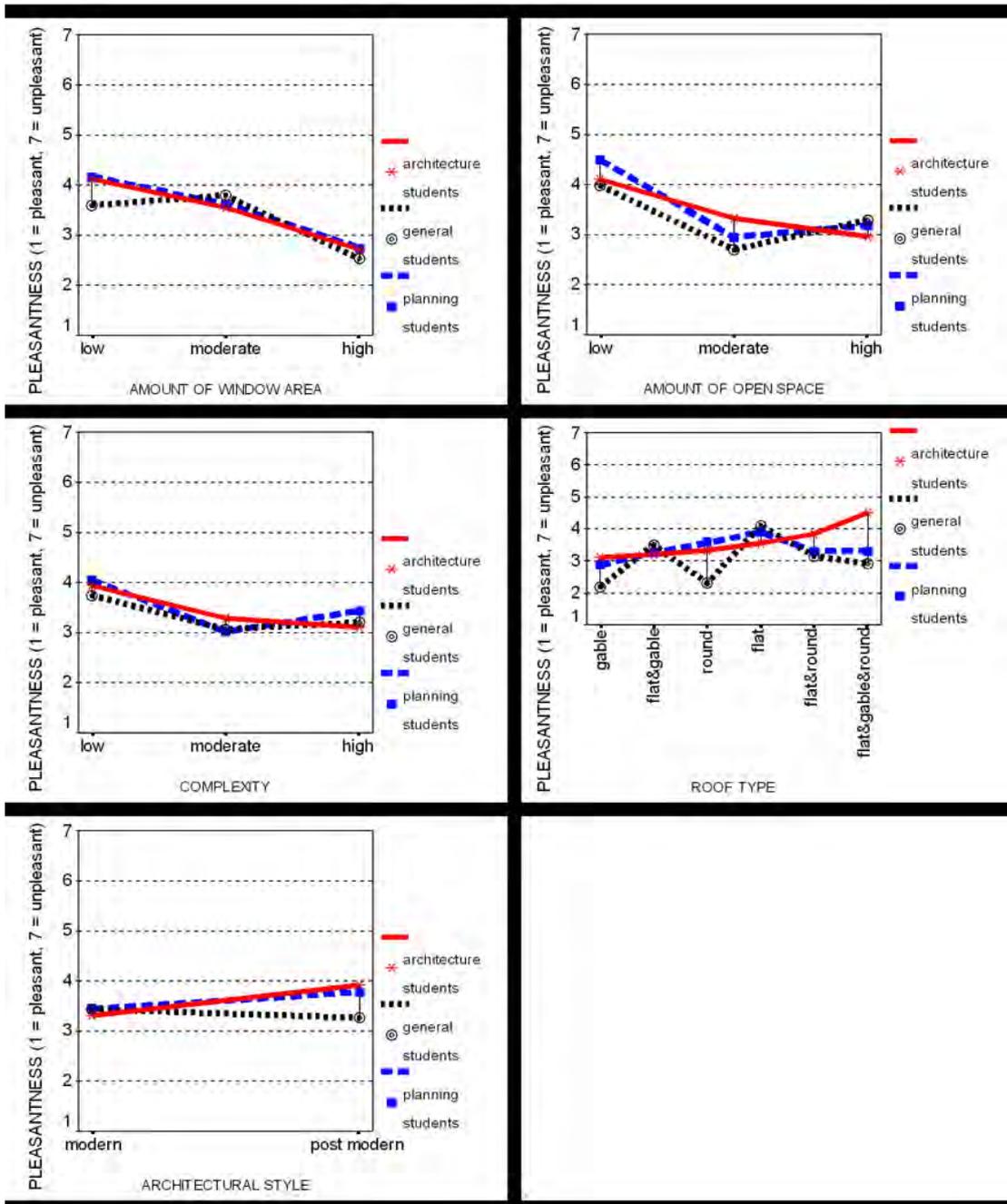


Figure 2: The effect of participant's major, façade complexity, roof type, amount of open space and window area on pleasantness judgments (Source: Authors).

Table 2. Analysis of Variance testing the simultaneous effect of personal and physical environmental characteristics on “desire to live” (Source: Authors).

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Participant ID	11.557	1	11.557	3.930	.048
Major (architecture, planning, general)	7.575	2	3.787	1.288	.276
Complexity (low, moderate, high)	96.986	2	48.493	16.489	.000
Roof Type (gable, flat, round, flat&gable, flat&round, flat&gable&round)	83.559	5	16.712	5.683	.000
Amount of Open Space (low, moderate, high)	46.833	3	15.611	5.308	.001
Amount of Window Area (low, moderate, high)	106.558	2	53.279	18.117	.000
Architectural Style (Modern, Postmodern)	15.223	1	15.223	5.176	.023
Major X Complexity	9.819	4	2.455	.835	.503
Major X Roof Type	61.762	10	6.176	2.100	.022
Major X Open Space	17.369	6	2.895	.984	.434
Major X Window Area	8.766	4	2.191	.745	.561
Major X Architectural Style	1.541	2	.770	.262	.770
Error	2696.798	917	2.941		

Table 3. Analysis of Variance testing the simultaneous effect of personal and physical environmental characteristics on “friendliness” (Source: Authors).

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Participant ID	1.460	1	1.460	.680	.410
Major (architecture, planning, general)	6.625	2	3.313	1.544	.214
Complexity (low, moderate, high)	83.914	2	41.957	19.551	.000
Roof Type (gable, flat, round, flat&gable, flat&round, flat&gable&round)	81.896	5	16.379	7.632	.000
Amount of Open Space (low, moderate, high)	37.295	3	12.432	5.793	.001
Amount of Window Area (low, moderate, high)	91.143	2	45.571	21.236	.000
Architectural Style (Modern, Postmodern)	16.124	1	16.124	7.513	.006
Major X Complexity	10.923	4	2.731	1.272	.279
Major X Roof Type	38.183	10	3.818	1.779	.060
Major X Open Space	20.035	6	3.339	1.556	.157
Major X Window Area	3.164	4	.791	.369	.831
Major X Architectural Style	1.776	2	.888	.414	.661
Error	1967.882	917	2.146		

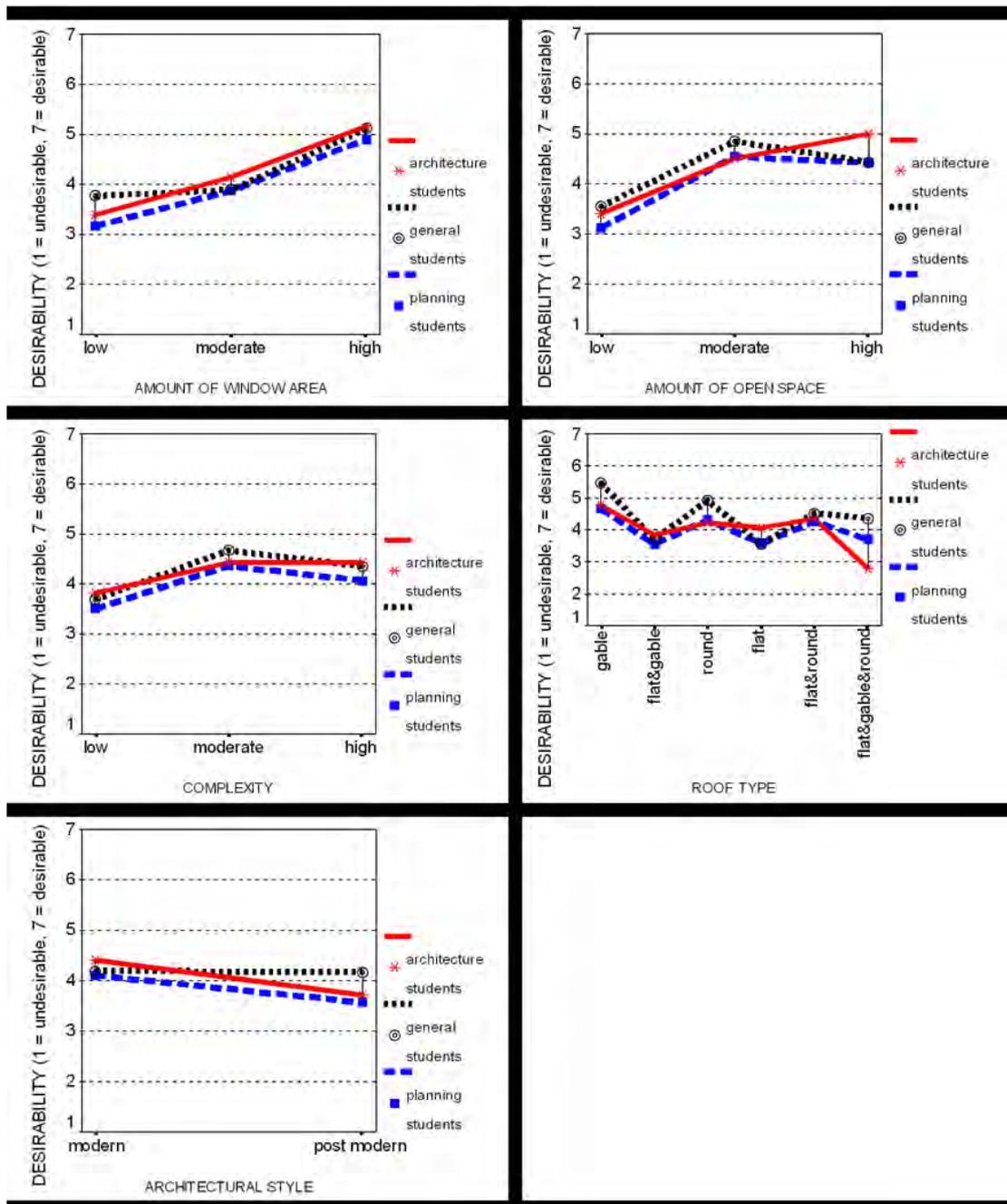


Figure 3: The effect of participant's major, façade complexity, roof type, amount of open space and window area on desirability (Source: Authors).

For friendliness, Table 3 shows that physical characteristics of the building (complexity, roof type, amount of open space, and window area) produced a significant effect. The main effect of architectural style also achieved significance. However, the main effect of major, the interaction effect of major and architectural style, and major and other physical factors did not achieve significance. Figure 4 shows that, for all groups, moderate complexity, larger window area, and moderate or high amounts of open space were judged to be friendlier than low or high complexity, smaller window area and open space. 'Gable', 'round' and 'flat and round' roof types were found to be friendlier than other roof types. Modern style was evaluated as friendlier than postmodern style.

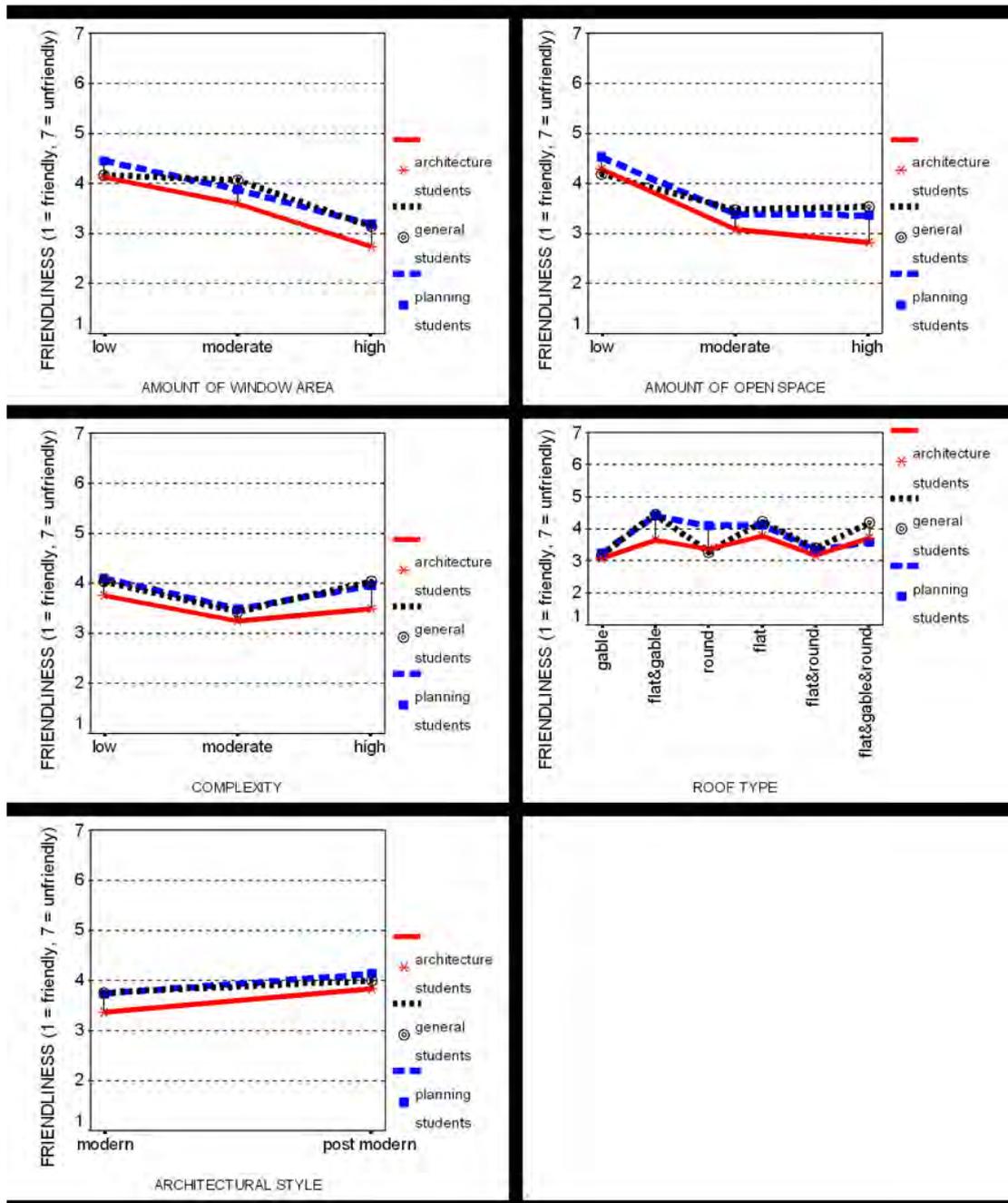


Figure 4: The effect of participant's major, façade complexity, roof type, amount of open space and size of window area on friendliness judgments (Source: Authors).

For interest, Table 4 shows that physical characteristics of the building (complexity, roof type, amount of open space, and window area) and the interaction between major and roof type produced a significant effect. However, the main effect of major, and architectural style, the interaction effect of major and architectural style, and major and other physical factors did not achieve significance. Figure 5 shows that, for all groups, higher complexity, larger window area, and moderate or high amounts of open space were judged to be more interesting than low or high complexity, smaller window area and open space. 'Gable' and 'flat and gable' roof types

were found to be more interesting than other roof types. While ‘round’ and ‘flat, gable and round’ roof types were judged to be more interesting for general university student population than architecture and planning students.

Table 4. Analysis of Variance testing the simultaneous effect of personal and physical environmental characteristics on “interest” (Source: Authors).

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Participant ID	.595	1	.595	.260	.610
Major (architecture, planning, general)	1.984	2	.992	.434	.648
Complexity (low, moderate, high)	117.482	2	58.741	25.711	.000
Roof Type (gable, flat, round, flat&gable, flat&round, flat&gable&round)	128.655	5	25.731	11.263	.000
Amount of Open Space (low, moderate, high)	62.867	3	20.956	9.172	.000
Amount of Window Area (low, moderate, high)	66.241	2	33.120	14.497	.000
Architectural Style (Modern, Postmodern)	2.871	1	2.871	1.257	.263
Major X Complexity	20.343	4	5.086	2.226	.064
Major X Roof Type	44.745	10	4.474	1.959	.035
Major X Open Space	11.369	6	1.895	.829	.547
Major X Window Area	5.390	4	1.348	.590	.670
Major X Architectural Style	3.079	2	1.539	.674	.510
Error	2095.015	917	2.285		

In brief, when aggregate values are considered design and non design students evaluated building exteriors similarly. However when their evaluations compared by physical characteristics results showed that window area and architectural style influenced both design and non design students evaluations similarly; however, complexity, roof type, and open space influenced their evaluations partially differently. Table 5 shows the summary of the results on the influence of physical environmental factors on the design and non design students’ evaluations. While moderate complexity and moderate amount of open space produced higher pleasantness for planning students and students from general university population; higher complexity and higher amount of open space produced higher pleasantness for architecture students. Round roof type was found to be more pleasant, more desired and more interesting by the students from general university population than architecture and planning students. When a building has ‘flat, gable and round’ roof types simultaneously planning students and other students rated the building as moderately pleasant; moderately desirable, and moderately interesting; however, architecture students rated it as unpleasant, undesirable and boring.

Table 5. The influence of physical environmental factors on the design and non design students' evaluations (Source: Authors).

Physical Environmental Feature	Pleasantness	Desire to live	Friendliness	Interest
Complexity	SE	InSE	InSE	SE
Roof Type	SE	SE	SE	SE
Amount of Open Space	SE	InSE	InSE	InSE
Amount of Window Area	InSE	InSE	InSE	InSE
Architectural Style	InSE	InSE	InSE	InSE

IS : Insignificant Effect, SE: Significant Effect

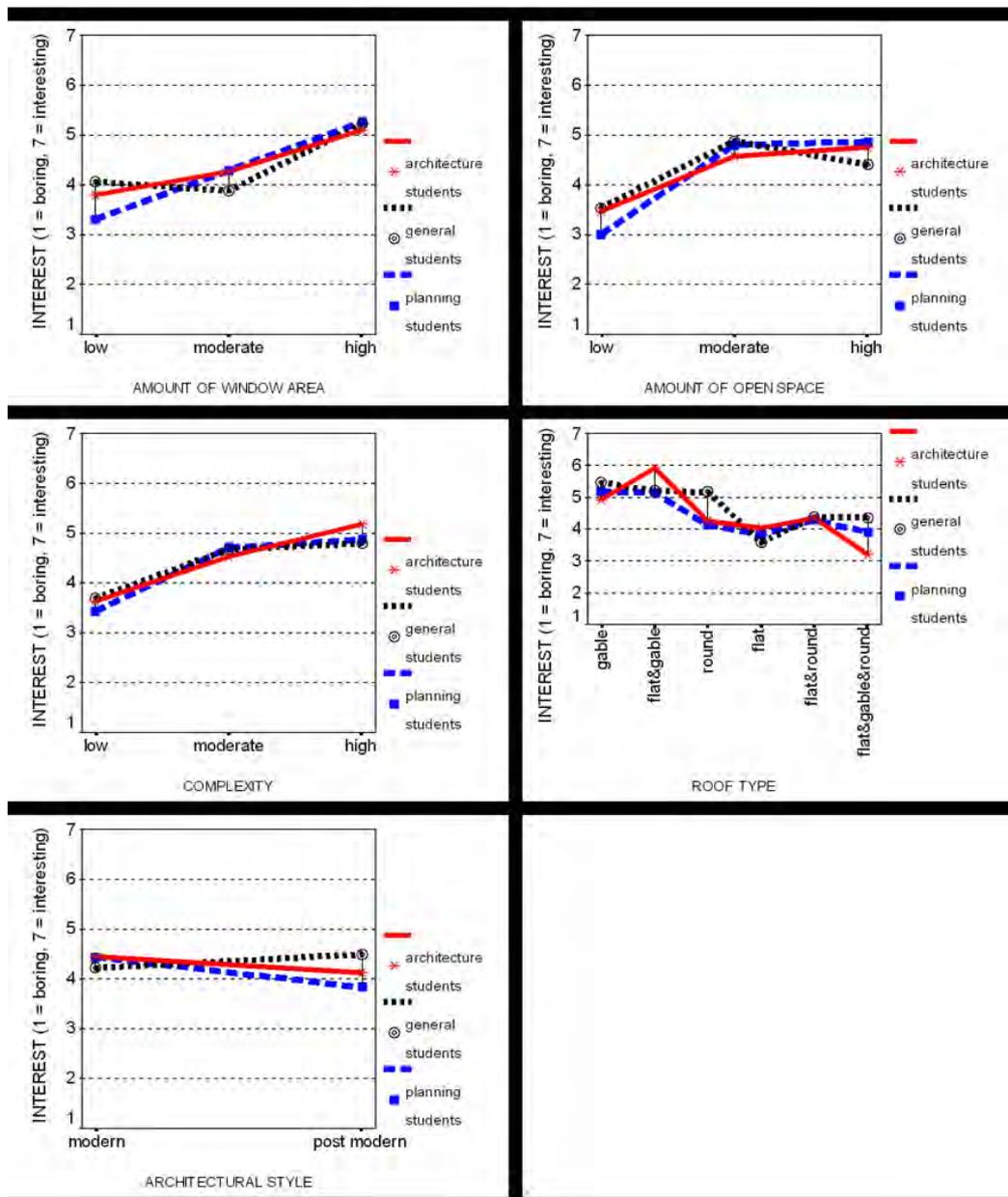


Figure 4: The effect of participant's major, façade complexity, roof type, amount of open space and size of window area on interest (Source: Authors).

CONCLUDING DISCUSSION

This study aimed to contribute to the scientific knowledge on environmental aesthetics by investigating the simultaneous effects of personal characteristics and physical environmental factors on the evaluations of high style examples of modern and postmodern house exteriors. Supporting findings of Stamps (1995b), the results suggested that physical environmental factors have a stronger effect than personal characteristics and architectural styles. In parallel to previous studies (Nasar, 1983; 1992; 1994; Brown & Gifford, 2001; Gifford et. al. 2000), people tend to prefer moderate complexity, larger window area, and higher amounts of open space. For the roof type people preferred gable roof type over the other roof types. A preference-for-prototypes model may account for such a finding. Studies (Whitfield & Slatter, 1979; Whitfield 1983) suggested that typicality positively correlates with preference. Although there is no empirical study showing whether gable roof type fits to mental representation of a house more than the round and flat roof types, anecdotal evidence suggest that gable roof type is more typical for a house than the round and flat roof types. Thus, for a house exterior evaluation, finding gable roof as more liked than other roof types might not a surprise.

For the architectural style, the results provide partial support to previous research that report significant effect of architecture styles on preference judgments. Participants tended to differentiate modern and postmodern styles for ratings of friendliness and desire. Modern style was found to be friendlier and more desirable as a place to live. However, for pleasantness and interest judgments, there was no significant effect of architectural style. A plausible explanation is that only high style examples of modern and postmodern houses were used in the study. Future studies may compare high and popular style examples.

Although a number of studies found a significant interaction effect of major (design education) and architectural style on preference judgments (Devlin & Nasar, 1989; Hubbard, 1996; Nasar, 1989; Nasar & Kang, 1989; 1999; Purcell, 1995; Purcell et al. 1998; Stamps & Nasar, 1997; Wilson, 1996), this study failed to find such an effect. Two explanations are plausible. First, perhaps design education has an effect on evaluations of high and popular styles, not high style examples of specific architectural styles, such as modern and postmodern. Second, previous studies overlooked the effect of physical environmental factors and solely evaluate the effect of architectural style. Recall, however, this study analyzed the effect of physical environmental factors and architectural style simultaneously. Perhaps, the effect of physical environmental factors surpassed the significant effect of architectural style. A useful extension of this study may examine the effect of popular and high style examples of various architectural styles (e.g. vernacular, high-tech) simultaneously with other physical features.

The methodological limitations of this study should be addressed to bring forth some interesting future research areas. There were eight limitations related to the experimental set up and the characteristics of the subject group. First, respondents' familiarity with each building was not measured in this study. Future studies should measure respondents' level of familiarity with each building to see whether level of familiarity influences participants' responses. Second, in this study the sample size was limited (sixty students) and various physical features are represented with limited number of buildings. Future studies may extend the sample size and the number of buildings to investigate various levels of different physical environmental factors. Third, the participants were asked to evaluate house exteriors. However, the effect of physical characteristics of a building may differ for different building types. For example amount of window size might be important in evaluating houses but not important in evaluating a museum. Future studies may use different building types, such as office buildings, campus buildings, airport buildings, commercial buildings, hotel buildings, hospital buildings etc. Fourth, this study investigated single building evaluations. However, understanding people's evaluations for a group of houses, or for a street, is more important for urban designers and city planners. A good direction for future research is to examine the physical features that may effect evaluations for a group of buildings. Fifth, this study focused on a limited number of physical features. However, emotional response to other physical features such as facade color or material may also affect

evaluative response. Subsequent work may test people's preference for physical features, which were not tested in this study. Sixth, this study assumed colored pictures are good representatives of real settings based on the findings of previous studies of environmental psychology (Cubukcu, 2003; Stamps, 1990). However movement in the physical environment may be a determinant of evaluative responses. Future studies may replicate this study using videos of real settings or virtual environments. Seventh, the target population of this study was students in Western Turkey. Whether the results of the present study will apply to different populations remains to be seen. Finally, this study used students as representatives of professional designers and lay people, more work needs to be done to test the generalization of the results to various groups, such as professional designers and lay people as well.

As a concluding remark, the physical features of a building exterior may affect people's aesthetic judgments and behavior. Some physical features may produce a desire to own and live. Yet little is known about the effect of specific physical features on people's evaluations for a house exterior. More research such as this one is on call.

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THE IMPACT OF THE SPATIAL QUALITIES OF THE WORKPLACE ON ARCHITECTS' JOB SATISFACTION¹

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Abstract

Undoubtedly Job satisfaction among architects is necessary to create a healthy work environment and in turn supports the creation of meaningful built environments. This paper examines the phenomenon of job satisfaction amongst architects and the factors that significantly influence it in the context of Belfast, Northern Ireland, UK. A descriptive survey in the form of a questionnaire and structured interviews was utilized to form a comprehensive methodology for investigation, which was conducted in 2009. In total, three hundred questionnaires were administered, addressing architects working in both private and public sectors, while twelve interviews were conducted, with six for each sector. Preliminary findings indicate that job satisfaction has been rated to be relatively high amongst Belfast architects. Factors identified as particularly significant include control over thermal conditions, acoustics, views, lighting, and ergonomics.

Keywords: Job satisfaction; architects; professional practice; spatial qualities; workplace.

INTRODUCTION

It is widely acknowledged that architects work long and unsociable hours. They adapt their lives to routines mandated by the nature of their work. Such overtime accounts for the very high competition that is present amongst architects and firms. According to the Trade Union Congress-TUC (2006), architects and planners completed 39.8% of unpaid overtime in 2005. Although UK architects work the most overtime across Europe, they remain less productive than those of other countries (Anon, 2005). This leads to the question of whether such unpaid overtime is in fact necessary. Ideally, a work environment is organized in a way such that employees would be the most productive in the least possible timeframe. Excessive overtime holds many disadvantages including threatening employees' health.

Typically, architects spend up to 50 hours per week in their work environment, inevitably impacting their lifestyles. While a workplace may have positive effects on the architect, it may also have negative impacts resulting from poor design, which may lead to stress, job dissatisfaction, absenteeism and high turnover. Based on a survey conducted by Saratoga Institute (Leigh, 2005), reasons why people leave their jobs included limited career opportunities (16%), work hours (6%), and poor working conditions (9%). The study revealed that the nature of the organization and the environment in which the employee works are crucial for achieving job satisfaction.

Because of the vast demographic and cultural changes, Northern Ireland now hosts a culturally diverse workforce. People's attitudes towards their workplace vary according to their

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unique personal experiences and backgrounds (Haynes, 2008). Moreover, advanced information technology is constantly developing and thus poses a challenge for architects and planners (Worthington, 2005). As such, emphasis is placed on the importance of change and the need for companies and organizations to develop responsive environments amenable to productivity and satisfaction as they relate to the spatial quality of the workplace.

This paper examines the job satisfaction phenomenon amongst architects and the factors that significantly influence it. It provides insights into potential approaches that could be used to raise the level of job satisfaction. It explores the impact of the spatial qualities of the workplace on architects' job satisfaction in the context of Belfast, Northern Ireland, UK. Using a descriptive survey in the form of a questionnaire and structured interviews a comprehensive methodology is adopted and implemented. Three hundred questionnaires in total were administered: two hundred to the public sector and one hundred to the private sector, while twelve interviews were conducted, with six for each sector. Initial findings indicate that job satisfaction has been rated to be relatively high amongst Belfast architects. Variables and factors identified as particularly significant include control over thermal conditions, acoustics, views, lighting and ergonomics. These factors foster the argument that job satisfaction is strongly impacted by a number of indoor environmental qualities, and in turn, organizations should do more to invigorate job satisfaction in order to maintain architects satisfied and thus remain a more productive workforce.

UNDERSTANDING JOB SATISFACTION

Job satisfaction has been heavily discussed in contemporary literature. Locke (1976:105) defines it as "... a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences." As such, the emotional experience, which varies from an individual to another, is highly influential towards job satisfaction. Along the same line of thought, Nobile (2003:3) links job satisfaction to positive feelings that an employee has towards his or her workplace. Another view, (Miner, 1992:10) argues that "... it seems desirable... to treat job satisfaction as generally equivalent to job qualities." Furnham (1997:305) states that job dissatisfaction is directly linked to having negative feelings about the work environment. In essence, the environment is the most important factor to consider. Therefore, job dissatisfaction would be absent in stress free environments.

Among the theories developed to explain job satisfaction, Herzberg (1959) proposes a "two factor theory" which emphasizes the independence of job satisfaction from job dissatisfaction. This is because the causes of job satisfaction are completely different from the causes of job dissatisfaction. Through his studies, Herzberg concluded that "hygiene" and "motivators" were important variables involved in determining job satisfaction. Job satisfaction is directly related and positively correlated to job performance. While some believe that job satisfaction leads to high job performance, others controversially believe that high job performance leads to job satisfaction. The latter perspective is understood to have a very simplistic view on the relationship between job satisfaction and job performance, and must therefore be reconsidered (Judge et al, 2001).

Previous studies have established that work is the major cause of stress in people's lives, which inevitably has a negative impact on employees' productivity. Furthermore, absenteeism can significantly hinder an organization from productively carrying out its functions. Based on 811 received survey questionnaires out of 7660 sent to UK based organizations, the Chartered Institute of Personnel Department-CIPD' Absence Management Survey Report (2008) found that the average of the public sector absence was higher than that of the private sector 9.8 days per year per employee and 7.2 days per year per employee respectively. Stress was found to be the main cause of absenteeism, whether short term or long term.

Furthermore, the Confederation of British Industry and AXA (2007) have found that the UK economy has lost £13.4 billion as a result of staff absenteeism. Absences of 20 days or longer account for approximately 40 % of total time lost. In 2006, the average days of employee absenteeism were seven days for sick leave. In that year alone, businesses in the UK lost a total

of 175 million working days. Both public and private sectors continue to witness appalling rates of absenteeism.

PREDICTORS OF JOB SATISFACTION IN RELATION TO SPATIAL QUALITIES

Different professions exhibit different predictors of employee job satisfaction. This is because different professions deal with different challenges and stressors, all of which impact job satisfaction. Employees of the construction industry are seemingly challenged by numerous stressors, often leading to poor health conditions. Long working hours (Sang et al, 2007), heavy workload (Haynes and Love, 2004), job security (Loosemore et al, 2003; Sang et al, 2007), and poor professional merit (Lingard, 2003) are among the stressors faced by employees of the construction industry. Architects, in particular, face additional stressors including stressful education (Anthony, 1978; Salama, 1995), lacking opportunity to use and showcase talent, and being responsible for work tasks out of their capability. Evidence has shown that architects take on more roles than they ought to, roles that would otherwise be carried out by a multidisciplinary team. Three types of predictors can be classified to understand the impact of the spatial qualities of the workplace on job satisfaction.

A) Office Types and Typology

As part of their workplace, the employees' choice of office type significantly affects their satisfaction and productivity (Aronoff et al, 1995; Becker, 1995). There are five office types, including cell, combi, flexi, open plan, and shared room offices. Recently, open plan offices have become more popular. In an extensive study carried out by Pascoe et al (2002:1245), a mere 45% of employees indicated that they would be productive in an open plan office although open plan offices are specifically designed to encourage communication (Figure 1). While open plan offices are widespread in the UK, they are not the most preferred. The work of Brennan et al (2002) revealed that contrary to popular understanding, the open plan office do not in fact encourage communication among coworkers because it actually hinders confidential conversations.

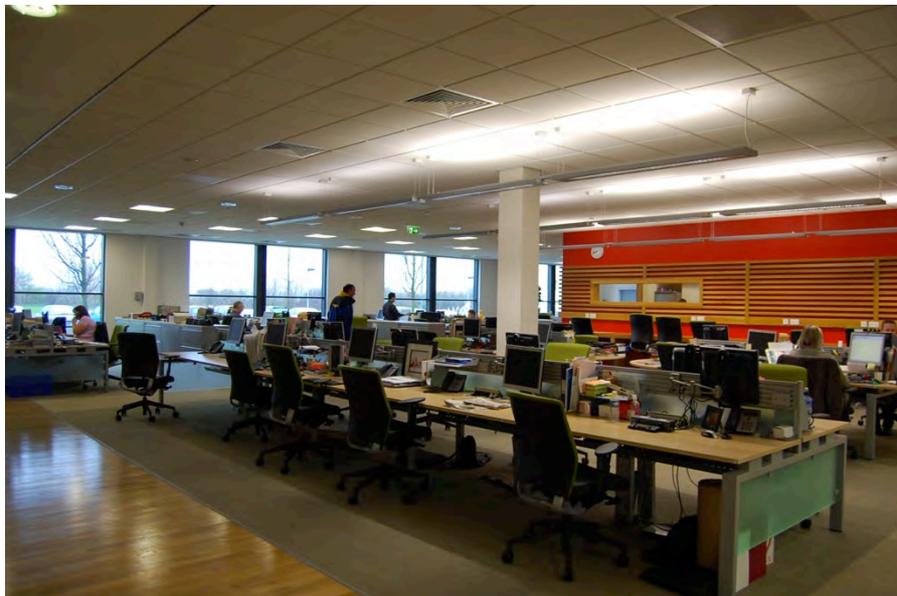


Figure 1: An example of an open plan office (Source: Authors).

Clearly, the office type affects the spatial qualities of a workplace. Business and work tasks must be considered when examining the relationship between the office type and the professional using it. Notably, architects' jobs are not merely limited to the workplace. Research shows that

the nature of work tasks often contradict the character of the workplace. BOSTI Associates (Brill et al, 2001) observed 10,000 employees in 80 business units and found that employees spend 75% of their work time within their own workspace, while the remaining 25% of their time is spent outside of their workspace. Such a study established that workplace qualities are most influential on employee performance and include support for individual work, support for teamwork, as well as support for the individual within the team. It has been suggested to give employees the option to choose their most convenient workplaces.

B) The Office Environment

The spatial qualities of the office environment involves several factors that includes acoustics, day-lighting, views, thermal comfort, air quality, and space ergonomics.

- **Sound and Acoustics:** There are several factors that can determine if a distraction free workplace is present (Haynes, 2008). Among these factors are those influencing surrounding sounds, which include geographical location, acoustic insulation, and the fabric of the building. Distraction can also be internal and come from within the office.
- **Daylighting and Views:** Daylight and views are advantageous in the workplace (Figure 2). Sims (2002) found a direct positive correlation between satisfaction about a view and productivity. An unsatisfactory view contributes to the lack of a sense of orientation, and the lack of a lively spirit. Being exposed to direct sunlight and having access to viewing outdoor activities are necessary to avoid such negative consequences.

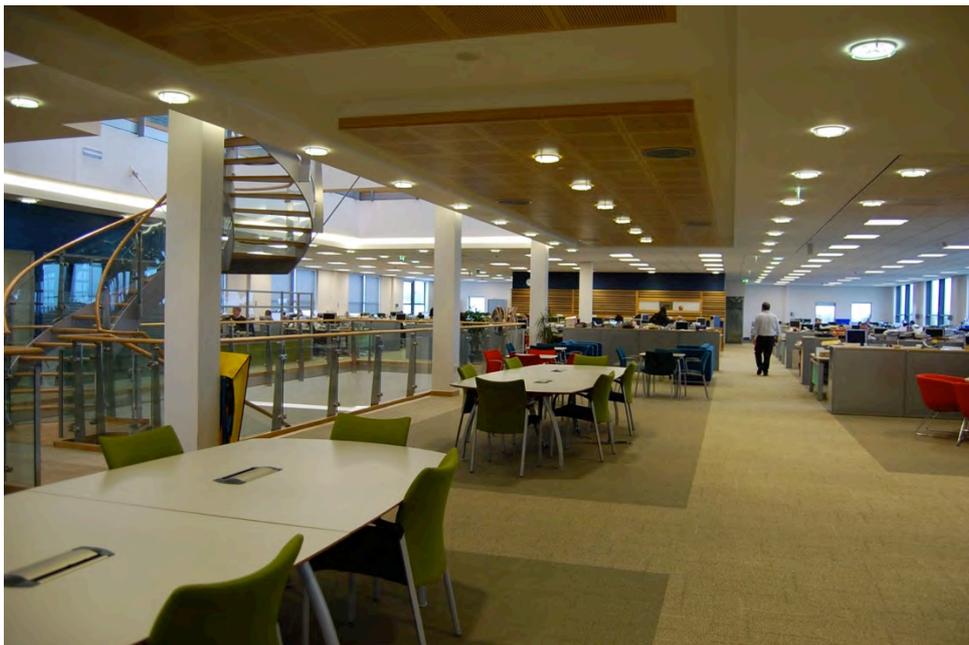


Figure 2: Daylighting and views as important factors determining the quality of the office environment (Source: Authors).

- **Thermal Comfort:** HVAC systems that are controlled individually are beneficial since they allow employees to adjust the temperature in order to feel most comfortable. Yet, organizations avoid investing in such systems since the initial costs of HVAC systems increase in separate enclosed workspaces (Haines, 1988). Several studies have investigated office workers' differences in the perception of naturally ventilated and air conditioned workspaces. Results always indicate that natural ventilation, as opposed to air conditioning, results in increased satisfaction of the occupants' thermal environment.

Thermal comfort is influenced by lighting, draughts, temperature variations, acoustics, glare, olfactory quality, perceived control of thermal environment, as well as the quality of the air (stale or dry).

- Air Quality: Air quality has been found to have a direct effect on the productivity and performance of an employee and thus job satisfaction. According to Wargocki et al (2000), staff morale and productivity could be enhanced with the increase of ventilation rates twice the minimum allowance of a typical ventilation rate.
- Space Ergonomics: Workstations must be accompanied with sufficient space surrounding them. A major mistake done by some organizations is increasingly minimizing additional space in an attempt to maximize the use of space. Space ergonomics have a great influence on employee absenteeism. According to the Chartered Institute of Personnel and Development (CIPD) (2008), back pain is the fourth reason for short absence of non-manual workers.

C) Social Spaces in the Workplace

Social spaces in an office environment, also known as break out spaces, are necessary for satisfying the psychological and functional needs of employees (Duffy, 2003; Zelinsky, 1996). Office environments generally have various spaces, each supporting a different set of work tasks (Laing, 1998). Therefore, the function of each space varies. For instance, social space may be allotted for lunchtime, or informal meetings with co-workers or clients (Figure 3). To be able to accommodate the most people and widest variety of functions, workspaces require appropriate space programming (Salama and Adams, 2003). For instance, if there is no space for lunchtime, employees are most likely to find this space outside the office, perhaps even outside the building. This may cause employees to return to their job tasks late, thus decreasing their productivity.



Figure 3: Breakout spaces for informal meeting with co-workers and clients
(Source: Authors).

Because interaction and communication amongst co-workers is important for a healthy work environment, interactive spaces must be available. These spaces would promote team bonding, sharing of experiences, and the hierarchical transfer of organizational knowledge. They would

also allow for flexible work environments where employees would be able to determine the type of workspace most suitable from them. Providing the necessary spaces is a challenge for organizations as space is always limited. This has been observed to be most common within the public sector (Hardy et al, 2008). To compensate for the limited space availability, public sector organizations have focused on how to efficiently use the limited space available. While management and property costs remain a constraint, organizations are putting effort into efficiently and effectively using the available space and improving the overall quality of the work environment.

One of the important goals of organizations is to effectively manage and plan workspaces (Marmot, et al, 2000; Adams and Salama, 2003; Salama 2004).. In so doing, organizational needs must be considered in order to identify the most convenient space design types. One method to determine the needs of an organization is to conduct a space analysis that assesses employees' behaviors within the space and the way in which they carry out their routine tasks. Moreover, participatory design and planning techniques utilized in organizational re-structuring is an important mechanism that reveals users needs as they relate to actual workspace and the associated social, gathering, and interactional spaces.

METHODOLOGY

Both quantitative and qualitative methods were used to assess architects' job satisfaction in the workplace. Sampling was used to identify the organizations or offices to be studied. In both the private and public sectors, self administered questionnaires and interviews were used to examine job satisfaction and the factors and variables that directly affect this phenomenon.

Survey Questionnaires

In addition to the typical questions related to background information and employment history, by utilizing Likert Scale architects were asked to react to aspects that pertain to the office environment, space ergonomics, the availability of support facilities, gallery areas and social spaces. Through open-ended questions that followed most of the Likert Scale questions, architects were given the opportunity to comment, offer feedback, or give reasons for their choices. Stratified sampling was used to collect data and architects from both public and private sectors were surveyed. In total, 300 questionnaires were administered to architects working in Belfast. 100 questionnaires were sent to architects working in the private sector and 200 were sent to architects working in the public sector.

Selection strategies for conducting the survey questionnaire: The size of the organization or office was used to determine the office where questionnaires will be administered. The sample size was determined by the size of the office. For the purpose of sampling, private sector offices were divided into three categories, including small sized offices (10-15 employees), medium sized offices (15-30 employees), and large sized offices (more than 30 employees). All organizations of the private sector received an equal number of 100 questionnaires. Random selection was used in the public sector since most government organizations are large sized.

Testing the questionnaire: Both closed and open ended questions were used in the questionnaire, which was piloted in order to examine its clarity. Initially, the questionnaire was administered to a small group of professionals that exhibit qualities similar to those of the intended respondents. This group provided comments and suggestions. The format of the questionnaire was also reviewed by an independent observer. Furthermore, a test re-test was administered where the questionnaire was administered on two different occasions and the results were compared.

Interviews

Stratified sampling strategies were also used as a selection strategy for interviews. The goal was to conduct equal numbers of structured interviews in both public and private sectors. The size of the organization was used to select the sample. In the private sector, an equal number of

interviews were conducted in the three categories of offices. Twelve interviews were conducted, with six interviews for each sector. In the case of the public sector, interviewees were directors or managers representing the employers, while private sector interviewees were office principals, or their representatives. Issues addressed in the interviews were centered on whether managers or principals think that the office environment supports architects. Office ethics issues including staff satisfaction and quality of services were also explored. Among the factors discussed were the availability of social and support spaces, work style including working from home, hotelling, and hot desking.

SELECTED RESULTS

Applying a simple frequency of responses procedure, the results outlined here are selected to foster the establishment of the relationship between the overall level of architect's job satisfaction and the principal spatial variables affecting it. A response rate of 83% (n=165) was achieved from the public sector, while a 72% (n=72) response rate was achieved from the private sector.

Participants of the study from both the public and private sector were mainly architects where 73% of those respondents sampled from the public sector were architects and 71% from the private sector respondents were architects. However, some of the participants, especially from the public sector, held other job titles such architect technician, architectural assistant, assistant director, director or associate. Notably, in both sectors there appears to be a broad range of age groups. Yet, the length of time architects have worked in their current office setting vary dramatically across the two sectors, where 50% of respondents from the public sector have worked in their current workplace for twenty years or more. In the private sector, however, the maximum length of time respondents have worked in the particular office setting does not exceed 15 years.

Levels of Job Satisfaction

Using Likert Scale satisfaction indicators were composed to measure the level of architects' job satisfaction. Table (1) displays responses to selected satisfaction indicators. A comparison of the findings demonstrates that architects are generally satisfied in their jobs in both public and private sectors. However, there is a slight differentiation in the level of job satisfaction between the sectors. 4% of participants from the public sector strongly disagreed with the statement '*I consider my job rather pleasant*' whereas no participants from the private sector strongly disagreed with this statement. 4% of participants from the public sector strongly agreed with the statement '*I definitely dislike my job.*' In contrast, no participants from the private sector strongly agreed with the same statement.

Office Environment

The variables that had the strongest links with job satisfaction included acoustics, thermal comfort, views and light, ergonomics and level of privacy.

Sound and Acoustics: It is evident that sound levels impact architects negatively. Specifically, in the private sector, 10% and 34% of participants strongly disagreed or disagreed that 'sound levels affected work quality in a positive way.' This corresponds with their reactions to 'the impact of sound levels on work quality in a negative way,' as shown in Table (2). For public sector architects, sound levels do not seem to be of a major concern since approximately 70% of respondents either strongly agreed or agreed that 'sounds levels in the office are acceptable.'

Thermal Comfort: Across all the respondents, 63% agreed that 'the office environment is adequately ventilated,' and 76% disagreed with the statement that 'the office is too cold.' However, only 35% of the respondents disagreed with the statement that 'the ventilation and heating is easily adjusted on an individual basis.' In contrast, from the public sector only 36% of the respondents were of the opinion that 'the office environment in which they worked was adequately ventilated.' Similarly, private sector architects were also in disagreement that the

ability to adjust the thermal properties of the environment on an individual level was available, and 39% of respondents held the opinion that ‘the ventilation and heating of the office environment was not easily adjusted.’

Table 1. Architects’ responses to indicators of job satisfaction levels in the private and public sectors (Source: Authors).

Satisfaction Indicators	Sector	Frequency of Responses (%)				
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
<i>I find real enjoyment in my job</i>	<i>Private</i>	18%	62%	12%	6%	2%
	<i>Public</i>	23%	51%	20%	3%	3%
<i>I consider my job rather pleasant</i>	<i>Private</i>	17%	70%	10%	3%	0%
	<i>Public</i>	12%	66%	18%	0%	4%
<i>I am fairly well satisfied with my job</i>	<i>Private</i>	15%	71%	8%	6%	0%
	<i>Public</i>	18%	70%	4%	4%	4%
<i>I definitely dislike my job</i>	<i>Private</i>	0%	6%	1%	67%	26%
	<i>Public</i>	4%	0%	4%	41%	51%
<i>Each working day seems like it will never end</i>	<i>Private</i>	0%	3%	11%	38%	48%
	<i>Public</i>	0%	7%	7%	38%	48%
<i>Most days I am enthusiastic about my job</i>	<i>Private</i>	18%	63%	12%	7%	0%
	<i>Public</i>	18%	66%	12%	0%	4%

Table 2. Architects’ responses to sound and acoustics aspects in the private and public sectors (Source: Authors).

Sound and Acoustics Aspects.	Sector	Frequency of Responses (%)				
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
<i>Sound levels in the office are acceptable</i>	<i>Private</i>	9%	52%	30%	8%	1%
	<i>Public</i>	24%	45%	18%	13%	0%
<i>Sound levels affect your work quality in a negative way</i>	<i>Private</i>	4%	40%	40%	15%	1%
	<i>Public</i>	0%	27%	45%	22%	6%
<i>Sound levels affect your work quality in a positive way</i>	<i>Private</i>	0%	15%	41%	34%	10%
	<i>Public</i>	0%	30%	40%	30%	0%

Lighting, and Views: Lighting appears to be satisfying for architects in both private and public sectors. In the private sector 67% agreed that ‘the office environment provided sufficient natural lighting.’ In addition, 20% strongly agreed with the same statement. 18% of public sector architects disagreed with the statement that ‘the natural lighting was sufficient’ and a further 4% strongly disagreed. On the other hand, in the public sector 79% of the architects stated that ‘the office environment in which they work offers views.’ In comparison findings indicate that 83% of private sector architects suggested that ‘the office offers views to the outside.’ On closer observation and with the use of open ended questions public sector architects emphasized that the office did not necessarily have desirable views.

Space Ergonomics: As shown in Table (3), the adequacy of space does not seem to be a critical issue for private sector architects where 61% of the respondents disagreed with the statement that ‘the office feels overcrowded,’ while 65% agreed that ‘the office environment is very spacious,’ and 20% strongly agreed. On the other hand, public sector architects do not seem

to be satisfied with the space ergonomics where 70% strongly agreed or agreed with the statement that ‘the office often feels overcrowded,’ while only 11% of respondents strongly disagreed with the statement that ‘the work environment felt very spacious.’

Table 3. Architects’ responses to sound and acoustics aspects in the private and public sectors (Source: Authors).

Space Ergonomics	Sector	Frequency of Responses (%)				
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
<i>The office often feels overcrowded</i>	<i>Private</i>	0%	3%	22%	61%	14%
	<i>Public</i>	29%	41%	15%	8%	7%
<i>The office feels very spacious</i>	<i>Private</i>	20%	65%	13%	2%	0%
	<i>Public</i>	8%	11%	29%	41%	11%
<i>Space surrounding my workstation is adequate</i>	<i>Private</i>	14%	77%	7%	2%	0%
	<i>Public</i>	12%	30%	12%	43%	3%

DISCUSSION OF KEY FINDINGS

Notably, interview findings generally corresponded with findings from the questionnaires. Contradictions between questionnaire and interview comments were present but very minor. It is important to note that directors and managers of architecture offices and organizations are relatively aware of issues concerning their architects’ job satisfaction. Issues of concern for public sector managers were space efficiency, reduction of capital costs, and an increasing use of information technology and emerging trends like hot desking, hotelling, and home working. Private sector employers had different concerns. These include creating dynamic and creative work environments for architects and designers, staff efficiency, corporate image, and architectural agendas of design of the workplace which reflect the quality of the office work. Control over the office environment is a major rising theme that is important in achieving job satisfaction. Categories of control were control of acoustics, views, light ergonomics, and thermal control. The following are selected thematic discussions supported by the results and respondents’ comments.

Control over Environmental Conditions

Undoubtedly, it is valuable for an architect to be able to control his/her work environment, just as architecture puts great emphasis on the built environment. For one architect, job satisfaction is concerned with “working from an environment in which one enjoys the process of creating another environment which brings joy to its users.” Four main categories or themes of job control were identified: acoustics, thermal comfort, views, light, and ergonomics.

- **Acoustics:** Private sector architects did not report being influenced by noise. One private sector principal stated “Communication is the way forward. When I walk into my office and hear the employees making noise, talking, negotiating and liaison with others, I know my business is growing.” This indicates that to some private sector principals noise is comforting.
- **Thermal Comfort:** Findings from interviews indicate that controlling thermal comfort generally left employees satisfied. Public sector managers revealed that because newly design government offices did not feature thermal control, employees were dissatisfied. Similarly, when private sector employees did not have control over their thermal comfort, they were also dissatisfied. In such environments, open plan offices were utilized for discussions and debates about the thermal environment; a majority vote was usually the method of decision-making. In larger scale offices, this issue would be of greater concern.

- Views: Having pleasant views have proven to be important for architects in both public and private sectors. A participating architect emphasized the psychological benefit of views in stating, “starting with the company was a scary experience but being able to look out the window and see my house in the distance meant that if things got really pressured in the office, I could always go home for lunch.”
- Lighting: Almost all private sector participants were satisfied with the artificial lighting present in the office, while only a little over half of public sector participants claimed they experienced sufficient lighting. One public sector employee stated, “Lighting is important as I need to see my plans and drawings.”
- Ergonomics: While approximately 75% of private sector architects were satisfied with the space surrounding their workstation, only one third of public sector participants had this feeling. One public sector employee stated, “Sometimes I walk into this establishment and wonder whose desk I’m actually working on, because my neighbor feels like he has moved in.”

Work Environments

Private sector architects indicated that they felt very positively about the relationship between their workspace and their work tasks. Supportive work environments were characterized by appropriate acoustics and space variations and flexibility. One private sector employer believed that “the interaction present in open plan offices helped employees complete their work tasks.” Another employer argued that the overall design and environment of the office was important for employees to enthusiastically complete their work tasks. Employees felt a “sense of pride” about their work environment when the design of the office and the architecture agenda was well thought of. Employees were then more likely to be more efficient and productive.

On the other hand, public sector architects are not entirely concerned with the architectural agenda. One public sector organization stated that despite the fact that its office was not very different from other public sector buildings in Belfast, the organization had set goals to achieve with regards to serviceability to employees. The same organization emphasized the importance of information technology in helping employees complete their work tasks. By and large, public sector architects felt that change and improvement was necessary for their workplace to fully support work tasks. Public sector organizations claimed that such improvements are underway. Improvements generally involved restructuring the office to achieve a more open layout.

Office Design and Work Culture

Employees in Belfast were asked to describe how they see their workplace as different from others. One public sector manager stated that “we set standards for our accommodation and we do involve staff in setting those standards so that should lead to an environment that staff wants to work in and would like to work in.” Some organizations thought that they were unique for their information technology. Some employees’ comments were directly linked to architecture. One private sector architect stated, “Architecturally [the office] is quite unusual. Everyone works in the open plan regardless of status. Even the relative privacy of the boardroom is only relative. We very rarely ever close the screens. So it’s fairly democratic.”

Virtual working has proven to be on the rise, particularly in the public sector although one public sector manager indicated that only 1.8% of employees permanently worked from home. Some organizations had employees that worked from home on certain occasions, and therefore they still had their own workspaces within the office. In some organizations, widely dispersed centralized switchboards have been introduced. As such, some employees work from home therefore dealing with the concern for space efficiency.

Although virtual working is generally promoted in the public sector, a fully virtual office is seemingly not favorable. One employer stated that “there needs to be a balance between the

efficiency of the organization through using concepts like mobile working but... bringing staff together from time to time to keep the culture of the organization together.”

Unlike public sector organizations, private sector organizations were more likely to discourage virtual working. All private sector participants expressed disdain towards the concept. One principal indicated that because recent graduates are often hired, office interaction and guidance are necessary to achieve a promising and productive learning and professional environment. Another employer criticized virtual working particularly for architects as it poses a threat to the architect’s “studio type atmosphere.”

CONCLUSION

Among architects working in the Belfast area, spatial qualities of the work environment are factors that determine satisfaction of their jobs. Public sector offices examined in this study are already witnessing investment. These organizations shared their comments on what could be learned from implementing change within the work environment. One public sector employee stated that change must be done gradually in order to allow for necessary adjustment time.

Job satisfaction is very specific to the individual as it is relatively psychologically based. On the contrary, job dissatisfaction occurs when individual’s expectations about the job are not met. In order to recruit and retain quality staff, employers must strive to meet their employee’s expectations, which are becoming increasingly demanding. Contemporary literature emphasized that the quality of the work environment is the primary determinant of the relationship between employers and their employees. Findings from this study have indicated that public sector organizations are failing to meet their employees’ expectations. It is important to note that not only is it important for employers to provide the necessary alterations within the work environment, but wisely investing in a supportive environment is also a necessity. Particular attention must be paid for appropriate investments.

An important aspect of the workplace that this research has deemed important is the control that employees have on their work environment. Personal storage was among the issues raised. Such issues have proven to be a threat to communications between employees and their employers. In order to instill and maintain a sense of pride, ownership among employees, and loyalty to the organization or office, interaction and consultation between staff is crucial. Employee involvement should nonetheless be relatively controlled, as employees may not have realistic expectations. Yet, employers must continuously consider the needs of employees in order to overcome economics and organizational challenges. The fact that architects design environments for people mandates that the environment they work form should also be responsive.

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ABANDONED HOUSING PROJECTS IN MALAYSIA: Pressing Issues during the Rehabilitation Process

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Abstract

Abandoned of housing projects during construction is a prevailing problem that the housing sector in Malaysia has been experiencing since 1980s. This paper aims to highlight the causes and impacts of abandoned housing projects, and various initiatives to rehabilitate these projects. Factors pertaining to projects abandonment can be categorized into: economic, financial, legal, managerial, system-related, and unforeseen risks. The study reveals three main impacts of abandoned housing projects: social, economic, and environmental impacts. The main steps taken to solve this problem include the rehabilitation of abandoned projects and other initiatives to reserve the right of purchasers through appropriate legal resolutions endorsement. Additional initiatives and formulation of upgraded solutions would further strengthen and enhance the ongoing policy of preempting and resuscitating abandoned housing projects. The study suggests further research to be conducted to identify various risks involved in the rehabilitation process. Such research can be aided through the seeking of stakeholders' opinions on the risks to carry out projects rehabilitation.

Keywords: Peninsular Malaysia; construction housing; rehabilitation.

INTRODUCTION

A housing project in Malaysia is regarded as abandoned if construction project is not completed or the housing units are not ready for occupation. Abandoned housing projects in the UK or the US refers to buildings that are unoccupied and show visible signs of physical distress (i.e., boarded up, burned, exposed to the elements, or have deteriorated) (Jacobson, 2007). The Ministry of Housing and Local Government (MHLG) of Malaysia has set four conditions, if one or more are met, then the project will be declared abandoned: (1) no construction activities on site for six months or more, (2) the developer winds up, (3) the developer declares an inability to complete the project, and (4) the MHLG declares the project abandoned pursuant to the Housing Development Act (118).

From January 2003 to 30 June 2012, there are 177 abandoned housing projects in Peninsular Malaysia (MHLG, 2012). The figure represents 2.7% only of the total housing projects completed. This figure seems small; however, its impact is not so. The main impact lies mainly on house buyers, as well as on the government, which is responsible for providing shelter to every citizen.

The abandonment of housing projects during construction appeared during mid-1980s, during the first economic recession that hit Malaysia. By the end of 1986, 126 housing projects were reported to have been not completed as scheduled and left completely abandoned. The number of housing units abandoned at that time was 14,568, affecting 6,834 buyers (Khalid, 2010). In 1990, Bank Negara had set up the Abandoned Housing Project Fund (AHPF) to provide special assistance to abandoned housing projects. The total fund approved at the end of 1993 was RM 382 million, which targeted to revive 23,287 housing units (Hussin, 1994). Another government initiative in 1992 was assigning Syarikat Perumahan Negara Berhad (SPNB) the

responsibility of rehabilitating abandoned projects till 2010. The efforts to address this housing issue will continue in the coming years, in the Tenth Malaysian Plan (Tenth Malaysian Plan, 2010).

The pressing issue of abandoned housing projects has been a burning topic in media and has become a great concern to stakeholders involved in housing projects, primarily house buyers and the government. Apparently, abandoned housing projects have an adverse impact on these stakeholders. However, a review of studies about the current situation of abandoned housing projects in Malaysia is still lacking. Therefore, this paper aims to fill up this gap by highlighting the causes, impacts, and solutions for abandoned housing projects from the review of literature and documents on abandoned housing projects. This paper is organized as follows: second section discusses the root causes of housing projects abandonment. Third section highlights the impact of this issue. Fourth section discusses solutions and initiatives taken to address the problem. Fifth section presents the current situation of abandoned housing projects in Peninsular Malaysia based on recent data from MHLG. Last section concludes with suggestions for future research based on the highlighted gaps including risk management during the rehabilitation of the abandoned projects.

ROOT CAUSES OF PROJECT ABANDONMENT

The influence of the economy on the construction industry and abandoned housing projects are intertwined. The economic recession that struck Asian countries in the mid-1980s is believed to be one of the main reasons for the abandonment of numerous housing projects (Ho, 1994; Hussin, 1994). The recession had a direct negative impact on the property sector, on prices of building materials, and on the labor market. In addition, the second wave of the 1997 recession significantly deepened the wound of the Malaysian economy, causing an overhung and oversupply in the properties market (Rameli et al., 2006). During this recession, the total property sector credit accounted for 40% of bank credit (Athukorala, 2010). This high exposure of the property sector further weakened the financial position of banks, as lending led to a glut in the property market.

Kamal and Ab. Wahab (2004) reported that the government provided financial support of RM 0.2 billion in 2009 to deal with the downturn and revive abandoned housing projects. The authors also emphasized that the oversupply of properties, uncompetitive selling prices of houses, and insolvency of developers are factors that worsened the problem of housing projects abandonment. However, recessions are not the only reasons for housing projects abandonment as Khalid (2010) confirmed. He cited the following reasons: project agent behavior strives to maximize profits; poor management and fraud in managing housing projects; weak response to market signals on the status of the Malaysian economy; lack of enforcement and monitoring of housing projects of authorities; and the restriction of rules and regulations on housing development of the housing ministry. These findings indicate that the housing developer might be the key contributor to housing projects abandonment.

Dahlan and Aljunid (2011) identified other reasons for housing projects abandonment, as follows: financial problems of developers; problems related to site clearing; conflicts, feuds, and squabbles among project stakeholders; and insufficient coordination between the land administration authority, planning authority, building authority, housing authority, and other technical departments with respect to the approval of land alienation, land use, subdivision of lands, planning permission, building or infrastructure plan approval, licenses of housing developers, and issuance of Certificate of Fitness (COF) for homebuyers occupation and Certificate of Completion and Compliance (CCC). Dahlan (2011a) affirmed that insufficient legal provisions to protect the interests of purchasers can be one of the main reasons for abandoned housing projects.

In the discussion of abandoned housing projects, Dahlan (2011b) had compared the current housing selling system and the "full-build-then-sell" system; the latter would be a better system. Dahlan (2011b) further cited two reasons that lead to housing projects abandonment: the

absence of mandatory insurance imposed on developers during the application from the MHLG, and the specific legal provisions governing rehabilitation schemes that resulted in perpetuating abuses and misuse of power and authority of rehabilitating parties, which are detrimental to the well-being of purchasers. The Consumers Association of Penang highlighted the following similar reasons involving housing projects: project approval takes a long time, leading to an escalation in housing prices; developers misusing deposits of purchasers; and construction of houses that do not follow the specifications and the same price of low-cost houses although constructed in different locations and involving high-interest lending rates (Consumers Association of Penang, 2012).

The causes of housing project abandonment in other developing countries seem to be different. For example, in Nigeria, the following are the causes of abandonment of projects: incorrect estimation; lack of available skilled personnel; inadequate planning; poor risk management; misunderstanding work requirements; poor quality control by regulatory agencies; corruption; and communication gap among personnel (Olalusi & Otunola, 2012).

One classic reason for housing projects abandonment is predominantly the unforeseen factors resulting from the initial estimation of developers of the housing project development cost during the planning stage. The discrepancies between the estimated and actual construction costs make the housing project unfeasible during the implementation stage, such that the developer has to abandon the housing project (A. Tan, 2004). This scenario has created a negative perception and a lack of confidence on the part of the public regarding the capability of big developers to deliver completed projects, as some of these developers become insolvent due to projects that were abandoned (Carrero et al., 2009). In lieu of the discussions on finding the causes of housing projects abandonment, a limited number of studies exist about unforeseen factors, especially factors pertaining to risks that lead to abandoned housing projects. Such specific studies on sudden developer or contractor insolvency and economic downturn are still limited.

Causes related to the Current Selling System

In the Current Selling System (CSS) or deferred payment sale or selling-off-the-plan, buyers have to bear 10% of the deposit for the unit cost of a house even before construction started, as well as construction-stage payments (Yusof et al., 2010), as stipulated in the standard Sales and Purchase Agreement (SPA). Setbacks in CSS include development performance, project failure, delay, and higher financial risk on the buyers (Isa, 2008). The other drawback of CSS is that it provides room for irresponsible developers to easily abandon their projects at any stage of the project or when a potential loss is expected. This situation results in the exposure of house buyers to unnecessary financial and legal risks.

The government has proposed an alternative system called Build Then Sell (BTS) to address the predicament of house buyers regarding an abandoned project. BTS is expected to reduce the potential of project failure and abandonment, and increase the quality of projects (Yusof, et al., 2010). BTS is in place and in 2007, its policy was included as one of the amendments to the Housing Development Act (HBA, 2009). In this system, buyers have to pay 10% upon signing the SPA, and then the 90% balance upon house handover. The major issue of BTS or the 10-90 system is that it was not made mandatory (Khalid, 2010). The government move to complete the implementation of BTS in the housing industry was faced with severe resistance from developers (Yusof et al., 2012; Yusof & Shafiei, 2011).

To summarize, the causes of abandoned housing projects can be categorized into the following: economic, financial, legal, managerial, selling system-related factors, developer-related factors, and unforeseen risk factors. The subsequent section highlights the impacts of abandoned housing projects on the different housing industry stakeholders.

IMPACTS OF HOUSING PROJECTS ABANDONMENT

The influence of abandonment of urbanization projects classified into two main categories: environmental impacts and socio-economic impacts (Carrero, et al., 2009). Both have short- and long-term impacts including unemployment increase, conflict between stakeholders, landscape modification, visual impact, lose of economic value of the area, marginalization of population, transfer of cost between private and public sectors, erosion, decrease of biodiversity, and pollution.

Implications of abandoned housing projects in Malaysia include legal implications on project stakeholders; financial implications on the original developers (difficulties in infusing funds or selling the remaining unsold units); implications on the reputation of the housing sector; and the perception of local and foreign house buyers and property investors (MHLG, 2012).

Majority of studies indicate the negative impact of abandoned housing projects on house buyers. Dahlan (2011b) called this phenomenon of abandoned housing projects as “grievances and troubles” of purchasers. The implication of abandoned housing projects on purchasers can be categorized into pecuniary and non-pecuniary losses. Both losses include the following: bearing the monthly installments of housing loans, otherwise the bank will blacklist the purchasers; inability to revoke the sale and purchase agreements, and claim for the return of all payments paid to the developers; purchasers may need to use their own funds to rehabilitate the abandoned housing projects; no compensation for damage or defaults that previous developers caused; and inability to take legal actions against the defaulting developer (Dahlan, 2011b; Dahlan & Aljunid, 2011).

Developers have traded off for standards and quality, knowing the eagerness of purchasers to take over the premises, and the latter would prefer not to waste time seeking compensation if the project is delayed (Khalid, 2010). Aside from being committed to housing loans, the house buyers have to pay quit rent and council tax until the project is rehabilitated (Kamal & Ab. Wahab, 2004). Dahlan and Aljunid (2011) pointed out that purchasers of abandoned housing, which are houses pending completion, based on deferred payment transactions, called Bay' Bithaman al-Ajil (BBA), are facing possibilities of gharar al-fahish (exorbitant cruelty, fraud, and injustice in business and transactions). The authors elaborated that BBA may be invalid on the grounds of the elements of gharar al-fahish in the case of abandoned housing projects, although loans come from an Islamic bank.

Abandoned housing projects also affect other related industries, including suppliers of construction materials, transportation companies, contractors, and consultants. Tan (2010) indicated that abandoned housing projects are one of the causes of the reduction in the relationship between housing price and residential subsector housing activities in Malaysia.

The impacts of abandoned housing projects can be categorized into the following: implications on the housing buyers and other stakeholders involved; implications on the construction industry and the national economy; and implications on the environment.

INITIATIVES TO OVERCOME THE PROBLEM

Some strategies are forwarded to mitigate and overcome the problem of abandoned housing projects. One strategy is to adopt another housing selling system instead of the CSS. If this system remains, then some of the conditions shall be enforced to balance the interests of creditors and purchasers or borrowers, and prevent exorbitant cruelty transactions (Dahlan & Aljunid, 2011). Promoting public-private partnership (PPP) might useful to mitigate delay and project abandonment (Abdul-Aziz & Kassim, 2011). Another preventive strategy could be the resolutions of developers, the government, financial institutions, and contractors to reduce project failure in the CSS. For projects that are already abandoned, Tan (2010) recommended an effective and efficient selling system while reviving the projects. Efficient Reviving Process (ERP) implies establishing an agent for the MHLG, and maintaining that the account of abandoned projects to be left untouched.

The government plays an important role in rehabilitating abandoned housing projects and addressing the different consequences of such projects. The MHLG has monitored the existence of housing projects abandonment in Malaysia since 1986, and reported that the cumulative figure of the total projects involved (until 31 December 2001) was 526. At the time, 114,568 housing units, involving 72,543 house buyers, exist in Malaysia (Khalid, 2010). In 2008, a new division was established under the MHLG called the Division of Rehabilitation of Abandoned Projects. Handling this particular division is the Jabatan Perumahan Negara (JPN), a division of the Department of Housing and Local Government (DHLG) under the MHLG. From January 2009 to June 2012, the Division of Rehabilitation of Abandoned Projects has been responsible for and has completed the revival of 104 out of 177 abandoned housing projects in Malaysia (MHLG, 2012).

The initiatives and proposed solutions to address the problem of abandoned housing projects can be categorized into strategies to prevent the occurrence of the problem and remedies to address the problem after it has occurred. Figure 1 summarizes the causes (contributing factors) that lead to abandoned housing projects, the impacts of abandoned housing projects, and initiatives to resolve the problem.

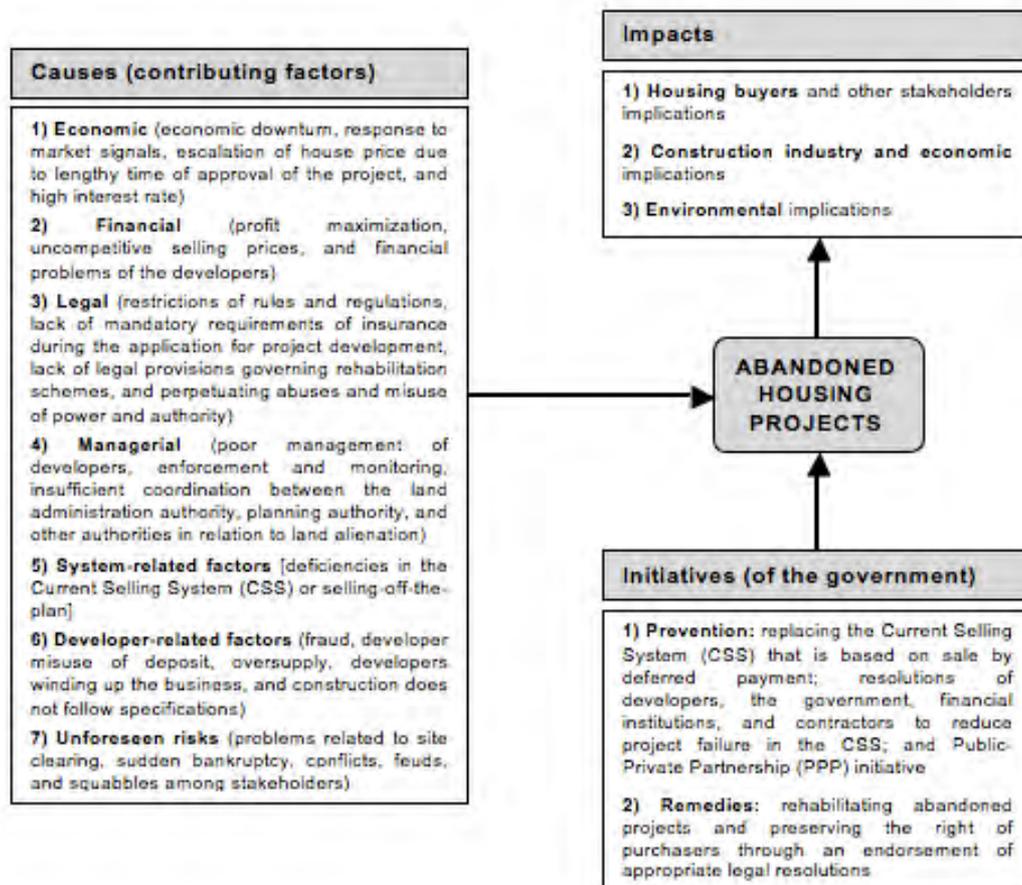


Figure 1: Causes, impacts, and initiatives on abandonment of housing projects in Malaysia (Source: Authors).

Other initiatives of the Malaysian government to resolve the issue of abandoned housing projects are focused on reducing the negative impacts of the latter. In general, the government's role can be categorized into the following: (1) facilitating and monitoring the rehabilitation process; (2) funding some special abandoned project to facilitate the rehabilitation; (3) actions taken to

reserve the right of purchasers and other legal resolutions; and (4) proposing an alternative housing selling system. The government launched the Special Task Force or a Special Purpose Vehicle (SPV) under the Ministry of Finance (MOF) to address the issue. In addition, Syarikat Perumahan Negara (SPNB), which is the MOF incorporated and funded in 2001, assigned with the major role of rehabilitating abandoned projects. Until 2010, the SPNB has successfully completed 77 projects involving 24,326 housing units, with 11 other projects under construction (SPNB, 2010). Further government initiatives include the enactment of new laws to handle the legality of abandoned housing projects and initiatives for full implementation of BTS approach by 2015 (HBA, 2010; PEMUDAH, 2011).

The recent amendments made to the Housing Development (Control and Licensing) Act 1966 (Act 118), effected through the recent Housing Development (Control and Licensing) (Amendment) Act A1415, are believed to help mitigate the abandonment of housing projects and successfully complete the revival process. The amendments apply to all developers who refuse to continue the project or have postponed, suspended, or stopped the project for a period of six months or more, or past the original scheduled completion date as stated in the SPA (Dahlan, 2011b). Upon conviction, such developer is liable to pay a fine of not less than RM 250,000 but not more than RM 500,000, or be imprisoned up to three years, or both. Other amendments in the Act to reserve the right of purchasers include the following: (1) deposit increase from RM 200,000 to 3% of the total estimated physical development cost, which also includes professional fees for the Housing Development Account (HDA); (2) house buyers having the option to cancel the SPA in the event that the project does not take place within six months of the agreement being signed; (3) extending the House Buyers' Claims Tribunal (TTPR) scope to enable house buyers to claim damages from unlicensed housing projects; (4) imposing a maximum penalty of RM 50,000, from RM 20,000, for any offense of developers on any provisions under Act 118; (5) prosecuting developers responsible for abandoned housing projects; and (6) expanding the definition of "housing developer" to include liquidators, in which their role is to revive abandoned housing projects should the developer companies go for liquidation (PEMUDAH, 2011).

CURRENT SCENARIO OF THE REHABILITATION PROCESS

Table 1 presents the overall situation of abandoned housing projects in Malaysia (as of 31 May 2012). The MHLG list did not take into account abandoned housing projects in East Malaysia (Sabah and Sarawak), which do not fall under the jurisdiction of the MHLG and Act 118, or abandoned housing projects in the 1970s, 1980s, and 1990s (Dahlan, 2011a). A number of abandoned projects are closed files as their rehabilitation was deemed to be no longer feasible. Table 1 further presents that out of the 16 projects in the initial planning stage, the companies that undertook the eight projects (with 1,154 housing units) have been wound up or have become liquidators, and the government has entirely taken over one private project (inclusive of the land).

An indication of return of deposits to purchasers was not present during the initial planning phase. The implication is that the distress that abandoned housing projects caused on house buyers still prevails. The 58 projects under rehabilitation indicated a vulnerable situation to get abandoned housing projects revived, considering the risks or unforeseen threats associated with the rehabilitation of such projects. In the case of completed housing projects, the proportion between the number of projects and the number of purchasers is the same, except for projects with changed development proposals. This scenario indicated a lack of trust on the part of house buyers on abandoned housing projects. This, in turn, has decreased the market value and the reputation of the abandoned property.

Table 1. Summary of the status of overall abandoned housing projects in Peninsular Malaysia (as of 31 May 2012) (Source: MHLG, 2012).

NO.	PROJECT STATUS	NO. OF PROJECTS	NO. OF HOUSING UNITS	NO. OF BUYERS
1.	Initial Planning			
(i)	Under Rehabilitation Plan	7	3,905	1,798
(ii)	Wound up	8	1,154	871
(iii)	Monitored by the Government (Land Confiscation)	1	924	652
	Sub Total	16	5,983	3,321
2.	Under Rehabilitation (being restored)			
(i)	Original Developer/ Rehabilitation Developer	49	24,942	17,227
(ii)	SPNB	5	4,125	3,948
(iii)	Completed without CFO	4	935	551
	Sub Total	58	30,002	21,726
3.	Completed/Finished			
(i)	Completed with CFO	12	1,724	1,472
(ii)	Variation of Development Proposal	6	81	81
(iii)	Return of Deposit	2	2,754	1,175
	Sub Total	20	4,559	2,728
TOTAL		94	40,554	27,775

CONCLUSIONS AND FUTURE STUDIES

This paper attempted to offer an overview of housing projects abandonment in Peninsular Malaysia by identifying the root causes, implications, and current initiatives to address the problem. Based on the literature synthesis, factors pertaining to housing projects abandonment can be categorized as follows: economic, financial, legal, managerial, system-related factors, unforeseen risks, and other factors such as fraud, developer misuse of deposits, oversupply, developers winding up the business, conflicts, feuds, and squabbles among stakeholders, and nonconformance with construction specifications. The two major economic recessions in the past 20 to 30 years further contributed to an increase in abandoned housing projects. Legal issues such as obtaining project approvals and licenses, and shortcomings in the current sale and purchase system of property have been recognized as other major contributors to abandoned housing projects. A limited number of studies have highlighted the unforeseen factors that lead to abandoned housing projects, including various risks faced in the construction of housing projects. Investigations are likewise lacking to verify the efficiency of different proposed initiatives to mitigate the problem.

The review and analysis of literature and documents also reveal the impacts of abandoned housing projects that can be categorized as implications on housing buyers and other stakeholders. The highlighted factors have socio-economic and environmental implications. House buyers remain as the ones who suffer the most regarding the issue of abandoned housing projects. In general, compensation is not provided for damage or default that previous developers have caused, and legal actions cannot be taken against defaulting developers as most of them are already out of business. Another impact of abandoned housing projects is the tarnished reputation and perception of local developers and the housing sector among local and foreign house buyers and investors.

Further findings from the analysis of literature and documents are government initiatives that include strategies and remedies to prevent the problem of housing project abandonment. These strategies are the following: legal actions and amendments; replacement of the current selling system; public-private partnership; and remedies after the problem has occurred such as the rehabilitation of abandoned projects, actions taken to reserve the rights of purchasers, and the creation of a Special Task Force and a Special Purpose Vehicle. The problem of abandoned

housing projects still persists despite numerous government actions. Figures from the MHLG website indicate that 16 abandoned projects have been added to the list as of May 2012.

Unforeseen factors or risks encountered during the rehabilitation process have not been considered. Therefore, the examination of such risks can be included in further studies. For example, the SPNB has faced a number of unforeseen difficulties, including the following: lack of collaboration among developers, consultants, and government authorities; inability of developers to activate or transfer their bridging loans to the salvage developer; problems related to land ownership; unsettled legal actions among the stakeholders of abandoned housing projects; lack of necessary information about the projects; and issues arising during the resubmission of project approval documents. In a number of cases, projects have been abandoned for such a long time that an attempt to retrieve project information can be painstaking and futile. Further studies to investigate the efficiency and reliability of proposed solutions, initiatives to prevent housing projects abandonment, and management and mitigation of risks of abandoned housing projects are very relevant.

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BALANCE IN CONTROL: The Case of an Urban Design Studio at the University of Arizona

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Abstract

For the first time, in history, the majority of human beings live in urban regions. Although cities are among the most complex human-made systems, they are unfortunately environmentally, economically and socially unsustainable. How can we change this? This paper discusses an undergraduate architectural design studio, Future Cities, which pushed for an environmentally holistic design process, moving past the idea of single, object-like buildings. The studio taught various digital and research methodologies to aid in the complex issue of urban form. Emphasis was placed on balancing the huge amounts of data and information that is available in our technological age, with the need to retain the human perspective and experience.

Keywords: Carrying capacity; computational design; ecological design; sustainability; urban design.

INTRODUCTION

The Future Cities studio took place at the University of Arizona, in Tucson, Arizona, USA during the Spring Semester of 2011. The studio consisted of 9 different teams comprising of 13 fourth year undergraduate architecture students. Students could work individually or in teams of up to three people. We also had input from one of our Planning Professors, Dr. Ryan Perkl and two additional masters students from the School of Landscape Architecture and Planning. Students were also encouraged to consult with other departments outside of our college, most notably with material science and biochemistry.

Our current environmental crisis led to a studio premise that it is not okay to maintain the status quo, but that we needed to fundamentally rethink the direction we are moving in as a design profession. This re-calibrating related to the structure of the design studio and the design proposals themselves. The speculation was whether city planning should continue to impose its will upon the land, or should it become yet another organism imbedded within a homeostatic ecosystem, like an emergent system which has been correlated with the concept of giving up control? Part of this process was determining how much should be designed and controlled in this potentially more dynamic, ecological model for humans and the environment (bottom-up versus top-down approaches).

The studio's intent was to find ways of form-finding verses form-making; using natural and built infrastructure, systems and flows to create new planning strategies, relationships and building typologies. Projects needed to emphasize cycles and inter connectivity. Pedagogical methods were a crucial part of the studio's make-up, emphasizing digital agility and collaborative team-work. Recent advances in digital technology have helped us understand our environment at another level than we previously had known. Design proposals were critiqued against the move towards superficial formalism to an understanding of the systems and performative aspects of ecological systems. Speculating on whether this understanding can help us to develop a non-plan that allows for more adaptability, livability and change in our built environment. Ecological, inter-connected systems in the natural world have no separation of form, structure and material: they all act on one another and cannot be predicted by the analysis of any one separately or in a different context. Isn't this how the design of our built environment should be, critically sensitive to

its region and holistic? With the increasing specialization of professions and the academy it is imperative to get input from other areas of knowledge and experience to develop a more holistic design strategy.

ECOLOGICAL BACKGROUND

Inspiration from the natural world has been an important force in humanity's design history. Charles Darwin's theories in the late nineteenth century had a strong influence on Art Nouveau and the Arts and Crafts Movement. The concept of the organic was also central in the 20th century. Louis Sullivan, Frank Lloyd Wright and Le Corbusier all employed biological analogies. Generally the connection was fairly superficial, although Wright spoke of adaptability and several other core ecological concepts. In other fields Aldo Leopold, in the early twentieth century was a proponent of inter-disciplinary ecological design and author of the Land Ethic. He wrote,

"When we see land as a community to which we belong, we may begin to see it with love and respect. There is no other way for land to survive the impact of mechanized man, nor for us to reap from it the esthetic harvest it is capable, under science, of contributing to culture. That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics." (Leopold, 1949, p. viii).

Some scholars see his work as one of the first modern philosophies of sustainability. Developments in cybernetics, computation and science later in the century led prominent architectural theorists like Reyner Banham and Charles Jencks to predict that biologically-related architecture would be the next major movement. Jencks wrote in 1971, "When biology becomes the major metaphor of the 1990's, the intuitive tradition will explode in a burst of biomorphic images suited to the individual and organic development" (Jencks, 1971, p. 99).

Hopefully we have learnt from the modernist tradition of 'form follows function' that making design too cut and dry tends to lead to alienating and cold environments. Most ecological systems are completely bottom-up systems, i.e. they are 'designed' through the balance of self-organized internal and external environmental forces. Humans, being among the most complex natural organisms, have the ability to think and plan ahead, so one would assume that their built environments need to be a balance between top down (planned control) and these more natural, bottom up (self-organization) systems. Therefore designing for them should not be reductive, but should acknowledge that humans are different from plants and animals.

Most contemporary designed environments have emphasized the top down approach too much. In order for us to become more civilized we need to be less controlling of others and our environment (softer), realizing that in this time of rapid change we cannot plan for permanence or predictability in a way that past cultures have.

"Power itself must be abolished – and not solely in the refusal to be dominated, which is at the heart of all traditional struggles – but also, just as violently, in the refusal to dominate...Intelligence cannot, can never be in power because intelligence consists of this double refusal." (Baudrillard, 2010, p. 47-8).

If we are to be at balance with natural systems we need to have less of a hierarchical attitude and focus more on a system of ethical, mutual respect for the entire environment. This ultimately leads to changes beyond traditional architecture's scope, which would have to happen on multiple levels of society, including economics and politics. Trying to solve all of these issues are beyond the scope of this paper of course, but it is imperative to at least open the door to these larger ideas, particularly in an educational environment.

The Arts and Crafts Movement was in part a reaction against industrialization and the technological development of the world. However, the recent interest in natural systems is paralleling the development of technology and computation specifically. The need for computation to study and model this complexity is paramount. John Frazer, a pioneer in the use of computers in architecture has written that,

“The modeling of these complex natural processes requires computers, and it is no coincidence that the development of computing has been significantly shaped by the building of computer models for simulating natural processes. Alan Turing, who played a key role in the development of the concept of the computer (the Turing Machine) was interested in morphology and the simulation of morphological processes by computer-based mathematical models...Von Neumann, the other key figure in the development of computing, set out explicitly to create a theory which would encompass both natural and artificial biologies, starting with the premise that the basis of life was information.” (Frazer, 1995, p.13).

Generally technology today is not seen with the negative connotations that went along with the industrial revolution. Nicholas Negroponte, founder of MIT’s Media Lab, is a computer technology proponent and has stated,

“I believe that computers have the potential for assuring a responsiveness, individuality, and excitement in all aspects of living, to a degree hitherto unseen...the computer sciences, generally associated with elite and often oppressive authorities, can provide to everyone a quality of architecture approximated in indigenous architecture (architecture without architects).” (Negroponte, 1975, preface).

PEDAGOGICAL CONTENT

Even with the implications of our transforming world, much of our pedagogical methods for architectural design have remained unchanged since the introduction of studio culture in the Beaux Arts tradition. Nikos Salingaros, known for his work on urban theory has written that,

“Architectural studios today are dominated by subjective, elitist, ideological, and master-apprentice models that aggrandize invention over innovation, and radical individualism over collaborative processes.” (Preface in Salama, 2009, p. 13).

It is important to remember that studios are not a neutral environment so every attempt should be made to create as creative and interactive an environment as possible. John Dewey, an early protagonist for experiential learning, wrote about the need for a democratic education where it was imperative for students to help shape their own program and context. As a result the program for the Future Cities studio was developed by the students, relating to the particular ethics and strategies of the groups research endeavors. For this particular studio emphasis was put on a collaborative process rather than on individuals working in a competitive environment. The trans-disciplinary element was added in an attempt to make the students look more holistically at the complex subject of urban form and to encourage work patterns that reflect the current realities of the profession more accurately.

Traditionally the studio instructor has the central position of power in a very top down, hierarchical approach. In order to empower student creativity and activism it is necessary for there to be a marked reduction in the power of the instructor in order to facilitate more bottom-up action. Tomas Dutton developed a *Hidden Curriculum* Model in 1987, which strove for equality between instructors and students. This model was not followed completely in this particular

paper's example, in reality the studio was more of a hybrid approach where students were encouraged to develop their schemes and be part of the group critique process, but at times it was necessary to assert the traditional power of the instructor, mainly due to time constraints.

It was also imperative to create more research components than those that exist in the traditional studio. It is imperative that these nurture exploration and critical thinking and develop into the design element rather than being a detached precursor to the problem. This is particularly important in an area, which is attempting to be cutting edge with regards to latest technologies and theories. It is imperative to get input from everyone in the studio to share the work load and get a diverse set of perspectives. In fact defining the problems were often more important than developing solutions. In the book, *Changing Architectural Education*, it states that,

"Students typically come to understand analysis in an oppositional relationship to design. Perceiving design to be the most valued element of the course, they equate spending more time on analysis with spending less time on design. The result is a narrowness and lack of depth in analysis coupled with overreliance on traditional analytical, supposedly objective, methods of analysis." (Morrow, 2000, p. 45).

SPECIFIC METHODOLOGY

The student's first assignment was to research the various relevant issues/problems in a general way; this was followed by workshops and assignments that focused on increasing their digital skills. The architecture students involved, generally embraced the issues addressed in the studio, although many had not had a previous education in these specific areas or scale. Ultimately they were given a four square mile site in the Sonoran Desert to develop their hypothetical design strategy. The site was at the base of a mountain range, adjacent to the city of Tucson, Arizona with a major transportation link running across one edge.

Many initial decisions were based on determining the appropriate density for the project. The extreme climate in the desert was an obvious opportunity for students to address the idea of an ecological footprint and carry capacity. Density (the supportable population) became directly proportional to the amount of water and other available necessities in their given ecosystem. Students began by calculating the available resources in their given site (figure 1).

They also evaluated standard norms of per-capita consumption evaluating these against potential (per-capita) improvements based on designs that encouraged less automobile usage and more developed attitudes to resource consumption generally.

In all cases there was a desire to increase density where appropriate and to protect the natural landscape from urban sprawl as much as possible, which is predominant in the Tucson area. They also needed to balance the obvious desire for density and collective experience, with the sense of individuality and freedom for which the desert southwest has become a symbol. Land use strategies were developed which generally related to the existing topographical and environmental conditions, in many cases pushing for more decentralized network strategies rather than the centralized schemes we have historically seen. These related in part to Yona Friedman's plurality of utopias,

"In this spirit, I propose to think of our autonomous and non-communicating Utopias – which can range from wandering tribes and settled villages all the way to great city states or regional ecologies – as so many islands: a Utopian archipelago, islands in the net, a constellation of discontinuous centers, themselves internally decentered." (Jameson, 2005, p. 221).

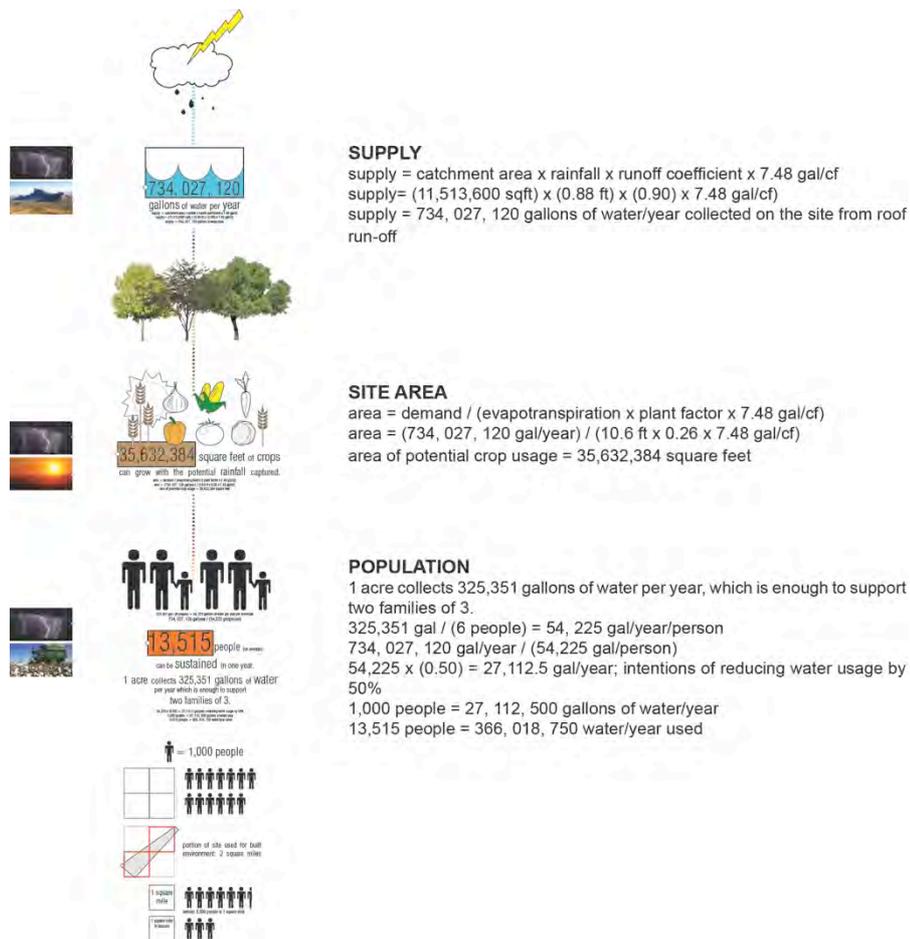


Figure 1: Carrying capacity calculations

(Source: Dana Decuzzi, B.Arch Graduate 2012, equations were derived from "The Environmental Planning Handbook" by Daniels T., and K.).

The positioning of main transportation routes and nodes became networks and attractor points that encouraged transit-oriented development. These attractor points/routes were created relatively easily in the digital parametric model. Most students worked in Grasshopper, the parametric plug-in for the 3-dimensional modeling tool Rhino, by Robert McNeel and Associates. Grasshopper is not just a stripped down version of Building Information Modeling (BIM), but allows a parametric design dialogue that is not the emphasis of all BIM tools. It also has a relatively graphic interface, which is generally useful to architecture students without a prior scripting background.

Parametric, geometrical, networks were also developed which linked programmatic distances with various transportation modes and systems, always encouraging more sustainable options. Students began to see these systems as inter-connected metabolic networks. They were also encouraged to see their system analyses as a series of dynamic flows and feed-back loops rather than as static consumable objects. These dynamic systems by their very nature also needed the ability to adapt and change, bringing in 1970's system theories of autopoiesis, the capacity of a system to self-regulate (figure 2).

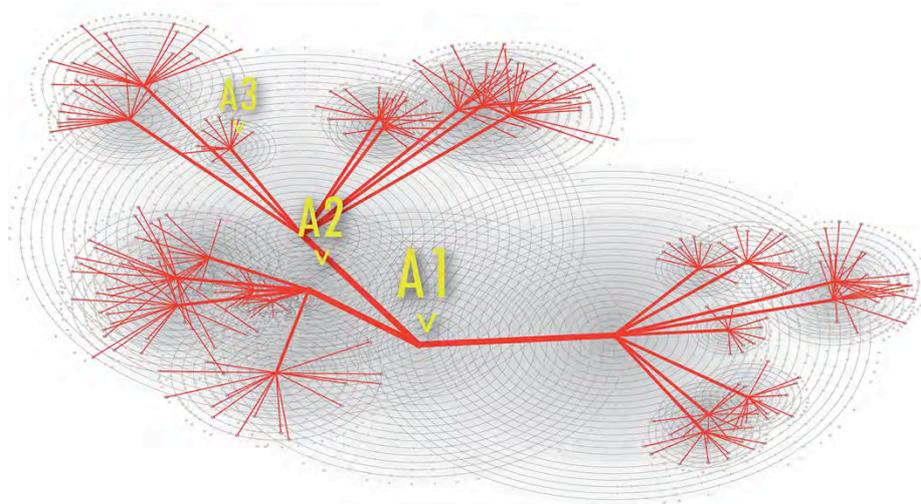


Figure 2: Organizational branching model
 (Source: Cruz Crawford and Sheehan Wachter, B.Arch Graduates 2012).

FINDINGS - EXAMPLES

Obviously to use computational, morphological processes is a complex task indeed. There is a negotiation between the seen and unseen forces which need to be parameterized and added to the equation, hopefully in real time. Particular attention was given to what may be considered an arid regions most precious resource, water. Teams hypothesized in different ways about how future community boundaries, form and infrastructure could follow those of existing water sub-basins and flows within the larger existing watershed. Many groups clustered development around water run-off and catchment areas whereas others saved the areas where water naturally flowed for natural ecosystems and wildlife corridors, slowly gradating to urban density with zones of agriculture or other non-built environments (figure 3). Through integrating water conservation systems at various scales (within the home, community gardens, and landscape), it was envisioned that citizens will embrace more sustainable water management practices in their everyday life, stimulating an educational paradigm shift, from the wasteful use of resources to using them in a more thoughtful way.

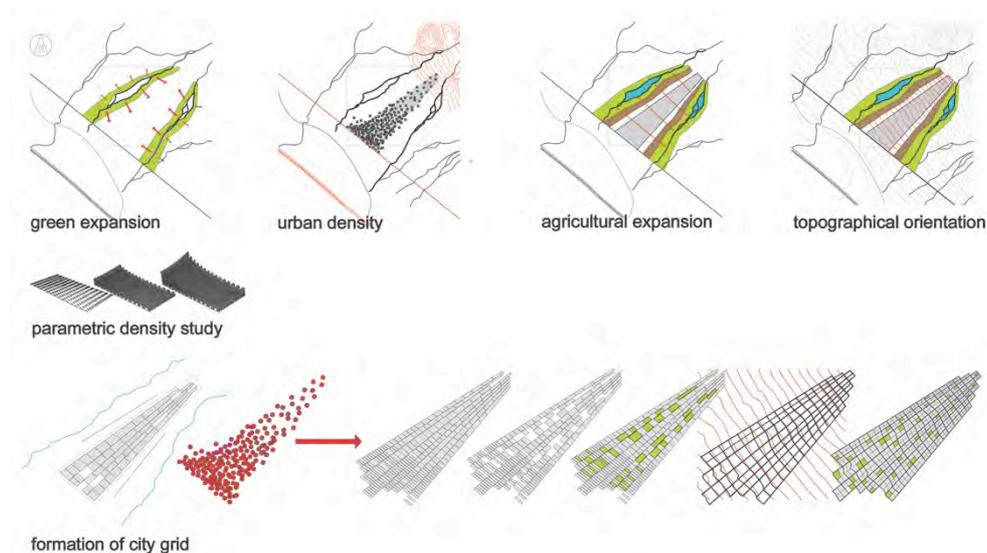


Figure 3: Iterative design diagrams
 (Source: Dana Decuzzi, B.Arch Graduate 2012).

The following two student team examples show in more detail about how this was tackled to various levels of success. These groups were of particular interest as they also developed their schemes one step further than an urban plan, proposing specific materiality for dwellings which would rise out of advances in material systems related to their cycles and processes. Many of the common building materials used today are non-renewable and use an exorbitant amount of energy in their manufacturing processes. Michael Weinstock, Founder and Director of the Emergent Technologies Masters Programme at The Architectural Association has stated that, “form cannot be treated independently of material, even when the strongest architectural interest is in form-finding” (Kotnik and Weinstock, 2012, p. 106).

The first scheme, *Reconvergence, an emergent city* was an immediate response to specific desert conditions but could also be a prototype for any city faced with disappearing natural resources. In this emergent city, water is used and reused as a direct response to a disintegrating water table (figure 4).

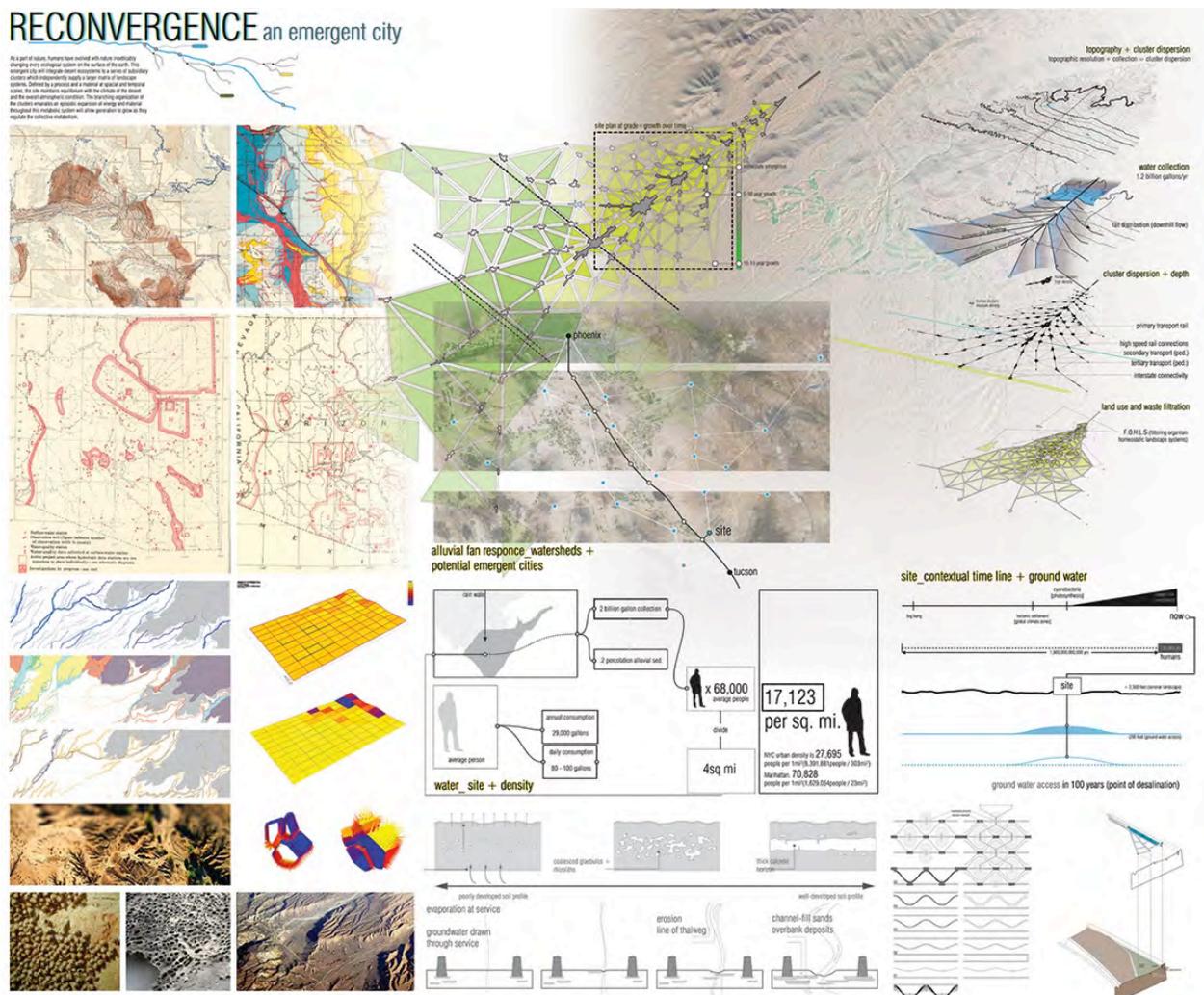


Figure 4: Site analysis and design drawings relating to water issues.
(Source: Tyler Jorgenson, Kevin Moore and Andre Rodrigue, B.Arch Graduates 2012).

The population within the emergent city is provided economic homeostasis through the emancipation of imported goods and services. As natural systems become a part of the community ritual, they provide energy and consumable goods, and can change according to the

immediate demand of social implementations both actively and passively. The scheme proposed a relationship to desert calcification: where the contemporary means of groundwater desalination could help 'grow' the city form. Through the process of homogenous nucleation over time, the solids found in groundwater brine aggregate and solidify creating minimal surfaced limestone structures and habitable voids (figure 5 and 6).

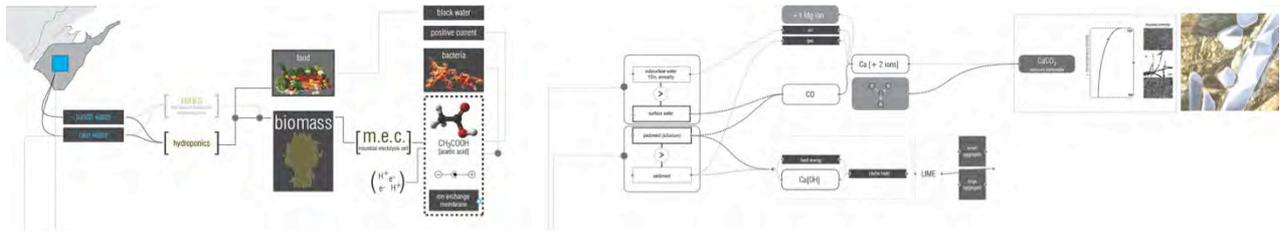


Figure 5: Chemical breakdown of homogenous nucleation.
(Source: Tyler Jorgenson, Kevin Moore and Andre Rodrigue, B.Arch Graduates 2012).



Figure 6: Physical modeling of minimal surfaces.
(Source: Tyler Jorgenson, Kevin Moore and Andre Rodrigue, B.Arch Graduates 2012).

Dynamic differences in the aggregation of the metabolic dwelling machines [MDMs] provide for such human functions such as living, working, playing, learning and socializing. Therefore, programmatic elements that nurture these types of sociological behaviors differ and disperse based upon the density of the clusters. Each individual MDM unit is adaptable and can become any number of spaces to meet individual and community needs. By allowing amenities to fit within the clusters, each area of density will begin to have its own social identity. The porosity of each module also allows for access to exterior spaces linked to public areas and richer riparian landscapes shaped by the Filter Organism Homeostatic Landscape System [FOHLS](figure 7).

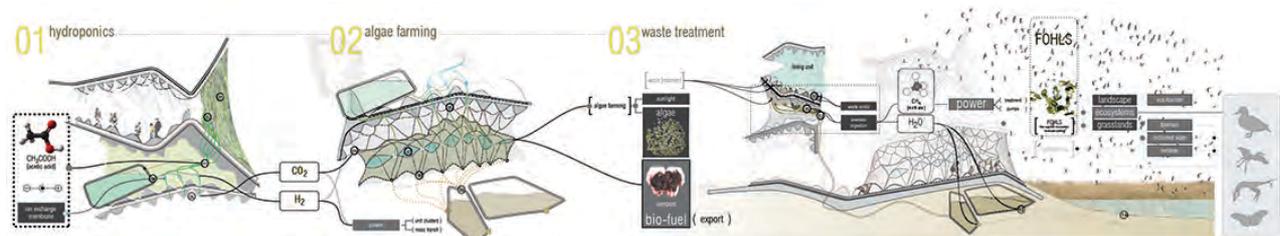


Figure 7: Diagram showing dwelling machines and their relationship to the landscape systems.
(Source: Tyler Jorgenson, Kevin Moore and Andre Rodrigue, B.Arch Graduates 2012).

The openness of cultural, community and economic areas allow for rich social interactions, where the community would manage socio-economic programs, thus fully engaging in all aspects of sustainability. Nature is introduced into the daily lives of citizens creating a strong ecological relationship amongst the people, the natural environment, and the systems facilitating this interaction. Positive ecological affect, is the product of people in the community caring for the environment due to an added understanding of ecology and the benefits that can be achieved by

designing for interaction amongst humans, habitation, and the environment. Author Richard Louv continually stresses this natural need especially in our increasingly informational age, “but electronic immersion without a force to balance it, creates the hole in the boat – draining our ability to pay attention, to think clearly, to be productive and creative. The best antidote to negative electronic information immersion will be an increase in the amount of natural information we receive. The more high-tech we become, the more nature we need.” (Louv, 2011, p.24).

The second group, team *Arid Systemics* based their scheme on the principle that in nature form and force are simply manifestations of material and energy flow, fundamental to its ability to capacitate life. The urban homeostasis was imagined as a literal manifestation of this human metabolic network that mediates between complex environmental biological processes and the indeterminate physical organizations of urban life. A series of rules were established based on precedents seen in nature. The basis for the management of energy in this system came from the precedent of the *living machine*, a system which effectively cycles waste through a series of anoxic, anaerobic and aerobic microbial and microbiological processes in order to extract clean water and support processes which produce various forms of energy; biofuel, agriculture and hydroponics (figure 8).

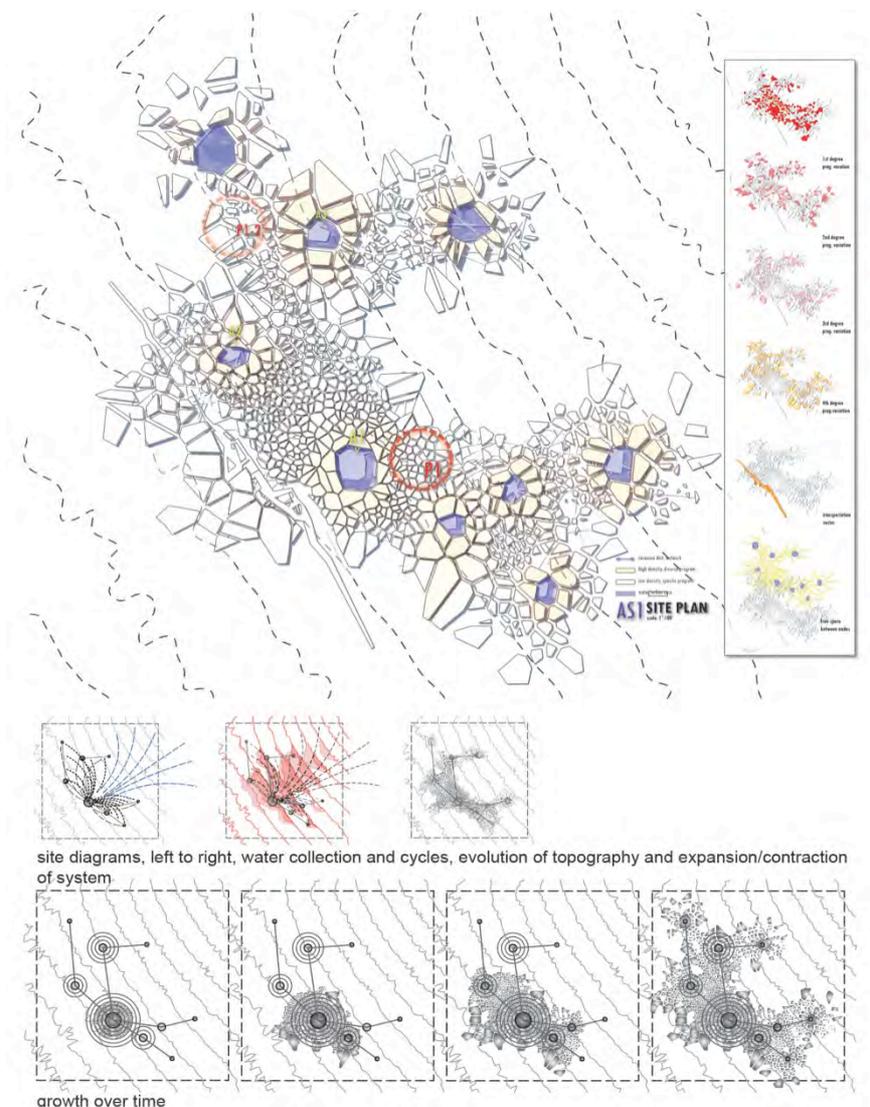
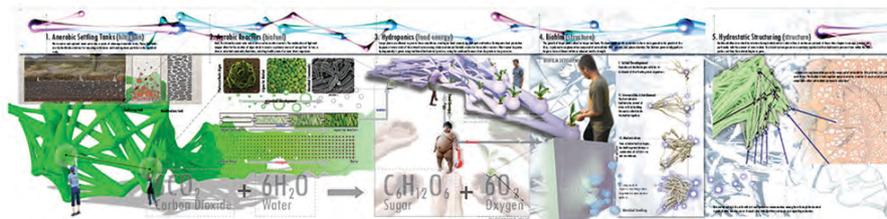


Figure 8: *Arid Systemics* team site diagrams and growth over time. (Source: Cruz Crawford and Sheehan Wachter, B.Arch Graduates 2012).

The main system that organizes the layout on the site is its water cycles. The system is shaped in order to catch rainfall and water runoff from the surface. The water is then cycled through the overall system flowing out from the center to the edges and back to the center in a series of feedback loops which also organize the water treatment processes. The appeal of this organization is the redundancy of scale and the repetition of feedback loops which organizes a series of dispersals of energy production and waste management processes within the overall system. The larger organization is driven by a series of cores, which extend out along major arterials into the landscape. These cores represent different scales within the organization of the system, and are the centroids of the potential expansion and contraction of the overall system. The scale and mode of lifestyle at these cores also produce a varying degree of regularity of program within clusters and also a varying degree of cluster type aggregations. The essential concept was that the volume of energy in the overall structure is consistent between the innermost and outermost rings.

They also developed a conceptual system of bonding specific molecules to plant roots, generating the growth of *Biofilm*, a polymeric conglomeration composed of extracellular DNA, proteins, and polysaccharides. The biofilm grows intelligently to begin to form a filament within a system of hydrostatic structuring (figure 9).



enlarged plans and sections

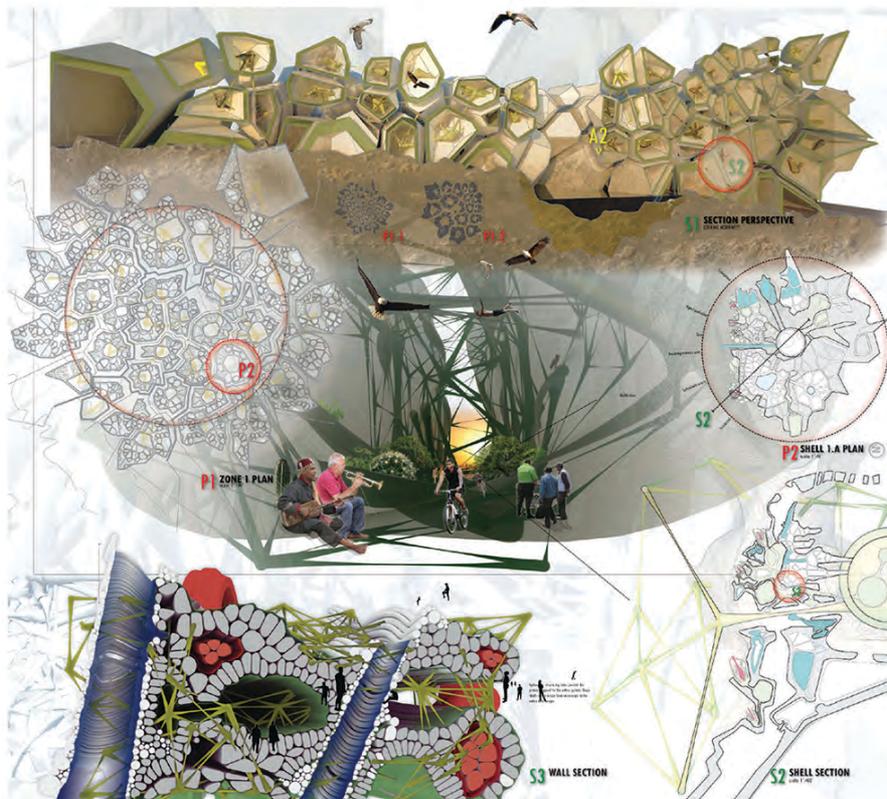


Figure 9: *Arid Systemics* team renderings and system analysis drawings.
(Source: Cruz Crawford and Sheehan Wachter, B.Arch Graduates 2012).

CONCLUSION

It was apparent that the balance of many issues became a key theme of the studio. This manifested itself on several levels, from the bottom-up versus top down planning principles, use of environmental resources and the reality of working methodologies in a quasi-hierarchical studio structure. The optimum result was usually a hybrid approach that acknowledged the complexity of the situation and was not too reductive. Obviously architecture itself cannot solve all of society's problems, but as the eminent philosopher Michel Foucault has stated, "it can and does produce positive effects when the liberating intentions of the architect coincide with the real practice of people in the exercise of their freedom" (Rabinov, 1984, p. 246). We need to be engaged as educators to be part of the process of the future shaping of the world. Staying flexible and dynamic to changes in our profession and world, more akin to nature and natural models. It is imperative to start getting students to think and work this way too. Whether this is changing up the traditional solo-based designer methodologies or introducing them to other fields and disciplines.

Technically there are always developments to be made. It is imperative for architects to start using information and data in a smart way, and in multiple dimensions - the 4th dimension using time and energy. Simulation and analysis tools are developing daily, even though their interface (especially in a live way) is sometimes a digital challenge. This interface is crucial if we are to move beyond the green-washing that is the current general state of affairs and incorporate these principles in the earlier design stages. The studio started to address many key ecological concepts, but what is needed is a paradigm shift in thinking. William McDonough and Michael Braungart, authors of *Cradle to Cradle*, which gives an ecological approach to design, have written,

"When one takes seriously that the concept of waste can be eliminated in the worlds of architecture, commerce, manufacturing, and transportation – indeed in every sector of society-the purview of design shifts radically. Not only are we required to include the entire material world in our design considerations, we are asked to imagine materials in a whole new way." (McDonough and Braungart, 2003).

At the end of the semester, feedback from students and peers indicated that the enormity of the design challenge was seen as a positive that was an engaging experience for all. (i.e. selecting and developing their own program on an urban scale). Part of the challenge pedagogically was the need to control and lead the studio, but not to the extent where I became dominating and stifled the students' creativity. In our globalized world it is crucial to stimulate students to make further connections between themes and concepts like ecology, sustainability and parametric design, always encouraging them to work smarter, not harder. It is imperative to engage students in projects of this scale and complexity while they are in an educational environment, allowing them to be visionary and forward-thinking. These ways of thinking beyond the traditional box are becoming increasingly needed in our rapidly changing professional environment. Buckminster Fuller has eloquently stated,

"Because politicians will not dare to stop politicking, and because income-supported individuals will not risk loss of their incomes, and because the wage-earning world will not dare to drop its income-producing activity to promulgate the design-science achievement, it can only be undertaken by the more or less freewheeling student world." (Fuller, 1969, p. 291).

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VALUES OF LEARNING THROUGH 'PLACE-MAKING' IN THE DESIGN STUDIO

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Abstract

With emphasis on conceptual design-thinking in studios and the extended attention to abstract architectural theories, design education is veering away from the pragmatic issues of the discipline. This paper discusses an architectural design studio teaching experience, which emphasized the notion of place-making, particularly the contextual analysis and appreciation, as the approach to design. It identifies the gap inherent in the current practice of design studio, and presents a reflection of the facilitation process and teaching strategies implemented within an architectural design studio conducted in the Bachelor of Science (Honors) (Architecture) program at Taylor's University. The purpose of this paper is to discuss the values of learning based on the emphasis on contextual analysis and appreciation in design. This paper shows that the emphasis on context and its responses in the design work allow students to explore different channels of creativity and address imminent issues that underlie the students' tendency of literal mimicry, the unconditional abstraction and the lack of sensitivity in contextual considerations in practicing architectural design.

Keywords: Place-making, design studio, pedagogy, context, architectural education

INTRODUCTION

Place-making is one of the significant issues within the discourse on architecture since the 1970s. There were different theoretical attitudes toward the conception of place and its relations to architecture, one of which was the concept of *genius loci* or the 'spirit of place'—a spirit which gives life to people and places, and determines their character or essence. This notion was described by Norberg-Schulz as 'local character' and the phenomenon of everyday life as well as referring to landscapes and urban milieu. Quoting from Suzanne Langer, Norberg-Schulz argued that 'architecture belongs to poetry, and its purpose is to help man to dwell. But architecture is a difficult art. To make practical towns and buildings is not enough. Architecture comes into being when a 'total environment is made visible'. (cited in Nesbitt, p. 426) Similar concerns were raised by Karsten Harries who stressed the need to 'discover the importance of neighborhoods and regions ... which will articulate their character...'. (cited in Nesbitt, p. 396) These theories of architecture emphasized the importance of making the environment meaningful through the creation of specific places.

Despite the emphasis on place, it remained a theoretical endeavor. Edward Casey, in his seminal work titled *The Fate of Place* (1998) argued that the manifestation of place within the built environment is limited. In the book *Analyzing Architecture*, Simon Unwin's (2009) definition of 'place' centered on the core of architectural design. He argued that place is to architecture is akin to meaning is to language; through identifying places, and organizing them, we make sense of the world we inhabit. (Unwin, 2009) Unwin defined 'place' as a configuration of architectural elements that seems (to the mind informed by its senses) to accommodate, or offer the possibility of accommodation to, an object, a person, an activity, a mood. These standpoints (both theoretical and design based) suggest that one important aspect of architecture is to create 'place'.

Similar phenomenon can be seen in architectural design studios. The influences of postmodern architecture in the 1960s and deconstructive architecture in the 1980s gave rise to

form-driven design that overshadowed the importance of 'context'. This scenario is observed typically in lower years design studios (for example in Years 1 & 2). In the book *The Fundamentals of Architecture*, Lorraine Farrelly (2007) described the notion of 'placing architecture' as a fundamental and important aspect of architecture. Context, or the place in which architecture is located, is specific and significantly affects how an architectural idea is generated and the critical issue of context has been studied, analyzed and responded to (Farrelly, 2007).

This paper discusses the effectiveness and challenges in emphasizing place-making as the theme for design studio work. The design module for Year 2, Semester 1 students enrolled in the Bachelor of Science (Honors) (Architecture) conducted in a private institute of higher learning in Malaysia is used as a case study. This design studio explores the notion of place-making as the basis for creativity where students were asked to draw inspirations from the site. To what extent students' learning experience in design studio benefit from this? What are the values of this approach in teaching design studio? These are the questions that this paper addresses. These questions will be tackled based on individual experience and reflection on the way the studio was conducted. Students' works will also be used as objects for discussion.

TEACHING DESIGN IN ARCHITECTURE

Architectural design forms the core module in architectural education. Being an academic who has been teaching design modules for the past 10 years, I realized that one of the issues in design lies in the students' affinity for literal mimicry and the problem of form. Concept in architecture should be meaningful, the theme or idea should not derive from mimicry of objects nor unconditional abstraction by which selling an architecture idea that was extruded from an existing object and abstraction is problematic.

Anthony Antoniades, in the book *Poetics of Architecture: Theory of Design* (1992) narrated the different 'channels of creativity', which were implemented in architectural studio in order to stimulate imagination and create design. He pointed out diverse themes that led design, for example, the use of metaphors, the use of history, the influences of cross-cultural design, the use of nature, and the use of arts and other related disciplines amongst others.

In the Bachelor of Science (Honors) (Architecture) program, emphasis was given to the poetics of the site, particularly in Year 2, in order to develop creativity in design in a meaningful way. In this program, the progression of design across the 6 semesters is charted. This paper only emphasizes the aspect of 'site' or 'context' as shown in Table 1.

Table 1. Progression of Design Studies of the Bachelor of Science (Honors) (Architecture)
 (Source: Author, 2008).

SEMESTER	1	2	3	4	5	6
THEME	Place-making and the self		Experiencing place and context		The users in the Urban Space	
EMPHASIS ON:	Defining space and boundaries	Place-making within the natural environment	Experiencing spaces/places	Sustainable environments	Place-making within the urban street	Architecture with a social impact

Although the importance of site is emphasized from Year 1 onwards, it was in Year 2 that students explored contextual influences of the site in a meaningful manner. In Year 2, Semester

1, students are introduced to producing comprehensive site documentation and analysis on both the tangible and intangible aspects of place. In addition to the emphasis on the user and his/her space in Year 1, the notions of genius loci and place-making were significant design generators in the design process for Year 2 students. Such importance has been captured by Franck and Lepori (2000, p. 7), who wrote: 'Inside and outside are complimentary; each exists by virtue of the other.... I tend to think of "architecture inside out" primarily as suggesting the process of growth...within the needs of people and within the site, emerge and be transformed. It also gives importance to what too often is not given importance – to human experience and aspirations. And so architecture comes from the inside, from the needs and desires of people, from the site and context.'

CASE REPORT

One of the key objectives of the studio was to develop awareness of a wider place, a genius loci (town, countryside, coast), and the design response towards a particular place. The design brief called for an architectural response toward characterizing the sense of place of Sungai Lembing by designing a museum which should reflect a strong contextual engagement to the site. Emphasis was given to the tangible and intangible quality of the site which includes the physical, social, cultural and historical constructs of place. All these elements contributed to the meaning of a particular 'place', or its 'genius loci' which informed the architectural concept and design generator for the project. Several considerations were made in designing this module:

Choice of 'place' or site

The set of criteria for site selection was crucial in order for students to immerse themselves in drawing inspirations from the site. One major question to ask is 'what are the special and interesting characteristic of this site?' With considerations of the criteria, Sungai Lembing was selected as the context for the exploration of design work. Sungai Lembing is an ex-tin mining town in Pahang located approximately 45 km from Kuantan. It was once the richest mining town in Pahang, and had the second richest tin deposits in the world after Bolivia. What is seen as the mining heritage today was once the largest underground tin mine in the world with multi-tiered tunnels carved into the mountainside, which are said to be the second deepest in South East Asia. This heritage is not accessible to visitor now; the history which evolved around the tin-mining industry is captured in the Sungai Lembing Museum, which is perched on the hill facing Sungai Kenau. What was once known as a jewel is now claimed as a 'sleepy hollow' which is now inhabited by elderly townspeople who used to work in the underground mines. The richness of the physical and built landscapes, the social and cultural values and norms and the history and memory of Sungai Lembing contributed strongly to the selection criteria.



Figure 1 (left): View of Sungai Lembing town (Source: 'Sixty Years of Tin Mining: A History of The Pahang Consolidated Corporation 1906-1966', n.d.) Figure 2 (right): View of Sungai Lembing town today (Source: Author, 2010).

The choice of Sungai Lembing was also due to its currency in recent newspaper publications. For example, Sungai Lembing was published in the tourism section of New Straits Times (February 11, 2009) and The Star (April 10, 2010). Also, a workshop on the proposition of the future for Sungai Lembing as a 'living museum' was also undertaken by a group of researchers facilitated by Dr. Ir. Yulianto Sumalyo in the 2nd International Field School on Asian Heritage (IFSAH) & International Symposium on Asian Heritage (2003) organized by University Teknologi Malaysia (UTM). Sungai Lembing was also documented in private web-blogs and travelogues which generally narrated Sungai Lembing as an interesting yet 'forgotten' or 'lost' place.

Facilitation and teaching strategies

This design studio, taken by a total of 62 students, is led by a full-time academic as a studio facilitator whose research background is on the theoretical ideas of place. It is co-tutored by three part timers from the architectural practices. The teaching approach implemented in this studio is designed to provide a 'contextual' learning environment where learning tasks are situated in meaningful real world tasks. The learning strategy applied is based on 'authentic learning' where learners were presented with design problems that are realistic situations (Smith & Ragan, 1999), as Young (1993) recommended that learning situations should include some of the characteristics of real-life [as opposed to hypothetical] problem solving scenarios. In this way, finding and defining problems as well as solving them formed a generative process of learning. The project was meaningful as Sungai Lembing was a 'forgotten place' striving to find herself. The question of 'what makes it a place?' thus became a driving question behind the core emphasis of the design studio. Some of the design questions/problems formulated were: What does Sungai Lembing mean to you? What are the essence(s) of Sungai Lembing which inspire you? How does the design reflect the character of Sungai Lembing?

Strategies to immerse students in task of place-making in the design studio included the following:

1. Emphasis on the avoidance of literal mimicry and symbolic references based on superficial imitation of literal shapes and forms.
2. Emphasis on the importance of understanding the context/site in the pre-design phase based on a theoretical standpoint. Students were introduced the notion of place through a short excerpt of Christian Norberg Schulz's *Genius Loci*, and Lorraine Farrelly's chapter on 'Placing Architecture' in *The Fundamentals in Architecture*. Students were also introduced to Edward White's *Site Analysis* which provided a very comprehensive way of documenting and responding to the site.
3. Exhaustive research and data collection on site to provide students a holistic perception of the site prior to design. Field work offered opportunity for students to immerse in the learning process set in a real life context.
4. Discussion on human experience as a significant contribution to understanding and knowing a place formed part of the same inquiry. Students were introduced to architects/writers of the phenomenological standpoint in architecture such as Steven Holl and Juhani Pallasmaa. This opened up students' perception of place and place-making beyond the visual domain of architecture as users of built environment and as designers.
5. Introduction to the paradigm of works by architects that approached design by exploring the integration of built forms to landscape forms e.g. Frank Lloyd Wright's Falling Water; Adalberto Libera's Casa Malaparte.
6. Introduction of myriad of works that explored memory and history of place as a design inspiration. It highlighted the importance of history and event within a place as a generator of design e.g. Proposals for Twin Towers for the September 11.
7. Emphasis on place-making approaches that emphasized materiality and place e.g. Kengo Kuma's Stone Museum and Bamboo Wall House; Peter Zumthor's Thermal Vals.

The following section documents the methods of teaching which introduced the notions of place and place-making.

Pre-trip required readings and lectures: The key readings which formed the theoretical basis of this studio are as follows: a short excerpt of Christian Norberg Schulz's *Genius Loci*; Lorraine Farrelly's chapter on 'Placing Architecture' in *The Fundamentals in Architecture*; Edward White's *Site Analysis*. In supporting the understanding of the theories that framed the studio, a series of design lectures are delivered to introduced architecture and architects that derived their design based on context/site.

Field trip: The major thrust of the teaching strategy was devoted students' perception of place. Thus, the first step was to set up a site visit. A site visit of 3 days was programmed to document and record site information. It adapted the field trip planning model presented by Myers and Jones (2004) which included the pre-trip, trip and post-trip stages. In this model, Myers and Jones (2004) emphasized the importance of proper administration and instruction during the pre-trip stage, the significance of identifying roles of participant and organizer in the trip stage, and the value of debriefing and culminating activity in the post-trip stage. Prior to the trip, students were made aware of the itinerary, the objective and outcomes of the site visit and required to conduct preliminary research as part of the pre-trip instruction.

During the site visit, students conducted a contextual analysis. 'Contextual analysis' is a pre-design research activity, which focuses on existing, imminent and potential conditions of the site. Its major role in design is that of informing designers about the site prior to beginning design concepts so that the early thinking about the design can incorporate meaningful responses to external conditions (White, 2004). The information collected was classified into the various sections:

- Location, orientation & climate
- History and morphology of town
- Natural and constructed landscapes (include site sections)
- Circulation & movement through the town
- Typologies & patterns (1) Settlement types (township models in the region) and (2) Architecture and Building types
- Ritual and communication (1) Social geometries (2) Social interaction
- Textures and materiality of the site

Groups of 8 students were asked to collect data for one of the 7 themes. Observation, diagrams, photography and model making were used as data collection and recording techniques. In order to find out about the social and cultural norms of the place, students interviewed the inhabitants of Sungai Lembing which majority of them were ex-miners. The purpose was to understand the rituals and the everyday lives of the inhabitants, and the history and their memories of Sungai Lembing.

The breakdown of the 7 areas of documentation gave a more holistic understanding of Sungai Lembing. Besides collecting as much data as possible, the hands-on direct encounter with the site from a personal and sensory point of view offered the opportunity to develop a sense of what is unique, valuable and important to the site (White, 2004). This provided students with myriad of findings on the character of Sungai Lembing, which they may draw, inspirations from for their individual design work.

During the trip, the agenda began with free time for individuals to explore the site on their own which allowed students to get comfortable with their surroundings. Once their curiosity is satisfied, learners were able to focus their attention on the outcomes of the visit (Myers & Jones, 2004). It is followed by the second phase of the trip, which was a guided tour by a tour guide/ex-tin miner who provided first hand experiences on his perception of the town. This provided an opportunity for students to ask questions that may have developed during their exploration time.

The third phase was a small group learning activity, where students participate in a discussion and questions and answer session on their data collection.

The post-trip phase ended with a debriefing session where students' shared their experiences and discussing data or results of assigned groups. This activity culminated in a student presentation and a site model and preliminary design work to use/apply their findings on the Sungai Lembing, which is presented below.

Brainstorming workshop, A Model Plug-in session as a form of group discussion: 'Making' is used as a key technique for design explorations which stimulates thinking and more importantly, to visualize ideas in a tangible manner. In previous studios, students are introduced to conceptual models and study models as generative tools for design. In this studio, a contextual model is introduced; this model is a three-dimensional presentation technique which used the composite approach of superimposing all the site information over one referent base model. A significant advantage of using the contextual model is that it may be used as a base model for studying and presenting site concept and building design.

Students are then required to construct conceptual models to visualize their design ideas. Conceptual models are built at initial stages of a project to explore abstract qualities such as materiality, site relationships and interpretive themes. The brainstorming sessions for conceptual development and ideas are conducted as a group discussion using 'model plug-in' as a platform for generating and visualizing ideas. Students were to generate ideas based on their perceived *genius loci* of Sungai Lembing. This is conducted as a one day workshop. The guiding design question posed to students was: What is the essence of 'place' [Sungai Lembing] that you are capturing in your design? What is the design strategy, concept or idea which will be explored in your design?

Site response diagramming: Emphasis is given to site response as an important aspect of design. While the contextual model is used to brainstorm creative ideas of the context in relation to design, the site response diagrams further reinforces the emphasis on site as a generator for design. In this aspect, diagramming was an important aspect of design language which produces design solutions. As reinforced by White (2004), mastery of diagramming is fundamental to attaining competence in design: 'Diagramming is a way to get close to the problem, to engage it, to absorb it, to reinstate it in our own terms and to render it second nature so that we can attend to the selection and integration of potential solutions. ... Investigating in diagramming often leads us to the discovery of design ideas that otherwise wouldn't have occurred to us. Diagramming assists us in bridging between the problems as expressed in verbal terms and the solutions as expressed in physical/architectural terms' (White, 2004, p. 3). This studio took the analysis of sites as one aspect of architectural diagramming which initiate the design process.

Students are asked to examine how their design is developed through both tangible and intangible site forces for example:

- Orientation and climate
- Topography and natural landscapes
- Neighborhood context: Adjacent objects and buildings
- Circulation (pedestrian and vehicular including roads, tracks, trails, paths)
- Views
- Sensory (Sound, Smell)
- Site uses

The methods implemented in the design studio which introduced the notions of place and place-making impacted on student learning in different ways. The following section discusses its values towards student learning.

VALUES AND EMERGING EVIDENCE OF LEARNING

The different teaching approaches (site visit and documentation; model plug-in and diagramming/site analysis) revealed values and emerging evidence of students' learning:

Students progressed from 'space-making' to 'place-making'

Students progressed from the previous design studio (Architectural Design Studio 2) which focused on internal constraints of architecture; whilst Architectural Design Studio 2 emphasized the user and the spatial planning process and specificity, this studio focused on the site as a significant force that shape and manipulate architectural outcomes. The emphasis on 'place' as a design generator completed the understanding of basic design, i.e. the fundamental design knowledge for students to progress into Architectural Design Studio 4.

The emphasis on the context and its meaning was a challenging task as students have a preconceived perception of site as a separate aspect of design to be resolved rather than an integrated design problem i.e. challenges to the inclusive design approach. Initially, students began developing their ideas into design through space planning. They were largely ignorant on the influence of the 'outside' to their architecture. Based on students' interim presentation, it was found that site response was scarce and limited. Students found it difficult to develop their work in relation to the site forces, as many failed to carry through design skills acquired from previous design studios. This problem is resolved by emphasizing the integration between the site, the program and the form/space informed the pre-design phase (See Figure 3). It reinforced the importance of the notion of place and place-making (context) in relation to form and function in the development of design, i.e. the site being the source of a basic organizing idea for the design.

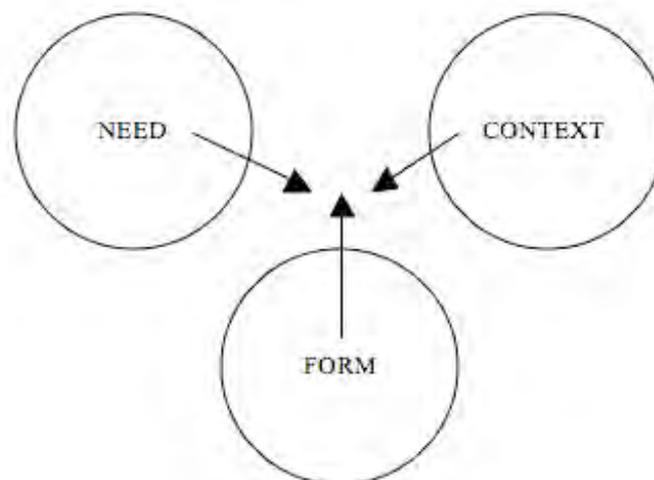


Figure 3: Sources of design solutions through three variables: Need, Context and Form
(Source: Adapted from Laseau, 2001, p. 107).

Defining and solving design issues rather than abstract making of architectural forms

Extending from the Year 1 design studios, students are exposed to more realistic design problems. As Bryan Lawson (2005, p. 42) stressed: 'For me creativity is, you know, finding solutions for all these things that are contrary, and the wrong type of creativity is that you forget about the fact that sometimes it rains, you forget that sometimes there are many people and you just make a beautiful stairs from the one idea you have in your head. This is not creativity, it is fake creativity'. In this studio, students explored what is the challenge/weakness of the site as an immediate response to their design. Diagramming the site responses was a tool for the visual

thinking process. Students' approach to design using model making (which is three-dimensional) is interwoven with the diagrammatic exploration of site (two-dimensional) to facilitate the design process (Figure 4). The site model plug-in session was beneficial for students to relate their initial ideas to the context.

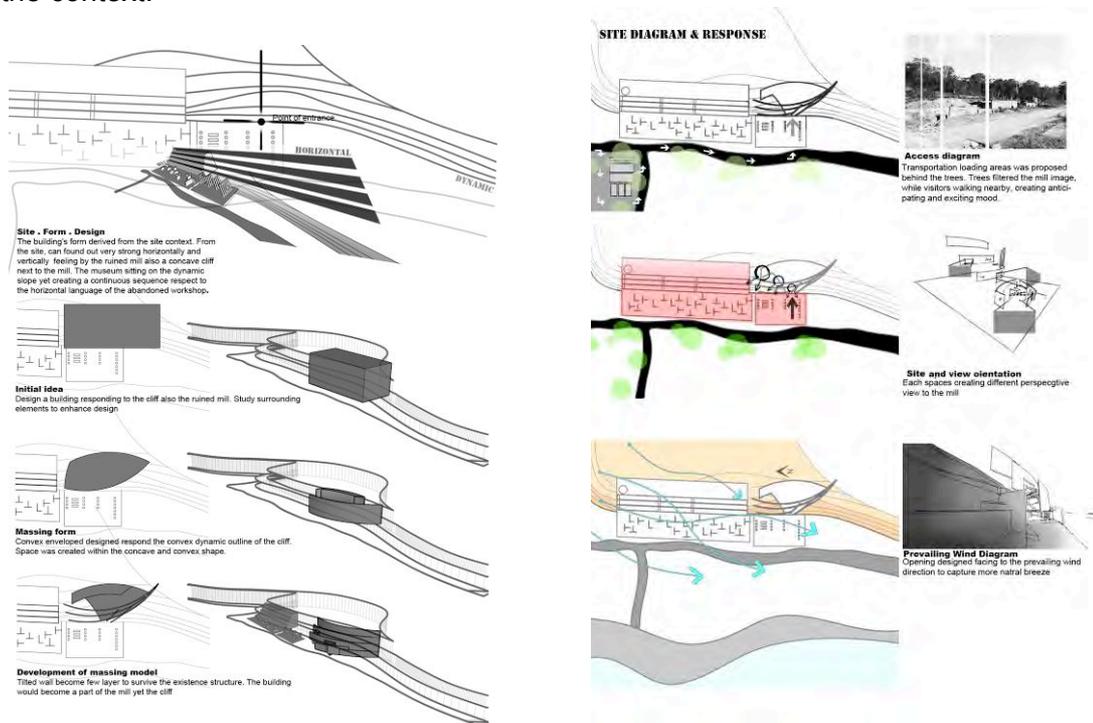


Figure 4: Diagrams illustrating the conceptual development of Chua's design in response to the site context (Source: Chua, 2010).

One challenge faced by students is the lack of maturity to integrate the perceptual character of the site, the site response, the program in developing their conceptual stance of the project. The conceptual development phase was still driven by a rather abstract stand-alone idea within laying all design issues involved in the pre-design phase. The conceptual development is seen as solely an artistic endeavor separate from problem solving. This meant that students were able to analyze different issues related to design, however they lacked the ability to synthesize the issues into a design scheme.

Defining 'meaning' in architecture through the site

Outcomes of students' works demonstrated evidence of learning from various perspectives of design. In the plug-in model session, students' explored varied ways to appreciate the context or site. The inspirations, which guided students' works, demonstrate the avoidance of literal mimicry and approached. Although imitation or metaphors are used, the approach toward design was from the perceptual and sensual perspectives, rather than literality.

One of the channels of creativity is based on developing design ideas through metaphors, i.e. transferring references from one subject to another. For example, Lee Car Rol generated her design based on the 'intangible metaphor' (Antoniades, 1992, p. 30) of clouds. The 'sea of clouds', a natural environment which was unique to Sungai Lembing, is translated into architectural planes which hover to create the overall form and space of the museum. These planes functioned as leveled floors and ceilings. Translating the ambiance of the changing and non-static appearance of clouds, one of the main features of this museum is the designed sliding panels that hold the exhibits. These panels stretched from floor to ceiling height, and are made of

translucent materials to impose a blurry visual experience. It is also functionally used for sun shading. To achieve the lightness of clouds, the museum is composed of minimal load bearing walls and is structurally supported with slender columns. The overlapping planes and intentional voids at every level have a multi layering effect from an interior perspective (either looking upwards or downwards); like layers of clouds floating above one another (Figure 5).



Figure 5: The cloud-like spaces which offered the perception of floating amidst the clouds in Lee's design (Source: Lee, 2010).

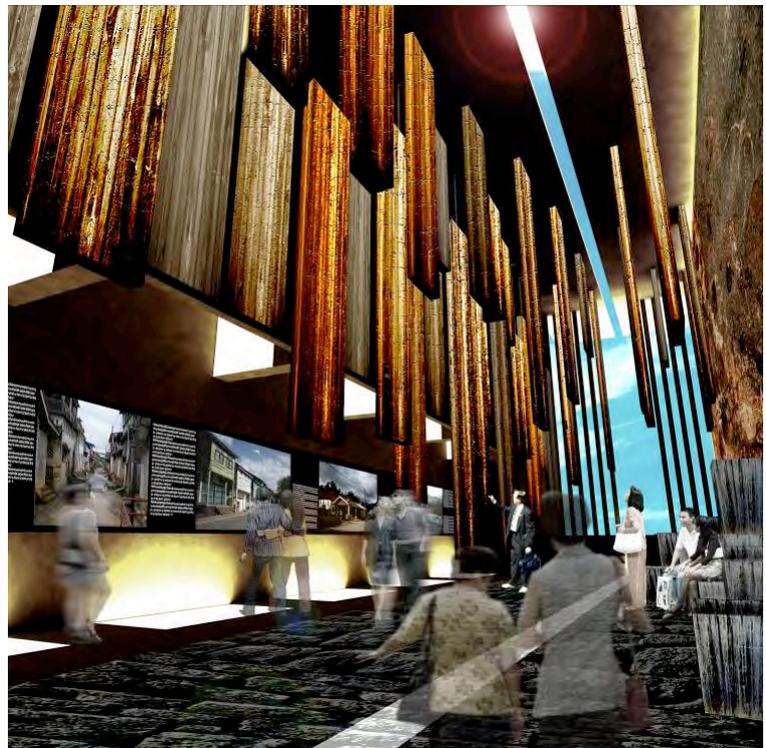
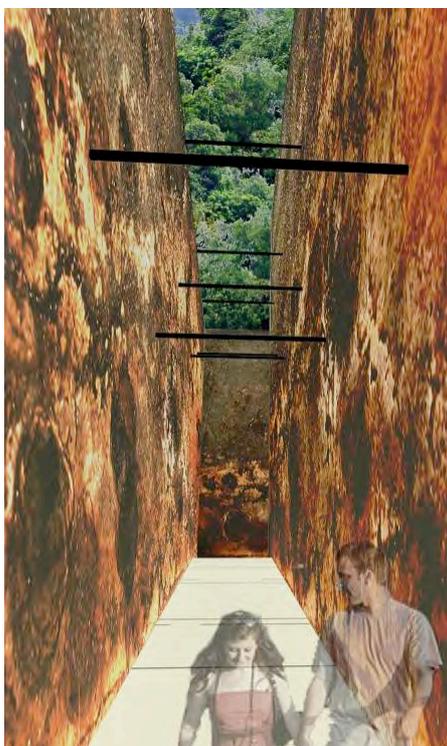


Figure 6: A narrow entrance into Tiong's museum for Sungai Lembing Figure 7: The use and emphasis on materiality in the main gallery space of the museum (Source: Tiong, 2010).

Besides the use of metaphors to derive architectural design, students grappled with portraying the perceptual character of the site of Sungai Lembing through an intangible sense of time. For example, Daniel Tiong chose cor-ten steel, or Cortensteel, also known as weathering steel, which is a steel alloy with a rusty appearance, to reflect the sense of time and decay of the ‘forgotten’ town. By developing design through the emphasis on texture and materiality, Tiong created spaces which provided users’ with a tactile and haptic experience as suggested by Holl and Pallasmaa (Figures 6 & 7).

Students also reacted to the character of Sungai Lembing intangibly based on the memories of past event and memory of place. Majority of the students generated their design works based on the experiences of the underground tunnels. For example, Chua Kwee How drew inspirations from the underground tunnels by emphasizing on the sensual qualities of space, following closely the perceptual condition of space as proposed by texts of Holl and Pallasmaa. Excerpting the elements of history, materiality and nature as the Sungai Lembing experience, Chua borrowed the existing ruined mills and the character of the natural landscapes to anchor his architecture. He used a choreographed spatial arrangement to restore the original view of the tin-mining workshop and mills (Figure 8).



Figure 8: Museum of Sungai Lembing designed by Chua. Front elevation (left) and section (right)
(Source: Chua, 2010).

Besides the intangible qualities of place, students were also drawn to portraying the physical condition of the context. For example, Tan Ik Chia generated her ideas based on the existing ruins of the mining site. Tan expressed the verticality of the ruins and captured tower-like spaces in her work (Figure 9).

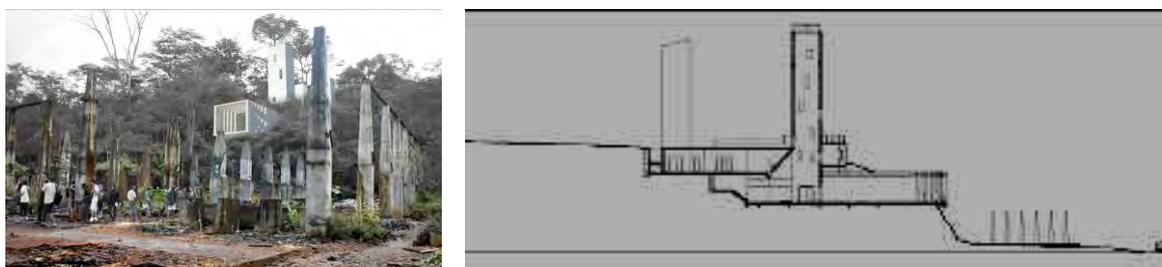


Figure 9: Tan's design depicting references taken from the existing site
(Source: Tan, 2010).

Another student Alex Lee also drew metaphors from the tunnels of Sungai Lembing, reflecting the scale of the mines and the ruins. The vastness of the mines is reflected through the overlapping tunnel (galleries). The façade formed a continuation of the mill, keeping to the language of massiveness and steps through the use of ramps. The ramps are related to the mountain biking

sport, which is popular with the youth there. To reflect the sense of vastness, Lee explored the scale and proportion of the design by drawing from architectural precedence of the Babylonian Ziggurat and Le Corbusier's Ronchamp (Figure 10).

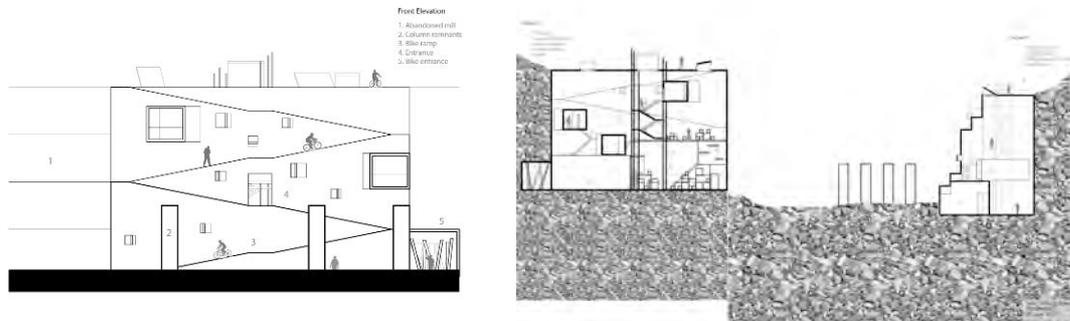


Figure 10: Lee's sections showing the key elements of his design through elevation (left) and sections (right) (Source: Lee, 2010).

The examples of students' works illustrated and described above demonstrate that the emphasis on place and place-making in design inspired different channels of creativity. They reflected references on history and memory, physical landscapes, place experience, and materiality and textures of place. These approaches are based on different means and starting point, and they demonstrated an avoidance towards literal mimicry, suggesting a strong relationship between the precedents used in the facilitation of the studio and the outcomes produced by students.

The field trips provided an opportunity of experiential learning and an attachment to place

In this studio, the field trip provided unique opportunity for learning that is not available within the four walls of the classroom (Myers & Jones, 2004). Students showed interest in Sungai Lembing, as it exerted a strong character in contrast to urbanity. The sense and character of place were felt by the students because of the rich historical, social and cultural construct of place. The site selection is critical to the design outcomes produced by the student. It suggests that the complexity, scale and size of the town as the context for the design project has to be carefully selected. One importance point which emerged is the 'place' has to be experienced as a pedestrian and it has to be lived-in in order for meaningful understanding of the context. Experience and attachment of place does not occur solely from the interaction between students and the built and natural environment of the context, but also to the community who resides and work there.

Although Sungai Lembing fulfilled such criteria, the challenge faced by the students was the difficulty in sourcing literature and information pertaining to Sungai Lembing. Data was collected from first hand experiences and walking through the town, and transcribing them into diagrams, and annotations. The immersion of students in the slow paced lifestyle of the society allowed them to experience the intangible qualities of Sungai Lembing. The data collected were collated as a publication and contributed back to the Sungai Lembing community, which encouraged and enhanced the students' sense of attachment and contribution to the place.

Theory-design link providing opportunities for meaningful and deep design outcomes

The experiential learning and the design process is informed by theoretical readings such as writings of Holl and Pallasmaa. Students are given readings to facilitate their learning, which guided through class discussions. The studio sessions revealed that students had little interest in reading. Rigor in discussion on the suggested texts and the use of lectures which were image-driven to complement the understanding of the theories is vital to facilitate students' learning.

Although the theoretical texts still remained a challenge, the design outcomes were more meaningful and deep for those who applied the theoretical knowledge of place (See design works of Chua and Lee).

CONCLUSION

This paper began based on the premise of the following questions: To what extent student learning experience in design studio benefit from the emphasis on place? What are the values of this approach in teaching design studio? Drawing from reflections of students' design works and experiences, the varied facilitation and learning strategies in the design studio provided a platform for learning to take place. It offered a platform which links theory and design, and puts emphasis on the importance of experiential and authentic learning, thus providing a basis to motivate learning and hence making it effective.

The strategy to facilitate learning began with the introduction of the theoretical framework for the studio through design lectures and readings, followed by field work that emphasized experience and engagement with place, and subsequently studio based work that offers myriad of opportunities for exploration and discovery (Figure 11).

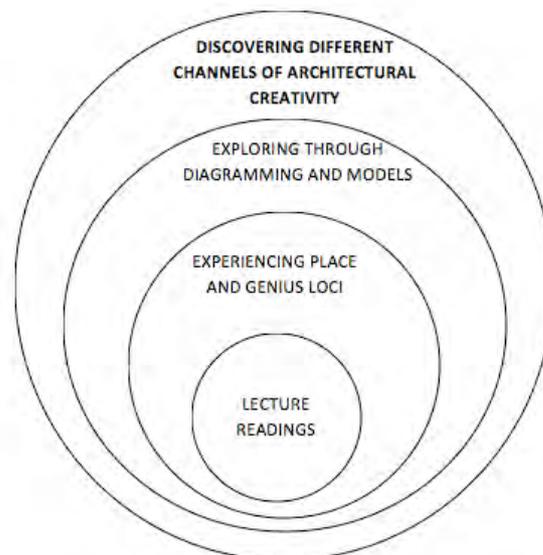


Figure 11: Facilitation and strategies for learning leading to different channels of creativity (Source: Author, 2010).

Learning is evidenced through students' discovery of architectural ideas based on different channels of creativity: students have approached design exploration and thinking through diagrammatic approaches, making references to intangible metaphors and physical contexts of place, as well as inspirations drawn from personal experiences, engagements and memories of place. The emphasis on 'genius loci' as a design generator informed the students' design work in a rather meaningful and poetic way. It reduced the problem of form-driven architecture which emphasized on the role of sight in architecture.

The values of learning extended beyond the intended learning outcomes prescribed in the formal documents of the syllabus. The emphasis on the site/place/context produced deeper and meaningful work that demonstrates sensitivity and sensibleness in design that forges modest intention to responsible designers of architecture and the built environment.

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THE UTILITY OF STRUCTURAL ENGINEERING CONCEPTS IN ARCHITECTURAL THINKING: THE IRANIAN EXPERIENCE

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Abstract

This article explores the utility of structural engineering concepts in the architectural design process. The widening gap between architects and structural engineers who pursue divergent intentions during the design process prompted this research. While the architects lament the insensitivity and unfamiliarity of structural engineers towards shared values such as aesthetics, the structural engineers criticize the architects for their lack of essential structural engineering knowledge. Analyzing the data collected from in-depth interviews with twelve renowned Iranian architects/engineers reveals the nature, outcome, and content of structural engineering concepts, which can be found useful to architectural education and practice. The interviewees used metaphors to describe the nature of the relationship between architecture and structural engineering. They also encouraged architects to integrate the building's structure into its architectural design as part of a cohesive design process rather than two separate systems managed by different disciplines.

Keywords: architectural design; structural engineering; pedagogy.

INTRODUCTION

Against the backdrop of two universal schools-of-thought in architectural pedagogy, namely, ABET (the Accreditation Board for Engineering and Technology), which gives architecture an engineering focus, versus RIBA (the Royal Institute of British Architects) with more emphasis on artistic skills, this article critically evaluates the utility of structural engineering concepts in architectural design thinking. It explores this question by surveying 12 renowned Iranian architects and architectural educators. While prior to the 1979 revolution, Iranian Universities developed and crafted their own programs they now carry out a set of standardized and centralized curricula for all the undergraduate and graduate disciplines. The nature, outcome, and content of the relationship between architecture and structural engineering capture the findings through which their linkages can be explored.

Familiarity with engineering concepts is imperative for architects and ranges from basic to rigorous calculations of structural elements (i.e., beams, columns, walls, foundations). The key question is: to what extent and in what ways can architects expand their understanding of these concepts without facing the information overload, recitation of concepts without understanding them, or trying to mimic what structural engineers do? There is also the question of practicality and collaboration between architects and structural engineers. A study on the quality of collaboration between architects and structural engineers, reports that while architects expect engineers to engage more, and embrace creative architectural design ideas, structural engineers expect architects to understand the structural concepts and seek advice before it is too late into the design process (Charleson and Pirie, 2009).

These concerns call for exploring the ways in which familiarity with structural engineering concepts could inform architects toward problem-solving—especially in the initial stages of design. These questions become particularly relevant since two divergent pedagogical approaches dominate the architectural training. While the traditional French Beaux Arts school-of-thought and RIBA adhere largely to artistic design principles more so than engineering calculations, architecture engineering programs focus instead on construction management as an offshoot of engineering, and on engineering principles rather than artistic content.

The article is organized into four parts. It first presents the research method and research questions, followed by an overview of the literature on the professional relationship between structural engineers and architects captured by two divergent pedagogical approaches to architecture (ABET and RIBA). The next part presents an overview of the architectural education in Iran and the extent to which 12 renowned Iranian architects/engineers found structural engineering concepts useful in their design practices and teachings. The third part focuses on the nature, outcome and content of the relationship between architectural design and structural engineering concepts, which emerged as the recurrent themes from the content analysis of the conducted interviews. The interviewees used metaphors (i.e., the nature, human embryo, organisms, and ecosystems) rather than abstract formulations to conceptualize forms and structures integrally rather than thinking about them separately. To do so in practice, they advised to rely more on intuition, common sense, and observation. These examples capture the key ideas behind each of these three emergent themes respectively. The article ends with the concluding remarks.

RESEARCH METHOD

This research stems from the need to revisit the architects' perceived responsibilities (i.e., creative design thinking) versus those of the structural engineers (i.e., calculating the structural elements such as columns, beams, and footings). Since architects are expected to design buildings while delegating the more technical and engineering-related tasks to structural (civil) engineers they may not think holistically toward their designs, and typically lack the skills that would allow them to think of designs unifying architectural and structural systems. Hence, architects need engineers as consultants who may alter the original design concepts based on structural rather than aesthetics considerations.

Using qualitative methods, the data for this research was collected from face-to-face interviews with twelve well-known Iranian architects/engineers who have taught in major Universities, and have a long track record of professional practice (in some cases for 40-50 years). The interviewees signed an informed consent before interviews were conducted. The Interviews were conducted in Farsi at the interviewees' consulting firms in 2011, and on average each took 90 minutes. The interviewees have served as experts and jury members for major architectural competitions, and collaborate with international architectural organizations such as the Agha Khan Architectural Award.

Most interviewees own consulting architectural firms, and have designed major buildings both in Iran and overseas. For example, Diba has designed the Iranian Embassy in Germany; Kalanatari has designed the Iranian Embassy in the Republic of Georgia, and Zeineddin has designed the Iranian Embassy in Japan. Saremi has designed several buildings including the Azadi Theater (1998), and the Molana residential project (2000). Hariri has among other buildings designed the National Budget Building in Tehran, while Saed Samiee has designed the Central Library of Zanjan University. Ghanei has designed the Sports Complex in the City of Naien. Arfaei has designed the award winning Jami Mosque in Bandar Abbass.

In addition to copious notes, the interviewees filled out a questionnaire during or after the interviews and submitted evidence (i.e., free hand sketches) on the use of structural engineering concepts before proceeding with technical calculations of their buildings. Except for those trained as structural/civil engineers, all other interviewees stated that they use freehand sketches in the

initial stages of architectural design, and submitted sketches of their implemented projects ranging from high-rise buildings to embassies and libraries. Besides characterizing the relationship between architecture and structural engineering the interviewees also commented on the quality of the structural engineering courses they took in college, and the extent to which they found those courses useful for professional development. Content analysis followed data collection whereby the respondents' key words/concepts were identified and coded (Miles and Huberman, 1984). See Table 1.

In addition to years in practice and teaching the interviewees addressed the following questions:

1. Whether they used structural engineering concepts in their architectural designs/courses?
2. If yes, specify and attach these ideas both in narrative and graphic (sketch) forms
3. Identify built examples which illustrate the use of structural concepts in projects/courses
4. Discuss the degree to which the courses they took or taught in structural engineering were useful in architectural design?
5. Recommend how to improve the content of the courses related to structure for architects?
6. The extent to which they find abstract structural engineering concepts useful in the architectural education?
7. To what extent they find practical experience useful for architects?

Table 1. Summary of respondents' answers to research questions (Source: Interviews).

Name	Specify structural engineering concepts in your designs	Built examples of using structural concepts in design	Usefulness of structural courses in architectural curriculum?	Professional experience vs. architectural training	Suggestions	Use of Metaphor
Sheikh Zeineddin	Building elements reflect structural forces (arches, columns, walls)	Iranian Embassy, Japan	Not useful	Problem solving with experience rather than abstract courses	Integrate aesthetics with structural necessities in cultural context	Forces of nature
Saremi	Understand the forces of gravity, use of walls (thin, thick, etc.)	Bolur Tower, Tabriz, Afsahar Residence Tehran, Villa, N. of Iran	Not useful	Intuition, self-discovery	Construction lab, practical training (e.g., carpentry and welding)	Tree, nature, mathematics (complexity, observation, integration, inspiration)
Diba	Integrate vernacular and modern architecture; high tech arch., Iranian architectural heritage	Iranian Embassy, Berlin, Bank Maskan Kerman, Iran	Not useful at all, most architecture programs suffer from lack of integration between arch. & structure	Self-discovery, observation, experience, architecture is like "fetus;" importance of finishing in architecture	Revamp architecture curriculum; field trips	Turtle, rose, egg, fetus, jaguar, morphology, ethics (integration, stability, flexibility, speed & structure of jaguar)
Arfaei	Integrate architecture and structure (e.g., the pyramids)	Bandar Abbass Jami Mosque	Not useful	Mentorship of "expert knowledge" by "local knowledge"	De-emphasize purely abstract structural concepts to architects	Vernacular architectural forms (i.e., cisterns and wind catchers)
Hashem Nejad	Folding, Deconstruction, geodesic domes, IM Pei's Louvre, Foster's Bank	Residential	Conditional	De-emphasize abstract concepts; increase students' understanding	Use of design software; understand basic concepts (i.e., stability design)	Building design vs. architecture (imageability)
Ghanei	Soleil; double-skin facades, Iranian architecture; cultural legacy; IM Pei's Louvre project combines simplicity and practicality	Sports complex, Naein; Arts Garden (Baghe Honar); Isfahan, Water Hall, Absar	Important practical & sensual understanding	Prevent visual clutter	Simplicity, cultural sustainability, practicality	Organic and green architecture; integrate landscape and architecture; organic forms; American Indian tents; "A" shaped forms of water cisterns; pyramids; Arab women's outfits to promote sustainability

STRUCTURAL ENGINEERING VS. ARCHITECTURE

The relationship between architectural design and structural engineering concepts in the West provides a backdrop to the Iranian experience explored here. The industrial revolution separated

the old from the new age during which new technologies transformed the civil society and public perception toward mass production and standardization (Ben-Joseph, 2005). Architects of the new era kept pace with the realities and demands of the society. The Bauhaus and the International Style envisaged new responsibilities for the social relevance of architects, who as artists were largely protégés of influential political and religious leaders of their communities a century earlier (Kreditor, 1992). These responsibilities stemmed from the applications of new technologies, the beginning of the professionalization of architecture, and a tendency for training engineers rather than artisans and craftsmen. Hence, structural engineering evolved from architecture as craft into a by-product of scientific rational thinking, and gained new grounds as a separate discipline seeking new identity.

Further specialization and advances in construction techniques drove a wedge between architecture and structural engineering (Cuff and John Wriedt, 2010). While until the 19th century the master builder assumed full responsibility from architectural to structural design, thereby, envisioning and creating a balanced coherent outcome, architects now design buildings without much engagement in other pragmatic skills including construction and fabrication (ibid). These responsibilities have caused problems whereby the architect is accountable for the artistic part and the structural engineer for the structural part. This creates an imbalance in the design process preventing a coherent and holistic architectural design. Two popular schools-of-thought in architectural design addressed this imbalance. Unlike the French Beaux-Arts architectural pedagogy, which focused on honing students' visual skills and emphasis on proportion and scale, the Bauhaus training emphasized apprenticeship and gaining mastery of crafts such as carpentry and masonry as well as reconciling between arts and construction (Giedion, 1962).

Whereas innovations in the structural engineering sciences gradually intensified the rifts between architectural and structural engineering innovations in architectural design do not seem to catch up with them. The chasm between structural engineering and architecture makes the potential collaboration between the architect and the civil engineer challenging and less conducive to acceptable outcomes. The advent of modernity exacerbated the situation by further specializing architecture and engineering, and hence, limiting the familiarity of architects with a comprehensive knowledge of structural engineering concepts. Regular training courses set up for engineers and architects in various countries attest to the further specialization and professionalization of scientific disciplines as a global emerging phenomenon.

Debates surrounding innovative structures and technologies reflect sharp boundaries, which have also defined contemporary academic disciplines. Consequently, recruiting knowledgeable experts with catalytic roles in training structural concepts to architects has become increasingly problematic. In many cases, civil engineers undertake to teach these concepts to architects. However, the degree to which architects find such courses effective remains questionable while finding qualified architects who can teach them is fairly uncommon.

Structural engineering concepts transcend solutions to common structural problems and range from addressing structural forces to symbolizing aesthetic values. For example, construction technology in Norman Foster's work has become a potent architectural vocabulary for spatial expression. Indeed, structural thinking can provide architects with numerous possibilities from conceptual to detailed design. But the dilemma is that during this process, distinguishing between architectural and structural design becomes somewhat murky (Afshar-Naderi, 1996). Calatrava's projects, typically demonstrate creativity in both areas. At the implementation stage and subsequent to the specification of structural systems architects feel more comfortable to take advantage of myriad ways of finishing interior decoration and spatial arrangements. Ignoring such information is analogous to a poet with a limited vocabulary, or a conductor who does not quite capture the range of his musical instruments to contribute to the entire orchestra (Hashemnejad and Soleimani, 2007).

While the knowledge gap between architects and structural engineers has widened, their responsibilities often overlap. For example, architects can inspect structures of up to two stories while structural engineers are allowed to design such buildings. This confusion and confounding

responsibilities promotes competition rather than collaboration between architects and structural engineers. The divergence of these two disciplines owes much to their specialization and separation of responsibilities. Reconciling this schism prompts searching for an effective collaboration between architects and structural engineers. This collaboration requires the architect to have a realistic understanding of the uniform structural behavior without the need for rigorous structural calculations.

ABET VS. RIBA

Two divergent trends distinguish the architecture curriculum today: ABET vs. RIBA. Whereas ABET views architecture as a sub-discipline of Civil Engineering (CE) RIBA considers it a separate profession. Often times, “many prospective students do not understand what architectural engineering is and are confused as to how it differs from architecture” (American Society for Civil Engineering Education, 2007). Substantial overlap among the courses offered in each discipline perhaps accounts for this confusion. In many of the 17 accredited Architectural Engineering (AE) programs in the United States, the AE and CE students attend the same classes with the same instructors. Content wise, both the AE and CE programs emphasize “the area of structures” (ibid.). The majority of the AE programs in the U.S. take four to five years with the average credit hours in the former range from 126-138 and from 158-165 for the latter. Proficiency in mathematics, statistics, strength of materials, calculus-based physics, and general chemistry, fluid mechanics, dynamics, and other engineering-related courses emphasize the requirements for the AE students as reflected in the ABET accreditation criteria. Emphasis on engineering courses, therefore, does not leave much room for the design-related courses as the architects’ main professional concern. In fact, the curricula of most accredited AE programs in the U.S. focus on: communications (i.e., writing and technical presentations); humanities (i.e., political science and economics); math and science (i.e., calculus, statistics, differential equations, chemistry, physics, and computer science); engineering science (i.e., statics, thermodynamics, and fluid mechanics); structures (i.e., structural analysis and soil mechanics); electrical/mechanical systems (i.e., lighting, acoustics, and environmental controls); construction (project management, contracts, and specifications, construction materials, construction methods, and estimation); technical electives; other (i.e., physical education, engineering economics, professional practice and surveying); architecture (i.e., architectural design studio and history of architecture); capstone design (i.e., senior design project) (ibid).

RIBA however, has a different take on architecture and concentrates on five areas (www.architecture.com, the Royal Institute of British Architects): professional context (i.e., architectural design, sustainable design, and design for access); practice and management (i.e., business administration and marketing); managing projects (systems of structuring and managing the brief process, negotiation skills, and contracts); construction skills (i.e., innovation in building materials and construction products); and personal skills development (i.e., verbal, critical, and interpersonal skills).

These two approaches underline different skill sets, competencies, responsibilities, and professional identities for architects. While an architectural engineer has limited design capabilities a RIBA-trained architect is a designer with a limited understanding of structural systems, but can engage in technical dialogs with engineers. This dichotomy between architecture as a sub-discipline of CE vs. an independent discipline which both derives from art as much as sciences has grown over time, and has made the prospect for creating a balanced curriculum unlikely. This wedge clearly manifests the struggles architects face throughout their training.

Iranian universities are no exceptions, and the conducted interviews reflected their opinions about the architects’ competencies. In many cases, they lamented the abstract notions of structural engineering as prescribed in the AE curriculum. They proposed instead, a balanced training in which observation and profound in-depth understanding of the natural phenomena provide grounds for developing a savvy for integrating architectural design with structural insight.

ARCHITECTURAL EDUCATION IN IRAN

The architectural education in Iran pre-dates the 1979 Islamic Revolution. Three major Iranian Universities offer degrees in architecture (Tehran University, Shahid Beheshti University, and the Iranian University of Science and Technology or Elm'o Sanat in Farsi), each of which has contributed to architectural training for over forty years with Tehran University (with over seven decades) being the oldest. The three universities offer B.A. in Architectural Engineering, M.Sc. and Ph.D. in Architecture. Energy, project management, landscape architecture, architectural engineering, historic preservation, history of architecture, building construction and technology, and urban planning represent the major areas of concentrations in those programs.

While Iranian universities had separate curricula prior to the Revolution, they adhered to the academic programs prescribed by the Cultural Revolution Headquarter after 1979. That headquarter standardized the content of architecture program based on what it considered the essential competencies of architects apropos of Iran's cultural, social, and technological characteristics. The approved curriculum places much emphasis on the architects' technical competencies and capabilities in statics, steel and concrete, and building technology. However, they differ in how to familiarize the students with imperative technical competencies.

Special attention has been given in recent years to natural and organic forms and integrating architectural and structural compositions, best exemplified in living organisms and animal anatomies. In the exhibitions series at Shahid Beheshti University College of Architecture and Urban Planning (<http://archurb.sbu.ac.ir>), in addition to such forms, students produce models based on the Japanese art of origami. These series demonstrate innovative approaches in familiarizing the students with complex architectural/structural compositions; a less orthodox approach in understanding structure as complementary to architectural design. Attention to nature, both as form-giver and a source of design inspiration, has indeed, prepared students to be more creative than their counterparts in the other architecture programs. Special tributes were also made to engineers such as Peter Rice, Santiago Calatrava, and Buckminster Fuller who bridged the gap between architecture and engineering with their contributions to innovative architectural expressions.

EMERGENT THEMES

Three common themes emerged from the in-depth interviews about the relationship between architecture and structural engineering. The first theme reveals the nature of this relationship metaphorically rather than explicitly. Unlike the engineers' reductionist approaches architects think about the form-structure relationship metaphorically and instinctively.

The interviewees also discussed the relationship outcome and considered the separation of architecture and structural thinking unnecessary while believing that abstract calculations subsequently makes sense for purely practical and implementation reasons. Seen thus, to architects architecture manifests a monolith that integrates construction materials, structural system, and stability. The third pattern focused on the content (i.e., the local vs. expert knowledge) of the relationship. Each theme unfolds one aspect of the relationship between the two fields, and in toto, they outline three ways to conceptualize their integration rather than seeing one as an offshoot of the other, or as an afterthought.

Nature

The interviewees used metaphors to articulate the nature of the relationship between architectural creativity and structural engineering. Metaphors enrich and enable "the currency of the artistic imagination" (Watson, 1984). Architects learn from the 'nature' as a potent metaphor even though its definition and whether it is "credited to divinity or to biological evolution" remains disputed (Sommer, 2010). Ghanei underscores the importance of organisms and ecosystems in form-generation. Natural forms inspired the primitive structures of the pre-historic period. To seek protection against natural disasters and to address basic needs pre-historic men took

advantage of their resources. Trees, cliffs, and caves protected them against wild animals, and large pieces of timber were used for transportation purposes and crossing rivers. Using natural forms and the nature as a model for technical inspiration and perfection gradually transformed the pre-historic man from novice to expert. Nature informs architecture, says Hariri, and to survive, structures should be strong and stable. Kalantari considers rhythm and dynamism relevant metaphors in architectural thinking. Natural organisms exemplify unique structures and forms, which allow them certain affordances, degrees of freedom, and flexibility.

According to the interviewees, simplicity (Hashemnejad), complexity (Iravanian), symbolism, balance, stability and harmony reflect multiple attributes of the nature of the relationship between architecture and structure (Figure 1). Architects, interviewees argue, can detect these relationships by intuition and making astute observations. Diba uses the fetus to show the inseparability of structure and architecture and how art, environment, and nature collaborate in its growth. Otherwise, a defective fetus cannot grow to embody a healthy human being. Imitating the laws of nature raises the architects' general awareness and inspires them toward innovative designs. Trees illustrate how natural forms inspire architects to generate forms that demonstrate stability, aesthetics, and firmness. The Bird's Nest—another meaningful metaphor—accommodates to sports activities. The laws of nature also serve as a good role model for architects. Hurricanes and floods illustrate the transfer of the forces of nature through resistance (i.e., wind or other flows). These forces guide architects to act intuitively and seek to learn from natural growth mechanisms.

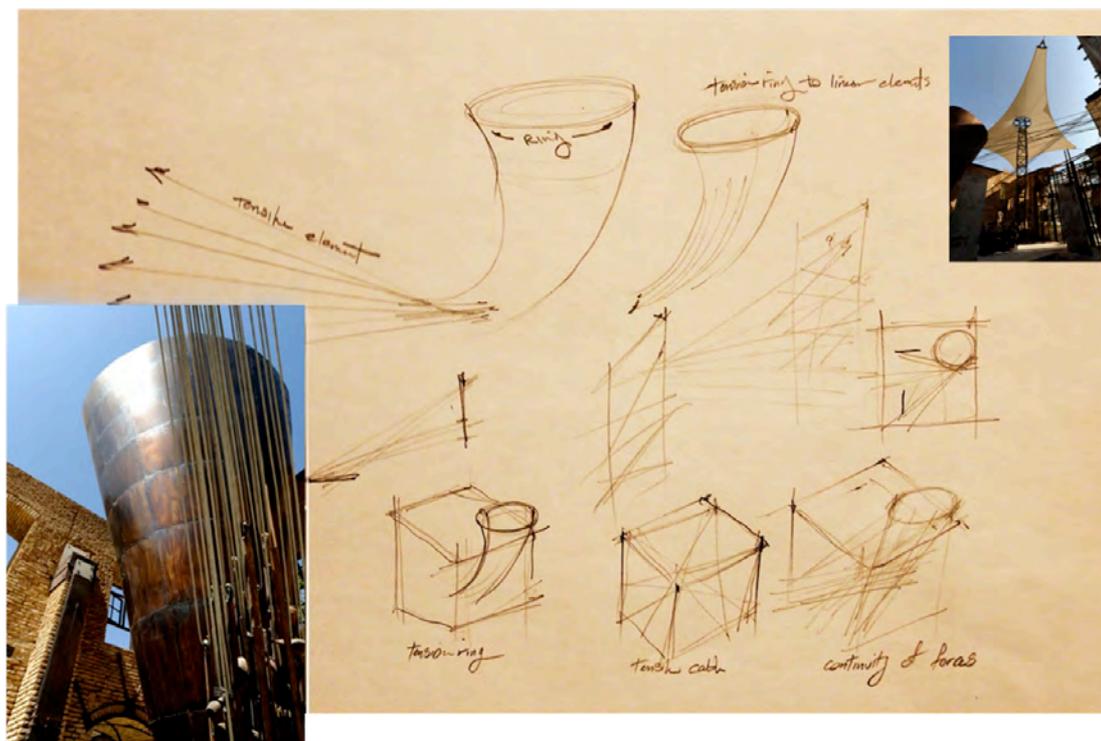


Figure 1: Iravanian uses an indigenous textile gadget as a metaphor for his design concept (Source: Authors).

Modeled after nature Faridani has developed a unique teaching style, which strengthens the students' hand-to-eye coordination and a sense of scale. He uses metaphors to articulate the relationships between scale, structure, design, and morphology. For example, he stresses the importance of model building in creative and critical thinking for architects. As a useful tool, a mesh illustrates the distribution of stress and strain in structural elements. The students use a large fishing net to erect a mesh. Using 200 balloons the mesh was partially suspended in the

air, while deadweight was used to keep the mesh downward. The upward and downward direction of the mesh alters its original stasis. The areas of the mesh under stress and strain become more like diamonds rather than their original squares. This experiment exemplifies a useful way to communicate to students how to conceptualize hybrid or complex forms found in nature. Others have used similar approaches in architectural design thinking. For example, in “bio-structural analogues in architecture,” the role of “animal,” “coral,” “seashell” analogues as various experimental means to enhance technological thinking in architectural studios has been extensively discussed (Lim, 2009). Building models based on these natural and biological organisms helps the students to visualize complex forms without the need for tedious abstract mathematical calculations. The human body (i.e., inhaling and exhaling through the lungs as a useful model for sustainable building design), Faridani believes, portrays another useful model for design-structure thinking.

The interviewees generally stated that the structural engineering courses in the architectural curriculum of Iranian universities are not useful in their current form. These courses mainly focus on abstract concepts (i.e., moment, torsion, tension, or compression) formulaically and through abstract calculations. There was consensus among the interviewees that teaching abstract engineering concepts without being grounded in the real-world examples does not promote critical and creative thinking. According to Zeineddin, the transfer of structural engineering concepts to architecture students requires continuous, gradual effort, instead of using hard core calculations; something “average” architectural educators and mentors do not commit to. Faridani also stressed his unique approach which involves gradual yet constant immersion of students in practicing architecture and structural engineering.

To remedy this deficiency, interviewees argue, architects and especially architecture students should simulate natural forms, hone various skills through field trips and observation, work with different construction materials such as timber, concrete, and steel, and practice carpentry and welding. Zeineddin finds the common abstract problem-solving techniques in architectural pedagogy less useful or indirectly relevant compared to seeking other approaches including self-discovery, observation, and critical thinking, and acknowledges the role of experience in shaping an architect’s professional identity. He likens experience to a ladder in which a novice architect can climb up over time. Interviewees also consider architectural forms resulting from architectural expression with incoherent structural systems partially responsible for poorly designed buildings.

These remarks do not deviate much from those who lament the use of abstract engineering concepts and technical calculations for architects. Golabchi reiterates this point and refers to his own publications where he discourages architects from adhering to technical calculations. Instead, he calls for a deeper understanding of forms where they follow or result from aesthetics, functional, or service-related rather than purely structure-related imperatives. These remarks resemble the pedagogical imperatives of those who address the knowledge gap between architects and structural engineers through potent graphics and brief descriptions instead of lengthy calculations. Introducing abstract structural logics has graphically enhanced the engagement of architects and engineers in shared dialogs. Some for example, discuss the interface between structure and form in two- and three-dimensional shapes, whereas post and beam, curved arch, pitched roof and barrel vaults illustrate the former, air supported, membrane and mast supported structures showcase the latter (Silver and McLean, 2008).

Outcome

Integrating form and structure illustrates the outcome of the relationship between the two fields. To Saremi, Ghanei, and Zeineddin, the nature integrates “simplicity and complexity” into “efficiency, flexibility, stability, and adaptability.” Ghanei believes that simple structures created by American Indians exemplify how architectural functionality integrates structural thinking (Figure 2). The typical water cisterns or *ab anbars* (in Farsi) also depict such integration.

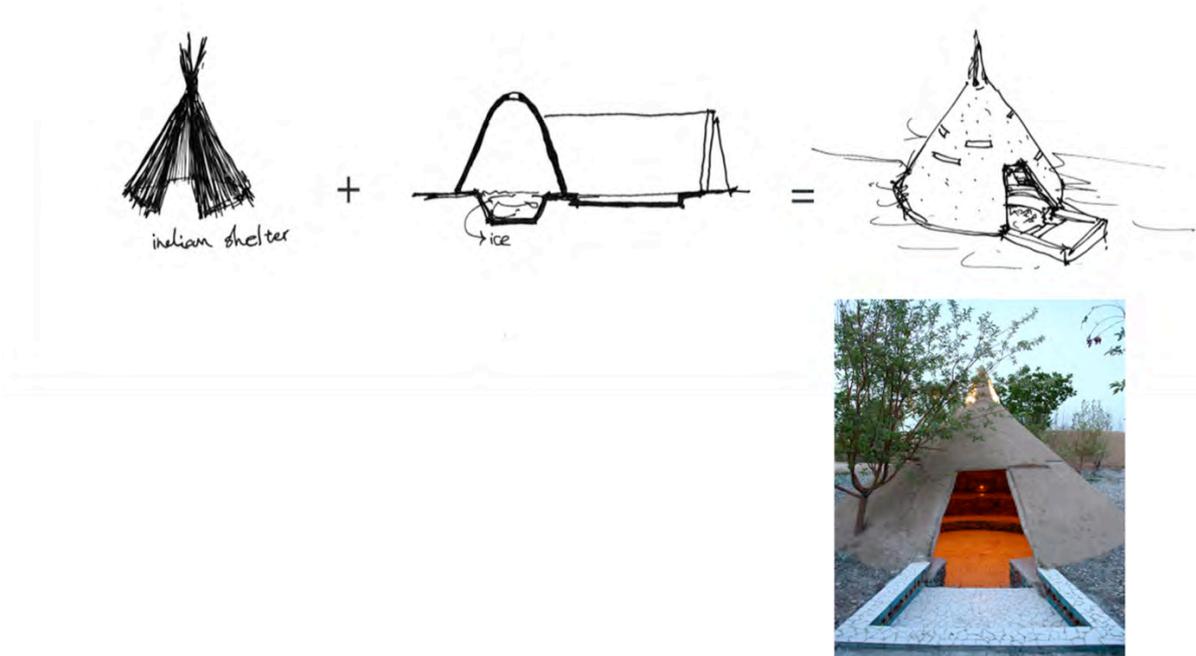


Figure 2: Ghanei's Mah Garden represents the integration of structure and architecture (Source: Authors).

Simplicity and intuition rather than complexity serve useful to think about integrative outcomes. Simplicity can be achieved in different ways, like how fingers, the forearm, and the joints play integral roles in the functionality of the human arm. Geometrical forms (i.e., cubes, cylinders, pyramids, or spheres) can accommodate various functions and prove more useful in design thinking compared to irregular, complex, and composite arrangements which lack identity and functional-formal clarity and simplicity (Kasprisin, 2011). Well-designed and well-balanced buildings demonstrate the unity and harmony of architecture and structural form. To promote creative thinking in design students should avoid using complex forms (Shahroudi, et. al., 2009). In contemporary architectural training simple geometric forms help students understand unity and stability, while any attempt to disturb the purity of architectural composition could disturb both the building's form and its functionality. Excessive use of complex forms increases ambiguity in the building appearance and allows the technology to reign over architectural spirit and meaning. The majority of interviewees underscored this point by showcasing the works by Le Corbusier, Mies Van der Rohe, Renzo Piano, Daniel Libeskind, Norman Foster, Santiago Calatrava, Pier Luigi Nervi, and I.M. Pei whereby structure and architecture are integrated not imposed.

The importance of simplicity in architecture—especially with regards to structural engineering concepts—is not unprecedented. ‘Less is more’ captures a common attribute of simplicity—especially in an era characterized by the proliferation of computer-generated forms—where technical prowess rather than need alone derives architecture. But simplicity by no means ought to determine the quality of the spatial experience. Indeed, as a powerful conduit towards creativity, integrating architecture and structural engineering through simple forms may result in the complexity of experience. Hence, instead of conceptualizing simplicity as merely the process of reduction by “leaving things out,” it can foster “forms that read as simple although incorporating a world in themselves, like the residue of past eras trapped in amber” (Treib, 2007).

Faridani also stressed the utility of first-hand experience in architectural model building instead of abstract calculations. A somewhat surprising comment regarding simplicity pertains to Golabchi who is a civil engineer by training. While as an engineer who believes that “form follows forces,” one would expect him to stress the role of technical computations or abstract structural

engineering concepts in the architectural training, instead, he believes that structural concepts should derive from “functional, aesthetic, serviceability, and construction” imperatives (Figure 3).

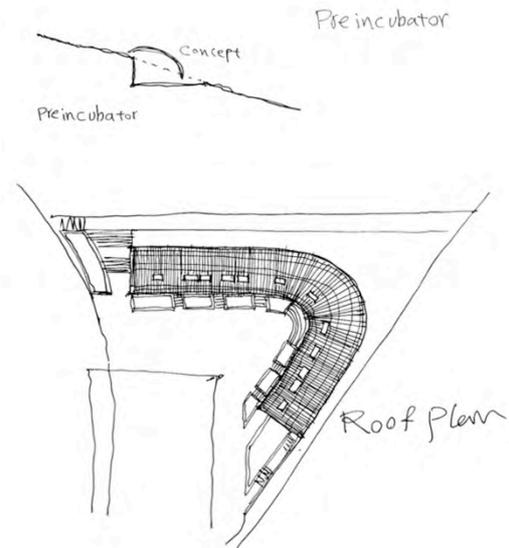


Figure 3: Incubator Building project, Isfahan, Iran; the natural landscape informs the building form and its structure in Ghanei's architecture (Source: Authors).

To Golabchi also, the integration of architecture and structure results in formal and structural stability as well as balance and harmony. Zeineddin argues that the forces acting upon the structure of a building should not be conceptualized separate from the building form considerations. Faridani makes similar observations by prescribing a set of unique architectural exercises in his building design-construction series courses where students experience the architectural and structural characteristics of various forms while they also build them by hand. These types of exercises familiarize students with the inherent architectural and structural engineering qualities and geometries inspired by natural forms and forces. Saremi also recognizes the advantage of model building by hand and examines the behavior of different construction materials such as metals and timber while exerting forces on them. Much of an architect's initial understanding of and exposure to various forces was driven or inspired by the forces of nature (i.e., trees and plants). To Zeineddin too:

Space and forces acting on it constitute the essence [of architecture]; the building's structural components are actually devised for controlling and taming those forces. Architects and engineers, hence collaborate to propose and generate innovative architectural forms, because neither architects can generate new forms without a concise understanding of such forces, nor can engineers successfully control them with only columns, beams, and walls alone (in Farsi).

Kalantari and Hashemnejad raised similar points by emphasizing the stability and unity of architectural forms, and practicality and feasibility during implementation. Diba, Saremi, and Arfaei emphasize the integration of architecture and structure demonstrated in important historic buildings (i.e., the Pyramids at Giza). For Saremi the design process does not begin with a

structural concept, but with the confluence of form, function, volume, stability, structure, and indeed, the ultimate users in mind (Figure 4). In Saremi's work, walls have a special role to play; they are at times thin and at times thick. Remembering his mentor Louis Kahn and his "French Structural engineering Professor" while studying at the University of Pennsylvania, Saremi considers the wall's main function as not only organizing the space by providing natural lighting, but also as dealing with the forces of gravity.

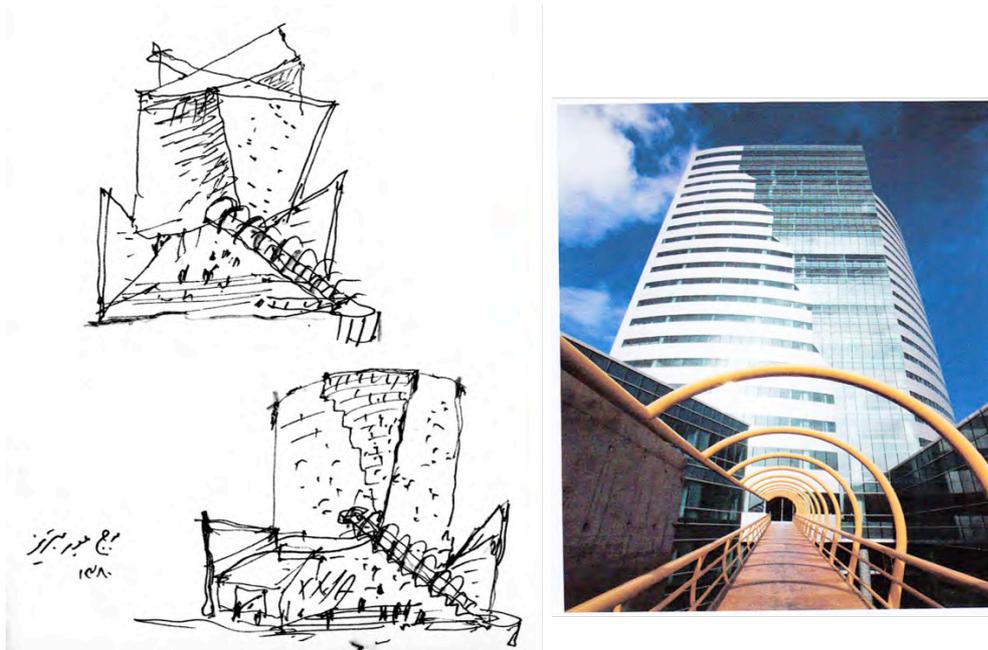


Figure 4: Borj Bolour, Tabriz, Iran. Sketch illustrates the integration of structure and architecture in Saremi's early design thinking (Source: Authors).

Zodiac 22 Light Structures illustrates one way of thinking about integration rather than competition between architecture and structure. This old publication contains many geometrical possibilities whereby structure, architecture, and mechanical installations can be cohesively and congruently integrated. The majority of Faridani's examples and his students' projects exemplified the expansion of geometrical forms.

Content

All interviewees express similar ideas regarding the content and substance of what architects should know. While they believe architects should acquire a standard set of artistic as well as technical/engineering skills for designing buildings, they question the extent and sources of these skill sets. There was consensus regarding the architects' representation capabilities from free-hand drawing to computer simulation and visualization skills. They were less unanimous however, in terms of the sources of these knowledge types. For example, while some stress the importance of canonical or expert knowledge, others like Arfaei, Kalantari, and Hashemnejad emphasize local knowledge as a more powerful source of inspiration instead (Figures 5, 6, and 7). The discrepancy between the expert and local knowledge reflects a larger gap in the architectural pedagogy where the former reflects the supremacy of authority in architecture the latter celebrates common sense, intuition, and good judgment not so much as a by-product of technical competency but as a virtue which evolves over time commensurate with experience.



Figure 5: Local knowledge informs Arfaie's architecture (Source: Authors).



Figure 6: Residential Building, Tehran, Iran. Kalantari utilizes structure, architecture, and the choice of building materials from early stages of design (Source: Authors).

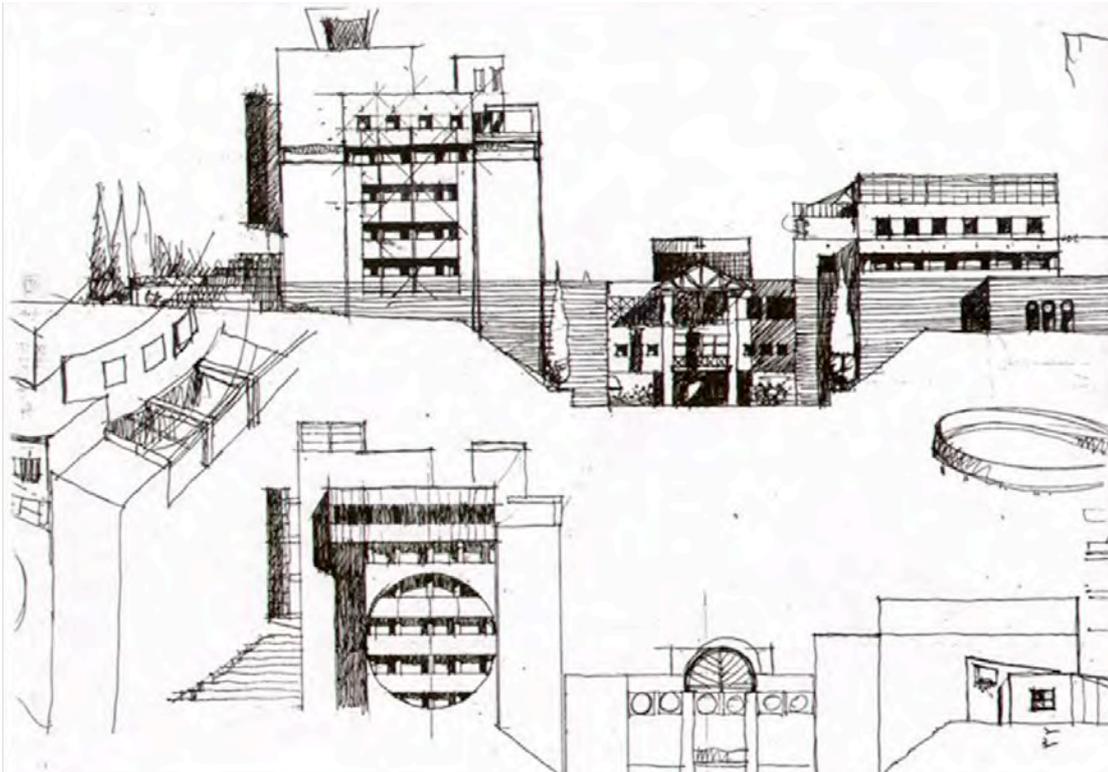


Figure 7: Hashemnejad's work also demonstrates his extensive knowledge of the context, design, and structure
 (Source: Authors)

Various themes including problem-solving, observation, intuition, self-discovery, and professional experience capture the type of knowledge the interviewees stress in architecture. They also emphasized free-hand sketches in expressing and illustrating design concepts (Edwards, 2005; Prats, et. al., 2009). While the interviewees understand the significance of hand-eye coordination and simple free hand sketches, they discourage the use of computer at the early stages of design thinking.

Other related issues associated with the use of free hand drawing include simplicity, naturalism, simulation, and practicality. For example, Hariri's sketches of a building he designed almost thirty years ago illustrates how he incorporates structural thinking (showing a customized steel hinged joint for a column to foundation in a house laid out on poor soil) into other concepts such as sustainability and practicality, and even the use of quick hand-drawn details of a wall-section. A systematic use of geometry in creative architectural thinking is another skill, which Faridani considers critical in developing the hand to eye coordination and appreciating scale in good design. On the other hand, like Charleson and Pirie (2009), Zeineddin urges engineers to understand good architecture so as to recognize their role not solely as experts who can perform complex calculations, but as facilitators who collaborate with architects in the problem solving process.

Diba underscores another important skill for architects. The adage "practice makes perfect" captures Diba's conviction regarding the importance of professional experience in architectural training. By using Indiana Jones as an ideal example of an archeologist who practices archeology most of the time, but teaches only a few hours a week, he articulates the utility of this model in architectural training as well. Diba rejects the current practice of architectural mentors who spend most of their time in the classroom and on campus rather than gaining outside experience. Furthermore, he emphasizes self-discovery and observation rather than solely relying on textbooks and abstract theoretical knowledge, which usually become obsolete if they do not stand the test of time or in practice. His call for incorporating practice or

field-based knowledge echoes Watson's notion of "technology as tacit knowledge," whereby technology alone is defined by three components: structures, construction, and environmental control" (Watson, 1997: 125). In his call for integrating technology and design, Watson argues:

if design and technology issues are not integrated, architectural students never really experience how the design idea, the line drawn on paper, can be informed by technical knowledge—the analysis of structure and construction or the quality and quantities of sunlight—that is, certainly not until after the design is formalized (Watson, 1997p. 125).

The majority of interviewees pointed out the virtues of "seeing" as the type of skill architects must develop in their training. These remarks are similar to Schon's virtues of "seeing" and "reflection" in designing (Schon and Wiggins, 1992). To better illustrate this skill, one interviewee reminds us of the principle of maximum efficiency with minimum materials in a bird's egg. The main function of an egg's shell, which is protecting the embryo with the minimum material, is done naturally and masterfully (Taghizadeh, 2006). Using more materials, however, could not only make the egg more brittle and heavier, but also jeopardize the mother's overall health. As such, a bird's egg represents a three-dimensional natural model in which the compression forces are evenly distributed across a thin shell.

This three-dimensional curved form becomes the main premise for designing domes and thin shell structures. Domes exemplify the integration of architectural and structural logics in adopting efficient and relevant natural building forms. Domes naturally distribute the lateral and gravity forces to the load bearing structural elements. However, the misuse and misunderstanding of this simple logic can result in the proliferation of flawed and inefficient structural systems in mosques for example. In many contemporary mosques, the use of horizontal steel beams at the base of the dome causes many problems. The shell naturally transfers the forces acting on the dome, and makes the use of horizontal beams redundant and unnecessary. This situation clearly increases the vulnerability of the dome because the transfer of forces to horizontal structural elements makes the shell thinner, and consequently increases the likelihood of creating cracks and leakage on the dome's concrete surface. This whole scenario clearly demonstrates the designers' lack of understanding and appreciation of natural forms, which leads to many structural and aesthetic problems.

CONCLUSION

This article has critically explored the utility of structural engineering concepts in architectural design thinking. By conducting in-depth interviews, twelve renowned Iranian architects/educators shared their insights about the utility of structural engineering concepts in architectural design. The interviews focused on the nature, outcome and content of the relationship between architecture and structural engineering. They used metaphors (nature, fetus, and organism) to describe the nature of this relationship while advising against abstract structural calculations, and instead, calling for integration rather than competition between the two fields in design thinking. Finally, by criticizing the existing chasm in the current architectural education, they emphasized intuition, common sense, self-discovery, and observation as part of the necessary knowledge base for architects.

Using formulaic structural calculations detached from their architectural expressions are widely practiced in the architectural education in Iran as well as some other parts of the Middle East. However, adherence to rigid engineering principles invokes mixed feelings in pursuing self-discovery and intuition, which according to the majority of the interviewees, students of architecture need to explore. This preferred integrative model of design thinking is neither institutionalized in Iran nor the Middle East. Encouraging students to pursue such approaches to architectural design as opposed to making sharp distinctions between architecture and structure represents the thrust of the interviewees' comments.

The irony is that while structural engineering concepts are perceived to be precise, rational, rigid, and less open to idiosyncrasies, architectural design thinking is rather subjective, artistic, and more personal. Filling this rather wide gap between the sheer logic of structural systems vs. the subjective nature of architectural design remains to be a major challenge in architectural education—especially among the proponents of each camp. The common wisdom among the structural engineers still seems to revolve around strict adherence to engineering principles while architectural educators opt to deemphasize these courses and favor replacing them with courses, which invoke intuition and self-discovery in students.

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WRITING IN DESIGN THINKING – Deconstructing the Question of *Being*

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Abstract

Design Thinking has now been widely adopted as an effective way to creatively solve problems in disciplines as diverse as design, engineering, management, and business. What remains uncharted territory is how Design Thinking relates to the discovery of what it means to be. The purpose of this paper is to explore how design faculty can allow room in their classes for students to uncover their place in the world. Using Heidegger's insights on being and thinking, we posit that by exploring the question of being, design students can engage with the design process in a way that adds new dimensions that could otherwise remain unexplored, reaching higher levels of excellence and creativity. And, writing, through its ability to unravel, expose, and communicate thought processes can be the vehicle toward that transformation. Moving across the design curriculum, we share three writing exercises that enable students to delve deeper into understanding themselves: manifestos, short writing pieces through which students can position themselves as designers; reflectionnaires, exercises used in a history class to entice students to search deep inside themselves and be sensitive to their feelings and thoughts through means such as visits in the community and imagining themselves as an inanimate object; and chime-in tallies, an exercise that fuses technology with memoir-writing. The paper closes by calling for the development of more writing exercises that speak to the diversity of the student body and challenges educators to define additional ways by which the question of being is embedded into their teaching.

Keywords: design pedagogy; writing; Being; history; culture.

INTRODUCTION

Instilling doubt is at the core of university education. How did things come to be the way they are? How do I know what I know? What could I be missing? Which avenues should I use in my explorations? And, where do I go to uncover knowledge? The first step to becoming a designer whose work responds to pressing social and environmental issues is learning to ask questions or, as Martin Heidegger, a German philosopher notes, learning to think (Heidegger, 1977). But, how does a designer learn to think? And, most importantly, how does a design educator help a student transform into a designer who thinks like a designer? This paper's purpose is to explore answers to the question of how design faculty can allow room in their classes for students to uncover their place in the world, or what Socrates called thousands of years ago '*know thyself*' or *gnwthei s'euaton*.

An obscure concept, the question of *Self* or *Being* has puzzled scholars for decades. Who is the Being? What does the Being stand for? And, how does the Being relate to others? In the American society, a society whose language revolves around the 'I,' understanding what the 'I' means and its' implications is inextricably linked to thinking processes. Complicating matters is the diversity present in the American landscape. At a time when over 62 million people in the U.S. speak a language other than English at home¹, unraveling the 'I' is intertwined with questions of similarity and difference that are steeped in colonialism, marginalization, inequality, and power discourses (Hall, 2000).

Placing the question of *Being* within the context of design education further sheds light on the concept's ambiguity. Herbert Simon, in *The Sciences of the Artificial* has defined 'design' as the "transformation of existing conditions into preferred ones" (1969:55). As a verb then, design is fascinating by the opportunities it presents for students, faculty, and practitioners to make a difference and improve the lives of those whom they are meant to serve. Inherent in these dialogues is the understanding that designers take a human-centered approach, one in which people come first. To imagine the future, a preferred future, designers must be able to deconstruct the present, which implies an intellectual alertness to life around them—how do people live? What is important to them? And, what role does space and place play in keeping them from fulfilling their dreams? The question that confronts us then, is how can a designer be sensitive to the multiple ways by which a *Being* can *Be* if the designer himself/herself is not engaged in questions of *Being*?

Design Thinking has been hailed by Bruce Nussbaum, one of Design Thinking's biggest advocates, as:

"...that collection of behaviors [that] is the heart and soul of creativity. It includes being attuned to the people and culture you are immersed in and having the experience, wisdom, and knowledge to frame the real problem and--most important of all perhaps--the ability to create and enact solutions" (2011:np).

The creativity embedded within the act of design drove Design Thinking to be adopted as one of the most effective ways to creatively solve problems in disciplines as diverse as design, engineering, management, and business. What remains uncharted territory is how Design Thinking relates to the discovery of what it means to *Be*. Using Heidegger's insights on *Being* and *thinking* (1977), in this paper we posit that by placing the question of *Being* at the core of design education, faculty allow design students to engage with the design process in a way that adds new dimensions that could otherwise remain unexplored, reaching higher levels of excellence and creativity. And, writing, through its ability to unravel, expose, and communicate thought processes, can be the vehicle toward that transformation, especially if employed throughout the curriculum, in studio, technology, history, and other courses (see Figure 1).

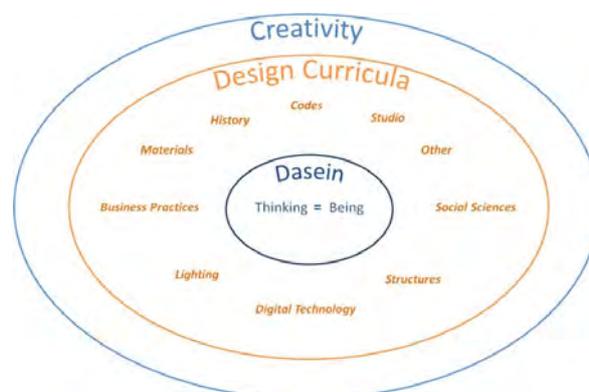


Figure 1. Thinking and Being as the core of design education
 (Source: Tasoulla Hadjiyanni)

Critical to our inquiry is the *thinking* aspect of Design Thinking. Thinking is integral to interior design education in all its various modes - conceptual, integrative, expressive, analytical, critical, and logical (Carmel-Gilfilen & Portillo, 2010; Meneely, 2010). Unlike critical thinking, which is a process of analysis and is associated with the 'breaking down' of ideas, design thinking is a creative process based around the 'building up' of ideas. As a style of thinking, it is generally considered the ability to combine *empathy* for the context of a problem, *creativity* in the generation of insights and solutions, and *rationality* to analyze and fit solutions to the context (Brown, 2008). How thinking, as part of Design Thinking, can be used to uncover what it means to *Be* needs further refinement.

Heidegger's analysis of both *Being* and *thinking* allows us to set a trajectory to follow in infusing design education with thinking and self-discovery. Heidegger reframed the question of Being into the notion of the *Dasein*, an existence that is focused in an *understanding* of its Being:

"Dasein always understands itself in terms of its existence, in terms of its possibility to be itself, stumbled upon them, or already grown up in them. Existence is decided only by each Dasein itself in the manner of seizing upon or neglecting such possibilities" (1977:55).

Design students who think of how they came to be and how their existence as designers and as humans relates to others will be better prepared to face the challenges of today's interconnected world.

To Heidegger, thinking is conflated with *Dasein* and this fusion attains temporal dimensions as time is "that from which *Dasein* tacitly understands and interprets something like Being at all" (1977:61). The notion of the Being as 'historic' opens additional avenues of exploration for the design fields, where the teaching of history is an essential part of the curriculum. In parallel, creativity is inherent in a subject matter where novelty and imagination are used to grasp and explore the past as well as understand the unfamiliar (Jackson, 2005). Given that the teaching of history is not static or stagnant, but instead it is subject to interpretation and critical analysis (Flores, 2003), history courses can serve as the fertile ground on which creativity and originality can flourish as well as the ground on which one's existence will be build. With knowledge of how social, economic, technological, political, religious and environmental forces shape peoples' lives, students can tie the past, to the present, and the future.

What remains fuzzy is the notion of *thinking* itself. In trying to understand what is thinking, Heidegger chose to focus instead on what *calls* for thinking:

"What calls us to think, and thus commands, that is, brings our essential being into the keeping of thought, needs thinking because what calls us wants itself to be thought about according to its essence. What calls on us to think demands for itself that it be tended, cared for, husbanded in its own essential being, by thought. What calls on us to think gives us food for thought" (1977:367).

In design, what calls us to think is multiplied by the implications of a lack of thinking – from buildings that collapse to those that do not meet peoples' needs, impacting health and well-being (Fisher, 2012). Much of designers' energy can go into balancing concepts with design solutions, technological innovations with historic preservation, the needs of the planet with economic and social sustainability as well as social justice.

Given the limited time we, as design educators, have to work with students, our passion for teaching must be translated into teaching students to learn to think. In Heidegger's words: "We can learn thinking only if we radically unlearn what thinking has been traditionally. To do that, we must at the same time come to know it" (1977:350). As a teaching pedagogy, thinking can be employed to problematize the dialectic between knowing and unlearning. And, writing can be a medium by which students can unlearn and begin to question what they know and how.

According to The National Commission on Writing “the importance of writing—for critical thinking and communication skills, for success in school and the workplace, for self-realization, and for its central place in school reform—cannot be overemphasized” (2006:29) The challenge to design educators lies in their ability to infuse writing in a field that is predominantly visual. Although writing has long been established as a creative endeavor (Benganolli & Rackham, 1982), little has been explored about the use of writing in design education (Eakins, 2005). In *Writing and Seeing Architecture*, Christian de Portzamparc, an architect wonders:

“.....when we are doing architecture, an architectural project, we are not thinking with language. I think through schemas and impressions; I draw fragments; I glue a couple of photographs. I don’t know where I am, but I am not in a discourse, I am not in a thought that could be spoken, that needs to be spoken and then translated into a form” (2008:22).

This is not to say that writing is not fundamental to interior design education and CIDA (Council for Interior Design Accreditation) accreditation requirements. In fact, in interior design, writing takes many forms, ranging from the mundane to the imaginary, from programmatic requirements and specifications to evocative conceptual statements. Furthermore, the field includes diverse sets of vocabularies that tackle issues from social and cultural needs to historical precedents and technological innovations. The diversity in the targeted audiences is another factor that must be accounted for—varying backgrounds, educational levels, and knowledge/understanding of the design process. Lastly, the variability in courses, topics, and emphasis areas that includes studios, history, and technology courses complicate the teaching of writing even more (Eakins, 2005).

In this paper, we share exercises, techniques, and ideas that afford writing a larger role in the design curriculum and in expanding interior design students’ ability to think and discover who they are and how they belong to the world. Although we focus on non-studio courses, the same ideas can be applied to all areas of the curriculum. Our aim is to create a forum for engagement, one through which the interactions between writing and creativity can begin to unravel and direct translations to interior design curricula can begin to happen. Designers who can move fluidly between and within modes of communication and can think both visually and verbally are more prone to succeed in a demanding world. Although content and writing style as well as grammar, punctuation, and spelling count, in this paper we focus on writing as a medium for self-discovery, how it can be used to excite the imagination and reveal possibilities not visible before.

WRITING AND THE SELF ACROSS THE CURRICULUM

Our interior design program couples writing with design throughout the four years of the curriculum. Below, we share three types of exercises from non-studio courses: manifestos, reflectionnaires, and the six-word memoir. Each varies in length and purpose but all aim toward the same goal, that of helping students think and learn more about themselves.

Exercise #1: Manifestos

As a program director, one of the authors was searching for a way to connect with the students. The idea of manifestos was perceived as a suitable means to build those connections. Manifestos are defined as “a written statement declaring publicly the intentions, motives, or views of its issuer” (<http://www.merriam-webster.com/dictionary/manifesto>). Through their ability to convey a stance, manifestos have been employed in fields as diverse as design and technology. Nudging creativity, a manifesto could help students position their work as well as explain it to others (Butler, 2011). Furthermore, the writing of a manifesto was an exercise that students could do on their own, with limited supervision by course instructors; it cut across the whole curriculum and was not course-specific; sophomores, juniors, and seniors, students who have been in the program longer could engage with it; it would not require a lot of time on the part of the program

director to review and critique the short paragraphs; and it could be revised and resubmitted in the following year. Via an email announcement, students were given this prompt:

“As designers, you are creating spaces in which people will live their lives and create meaning for their lives—from homes to offices to shops and healing environments. Ask yourself: Who am I to tell people where and how to live? What do I have to offer? Why should someone want to listen to my opinion and views? And, why would someone want to be in my buildings? In a paragraph, try to capture your own ‘Interior Design Manifesto.’ You will use this to guide your work throughout the year as well as position your work as you explain it to others in looking for a job or an internship.”

Manifestos were collected by the instructors and visits to each student cohort by the program director were arranged. During that visit, the manifestos were discussed and the marked copies, with feedback from the program director, were returned to the students. The process was repeated in the following year as program directors are appointed on a two-year term in our program.

In some cases, manifestos were built around conventionally understood notions of what interior design is and what the role of an interior designer could be¹¹. The notion of well-being for example, was referred to over and over again. In the words of Dana Leis: “Interior design is about creating a space that has functionality and is aesthetically pleasing to its user, which therefore improves the wellbeing of humans in the environment.” Current concerns of the discipline such as sustainability, affordability, and social justice were also mentioned extensively. Other students were able to use this exercise to craft a more personal narrative, one that spoke to who they are and how they see themselves fitting in the profession. Here is an example by Kylie Edgren:

“Design can piece together moments, memories, secrets and dreams, all to tell the story of a building and the people inside. Every building has had, at one point, a purpose. Maybe to shelter, store, provide strength and inspiration, or comfort and warmth. Each building was thoughtfully built and designed with a goal. Maybe with large aspirations or simple necessity, but nonetheless, with meaning. Today, we design with knowledge, experience, wisdom and soul. We act as guides and as storytellers, of a building’s past, present and future. We discover unknown potential in simplicity and resolve complexity. As guides, there is a responsibility to be cautious and thoughtful, yet rebellious and daring. To walk the fine line between careful planning and reckless abandon. With tremendous care, we scrutinize and detail, but subtly, so that the building acts as a whole rather than a million different pieces. It’s our duty to resist personal preference and taste. To design for a building, rather than around it, and tell a story not yet told.”

Kylie’s writing piece sheds light on her view of herself as a storyteller, a guide of the design process who tremendously cares. Care for places or *therapeia* as Walter calls it (1988) is another way by which the self is constructed through both individual and collective experiences.

Exercise #2: Reflectionnaires

Reflection, according to the Learning Center at the University of South Wales (2008), is a form of personal response to experiences, situations, events or new information. It is a ‘processing’ phase where thinking and learning take place. There is neither a right nor a wrong way of reflective thinking, there are just questions to explore.

The act of writing is extremely important in reflective thinking. In writing, one ‘puts into words’ the unstructured thoughts and ideas that form the material for reflection. Once the

reflections have been written down, they are available for review by the reflector and wider community. The Learning Center at the University of South Wales (2008) describes reflective writing as:

- response to experiences, events, or new information
- response to thoughts and feelings
- a way of thinking to explore learning
- opportunity to gain self-knowledge
- a way to achieve clarity and better understanding of what one is learning
- chance to develop and reinforce writing skills
- a way of making meaning out of what one is studying

Reflection and reflective writing are often not among the course objectives/outcomes one would typically associate with large enrollment classes that heavily rely on lectures and powerpoint presentations, such as interior design history. The authors believe that reflection and reflective writing provides students with the skills to mentally process learning experiences, identify what they have learned, modify their understanding based on new information and experiences, and transfer their learning to other situations. Drawing from over 20 years of combined experience in teaching history, the authors have identified multiple ways by which reflection and reflective writing can be incorporated into a design history class.

During the course of the semester, Pat Francis's technique of Reflectionnaires is used in a design history course and delivered in various ways. Francis (2009) defines *Reflectionnaires* as a word combining reflection and questionnaire. Reflectionnaires use the "I." The use of 'I' and the act of writing also demand ownership of learning, which can ultimately act as a form of self-empowerment. This ownership of learning will lead to a stance and the articulation and expression of personal values (Francis, 2009). As Moon (1999) claims, practice in reflective writing develops personal power and a 'voice' through which this power is communicated. Reflectionnaires can take many forms: they can be graded or not graded, draw from different experiences during a course, and be employed at different phases. Below, we share three types of reflectionnaires: ones that are based on class lectures and are not graded; ones that draw from field trips and are graded; and ones that can be integrated in exams.

Reflectionnaire A: Based on class lectures

When teaching reflective skills, the first step is to raise people's awareness of themselves as learners and thinkers—that is, to encourage them to become aware of their own thinking and learning processes. This is because meta-cognition has been identified as a key aspect of 'deep' learning, as successful learners become conscious of their own learning (Marton & Säljö, 1984). Deep learning is important in order to make material meaningful and so facilitate the transfer of learning into long-term memory.

Reflectionnaires are used and woven with content covered in course lectures. The results facilitate discussion and are not graded nor collected. Below are some examples of such reflectionnaires.

- Michelangelo was passionate about his work. What am I most passionate about in my life? What is my dream for the future?
- Inigo Jones was an unlikely candidate to change the landscape of British style and design. He had none of the advantages of birth, influence, and education possessed by his successors, yet this man rose to the post of Surveyor-General of the King's Work on the basis of his enormous talent, and in the process changed history. What am I most committed to in my life? How can I continue to learn and grow?

Reflectionnaire B: Based on field trips

During the course of the semester, design history students are required to go on two field trips. The authors believe that providing rich experiences and taking advantage of what the community has to offer are essential components of a transformative education. According to Caine & Caine, educators must "orchestrate the experiences from which learners extract understanding" (1994:26). They should arrange the experiences to fit into what the students already know, and they should link the disciplines (subjects) to highlight the interconnectedness and contribute to the students' ability to make connections. An additional goal of the required field trips is to deepen reflective thinking skills. This is accomplished by having students understand, for example, the important role our senses and emotions play in guiding conceptions of events and reflection (Boud, Keog, & Walker, 1985).

Here are three examples of how Reflectionnaires are used in conjunction with field trips to the Cathedral of St. Paul and the Minneapolis Institute of Arts:

- Today we have viewed artwork and vignettes that have only been seen in books or on the Internet. Ask yourself: What do I see, feel, and perceive that I cannot experience from a reproduction in a book?
- Find one exhibit in the Minneapolis Institute of Arts that interests you. Describe what you see. Ask yourself: What have I learned from the exhibition?
- Consider the space in the Cathedral of St. Paul. Ask yourself: How do I feel in terms of what I see, hear, feel, and smell? What architectural elements have contributed to my sensations?

Here is an example from interior design student Amelia Concradi:

"The St. Paul Cathedral is visually stunning! I feel small, humble, and in awe. The large scale of the columns, stone and dome contribute to this. It is almost silent with a mystical light coming in from the stain glass windows, giving me a spiritual experience that allows me to contemplate how great God is. The paintings, mosaics, and sculptures enhance this experience delighting my eyes and soul. I smell the burning wax from the votive candles. The massive structure of the dome, gives me the feeling of being humble, with all the Angels looking down at me. It was a very beautiful experience."

Amelia was able to convey, in writing, her impressions of the space based on the sensory experiences of seeing, smelling, and feeling the space around her. She also begins to generate a record or impression of the mood, aura, and range of meaning of the sacred space. In parallel, she ties her own Being in the world to spirituality or as Heidegger called it the fourfold of earth, sky, mortals, and divinities (Heidegger, 1977).

Reflectionnaire C: Exam questions

Through carefully crafted questions, the goal on each of the design history exams is to provide at least one Reflectionnaire that aids in deep learning and promotes independent thought. This means that students have to focus their thinking and articulate in writing the results of their reflection. Expressing reflection means finding a 'voice' by which to express thoughts and inevitably this increases confidence and self-awareness in ability (Moon, 1999). Another goal is to expand creativity and reinforce writing skills. The following is a Reflectionnaire used on an exam plus Andrea Uecker's response.

- There were a variety of chairs produced during the Renaissance. If I were to be described as a chair during the Italian, French, or English Renaissance, which would I be? Describe the chair and discuss how it reflects my personality, traits, etc.

"If I were a chair from the Renaissance, I would be the English Farthingale Chair. The chair was popular for its ability to accommodate the exceptionally wide-hooped skirts known as Farthingales. I like to be accommodating to people and if I was a chair I would like to be functional for everyone. The Farthingale Chair can be described as armless, with a wide seat covered in a high-quality fabric and fitted with a cushion; the backrest is an upholstered panel, and the legs are straight and rectangular in section. A perimeter stretcher is used to join the legs. The above chair reflects my personality and traits in the following ways. The chair had upholstery to add comfort. I like to make people comfortable around me and I prefer chairs with more comfortable aspects. The chair is more simple in design than others, I'm a pretty laid back and simple person. The exposed wood is oak and being from Minnesota, this species is well-known to me since it's fairly abundant around the state. Some of the upholstery on the chair has turkey work on it to imitate oriental patterns. This represents me because I love learning about different cultures and I love to travel. Finally, the bottom of the chair has a perimeter stretcher. This to me represents support, stability, and structure which represents my love of architecture."

Andrea generated an accurate description of the Farthingale chair and reflected on her personality and traits. Chairs have long been known for revealing a person's status or style. Now, building on Cranz's body-mind perspective (Cranz, 1998), inanimate objects such as chairs can also help students deconstruct the conundrum of what they like and why.

Exercise #3: Chime-in and the Six-Word-Memoir

Sometimes the power of words is not found in their oneness; it is found instead in their conglomerate. *DES 4165-5165 Design and Globalization* is a seminar course that has been developed as part of the University of Minnesota's internationalizing the curriculum effortsⁱⁱⁱ. Capped at 20 students, it brings together students from design and non-design fields as well as graduate and undergraduate students from across the university. The course unravels what it means to be human in this global era by focusing on ways by which culture manifests itself and how those relate to the production of space and place.

On the first day of class, as a way to get students thinking and contemplating about the transformative journey ahead, we use a chime-in exercise. This is an example where technology can come in handy. Students log in and respond to a question posed by the instructor. The responses are then posted on the screen for all to see. The power of chime-in comes from the system's ability to tally the responses and show which single words were used the most. The visual that is created can be an ice-breaker and a way to 'see' into the minds of the students.

In this case, the prompt that students had to respond to was: "In a six-word memoir, complete the sentence: As a global citizen, I....." Let us deconstruct the meaning behind the prompt. First, the six-word memoir is a technique that draws from the idea that often, a story only takes a few words to be told^{iv}. Enticed to choose only six words to convey their answer, students are more likely to focus on what is key to their beliefs and values. Second, under the lens of globalization, migration, displacement, transnationalism, and multiculturalism the notion of global citizen attains a dynamic quality, one that warrants a rethinking of how that construct relates to the designed environment. The normative view of citizenship as a legally recognized membership to a nation-state that bears both rights and responsibilities has long been interrogated and deconstructed by scholars from multiple disciplines (Appadurai 1996; Desforges, Jones & Woods, 2005; Leitner & Ehrkamp, 2006). Challenging students to think of their role in the world and what being a citizen entails sets in motion an inward-looking process that can disentangle the tensions and contradictions inherent in discourses around what it means to belong and to be, what Iyer called, a global soul (Iyer, 2000).

Responses included: hope to respect, understand the community; use personal advantages to advance others; hope to learn, understand and help others; wish to destroy the conception of naïve; seek to model what is excellent; hope to be empathetic and unbiased; respect others cultures, identities, and beliefs; strive to be open and accepting. Although a few of the responses went over the six-word limit, restricting answers to six words enables us to get a snapshot of what is truly important to the students at the time of answering this question.

The transformative power of this exercise is its real-time experience; it is an immersion into the words and what they mean. Responses are shown on the screen as they come in and the tally changes as new words become part of the whole. Witnessing the energy in the classroom manifest into a conglomerate of words on the screen makes everyone pause in anticipation of what is to come and the implications of that finding in understanding. In the Spring 2012, the chime-in tally showed that *understand*, *cultures*, and *others* were the words used most often. The debate that unfolded centered on the messages associated with those three words (Figure 2).



Figure 2. Chime-In tally
(Source: Tasoulla Hadjiyanni)

Understand brought forward questions such as: How does understanding come about? And, what about the power differentials in who defines what is knowledge? *Cultures* is an equally ambiguous term, a problematic category that should be enclosed in quotation marks (Gupta & Ferguson, 1992). Used in the plural, aligns dialogues with essentialist discourses that view “culture” as separate and distinct elements to be studied and explored (see Fischer, 1999). Such an undertaking ignores more recent discourses that point to such conceptions of “culture” as static and monolithic, ones that do not capture the complex, multi-dimensional, hybrid, dynamic, intertwining, and ever-changing facets of “culture” that characterize border crossings and modernization processes (Rosaldo, 1989). Lastly, who are the *others*? Scholars have called for moving beyond the “us” versus “them” paradigm, “exploring the processes of *production* of difference in a world of culturally, socially, and economically interconnected and independent spaces” (Gupta & Ferguson, 1992:14). Through a vocabulary that does not stigmatize and isolate, we can search for what makes us similar and different from each other (Hall, 2000), building global bridges.

CLOSING COMMENTS

The written word is an evocative and powerful medium through which design students can better learn about who they are and who they hope to become. When it comes to design courses however, faculty have little direction as to how to entice students to employ writing to push their creativity and find their passion. In this paper, we shared writing exercises from supporting courses that can play a role in this self-discovery process. In embarking in this effort, faculty can

keep in mind that not all assignments have to be graded or even turned-in. The premise here is providing a forum that allows students the space to explore who they are in a safe and private manner.

The opportunities are multiple: unlocking their passion for what they bring to the world; understanding how the past is tied to the present and the future; being attuned to one's senses and feelings; learning and growing; recognizing their personality and its characteristics; and figuring out how they relate to others, be those colleagues, friends, family, or strangers. As many as the avenues of exploration are so are the means through which to reach these goals: from exposing students to buildings in the community to employing technology. The challenge comes from finding the courage and energy to adopt these exercises in the curriculum.

Intriguing would also be the development of pedagogies that stimulate the interest of students from diverse backgrounds – ethnic, racial, and age differences are some of the variables that come into play (Akkach, 2002; Hillenbrand, 2003). Assignments that allow students to experience writing from other parts of the world and perceive design in a holistic sense and within varying contexts can be inspiring in different ways. Coupled with the need to engender students' global and multicultural perspectives (Salama, O'Reilly, & Nochis, 2002), a rethinking of writing's breadth and focus becomes adamant. Similarly, expanding inquiry into how studio courses can also employ similar pedagogies is as critical.

Challenging is the task of devising assessment strategies to evaluate writing on the individual and programmatic level. Questions to be explored include the development of guidelines that writing must meet to make it; vocabulary used; and how writing fits within the larger scope of a student's education. Although a lot has changed in how writing relates to the design fields, much remains to be done. This sharing of ideas aims to continue earlier dialogues; revitalize energies devoted to re-thinking the role of writing in design education; and foster collaborations among interested faculty.

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ⁱ The number 62 million is drawn from 20.1% of 311,591,917 as noted in <http://quickfacts.census.gov/qfd/states/00000.html>.

ⁱⁱ For a definition of interior design, see

<http://www.ncidq.org/aboutus/aboutinteriordesign/definitionofinteriordesign.aspx>. The notions of bridging “creative and technical solutions” as well as interior design’s role to “to protect and enhance the health, life safety and welfare of the public” are described.

ⁱⁱⁱ To learn more about this program please see http://global.umn.edu/icc/itl_cohort.html.

^{iv} See examples at <http://www.npr.org/programs/totn/features/2008/02/memoir/gallery/index.html>.

TAHRIR SQUARE A Narrative of a Public Space

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Abstract

This paper investigates the patterns of public discourse that occurred in Tahrir Square during the 18 days of the Egyptian Revolution. For protestors Tahrir Square became an urban utopia, a place of community engagement, collective projects, social discourse, and most importantly, freedom of speech and expression. This paper traces these forms of spatial adaptation, and the patterns of social organization and discourse that emerged in the square during that period. The paper builds on Henri Lefebvre's interpretation of space and his three dimensional conceptualization: the perceived, the conceived, and the lived.

Keywords: Tahrir Square; public space; Henri Lefebvre; public discourse; space adaptation.

INTRODUCTION

For decades, the notion of public space has been conceived by average Egyptians as the space that is owned by the government. The term *melk el hokooma* (property of government) was commonly used to refer to the public realm. Egyptians were made to believe that "public" equates "governmental," a conception that shaped their mental image of public space for decades. People were deprived of any social or political practices within the public realm. Under the Egyptian Emergency Laws, the agglomeration of more than five people in a public space could be considered a protest that threatens public safety and can lead to prosecution. On its part, the government tended to minimize people's presence in public spaces and in particular, plazas, by either fencing them or changing their land use. Open spaces were purposefully designed to minimize social gatherings and were continuously monitored by secret police. This managed to hinder all forms of socio-political discourse in public spaces.

Egyptians tended to adapt whatever is available of the public realm in order to use as public spaces. Bridges, street medians and narrow sidewalks became the places of social discourse. These spaces were usually transformed at night to host people searching for a an outdoor public space. Chairs, food and beverage carts, and children playing areas were arranged daily at night and removed before morning. All this was happening informally but under the watch of the government. People were not allowed to engage in any form of political discourse in these places. They were continuously monitored by secret police.

During the last six decades, very few public spaces were introduced to the urban fabric of a city like Cairo. It could be argued that the majority of places that have the capacity of hosting social or political discourse in the city were developed prior to the 1952 revolution. These spaces usually exist either in the medieval district, which includes mosques' *sahas* (plazas) and *souqs* (markets), or the colonial district with its wide boulevards, squares and parks. These places used to host various forms of public discourse until the middle of the twentieth century.

THE TRANSFORMATION OF PUBLIC SPACE

The conception, meaning, and use of public space in Cairo have been transformed over history. During the medieval era, the mosque was a major male dominated place of public discourse. This could be attributed to several factors, Firstly, unlike modern times; the mosque played a major role

in political life. There were strong ties between the state and the religious institution. Keeping a good relation with religious figures and earning their blessings was critical for Caliphs to secure their reign. The mosque on its part was the source of sharia'a education with its social, political and economic teachings. Major mosques included schools, hospitals and dorms that allowed the religious institution to shape public conceptions through teachings and *fatwas*.¹ Secondly, the Islamic tradition of *Gama'a* (congregation) Prayer that takes place five times a day assured a continuous daily public flow to mosques. Major mosques were strategically located at the center of the city adjacent to the market and the Caliph palace. People used to close their businesses and go to the mosque after each *Athan* (call for prayer). This was complemented by the Friday Prayer, which is the main weekly congregation for Muslims and is usually attended by the majority of males. This made the mosque one of the most visited places in the city. Thirdly, because of this continuous public flow, the mosque became a major information and mass communication hub. News was shared and announcements were made after prayers. Its minarets were even used in several occasions to warn people of invasions or make important announcements such as the death of the Caliph or the return of the army.

All these factors allowed the mosque to become the main hub of public discourse in the city and the arena where communication between the public and their government took place. It could be argued democratic practices with its western definition didn't exist in the Islamic World during the medieval era. However, the tradition of *Shura* or public engagement in the process of decision-making was common since Prophet Mohamed times. Many of the meetings with his followers were held in the mosque. Strategic planning for wars and invasions were made in the mosque. After the Prophet's death, Caliph Abu Bakr, delivered his inauguration speech in the Mosque of the Prophet. In his speech Abu Bakr emphasized the role of people in guiding their rulers saying:

"O you people! I have been given authority over you but I am not the best of you. If I do well, help me, and if I do wrong, then put me right... Obey me as long as I obey Allah and His Messenger (saw), and if I disobey them you owe me no obedience. May Allah forgive me and forgive you."

Same concept was emphasized by Omar Ibn Al Khatab, the second Muslim Caliph in his appointment speech at the same mosque. He asked the public to correct him if he deviated from the right path and a Muslim responded by saying "we will correct you with our swords." Although this concept of engaging the public in the process of decision-making was rarely applied during the medieval era, the mosque remained the medium of communication between rulers and the public. It was an absolute space, using Lefebvre term, a sacred place that played a major role in shaping the socio-political life of Muslims. It was the place where social conflicts were negotiated and political opinions were shaped. In the case of Cairo, Al Azhar Mosque played this role for centuries. However, it was not until the end of the eighteenth century that Cairo witnessed an organized revolt originating from Al Azhar. In 1795, almost six years after the French revolution, a major political uprising led by religious scholars protested high taxes and social injustice. This was followed by another organized revolt against the French colonizers in 1798.

During the 19th century, the role of mosques featured gradual decline. This could be attributed to shift towards modernization that was led by Mohamed Ali who ruled Egypt from 1805 to 1848. The gradual formation of a modern state and of the emergence of institutions such as the parliament, political parties and newspapers have shifted political discourse away from the mosque. These institutions have triggered new conceptions of political discourse and redefined the role of public sphere to become the medium of communication between the state, parliament and the people. The introduction of the Haussmanian planning model with its wide boulevards, squares and parks to Cairo during the era of Khedivie Ismail have injected new forms of public spaces that didn't exist in the indigenous city. These new urban spaces were relatively semi-public and were limited to foreigners and local elites. As noted by Nasser Rabbat, "these districts, adjacent as they

¹ A fatwa is a ruling on a point of Islamic law given by a recognized religious authority.

were to the old cities, were nonetheless entirely separated from them by spatial, legal, and behavioral barriers, although some seepage occurred both ways” (Rabbat, 2012). Parks such as Al Azbakiya, Al Orman and the Zoological Garden mainly catered for medium and upper classes while lower classes remained in the old districts exercising traditional forms of social discourse. This has created some sort of social segregation, a dichotomy that was less significant during the pre-modern era. It also limited political discourse to medium and upper classes.

The role of new public spaces and more specifically public squares in shaping political life in Egypt began to flourish by the beginning of the twentieth century. In 1919, the place that is known today as Tahrir Square (*Midan Al Tahrir*) hosted one of the most important revolutions in Egyptian history. It was led by Saad Zaghlul against British Occupation. Since then, the square, which was called Ismailiya Square, referring to khedive Ismail, unofficially earned the name *Tahrir* that means, “liberation.” This *Midan* (square) was originally a greenfield that was supposed to be designed to emulate Charles de Gaulle Square in Paris. This vision was never implemented and the square was gradually shaped over time especially after the construction of the Egyptian Museum in 1902 (see AlSayyad, 2011). It was later surrounded by a series of palaces as part of the new Al Ismailiya district. Since the 1919 revolution, Tahrir Square became the main arena of public protesting in Egypt. However, It could be argued that this place didn’t host significant forms of social discourse compared to other public spaces in the city such as Al Azbakiya and Al Orman Gardens.

The modernization of Cairo featured a gradual process of secularization of government. The state contribution to urban development gradually diminished in favor of both local and foreign enterprises. Western influences were obvious in Cairenes’ way of life during that time. The city was opened to western culture more than ever. The modernization of the city was a movement of the elite who benefited economically and politically from these changes. As noted by Tignor (1984), in the period before World War I, three groups dominated development in Egypt. These were the British political and military establishment; metropolitan capital; and landed oligarchy (Tignor, 1984, p.8). The source of metropolitan capital was European individuals and enterprises. New residential projects such as Al-Maadi, Garden City and Heliopolis began to emerge by the beginning of the 20th century. These residential districts were developed by private domestic and foreign enterprises. Garden City district was developed by Frantz Sofio, Charles Bacos and George Maksud, the owners of the Nile Land & Agricultural Company. Heliopolis district was developed by Belgian industrialist Baron Empain. He started this project in 1905. These developments created new forms of class spatial segregation that didn’t exist in Old Cairo. During the period between World War I and World War II, local industrial and commercial bourgeoisie started to play an important role in the Egyptian economy. This bourgeoisie class was composed of both foreigners and Egyptian business elite (Tignor, 1984, p. 5).

After the 1952 revolution against King Farouk, Egypt experienced a dramatic shift towards socialism. This redefined the meaning of public space in Egypt. After being developed and operated by local and foreign enterprises for decades during the early 20th century, most of public parks were acquired by the Egyptian government under the Nationalization Program. This process simply redefined the boundaries between the public and private realms. It reconfigured the conception of public space. The experience of Cairo was in fact a reversed process of the widely discussed concept of “privatization of Public Space” (see Sennett, 1977; Banerjee, 2001). Many of the public spaces that were limited to social elites were either fully or partially transferred to the government. For the majority of Egyptians, this act was a victory against the Feudal System that controlled the country for decades. Among the acquired properties were lands, real estate projects, major retail chains, theaters, and gardens. And in order to gain public support, the government made many of these properties accessible to the public regardless of their social or economic class. This introduced the concept of *melk el hokoma* (property of government) that occupied Egyptians’ conception of public space for the following six decades.

In 1960, Tahrir Square earned its name officially and became the icon of freedom and liberation in Egypt. However, the tendency of the ruling regime during that time was to hinder all

forms of political opposition have limited the role of public space in political life. Although these places were made accessible to all Egyptians, they were continuously monitored by secret police. This hindered all forms of political public discourse in public spaces. It was not until President Nasser announced his resignation after the defeat in the 1967 war that people returned back to public space protesting his decision. Massive crowds spent the night in the streets and squares of Egypt demanding Nasser to stay in office. It was the first time since the 1952 revolution that people used public space for political discourse.

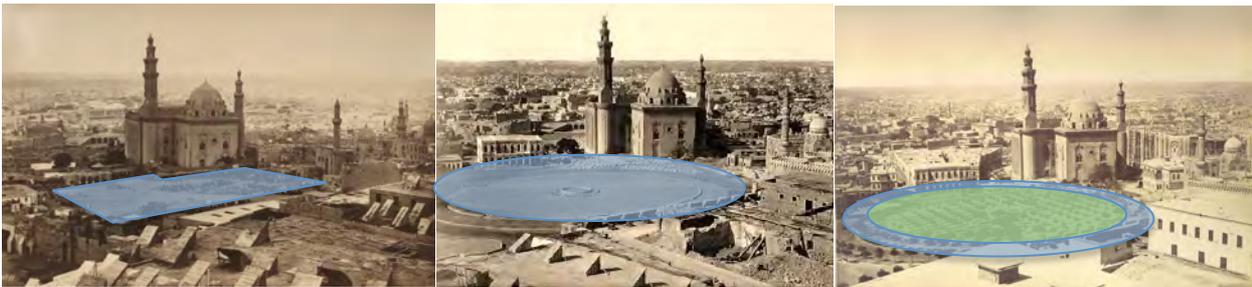


Figure 1: The transformation of the Saha of Sultan Hassan Mosque to a modern square during the late 19th century modernization project (Source: By author on archival photos).

When president Sadat came to power in 1970, he began to gradually abort the rigid socialist ideals that ruled the country for nearly two decades. He embraced the open door policy (*infitah*) and shifted the economy towards capitalism. These economic changes in the market dynamics benefited many local small investors and entrepreneurs who took advantage of the new business opportunities in general, and the starvation of market for imported goods in particular. A new class of nouveaux riche began to emerge mainly in Cairo. This class began to reshape the urban development trends in the city. New trends of social segregation and inequality started to emerge triggering societal conflicts and tensions. This was translated into two forms of public resistance to many social and economic policies. For socialists, public space was the place to protest against capitalism. In 1977, they led a massive riot that is referred to as the “Bread Riots,” against subsidization cuts. Protests sparked in Tahrir Square and then moved to many parts of the city. This reintroduced the role of the square in shaping political life in Egypt. For Islamists, it was the mosque that hosted their secret meetings and political discourse. By the end of the 1970s and after Sadat signed the peace treaty with Israel, Islamists intensified their opposition to the regime. Mosques, and more specifically those in poor neighborhoods and squatters, became the hubs of political Islamic discourse. These were the places where the Muslim Brotherhood and other Islamic movements recruited their members. These forms of resistance to secular government reached its peak during the early 1990s when some areas of Cairo such as Imbaba was nearly governed by Sheikhs and was called “The Islamic Republic of Imbaba.”

When Mubarak came to power in 1981 after the assassination of Sadat, his regime tightens its grip on these places and prohibited any forms of public gatherings in mosques except during the times of prayer. It also managed to hinder most of the political opposition activities using emergency laws that were activated after the assassination of Sadat. Mubarak followed the same economic policies of Sadat and started the Privatization Program through which many of the public enterprises were sold to local and foreign investors. This has triggered a new wave of anger and opposition that never materialized into a public discourse until the late 1990s. During that time, the introduction of internet, cell phones and satellite television opened venues for Egyptians to start constructing a new form of public sphere that has the capacity of hosting political discourse away from police watch. The digital world became the main public sphere for Egyptians. Internet penetration has jumped from 0.7% in 2000 to reach 32.6% in 2011. These new technologies contributed to the emergence of what Howard Rheingold (2006) calls “the smart mobs” or groups of people who manage to use communications technology to activate and organize social actions

and events in the real world (Rheingold, 2002). These groups tend to initiate events, call for protests and political activities on the cyber world and then take it to the physical public space. In this sense, public places become hubs for flows of information and ideas generated locally and globally. Political blogs, tweets, emails and Facebook posts created linkages between digital and physical realms. It gradually pushed political discourse back to physical public spaces. These communication tools facilitated the formation of several movements that played a significant role in reshaping the socio-political environment in Egypt. As noted by Herrera (2011):

“Social movements belong to people and not to communication tools and technologies. Facebook, like cell phones, the Internet, and twitter, do not have agency, a moral universe, and are not predisposed to any particular ideological or political orientation. They are what people make of them” (Herrera, 2011).

Many opposition movements in Egypt managed to make use of these new technologies. Opposition movements, being conservatives such as the Muslim Brotherhood, or liberals such as Kefaya used these cyber spaces to spread their ideals and beliefs. Bloggers and political activists focused on recruiting members online and were continuously calling for protests. Blogs, Facebook, YouTube, and many other Internet forums become the new political arenas where people expressed their political opinions and criticized the performance of the government.

It took a few years for this digital public discourse to materialize into physical action. In April 6th, 2008 an activist posted a call for a nationwide one-day civil disobedience. The call was widely spread via emails and SMSs. It was surprisingly successful especially in the industrial city of Mahala where thousands of workers protested against the regime and its privatization policies. Protesters torn down one of Mubarak’s posters and called for change of regime. It was a historic act that paved the way for more protests later on. That day marked the beginning of new era of political discourse in public space. Protests became common in major cities in Egypt. However, participation was always limited to political activists, and in few cases, workers and governmental employees. The majority of Egyptians refrained from these activities fearing prosecution. Places such as the stairs in front of Syndicate of Journalists building, the sidewalks around the Parliament and Prime Minister Office became places of political discourse.

When the revolution in Tunisia succeeded in overthrowing President Zine El Abidine Ben Ali after 24 years in power, Egyptians realized that making political change is possible. A call for a nationwide protest on January 25th, 2011 was posted on Khalid Said’s² Facebook page. In few days, the call was spread across the country and political activists began to campaign for it online. Protests were strategically planned with urban public spaces in mind. Based on previous experiences, activists were aware that security forces tend to attack protests in its early stages before gaining crowds. Accordingly, the plan was to start marching in multiple urban squatters and to keep walking in its irregular narrow streets until a large mass of people is formed. This actually managed to confuse secret police and security forces were suddenly confronted with huge masses emerging from multiple zones across the city. Protests’ leaders didn’t have a plan where to go next. They actually didn’t expect that the protests will survive for long. They started marching to main streets. After couple of hours, protests across Cairo were massive and interestingly, they were all moving towards Tahrir Square. The square was like a magnet that attracted all protests across the city.

The occupation of Tahrir Square and many other public spaces across the country was a statement of rejection of state domination. It was reclamation of people’s right to the public realm. Tahrir Square became the “discursive space,” using Habermas definition of public space, “in which individuals and groups congregate to discuss matters of mutual interest and, where possible, to reach a common judgment” (Hauser, 1998). The square was gradually transformed into a city within the city. In three days, camping areas, media rooms, medical facilities, gateways, stages,

² Khaled Said is a young Egyptian who was assumingly beaten to death by the police in 2010. Since then, the court has not yet reached a final decision regarding the circumstances of his death.

restrooms, food and beverages carts, newspaper booths, and art exhibits were established in the square. It was a process of space adaptation and divergence, using Henri Lefebvre's term, which featured astonishing forms of social organization and administration (see Lefebvre, 1991). For protestors Tahrir Square became an urban utopia, a place of community engagement, collective projects, and social discourse and most importantly, freedom of speech and expression.

TAHRIR SQUARE: THE PERCEIVED, THE CONCEIVED AND THE LIVED SPACE

During the 18 days of the revolution, Tahrir Square presented an interesting case of the power of public space. The square hosted multiple strata of public organization, interaction, and discourse. It was a hub of enormous flows of ideas and ethos generated locally and globally. In this section, I analyze the nature of Tahrir Square during this period using Henri Lefebvre's interpretation of space and his three dimensional conceptualization: the perceived, the conceived, and the lived (Lefebvre, 1991). According to Lefebvre, space is a process of continuous production not an end product. Space is what people perceive (reality), what they conceive (imagination), and how they perform accordingly (lived space).

Tahrir Square: The Perceived Space

The concept of perceived space emphasizes spatial practice which embraces the production and reproduction of space. It accentuates "the particular locations and spatial sets characteristic of each social formation" (Lefebvre, 1991, p.33). It is the appropriated social space created by spatial practice. It involves actions, signs and symbols. Perceived space is structured on the recognition of form, function and links. It is the reading of what is conceived by designers, planners and even social activists.

In the context of Tahrir Square, it is important to begin with a brief analysis of the physical features of the space. The area that has been referred to as Tahrir Square since January revolution has an irregular shape that extends from Mogamaa Al Tahrir to south to Abd El Moneim Riad Square to the north. The square is located at the far western part of the colonial district, very close to the Nile. It is surrounded by several important building such as the Egyptian Museum, Al Mogamaa (the largest governmental headquarter in Egypt), The Arab League Headquarter, and the old American University Campus. Although the square is accessible from nearly 16 streets, it still provides a sense of enclosure due to the continuous tall buildings that shape its boundaries. The Mogamaa building with its iconic curved design at the southern edge of the square creates a dramatic backstage that directs sight towards its front plaza.

Tahrir Square attracted protests from different parts of the city for several reasons. Firstly, the square is located at the geographic center of Greater Cairo. The metropolitan area has been growing from this center in all directions. Many of the major streets in Cairo such as Tahrir Street and Al Kasr Al Aini Street actually radiate from Tahrir Square. This made that place a very convenient meeting point for all protests. Secondly, the perception of "center" in the case of Cairo is very vivid. For most of Cairenes the city has one center, which is the colonial downtown area. Although the city experienced the emergence of multiple centers during the last few decades, Tahrir area or *wist al balad* (center of the city) as referred to by all Cairenes, remained the prime and most recognized center. The perception of "center" and "periphery" in the case of Cairo is not as blurry as the case of other metropolitan areas. Thirdly, the area of Tahrir Square is accessible from 16 streets many of them extend for miles into the urban fabric of the city. This makes the square one of the most accessible areas of the city. Fourthly, Tahrir Square is surrounded by several governmental buildings including Al Mogamaa which is considered the symbol of governmental bureaucracy in Egypt and the National Democratic Party Headquarters. This makes the occupation of the square a statement of rejection to state domination; reclamation of people right to what is public. Finally, Tahrir Square offered protestors a dramatic stage for media exposure due to its form, name and location. Occupying the largest public square in the country sent a clear message to the world that the revolution is serious. The vast space that extends from the square to Abd El Moneim Riad Square and Qasr El Nil Bridge allowed hundreds of thousands

of people to congregate together in one place creating a dramatic and clearly visible scene in front of media cameras. In the dense urban fabric of Cairo, this scene is nearly impossible in any other place than Tahrir Square. The city lacks public spaces with this scale and visual exposure. It is worth noting that protests in other Egyptian cities occupied spaces with similar features such as Al Ka'id Ibrahim Square in Alexandria and Al Arbaeen Square in Suez.

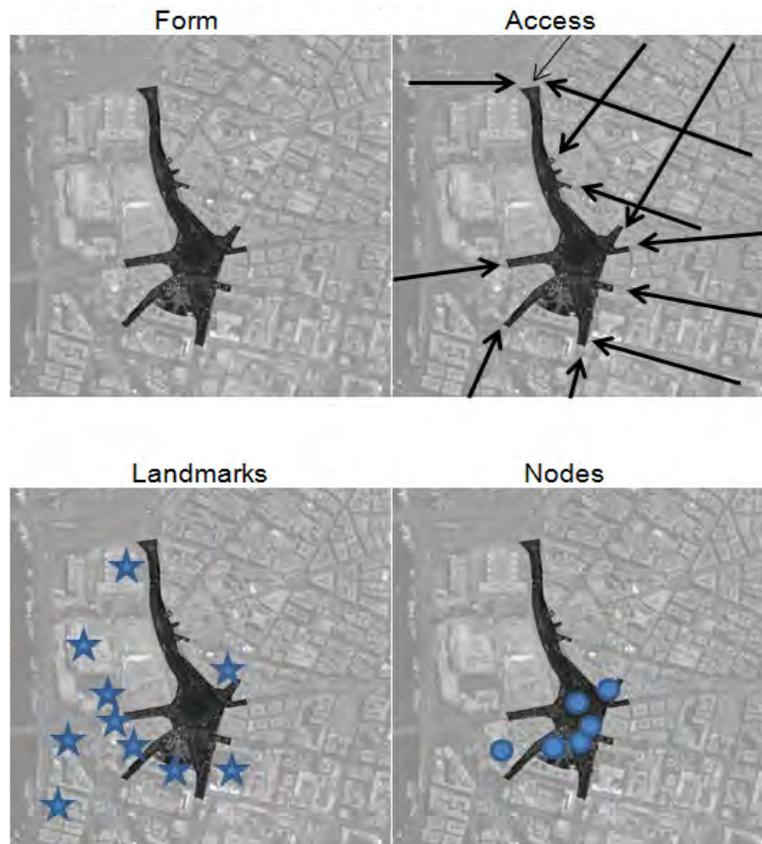


Figure 2: A physical analysis of Tahrir Square (Source: Author).

The patterns of agglomeration within the square featured an interesting dialogue between socio-political practices and space. For example, most of the intellectual and artistic activities took place on the eastern side of the Square with colonial buildings as a background. Newspaper stands, art exhibits and a memorial for martyrs was located on that side. Prayers were held at the center, the most secured area of the square. Services, trash bins and toilets were located on the western side adjacent to a construction site. Clinics were located on the edges of the space to facilitate the transfer of injured protestors to neighboring hospitals. Landmarks such as A Mugamaa, Kentucky Fried Chicken store, the museum and Talat Harb Street entrance became the reference points for people to navigate in the square. This spatial configuration evolved through collective actions that were not planned. It occurred instinctively within the realm of the perceived.

Tahrir Square: The Conceived Space

Before the revolution, Tahrir Square was an abstract space, a generic and socially fragmented realm. It was rationally configured to function as a vehicular circulation open space. During the last century, the square went through many phases of transformation that ignored the social aspect. This huge square never had a café or restaurant on its plaza or surrounding sidewalks. It lacked outdoor seats and its green areas were designed to hinder public use of space. It was simply designed to perform as an open circulation space rather than a place of public discourse. The

square was also commoditized by market capitalism. Being at the center of the city in front of the Egyptian Museum and adjacent to many hotels and shopping areas, Tahrir Square became a tourism hub continuously monitored by secret police and security cameras. Egyptians were not allowed to take pictures of this space for security reasons. Any gathering of more than five people was immediately questioned by the police. For the majority of Egyptians, Tahrir Square was not a place of leisure. Its plazas and sidewalks were rarely used for any activities other than circulation. During the 18 days of the Egyptian revolution the Square was transformed into an urban utopia, an ideal city within the metropolis. For the first time in its history, the square was reconfigured to reflect the needs of Egyptians. A sense of belonging generated by collective participation in the reproduction of the space was clear during that period. The term “our square” prevailed over the old conception of *melk el hokoma*. Reclaiming the square triggered a new spirit of public engagement in the process of place production.

In few days the square was transformed into a public space with all its vital components. This process of reproduction and the patterns of change reflect the imagined public space in the minds of Egyptians. The way the square was reconfigured reveals an interesting collage of local and global influences shaping people’s mental image of public space. Tahrir Square hosted interaction between global flows of information, ideals and knowledge on the one hand, and local traditions and ethos on the other. On the local scale, the mosque was reintroduced as a space for socio-political discourse. Omar Makram Mosque that has been for decades a merely ceremonial mosque became a crucial component of the square during the revolution. It reclaimed its role as a medium of exchange of ideas, a place of socio-political discourse. Its imam, Sheikh Mazhar Shahin became one of the revolution icons. Together with other religious figures, he played a significant role in mobilizing crowds and keeping them in the square. Same role was played by Kasr Al Doubara Church that hosted a clinic and offered support to injured protestors. It was critical for the majority of people in the square to feel that religion is represented in their public discourse. On the other hand, global influences were reflected in multiple aspects of the reproduced space. Flows of information between the square and the global domain were unprecedented. Tahrir Square was connected to the global domain via social networks and world media. Smart phones, tablets and laptops created hubs of communication between this micro urban setting and the whole world. Information was flooding into and from the place. Photographs, emails, tweets, YouTube videos and Facebook posts managed to connect the square with the outside world. Flows of information and ideas were mutually exchanged between the inside and the outside.



Figure 3: Banners, caricatures, and wall newspapers became a communication tool that allowed freedom of expression and communication in the square. For few days, these tools replaced digital social media that was blocked by the government (Photo by Mohamed El Wakeel).



Figure 4: After the end of violent confrontations that took place in the first week of the revolution, Tahrir square became a ceremonial place that was regularly visited by families to take pictures and be part of the historic event (Photo by Mohamed El Wakeel).

The square hosted multiple layers of what Appadurai refers to as scapes of global exchange of technology, ideas, and media. These scapes were gradually appropriated by socio-cultural traditions producing unique forms and urban expressions that portrayed the interaction between the local and the global. This could be traced in the forms of art expressions that emerged in the square during that period. Graffiti was introduced for the first time to the public realm in Cairo. This western form of expression was adapted to reflect the perceptions of people in the square. Bands playing localized western music were entertaining the crowd especially at night. Signs and banners written in English communicating with the international society spread across the square. Many Egyptian jokes and proverbs were translated into English. These patterns of interaction between the local and the global produced a rich contaminated culture, using Anthony Appiah's term, that featured a complicated merge of diverse and complicated ideals and ethos (see Appiah, 2006). It conceived a re-appropriated collective realm that reflects the people's imaginaries of public space.



Figure 5: Expressive banners reflecting local culture and interests spread across the square. It was a creative process of expression and representation (Source: Photo by Mohamed El Wakeel).



Figure 6: Gathering nodes of discussions and entertainment emerged in the square where people exchanged ideas and expressed their opinions (Source: Photo by Mohamed El Wakeel).

Tahrir Square: The Lived Space

The experience in Tahrir Square during the days of the revolution featured dramatic actions, passion and lived situations. The square was transformed from a profane space to a sacred and differential one (see Soja, 1996). For the first time in decades, a political discourse was triggered between diverse religious, political and social groups. Islamists and liberals, Muslims and Christians and men and women participated in a qualitative form of interaction. The rich and poor, political left and political right, and liberals and conservatives were all united. Muslims and Christians held joint prayers. Women with different backgrounds and dress code were engaged in political discourse. Niqabs, hijabs, jeans and T-shirts created together an interesting collage that reflected the social diversity in the square.

Tahrir Square witnessed the generation of new forms of public organization and administration that were not common in Egypt. Committees were formed and discussion assemblages between diverse political, religious and social groups emerged in the square. These nodes of socio-political discourse were triggered spontaneously in response to rapidly changing dynamics of the square. However, they gradually constructed the organizational structure of the place. Community groups responsible for securing, maintaining and administrating the square evolved from these nodes. Checkpoints were established at the entrances.

Groups were formed to communicate with global media while others were responsible for communicating global media to locals. Newspapers were pinned up daily on the walls and screens

were playing the news all the time. Volunteers were bringing food, tents and blankets for protestors in the square. In three days, camping areas, media rooms, medical facilities, gateways, stages, restrooms, food and beverages carts, newspaper booths, and art exhibits were established in the square. It was critical to define the boundaries of the place for security and the demarcation of this reclaimed territory.

Gates were formed at all the access points using available materials such as wooden bars and corrugated sheets. Restrooms were built and connected to the sewage system. Clinics were distributed around the square and stages were erected to communicate with protestors. It was a process of space adaptation and divergence that featured an astonishing forms of social organization and administration. For protestors Tahrir Square became a place of community engagement, collective projects, social discourse and most importantly freedom of speech. The square became an ideal city within the city where people exercised their rights, freely expressed their opinions, and together participated in shaping the urban context. It was a place of collective expression.

For protestors, Tahrir Square became the symbol of democracy, freedom and liberation. This was reflected in social practices in the space. Groups were equally represented in the process of decision-making and the square never had a single leader. It featured unity of representation and collective practices. This experience presents a model of the possibility of rapid social reconfiguration, which I argue is crucial for the future of Egypt. What Egyptians have experienced and lived in Tahrir Square during the revolution superseded their imagined urban utopia. It was a moment of practical and emotional experience of space.



Figure 7: Since the resignation of Mubarak, Tahrir Square became the main arena for protesting in Cairo. For the last two years, the square was never empty of protestors (Source: Author).



Figure 8: The walls of the square carry strata of visual representations that document the dynamics of political discourse in Egypt during the last two years (Source: Author).

CONCLUSION

The Egyptian revolution has reintroduced the notion of public space to the forefront of discussions on contemporary urbanism. In days, Tahrir Square was dramatically transformed from an abstract profane space to a sacred differential place. The square hosted forms of social organization and public discourse that rarely existed in Egypt before the revolution. It was a creative and generative space that managed to produce a new culture of social responsibility and engagement among Egyptians. The square was also a place of flows, a hub of communication between the local and the global that yielded sophisticated and unique expressions and practices. These reflections extend beyond the 18 days of the revolution. The walls and ground of the square hold strata of memories and experiences that were overwritten multiple times. It simply documents the process

of socio-political transformation that has been occurring in Egypt since the beginning of the revolution.

Lefebvre's perceived, conceived and lived space conceptualization offers an analytical approach to analyzing the nature of Tahrir Square during the revolution. It facilitates the unfolding and understanding of the sophisticated strata of interaction between people and space. Lefebvre's triad provides a balanced emphasis on the multiple dimensions of the Tahrir narrative. It highlights the importance of understanding the lived experience as a product of a process of space adaptation and divergence. There is much to be learned from the spatial experience in Tahrir. It was a model of place making that featured surprising forms of social coherence, public organization and administration. It was a momentary urban utopia, a construct of collective imaginaries that were generated in the square and then dispersed back into the city.

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PROMOTING A SENSE OF PLACE

An International Study of Architecture Centres

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Abstract

This paper details an international research project that examined over 50 architecture centres in 23 countries including four case study subjects:

- Kent Architecture Centre, England
- Chicago Architecture Foundation
- Museum of Finnish Architecture
- Netherlands Architecture Institute

The paper analyses the projects' main findings including issues of definition, reasons for foundation, cultural policy impact and the main goals of architecture centres. It summarizes recommendations for centres as they attempt to reach their aims.

Keywords: Architecture centres; cultural policy.

INTRODUCTION

In September 2004, Northern Ireland's first architecture centre, PLACE opened in Belfast. The research presented here aimed to support PLACE and other architecture centres, particularly those in the first years of work. Because little previous scholarship on architecture centres existed, the project examined the history and wider contexts in which centres work as well as asking key research questions: what are the goals of architecture centres and how can centres best reach those aspirations? As the research progressed, these areas of analysis expanded to include issues of definition, the influence of Jürgen Habermas's theories of debate and exchange, the impact of policy, and notions of cultural capital as posited by Pierre Bourdieu.

While investigating these specific research questions, a significant aim of the research was to incorporate methods of data collection and analysis not historically, (though increasingly), utilized within the realm of architectural research. To that end, the project has employed sociologically-based grounded theory and qualitative data analysis through survey and interview with surveys from over 50 centres in 23 countries and four case study subjects:

- Kent Architecture Centre, England
- Chicago Architecture Foundation
- Museum of Finnish Architecture, Helsinki
- Netherlands Architecture Institute, Rotterdam.

The findings of the study were then disseminated to PLACE, the UK Architecture Centre Network and the Netherlands Architecture Institute as a means for them to reflect on their methods of working and wider contextual issues which impact upon them. The project generated

several areas for future research including investigation of issues pertinent to architecture centres and their supporters and to a wider research community -- in architecture, cultural policy and tourism studies -- as well.

This paper seeks to encapsulate the project, beginning with a review of the research methods employed. It then goes on to summarize the main findings of the project -- issues of definition, reasons for foundation, policy impact and the goals of architecture centres. The paper then briefly summarizes recommendations for centres as they attempt to reach their goals. Throughout the research and this paper, the authors questioned basic assumptions of architecture centres – that individuals can impact on their built environments and that debate and discussion can contribute to democratic change. Though the research is largely predicated on these concepts, it also interrogates them as it progresses.

METHOD

To begin, we will discuss the various methods employed in the gathering and analysis of data, both as a means to add to the debate of the identity of architectural research as well as to offer these particular methods to scrutiny within architectural research framework. Much critical discussion revolves around the quality of architectural research and its ability to be evaluated in terms similar to those of other areas of academic endeavour.

Wang argues that social science methodological frameworks might be an avenue for architectural research to pursue more frequently in order to improve its esteem within the larger research environment:

“Architectural research can benefit from [an] acceptance of a diversity of methods that nevertheless offers a developed sense of each method’s strengths and weaknesses. ...[T]he social science domain offers an extensive literature arranging these methodologies into systemic frameworks that are both comprehensive as well as definitive of quality” (Wang, 2003, p. 50).

This research sought to use qualitative data analysis including “a defined set of research tactics...survey, interview, ethnographic engagement, document assessment, graphic exercise, statistical analysis...” (Wang, 2003, p. 50) We did this in order to produce research “from the totality of the data generated ...[which could give] a sense of systemic robustness in addressing the object of inquiry.” (Wang, 2003, p. 50) In using qualitative analysis of surveys and case studies, including textual analysis of multiple interviews, the main research methodology followed the framework of grounded theory. In so doing, however, the research acknowledged the significant debate around grounded theory’s ontological and epistemological foundations that has emerged since its inception in 1967 in sociology (Glaser and Strauss, 1967, Wilson and Hutchison, 1996, Dey, 1999).

Techniques of Research – Survey, Multi-site Case Study and Interview

After an initial literature review revealed that little research had been completed about the specifics of architecture centres, it became clear that a preliminary survey of existing centres would be necessary. The survey, of which fifty were returned from eighteen countries (forty-eight per cent return rate), assisted in gaining a basic understanding of the architecture centre 'phenomenon' and in the selection of case study sites. The cross-sectional surveys of issues including history and definition as well as goals and audiences allowed analysis of many participants at one point in time, ideal to the preliminary investigation required of this survey.

The results of the survey, (of which the scope of this paper does not allow detailed examination), showed that the typology of centre was extremely disparate, and we determined the need for in-depth study of case study sites. The second phase of the data gathering process thus focused on the design of case study protocols; within architectural research, the case study is an increasingly acknowledged methodology (Johansson, 2003). Case studies were particularly

useful in the understanding of organizations such as architecture centres as they explore “complex social phenomena” to “retain the holistic and meaningful characteristics of real-life events, such as...organizational and managerial processes.” (Yin, 2003, p. 2) In addition to conducting interviews at each of the four sites, key documents were collected including annual reports, budgets, exhibition catalogues, commissioned research, etc.

Unlike Yin who suggests that each 'case must be carefully selected so that it either (a) predicts similar results (a *literal replication*) or (b) predicts contrasting results but for predictable reasons (a *theoretical replication*),[emphasis in text]' (2003, p. 47), this study agrees with Johanssen -- site selection can be 'selected purposefully or analytically, because it is information-rich, critical, revelatory, unique or extreme (as opposed to a representational sample strategy used in statistical investigation.)' (Johansson , 2003). The analysis of the case studies was hypotheses generating (Johansson , 2003) in the grounded theory model. By using four sites, the data and its analysis were enriched -- the themes which emerged from a case study not only informed data collection in the parallel case, but also the analysis of data across all four sites led to the exposure of shared themes which could be compared across the four samples.

The results from the survey revealed that four categories would best help to further explore the typology of architecture centre. These main operational criteria for selection for the four case study sites were identified as a comparison of:

- physical makeup – numbers of staff, size of facility, etc.;
- funding and support structures, including relationship to government;
- means of assessment of goals and
- wide array of cultural context in which centre sits.

The four case study sites were then selected because they represented a varied sample across that range of criteria. The centres chosen also represented a wide array of ages, from 11-50 years and equally divergent reasons for foundation.

Table 1. Four case study sites selected for examination (Source: Authors).

Kent Architecture Centre (KAC), England	outreach-based, no public facilities, one of UK's oldest
Chicago Architecture Foundation (CAF), USA	little government financial support, highly dependent on tourism
Museum of Finnish Architecture (MFA), Helsinki, Finland	one of oldest centres, museum identity
National Architecture Institute (NAi), Rotterdam, Netherlands	purpose-built building, large staff numbers

Procedure of Analysis

The information collected, the three-part process of qualitative data analysis began with the collation of surveys and transcription of the interviews; these greatly enhanced the ability to comprehensively describe the data. The examination was further assisted by involving subjects from various sectors in the research -- not only centre staff, but their financial supporters, volunteers, board members, and users. The decontextualization analysis process followed the advice of Coffey and Atkinson developed from Tesch (1996, p. 31) with a recombination of concepts as far as possible. The classification process, which involved multiple passes, not only categorized and indicated negative or aberrant data, but also established relationships and boundaries between the groups. In each case, an element for investigation was identified; the survey data was tallied and every interview analysed for any elements, which pertained to that

topic. Any supporting documents, which centres had provided, were also examined. Depending on the depth of data, this distillation process took between two and four 'passes.' This three-step procedure was repeated for every subject analysed – all survey data and interviews were examined as whole documents afresh each time. The categories were then reduced to approximately five-ten major themes for each subject. Each section involved the identification of both formal and substantive type categories, and these connections are seen throughout the text.

The research period and scope did have its limits– most of the data were gathered from Europe and North America. However, the methods employed did allow for substantive recommendations to be made, and employing grounded theory permitted an in-depth interrogation of a topic lacking in previous research.

ISSUES OF DEFINITION AND QUESTIONS OF A NEW TYPOLOGY

One of the most persistent questions in the project was 'is there a standard definition of architecture centre?' and one of the main findings of the research was that a codified identity of 'architecture centre' does not exist. Organisations which define themselves with this nomenclature differ in size, funding structures, personnel. Though many centres have libraries, exhibition spaces, classrooms and bookstores, some are solely outreach-based. Luxton, the National Coordinator of the Architecture Centre Network UK at the time of the publication of *International Architecture Centres* in 2003, (discussed later in this text), asserted all architecture centres share 'an unshakeable belief in a common set of values that enable people to understand and influence development of their "place"' (2003, p. 7). Luxton was working in the milieu of the UK and under the aegis of specific funding bodies; the research interrogated not only multivalent definitions found in the data but also whether or not this is a belief held by all centres. In parallel with this key challenge of definition has been the attempt to ascertain if, in the architecture centre, there is a recognizable new typology. We sought to understand if the architecture centre differ substantially from previous organizational typologies to truly engender a 'movement' as Ford and Sawyers' book suggests.

Genealogical Background

There is extensive scholarship on the architectural museum, from Poulot's description of the birth of the museum of architecture in France during the Revolution to Vidler's influential text, *The Writing of the Walls*, and the work of architectural historians Searing, Colomina, Summerson, Furján, among others. For these scholars, the architectural museum was founded for a variety of purposes – political representation and public instruction and for education of architects and the workers who built their designs. Several authors have written about Patrick Geddes's 1892 Outlook Tower in Edinburgh, including his biographer Boardman, urbanist Boyer, landscape Alessandra Ponte; architectural journalist Dyckhoff identifies the tower as 'the' progenitor architecture centre due to its exhibition which demanded audiences engage with varying scales of the city. There was some literature on individual centres, particularly the Centre for Canadian Architecture. However, little literature examined the centre as a unique typology.

Ford and Sawyers's book, *International Architecture Centres* of 2003 thus acted as a significant window into the type. It was the first time architecture centres were identified as a 'movement'. The book was funded, in part, by UK government bodies such as the Commission for Architecture and the Built Environment (CABE). It represents an important, though uncritical document; it attempts to brand the notion of architecture centre in an effort to codify a group of organizations with common purpose. The book is not an analysis of centres, but rather a polemical assertion of architecture centres' value, particularly to their funders.

Reasons for Foundation

With this lack of previous critical research in mind, the project sought to explore the circumstances that have promoted the development of the centre as a type of cultural organization. These contexts varied, from the influence of environmental awareness and

architectural psychology beginning in the 1960s, to fragmentation of power structures and the erosion of distinctions between high and low culture. Concomitant with this post-modern fragmentation is the development of the term 'culture'; post-Williams, (1958) the term increasingly came to encompass a wide array of behaviours, traditions and organizations. The foundation of many centres in the late 1980s and early 1990s, when postmodernism's characteristics were being codified and architecture was becoming increasingly recognized as an element of 'culture' in arts policies, can be further identified as part of this phenomenon.

One cannot ignore the significant impact of Habermas's *Transformations of the Public Sphere* of 1962 on what David Hesmondhalgh calls the 'liberal-pluralist view' in which 'participating citizens should be given the tools to make rational decisions about the proper functioning of democratic institutions' (Hesmondhalgh, 2002, p. 30). The belief that inclusive debate and exchange can effect real change in the built environment stemming from Habermas and developed by Fraser (1992) and Calhoun (1992), can be found in the aims and objectives of most centres surveyed. Demands by many centres' funders, especially arts councils, for inclusion of a variety of audiences is a reflection of a late-Habermasian understanding that all communities should have the opportunity to comment on and impact their built environments.

Analysis of the data also revealed other motivations including nationalist desires to promulgate the singularity of national architectures beyond fixed borders; this was particularly the case for centres with major collections, such as the MFA and NAI. In addition, many centres were opened as a greater attention was paid to the links between arts and tourism after Myerscough's publication of his seminal volume *The Economic Importance of the Arts in Britain* in 1988. Though Myerscough touches on architecture only lightly, it was through this volume that the economic importance of culture and its producers was highlighted to policy makers and funders of centres. These centres were founded to make use of architecture as a cultural industry – that is, to develop not only better quality environments, but to use architectural culture as a means to attract investment and residents in line with Florida's much-criticised arguments about the creative class. Likewise, government preference for policies which encouraged 'upskilling' had an impact on the foundation of centres in England from the mid-1990s until the economic downturn circa 2008.

With these findings, we began to theorise that while a single definition of architecture centre does not exist, the data did reveal that centres seem to be evolving, perhaps unknowingly, towards a common typology. This evolution can be seen in three avenues in both survey and case study data:

- A moving away from a concentration on historic subjects to those which have current impact on the built environment;
- A shift in publics and
- A move towards programming which is interactive in nature rather than passive and uni-directional.

These leanings were a reflection of global awareness of activity in which other like organizations are engaged through ever-increasing communication networks, ease of travel, the popularity of conferences of groups such as the International Conference of Architectural Museums (ICAM,) Governance, Architecture, Urbanism: a Democratic Interaction (GAUDI,) the UK's Architecture Centre Network, Architecture and Design Education Network (ADEN) and Association of Architectural Organizations (AAO.)

Likewise, the data suggest that architecture centres were increasingly concentrating on the process of architecture rather than simply on its product including the ability of those with little Bourdieu-ian cultural, or indeed financial, capital to impact decisions made about local built environments. This exploration of the process sets architecture centres apart from many cultural organizations.

Policy Impact

Cultural planning impact

As part of the dissection typology, definition and goal formation, the research interrogated the variety and impact of policies upon centres. With such a wide array of cultural, political and economic contexts, this was unsurprisingly difficult. Nonetheless, several patterns emerged from the data. Several centres are based on what might be seen as more 'traditional' cultural policies, that is, those policies dedicated to encouraging, preserving and displaying culture in the mode of an art gallery. Centres with collections, mainly those founded before 1990, fall into this category: MFA, NAI, Alvar Aalto Foundation, the Danish Architecture Centre, Department of Architecture and Design at the Art Institute Chicago, the Norwegian Museum for Art, Architecture and Design, the Irish Architectural Archive and the Swedish Museum of Architecture

However, it is also clear that later developments in cultural policy also have a considerable impact on centres. In the past twenty years, there has been an explosion in the area of urban redevelopment projects that use 'culture' as the linchpin for their regenerative proposals and policies. This trend of 'cultural planning' has emerged to be one of the most significant cultural policy initiatives of the last two decades. (Stevenson, 2004, p. 119), and architecture centres are certainly part of this trend. Both the NAI and the Lighthouse were parts of larger cultural schemes to rejuvenate 'second' cities -- Rotterdam and Glasgow respectively. These centres were valued by politicians and policy makers both as cultural organizations, and what Bell and Jayne (2003) would call 'flagship buildings' -- projects (after the perceived success of Guggenheim Bilbao,) commissioned as central to urban regeneration projects.

CAF's reputation as an architectural tour company has been a major contributor to city and state governments to vigorously pursue architecture as a major element of the cultural planning of the area. The only government grants CAF receives are for the development of stronger ties to tourism. In 2006, CAF was asked to begin a feasibility study to examine the possibility of a major, high profile new centre to act as a focus for these tourism efforts by the city and state. Though cultural planning regarding architecture appears to be slower to gain popularity by policy makers in Finland, MFA is one of over 100 organizations participating in a growing scheme begun in 2005 for the Design District precinct in Helsinki. Marketed as a quarter of the city as well as a 'state of mind,' the District represents itself in its promotional materials as an area of 'creativity, uniqueness, experiences, design and Finnish city culture.' The creation of this district can be seen as an obvious attempt to increase consumption of local design culture or as an instrument to set Helsinki apart from other cities in Europe.

KAC, with a lack of publicly-accessible space was not part of this type of direct cultural planning in the same way. However, KAC was seen by its funders as part of a means of delivering better quality design to an area under serious development pressure. For SEEDA, formerly one of KAC's main funders, KAC was a key piece of infrastructure helping to deliver their adoption of Florida's ideas of the creative class. Indeed, many centres in the UK have similar relationships to the issues of creative industries and cultural planning. Urban Vision North Staffordshire was founded as part of an effort to increase the region's competitiveness, while the Doncaster Design Centre, created by a town renaissance initiative, sought to use architecture as a creative industry within a regeneration scheme.

Stevenson argues that cultural planning does not simply seek to produce or deliver art or culture, rather it is a widely-adopted 'stratagem for achieving social inclusion and nurturing local citizenship' (Stevenson, 2004, p. 119). This 'inclusion' aspect of cultural planning, currently hotly debated in arts delivery, is also evident in architecture centres. The Dutch government is increasingly concerned with inclusivity issues; NAI was been asked to provide programming for Rotterdam's large immigrant communities. MFA is required to include architecture from its various communities, to ensure these exhibitions are seen, as much as possible, throughout the country. Many UK centres are heavily encouraged to address diversity by funders, particularly local and regional arts councils. For CAF, inclusivity issues are largely self-generated -- that is,

CAF pursues philanthropic grants to encourage a larger demographic. Nonetheless, they are encouraged to do so as part of the policy of these grant-making bodies.

Architecture policies

Many nations, particularly those in Europe, have or are planning official government architecture policies. Some of the earliest of these include those of the Netherlands, 1991 and Norway, 1995, and architecture policies are active at supranational levels as well.

The survey data showed that correct knowledge of pertinent architecture policies was not above fifty-five per cent among centres in the study. However, forty-two per cent of centres were contractually responsible for delivery of their national or local architecture policy. The most explicit of these was the relationship between now-dissolved Lighthouse Glasgow and the Scottish Executive's Architecture Policy and Architecture Unit, but this relationship proved to be an exception in the data set.

Many interviewees were cautious about the impact the architecture policy had had on their activity. One might have expected architecture policies to have made a large impact on NAI or MFA as they received 100% core funds from their governments. However, neither centre had experienced any change in what they were expected to deliver after their countries had adopted architecture policies. Though MFA is mentioned in the policy as an important player in architecture culture in Finland, it is not listed as a means of implementation for the policy in the same document. Most importantly for interviewees, architecture policies do not seem to have made any funding impact. Hence a deeper investigation of the qualitative data to reveal that architecture policies have little impact on the goals or programming of centres.

GOALS

Having detailed these findings about centres' contextual issues, we will now discuss our findings which answered the basic research question: what are the goals of architecture centres, both individually and as a possible unifying typology? Fundamentally, the data revealed that architecture centres derive much of their *raison d'être* from the modernist, positivist environment encouraged by Habermas who contends that 'public sphere of civil society stood or fell with the principle of universal access' (1989, p. 85).

When examining the data, it becomes apparent that the missions of centres tend to fall into three categories; many centres have more than one of these as their main objectives:

- To raise awareness about architecture/built environment issues;
- To increase debate and exchange of ideas about architecture/built environment and
- To improve the quality of design.

The predominant goal type, to raise awareness about architecture and/or the built environment bridges many different types of centres – those with collections, those with tourism as a major focus, and those that work predominantly through outreach.

For NAI, MFA and several other centres including the Danish Architecture Centre, the export of architecture emerging from their respective countries was a chief goal. MFA's export began upon their foundation in 1956 as a means of exerting Finnish national identity early in its existence as a sovereign nation. For other centres, such as NAI, exhibitions of local architecture were exported in order to attract foreign investment and tourism. The collections-based centres included the collection and display of their collections as major goals. However, it is important to note that these centres did not list collection as a singular aim. MFA and NAI both list the 'dissemination of all architecture' or issues which concern 'the making of human space.' This applied to the Alvar Aalto Foundation, Estonian Museum of Architecture, Lithuanian Museum of Architecture.

For CAF and KAC, aspiring to be an impartial forum for discourse emerged as another important goal, though not one explicitly stated. Both organizations believe strongly that this 'not

taking a stance' position was key to their identity amongst other cultural organizations. For KAC, it was fundamental to their ability to retain a major contract to deliver the Southeast Regional Design Panel, while for CAF, acting as a forum for discussion and exchange enabled them to promote themselves as a "hive" for architectural debate in Chicago.

The Problems with Poor Goal Planning

However, several significant problems with goals and their review also arose throughout the data. These included centres having no goals; objectives not understood by all staff; goals with varying priority amongst staff; and different aims disseminated to the public. The detail of short-term goals, which could be seen as strategies or requisite work in order to achieve larger aims, became mixed with the overall objectives for the organization. At the time of investigation, very few of the centres had long-term plans for three, five or ten years including how goals may change over time.

The reasons for this lack of consideration of goals were difficult to pinpoint, but may be those shared by many not-for-profit cultural organizations. For some centres, management systems and even physical accommodation encourage 'silos', separations of departments. Workload and lack of time are repeatedly pointed to by centres themselves; as busy, often underfunded environments, centres did not lend themselves well to this type of close evaluation of overall goals. Also, one cannot ignore the historic lack of evaluation in cultural organizations.

RECOMMENDATIONS FOR CENTRES

With the issues of policy, conceptual context and goals in mind, the project then set out to recommend how centres could better reach their goals. We will close the paper with a summary of these suggestions in the following themes:

- Increase self-awareness across all tiers of the organization;
- Integrate audiences, staff and subject matter;
- Approach programming and management in active interfaces and
- Identify methods and means appropriate and specific to purpose.

While many suggestions which we might also posit -- such as a better use of evaluation, review of goals and better understandings of audiences -- apply to many cultural organizations, we have purposefully summarized those which are specific to architecture centres.

Self-awareness

The project illuminated the difficulties of identifying a new or evolving typology of architecture centre. An agreed and explicit definition not exist; likewise, centres seem to share very little in terms of management systems, styles of working, audiences, etc.

Centres at every level thus required a far deeper self-awareness, including reflection on this issue of a codified typology. Centres do not, in many cases, seem to understand the larger context in which they work, particularly their policy landscape. There are serious pressures, specific to architecture centres as an emerging typology, which require attention as a matter of urgency, both on strategic or tactical levels, including:

- cultural planning;
- increasing commodification of architecture, (particularly through architourism);
- near-fetishization of the 'stararchitect';
- deferent attitude of some governments to cater to the 'creative class',
- tendency of supporters towards project-based funding and
- new interests in issues of the built environment due to concerns about climate change or global security threats.

In addition to this, some centres ignore or even disparage their real cultural capital. Centres in cities or regions with little high-profile contemporary or historic architecture often disregard the value of the built environment in which they work. A lack of 'starchitecture' – past or present – does not eliminate the ability for local architecture to illustrate issues and problems for discussion with their audiences. Indeed, it may be that the examination of the less spectacular, problematic aspects of local built environment would elicit greater response and engagement.

Scrutinize the Influence of Architects

The next area of criticism is carefully levelled by the authors of the research as professional architects themselves. Architects are not only key audience members, but act as directors, chairs of boards, funders, staff members, volunteers, cheerleaders and members. These positions are also occupied by educators, curators, 'professional' not-for-profit managers, etc. of course; the involvement of the architect is nonetheless highly influential.

Staff, board members or volunteers trained as architects bring with them not only particular priorities, but also means of working and occupational traditions. Clearly many of the attributes of architects are strongly positive – creativity, the skill to quickly analyse a complex situation, the ability to juggle many requirements at once and to do all of this under extreme pressure.

However, the profession carries with it some inherent characteristics as well, which may exacerbate the problems inherent in any not-for-profit organization. The schooling and subsequent practice of architecture encourages unrealistic working hours, and it may be architecture centres employ similar unsustainable styles of working. Though many traditional contracts include a stage for review of the performance of a building post-occupancy, few architecture firms ever participate in such a review. It may be that architecture centres' lack of evaluation is impacted by this habit from the profession. Similarly, the lack of long-term (five-ten year) plans seen in centres is not uncommon to architecture firms; extensive strategies for the direction of the firm are not generally part of the training or information used by staff in non-management positions.

Also, architects are not necessarily keen to "recycle" designs used before, a sign of imaginative, but perhaps not the most efficient means of resourcing. Similarly, centres, with some exceptions, seem detached from the notion of recycling programming – not only do centres tend towards designing wholly new programmes, (again, the effect of creative staff seeking new challenges,) but departments within centres, because of a lack of clear lines of communication and an overseeing 'eye', duplicate efforts.

Perhaps most potentially damaging is the risk that centres inundated by those already in possession of cultural capital as it relates to the built environment may not be those most capable to act as translators to audiences without similar levels of training. Simply understanding the processes and products of the built environment is not sufficient qualification for running a cultural organisation that seeks to promote and 'curate' the public's interaction with the built environment.

Integration

Habermas and his critics, especially those with an eye to post-modern concerns of identity and the emergence of varied discourse, warn of the problems of 'administration' – that is, the imposition of priorities, opinions, and world views. This is particularly problematic for centres as administration often seems to lead staff segregating their audiences in fear that practicing architects need different programming to that of the 'general public'. Particularly if one considers constrained budgets, using audiences to educate one another seems a key tactic to engaging more individuals in built environment issues.

The 'places' of mixing can, of course, be virtual and thus occur at any time on a global scale. The coffeehouses of Habermas need not be a literal translation for the need of an actual room in the age of digital global communication. On the other hand, in order to facilitate this type

of integration, centres with public faces must also carefully consider the types of spaces for exchange.

Active interfaces

Alongside this, the programming observed at centres which seems to best forward goals of increased engagement with an eye to improving the built environment was, invariably, that which involved audiences coming in contact with buildings and spaces. Much current debate and literature exists around how architecture can or should be exhibited. This research showed time and again that the difficulty of translating architecture into exhibitions, due to the previous training and knowledge needed to understand architectural drawings and even models, was a concern for staff and for their audiences. It was noticeable that the treatment of architecture and built space as sanctified art objects with poorly-designed or ill-considered exhibitions made the issues more inaccessible, particularly to those with little experience in the area. Any programming based around the gallery must much more seriously engage with creative solution to the issue of translation.

Indeed, the data point to interactive and dialogic programming as that which was most engaging and likely to contribute to centres' goals. The best examples of this were small group tours through buildings and public spaces which invited not only a first-hand experience of the built environment but also conversation for multiple publics with varying understanding of how architecture is made.

Specificity and Appropriateness

Finally, we found that centres could better acknowledge their singularity as a type of organization with a specific topic and goals peculiar to themselves. Rather than blindly emulating the methods employed by other educational or cultural organizations, centres could recognize that their goals are specific, requiring rigorous examination of their programming. Though centres clearly have a genealogical relationship to art museums, their mechanisms for delivery are not necessarily appropriate for centres. It may be that debate and exchange are not only means to better achieve goals, but could be the single most exciting and unique aspect to what centres offer.

CONCLUSIONS

There are numerous areas into which this research could develop: further in-depth studies into the history and development patterns of centres since 1950; the relationship of centres to architourism; the position of architecture centres in the formation of national cultural identity and the role of centres as part of what Zukin (1990, 1991) and Harvey (1989) refer to as 'circuits of cultural capital.' These historical and theoretical issues could be joined by research into more quotidian, but nonetheless critical factors for centres achieving their goals including the best means of translation of architectural product and process as well as identification of possible measures of effectiveness, an area in which many, if not most, cultural organizations struggle.

Perhaps one of the most pertinent areas for future research, however, is the necessary unpacking of the relationship of architecture centres as cultural planning. Criticism has been heavily levelled at national governments around the world for embracing cultural planning, particularly, as Stevenson highlights, it has 'not been scrutinized as the basis for local government strategic planning' (Stevenson, 2004, p. 119). Stevenson goes further to make a case that by using cultural planning for 'civilising', the process becomes 'not dynamic, flexible and situational, but linear and linked to a set of clearly defined political and governmental objectives' (Stevenson, 2004, p.124). Likewise, Hesmondalgh and Pratt (2005) argue that cultural policy in general has not matured at local levels. A criticality of cultural planning as not yet permeated into the discourse of architecture centres. Perhaps this research can help centres scrutinize if being 'used' as a mechanism for cultural planning aligns with their goals or future ambitions.

One of the main sources of division between the camps of grounded theory is the issue of verification: 'Glaser argues, the task of grounded theory is to generate hypotheses, not to test

them... he claims that verification is irrelevant precisely because ideas are induced from the data' (Dey, 1999, p. 20). For Glaser, a second type of work is necessary after theories have arisen in grounded theory analysis, that is, verification studies. The study analysed here has generated hypotheses about the background, context and possible future for centres; now is the time for verification, interrogation and critique of these ideas to begin.

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ORIGINAL COPIES? Imitative Design Practices in Informal Settlements

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Abstract

Although limited by economic constraints, builder-dwellers in informal, self-made environments are free to choose housing forms and materials without external constraint or control. This situation potentially offers considerable freedom for expressive gestures, originality and individuality. Drawing on data from a longitudinal ethnographic study in Colombia this paper explores how dwelling forms and practices are characterised by imitative behaviours at a range of scales including settlement layouts, house plans, selection of materials and house furnishings. The main arena for competitive display and distinction is on the front facades of the dwellings where variations in colour and form become increasingly evident as settlements consolidate. The paper utilises Bourdieu's concepts of distinction and cultural capital to explore the changing dynamics of housing design and display, and to explain why as dwellings consolidate, there appears to be an increasing divergence between dwelling forms and domestic practices.

Keywords: Informal housing design; competitive display; cultural capital.

INTRODUCTION: REPRODUCING POPULAR HOUSING

In much of urban Latin America the '*barrios populares*' - literally neighbourhoods of the people - are places of aspiration and change; change in which the self-builders demonstrate considerable agency manifest in the ambition, ingenuity and energy with which they attempt to realise their individual and collective aspirations - to transform their social position within society. The construction of their owner-built dwellings is usually a decades-long project of consolidation. It is a powerfully symbolic and transformative process in which the physical construction of the dwelling - usually from a flimsy improvised hut of recycled materials - towards a solid dwelling of concrete blocks, paint and railings, plays a fundamental role in transforming social relationships and personal identity in which imitation appears to play a key role.

Imitative practices take place in different ways. Imitation is a fundamental part of the processes of cultural transmission as social groups attempt to reproduce themselves. Much of this appears to occur 'unconsciously' or 'naturally' and is embodied in everyday practices (Bourdieu, 1977) as children learn the social rules, behaviours and language of their parents and elders through copying and repetition. Houses play a crucial role as the site of many of these everyday social practices which are continually reproducing and reinforcing the social order. Other issues are overtly reinforced through formalised processes such as education, which historically has employed copying techniques and repetitive rote learning.

In this case imitation is a part of the process of change as people are observing and apparently copying the dwellings of others in clear attempts to raise their own social status. Are these low-income dwellers merely imitating the forms of more prestigious housing areas rather than adopting its norms and values? Can we distinguish between superficial copying and 'genuine appropriation'? What exactly is being copied? Is it the form, the content, the image or the lifestyle? Can these characteristics be separated?

To address these questions we need to explore the intentions, motivations and logics that lie behind different practices. To do this the paper draws on data from a longitudinal ethnographic study into the growth and development of popular housing in the Caribbean coastal city of Santa Marta in northern Colombia. I first collected data in 1986 and returned every few years until the early 1990s each time living with a family in one of the illegal squatter settlements on the periphery of the city. Several short visits were made in the late 1990s and in 2008 I carried out a follow up study when I lived for another month with the same family. This was 17 years since the previous intensive fieldwork, and over 22 years since my first visit. The core of the study is an analysis of the changing dwelling processes and practices of 40 households in two adjacent settlements. From my vantage point as a participant observer I collected a range of data including long transcribed interviews with householders and detailed plans of their changing dwellings accompanied by photographs (Kellett, 2000; 2011).

CONSTRUCTING ORDER

Many authors have emphasised the symbolic dimension of housing and identified the need to explore the meanings associated with the buildings, spaces and objects that make up domestic environments (e.g. Bourdieu, 1977; Lawrence; 1987; Rapoport, 1982). Waterson (1997:xvii) explains that houses and settlements are full of encoded meanings and that the house can be seen a microcosm which reflects 'in its layout, structure, and ornamentation the concept of an ideal natural and social order.' Similarly Bourdieu's concept of habitus can be interpreted as a way 'of knowing the world, a set of divisions of space and time, of people and things, which structure social practice. It is at once a division of the world and a vision of the world' (Dovey, 2010:32). In this sense dwellings play a central role in the reproduction of social order and practices.

In Santa Marta we can interpret the actions of land invasion, settlement and consolidation as processes of ordering. In this case the spatial order, which is created by the informal dwellers, is highly visible and identifiable at various scales. The most obvious is the formal, geometric layout of the settlement, but we also find a similar consistency in the house plans and even in the position of furniture within the dwelling. Let us look more closely at some of the elements, firstly the settlement layouts.

FORMAL PLANNING in INFORMAL SETTLEMENTS

Since colonial times urban areas in Latin America have been planned using orthogonal principles based on grid-iron layouts of standard blocks (Garcia Fernandez, 1989; Hardoy, 1982). This can be interpreted as the imposition of an 'ideal' social order through rigid planning which makes tangible in built form and space the power and value system of those in authority (Hernandez & Kellett, 2010). Perhaps ironically then, informal settlers aim to achieve just such a standard layout, sometimes overriding the logic of topography. The most vital aspect of the grid layout is that it will be read as conventional, and have the potential to develop and become the same as other parts of the city. The expressed aim of many settlers is to produce places that are as close as possible to the dominant formal housing areas. Hence they adopt the rigid layout of blocks and plots – and significantly they leave open spaces for squares, schools, clinics etc. In short, their collective aspiration is to create conventional, legal, fully serviced neighbourhoods.

Similarly, the design of the dwellings themselves echoes the same underlying geometric logics with minimal variation. Well-established patterns of development are followed at different speeds, but the end products fall well within a relatively narrow band of culturally prescribed characteristics. This means that dwellers are attempting within the constraints of their resources to create urban form and housing areas that are as close as possible to the dominant conventions. The informal dwellings and settlements can therefore be interpreted as striving to achieve formal respectability, conventionality and order. Such processes appear to be based on imitation and copying of dominant referent models.

ASPIRATIONAL JOURNEYS

A distinctive characteristic of informal settlements is that the dwellings are built by the inhabitants at the same time as the space is inhabited. This finds immediate echo in the ideas of Heidegger who emphasised the inseparability of construction and habitation, of building and dwelling. He argued that “*building isn't merely a means and a way towards dwelling – to build is in itself already to dwell*” (Heidegger: 1971:144). He explains that in both German and English the words have a shared etymology (Sharr, 2007:39) which confirms the existential importance of building to help ground and centre us in the world.

Such an approach also challenges the assumed ‘dichotomy between design and execution’ as both emanate from a dwelling perspective (Ingold, 2000:186). Hence the creation and construction of the dwellings is a lifetime project of change and improvement which is highly responsive to changing domestic circumstances, budgets and opportunities. This emphasises the idea of the house project as a process of change through time, a process in which the changing dwelling can be seen as a symbolic vehicle of transformation towards different circumstances. This can be interpreted as an aspirational life journey from poverty towards prosperity, from the past towards the future, from exclusion towards inclusion and from the margins towards the centre (Kellett, 2005). Such an analysis sees the house and house project as a classic ‘model of the world’ (cosmos) which is understood as an ongoing journey rather than a static cultural model. It also reinforces the idea of the dwelling as never complete but ‘continually under construction’ just as life itself is continually moving forward (Ingold, 2000:172).

This can be clarified through an example. I first met Olga, Jesus and their young children occupying a simple wooden hut high on the hillside a week after a land invasion in 1991. The change over 17 years from their temporary dwelling of discarded planks to their solidly built dwelling is a considerable achievement, and they have also managed to consolidate their economic position and educate their three children. Here is part of Olga’s story which she recounted in an animated way with both great pride in what had been achieved and also considerable enthusiasm for what was still to be done:

“Yes what an improvement! What happiness! To have your own house isn’t wealth, but not to have a house is certainly poverty. [...] Ay, in the beginning it was very hard for us, without electricity - we had to use *mechones* (improvised all lamps) and then what was it? - bringing up the water – we carried it on our shoulders and from right down there and each *cantina* holds 22 litres and you had to put that on your shoulder. [...] Yes it was tough. We all made such an effort, even the little ones. Everyone helped to carry up the stones and sand. The little ones carried up the sand in little buckets. [...] yes, when you build your own house you feel real affection for it. Are we happy with what we’ve achieved? Well yes, but we have to keep on improving it, of course! That’s my intention, yes. Yes it’s necessary to improve, it’s still basic construction (*obra negra*) – finish it, plaster it, paint it, the window in the kitchen, tile the kitchen and bathroom, plaster everywhere until nothing remains in *obra negra*. [...] we do it bit by bit. Apart from one room and the bathroom, everything we did ourselves, and it’s work, work.”

The front facade of the house is freshly painted and the living space is dominated by numerous framed educational certificates and graduation-style photographs of the three children. Despite the elaborate academic garments in some pictures these achievements do not go beyond secondary education apart from some short technical courses. However the message is clear. Their children are successful in educational terms and the household has thereby accumulated significant cultural capital of which they are proud. This message of achievement is visible to all who come to the dwelling. The certificates are distributed around the main living space and placed to ensure maximum visibility.

IMAGINED FUTURES

A common thread in such stories is the dogged persistence required to keep moving forward despite the hard work and hardships. The future dimension is crucial. The long-term nature of the process demonstrates that, in contrast to the common myth, dwellers are not present time

focused. They adopt forward looking strategies based on optimism and aspiration, and their dwellings embody future aspirations with little time for nostalgia or a rural past, rather a fascination with 'modern', urban, progressive images: a striving towards 'imagined futures' (Holston, 1991). Despite daily hardships and injustices, the world is seen as a place of opportunity and where effort and initiative can be rewarded. It is a worldview in which change and modernity are welcomed and attainable. Such values are directly reflected in the aesthetics of building in which models of success are sought from 'beyond the neighbourhood in space and away from the past in time' (Peattie, 1992:28).

What appear to be essentially physical changes not only symbolise progress and achievement but embody more fundamental social and economic changes. The mass consumption of materials and consumer goods through the construction and furnishing of dwellings draws dwellers intimately into capitalist cycles of consumption, and parallel changes in social identity occur as people's role and position within society is redefined. Social positioning plays a vital role in determining their actions. Informal settlers are conscious of their relatively low social status, which is reflected, in their physical conditions. Hierarchies of forms and materials which mirror economic and class divisions, are a very visual and public barometer of relative social position and hence are an obvious platform for all those with any means (however minimal) and aspiration (however unrealistic) to influence perceptions of where they fit, both on the larger macro scale of society and simultaneously at the micro-level of neighbourhood relations. We can see these as performative acts – with the aim, not necessarily consciously, of communicating to a range of possible audiences, largely those nearby. Simultaneously it can be argued such actions are also part of complex processes of self-realisation and identity (re)construction (Cooper Marcus, 1995; Wiesenfeld, 2001). In other words communication is both inward and outward.

Therefore their construction efforts to transform their settlements can be partly interpreted as a striving for dignity, respect and respectability through appropriating images and attributes which signify aspects of 'the modern'. From her personal experience of living in an informal settlement in Venezuela, the anthropologist Lisa Peattie (1992:29) concluded that the improvised wooden dwellings with minimal infrastructure '*represent attributes which are devalued and devaluing. People who live in this way are thought of as people to be looked down on. That is why the energy that goes into housing improvement ... is as much a drive for respect as it is for comfort.*' Such energy and values are manifest in the aesthetics of the built environment in multiple ways, but underlying them is the desire to transform their own self-image as well as project a new identity to others. This is well expressed by Holston with reference to his study of self-builders in Brasilia where '*the underclasses are constructing images and identities to counter those that subjugate. Not only are they transforming themselves as citizens ...they are also changing the images of disrespect [and] replacing [them] with new ones of competence and knowledge in the production and consumption of what modern society considers important*' (Holston, 1991:462).

DESIGN MODELS: ORIGINALS AND COPIES

What are the sources of these new images of competence and modernity? In this study the language of aspiration is expressed using a vocabulary borrowed from dominant groups to which the informal dwellers aspire: a language of order, formality and affluence. Knowledge and imagery of elite groups is easily accessible, not least through the media – especially television. This is reinforced by local role models, which are clearly significant influences on the design vocabulary, evident in the visual similarity between well-consolidated popular dwellings and middle-class houses. However it is not a direct appropriation, not least as life styles and housing preferences of all groups are continually evolving and changing. The recent development of new gated communities and apartments favoured by the aspiring middle-classes in Santa Marta can be seen as following the housing patterns of the capital Bogotá - which is looked up to as a place of power and wealth. These changes also help to define the social distance between them and the majority in the popular settlements in Santa Marta who are busy constructing dwellings, which

appear to be increasingly similar to their own. Therefore there is an apparent delay in the appropriation process: squatters are appropriating somewhat dated models.

An additional point of reference in the city relates to the large influx of internally displaced people (IDPs) fleeing extreme violence in rural areas. In 2008 it was estimated that at least 18% of the population of the city were IDPs and the ICRC (2007: 19) give a figure of almost 70,000 registered IDPs, making Santa Marta the fourth largest receiving city in the country. Many are erecting new dwellings on previously untouched steep slopes – some close to the city centre and on the hills surrounding existing settlements. Conditions are usually very difficult and 65% are living in 'extreme poverty' (ICRC, 2007: 30). These new urban dwellers are changing the relative hierarchy of housing types and conditions in the city. Established informal dwellers are no longer at the bottom of the social hierarchy and are keen to ensure that they are clearly differentiated from those below them. They do this not only through continuing to build in solid materials, but through careful attention to style and detail.

Housing types and styles have clear symbolic functions (Miller, 1987) and in Santa Marta these dynamic processes of change and appropriation can be interpreted as reflecting changing social ideals. Following Bourdieu (1984) we can see how different social groups attempt to maintain distinction from those 'below' them and simultaneously try to emulate those they consider to be successful. Foster (1975: 180) suggests that the type of dwelling built by the poor is 'an economical copy of a more wealthy man's house.' But although they may appear similar they are much more than a simple copy. Drawing on data from Brazil, Holston (1991) argues that low-income dwellers are not attempting to imitate, but rather to develop 'original copies' which display both their origin as well as demonstrating sufficient uniqueness and originality. This seems to be the case here.

DEFINING DIFFERENCE, REINFORCING SIMILARITY

We can interpret aspects of the visual appearance of the dwellings through an appreciation of transient and transcendent values (Miller, 1994) and an understanding of the imagery associated with contrasting rural and urban values. The barrio is on the edge of the city with hills and farmland close by and many older residents grew up in rural areas, but the countryside is regarded as backward and lacking in opportunity and prestige. The pitched roof is symbolic of the rural house and great effort and expense is expended in disguising its presence. Most consolidated dwellings appear to have flat roofs, which are associated with the urban houses of the rich and a key signifier of modernity. This illusion of flatness is achieved by erecting a parapet or fascia at the front eaves. Such 'modern' exteriors reflect transient, changing values and are designed to demonstrate prestige and link the occupiers with urban based ideas of affluence and progress.

Once the front façade is sufficiently advanced it will be rendered and painted. Bright colour is a recent addition to the armoury of those intent on achieving distinction from their neighbours through expressing visible difference. However, a delicate balance is required between difference and similarity: between uniqueness and conformity. A common, shared vocabulary is frequently evident between neighbours and which also indicates its imitative origins in the dwellings of the more affluent.

We can identify two levels of imitative behaviour. Firstly, copying from the design models of the more affluent beyond the barrio for the generic design patterns, and secondly within the barrio. Dwellers recognise that they observe and appropriate selectively the designs and motifs of neighbours which they believe express the values to which they themselves aspire. Again sufficient uniqueness can be achieved by the careful use of paired colours (rarely more than two colours are used). This is a self-conscious design process with the intentional selection of ideas and patterns (Ingold, 2000:175).

Although some people were not especially forthcoming when asked to explain their choices and preferences it is clear that low-income residents hold clear aesthetic preferences and participate with knowledge and creativity in the design process. I devised a simple photo-

elicitation exercise to encourage people to discuss their preferences using a range of images of different façade types, and found that invariably the same ones were selected as being the most attractive and 'better'. These all employed a clear symmetrical geometry combined with decorative elements in the fascia profile and railings. I included some older images and it was revealing that facades which appeared to be prestigious in 1991 were not selected. In recent years styles are becoming more colourful, extravagant and playful – as well as occasionally eccentric. There is a noticeable softening of the hard modernist geometry and increasing use of floral based decoration and occasional use of textured areas (e.g. pattern stones). This confirms that tastes and trends are in a state of flux and suggests that a more popular aesthetic is developing which appears less reliant on copying and places more emphasis on originality. Increasing numbers of recent facades exude a confident and playful exuberance (figure 1).

Fashions and styles are inevitably changing but this new found confidence in popular architecture may be an indicator of more profound changes and suggests a more independent relationship with elite groups and practices. In a study of cities in the highlands of Ecuador, Klaukus (2012: 263) explains how the potency of dominant models is linked to underlying systems of power, and illustrates how *'the former elite architecture is losing its distinctive quality; the barrier constructed by the elite between superior and popular culture is fading. The elite symbols have forfeited some of their strength.'* This reminds us that architecture is not independent of structures of power but is fully implicated in configuring societies through the construction of realities and symbolic meanings.



Figure 1: Three dwellings in the settlement. Increasing levels of consolidation are visible on the facades. The house of Nancy and Leopold is on the left. (Source: Author).

FRONT RAILINGS: A CASE STUDY

A very visible feature of more consolidated dwellings is the presence of high front railings. They range in design from simple vertical bars to railings which incorporate playful floral patterns. It appears their 'function' is one of security – but in many cases the door and windows also have security bars. Why then the need for outer railings? Here is an extract from an interview with Nancy (N) and Leonardo (L) whose house is well consolidated (Figure 1, left image). The interior is smart and in excellent condition (they re-decorate each year) with expensive shiny floor tiles and good quality furnishings. Nancy works as a maid for a middle-class household and Leopoldo as a petrol pump attendant. I asked them what they were planning to do next on the house:

- L We're going to do the front terrace and the fascia. Yes a terrace in *'material'*.
P *Many people have done that I think, not least in this street.*
N Yes, yes, in this street. In this street lots of people have done it.
P *So that's the next thing. It's a bit difficult isn't it?*
L Yes, yes it's difficult, quite difficult.
N And that's because it costs such a lot. Yes a lot because of all the (building) materials.
L And also we want to put in railings. Railings. I've always wanted to have railings.
P *Why do you want railings?*
N More security, to have more security.
L For more security, at least to be more secure, at least...

- P *But is there a problem of security here?*
- N No, no, very little.
- L No, no problem, not really... but to have more security at least when you go out.
- N Here it's very *tranquilo*. At least in all the [24] years we have lived here we've never had any problem. Here we even leave the house unattended ... we've left the house alone for several days. And we've never had, never had any problem. We've never lost anything. Because here it's very safe (*seguro*). Here you don't see [problems like] that.
- P *But (with railings) you would feel better?*
- L Yes you feel better, more secure.
- N More secure, yes but also it would make the house look much more attractive (*vistosidad*). Because here you can get some railings which are very pretty (*bonita*), and it would be like adding more luxury (*lujo*). Then the façade of the house would look prettier. It's like making it more attractive and special.
- L ... but more security too, for when you go out or anything ...

There appear to be several levels of explanation. Firstly, the bars are part of an aspirational language. They are emblematic of success and an essential final touch in the production of a completed house, one that will demonstrate beyond doubt that the inhabitants have transformed themselves from homeless squatters into prosperous citizens. In addition to the high cost of such railings, why have such security if you have nothing worth stealing? When burglary increased middle-class households began to fit railings (and other security features) which are now regarded as essential design features for those with money. They are outward symbols of inner wealth (or ambition to become wealthy). This is reinforced in the final paragraph where Nancy explains how they can be used not only to make the house more visually attractive but also to add 'luxury'. Luxury is synonymous with surplus.

Secondly, the vehicle chosen to express such aspirations is inevitably related to what others are doing. Bourdieu's ideas of distinction (1984) are based on clarifying both difference from those 'below' and similarity with those 'above'. It is worth noting that Nancy and Leonardo are at the end of a row of four houses on the same side of the street all of which have elaborate facades with railings. Such close juxtaposition makes comparison inevitable.

Finally, the bars provide a sense of security. One of the most fundamental functions of the home is to protect the occupants and offer a sense of calm, stability, refuge and wellbeing - 'a place of security in an insecure world' (Dovey, 1985:46). This security may be achievable through physical means, but more significantly it is a state of mind to which various factors may contribute. Although Nancy and Leopoldo have confirmed they have no need to protect their home from thieves and burglars, there is a generalised climate of violence and fear throughout the country including the coastal region (Carmago Rodriguez & Blanco Botero, 2007). They may have no need of physical protection but they appear to be interpreting the tangible presence of the metal railings as offering psychological reassurance from the violence and insecurity which surrounds them. The greater the perceived insecurity, the more important such mechanisms may be.

We are seeing here how buildings and particular objects play 'an active role in the constitution of social [and] cultural identities, and vice versa' (Vellinga, 2007:761). Just as social identities are in state of change and flux, so too material objects 'acquire different, changeable, contradictory, and often contested meanings, at different times and in different contexts.'

DUAL VALUE SYSTEMS

Although the streets remain unpaved the majority of dwellings are now constructed in solid materials, many painted in lively colours. Such improvements appear to be accounted for by a linear model of dwelling consolidation intimately integrated with social aspiration. Predictably, some households are more successful than others, and the differences become more evident over a longer time frame. To the observer there is increasing evidence of ordered layouts, consistent house plans, furniture types and positions.

If we were to apply the functionalist logic of (physical and spatial) form following (social and cultural) function then such consistency and order might suggest an equally ordered and disciplined social world. The reality is very different. The *barrio* is far from cohesive with an absence of clear and effective community organisation. Although the majority of households in my sample have been remarkably stable over the 22 year period of study, there are others which reflect the pattern of unstable relationships and consensual unions which are frequently reported as distinctive throughout the Caribbean region (Streiker, 1993, 1995, 1997). Although there is some variation, behaviour and lifestyles can be characterised as relaxed, informal and flexible. How can we explain this persistent inconsistency between physical order and informal social practices? Why is there such a strong contrast between the attempts at creating a clear geometric order and the flexible, informal patterns of social interaction?

This apparent disconnect between the formal language of the dwelling and its furnishings and the value systems and behaviour of the residents suggests we need to analyse further the actual usage of domestic space and objects. The house can be interpreted as a microcosm of significant cognitive categories (Bourdieu, 1977), but the danger is that we read the dwelling container and its interior furnishings and objects at face value. *“It does not suffice just to look at the objects: one must also study who uses them, and how and when they are used. The meaning which materialises in the organisation of objects in space can only be discovered through associated practices... which may be expected to reveal the same cognitive schemes as the objects in space”* (Gullestad, 1993:129-130).

On closer inspection of the dwelling practices in Santa Marta, it seems there are two apparently contrasting systems of values and practices (*habitus*) operating simultaneously: one which is flexible, moveable, informal and closer to rural practices while the other is more rigid, fixed and formalised and fits within the aspirational model sketched out earlier. Each set of values seems to have its own physical manifestations, spaces and attendant goods but I would argue that they do not operate in isolation but rather in a state of ambivalence and creative tension.

This can be clearly seen with reference to furniture which signals activities and behaviours which do not take place. On entering most well-consolidated dwellings you will find a suite of chairs, sofa and coffee table near the front door with dining table and matching chairs in a standard position between the sitting area and the kitchen. Such furniture arrangements appear to define clear activity settings (Rapoport, 1982). We would expect visitors to be received and entertained in the lounge area and for meals to take place as a household sitting around the dining table. But the reality is very different. Lounge seats are rarely used – most visitors (including myself) are entertained on the front terrace or in the rear patio sitting on cheap plastic chairs; and food consumption lacks any of the formality and domestic ritual associated with shared meals and implied by the dining table and chairs. Eating is not a collective activity. Food is consumed at different times and in different places and is usually eaten quickly without much conversation. I never witnessed a complete family sitting round the table for a meal together. This is significant, because food choice, preparation and consumption are fundamental indicators of cultural value and social categories (Mintz & Du Bois, 2002; Levi Strauss, 1983).

There seems to be an increasingly clear divergence between forms and everyday practices. The dwelling forms, spatial arrangements and many domestic objects adopt a language from beyond the *barrio*, but it is a language, which offers a point of reference against which the dwellers define their own practices. This is language from a world of power, influence, affluence and order, and people aim to appropriate wherever possible such tangible representations of this order. They are literally re-constructing such an order, but not directly for their own everyday habitation. Using Goffman's (1969) terms, it is rather like a play: the stage is set for a particular scene, but the actors are acting out a different performance – one which comes more naturally to the extent that they are no longer acting, but simply 'being themselves.' These everyday embodied practices (*habitus*) appear to belong to a more deep seated set of values which are closer to the sensual elements of the earth and ground, the world of air and

trees - the natural world from which it might appear people are retreating: each time the house gets bigger the patio gets smaller.

We can see this played out in the tension between the house and the rear patio. The house appears to offer a visible and tangible representation of control and order - the straight line culture of the house contrasting with the subversive, 'chaotic' sensuality and fertility of the natural world: the patio with its ripening fruits and birds – emblems of desire and freedom. The dweller may attempt to impose a calm, cool, mechanical order within the house, but for many the patio is irresistible, with its natural breeze and infinitely flexible spatial arrangements. Where chairs can be moved in and out of the shade and a hammock strung between the trees.

According to Douglas (1966:3), the order for which people are striving and which is enabled by the 'positive re-ordering of the environment' (in this case through dwelling construction) is an attempt to make it 'conform to an idea ...it is a creative movement, an attempt to relate form to function, to make unity of experience.' But in this case it is not the unity we might imagine. The key value of the dwelling is as symbolic capital, as a material manifestation of progress in the journey of social aspiration and recognition. The unity may perhaps lie in a symbiotic inverse relationship with everyday domestic practices in which the natural world of the patio, and the flexible characteristics of the plastic chair, co-exist with the hard, immovable presence of the house.

CONCLUSION: DIVERGENCE OF FORMS AND PRACTICES

Such evidence confirms the central importance of the house as a dynamic 'model of the world' understood as an ongoing journey. This is a journey in which imitation and appropriation play a key role in the formation of new identities through construction practices. The imitative practices observed appear to be related largely to visible spatial forms and physical objects: settlement layout, dwelling plans, building materials, type and location of furniture etc. The meanings that are appropriated are vital for the construction and consolidation of progressive identities for the informal dwellers – but their everyday domestic practices appear to remain rooted to a deeper set of values. Hence it is largely the forms but not the practices which are imitated or borrowed.

This suggests that the new, borrowed 'language' does not displace the old – rather that an uneasy bilingualism is constructed – in which the different languages are used by different speakers on different occasions depending on the audience(s). Nothing is static; both languages are in a continual state of flux. Forms and practices, meanings and values are intimately interrelated in dynamic, unpredictable ways which are highly conscious of what others are doing. Lifestyles and dwelling forms external both in time and space to the popular settlements, provide points of reference: sometimes copied directly, frequently adjusted but rarely it seems adopted as a total package linking forms to practices.

We must be cautious of claims, common in the field of architecture, of causal relationships between forms and behaviour, for example the space syntax ideas of Hillier & Hanson (1984). Such formal determinism in which particular forms are believed to govern certain spatial behaviours with implicit values can lead to erroneous and superficial conclusions. As we have seen, dwelling practices are complex and do not necessarily correspond to the specific forms and spaces to which we might assume they are allocated. Such findings confirm the value of detailed ethnographic work in teasing out the subtlety and complexity implicit in dwelling practices, social values and meanings.

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SPARKING THE IMAGINATION Exploring the Eureka Moment

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Abstract

This article elucidates aspects of the creative imagination: inspiration and how this brief momentary revelation combines previously pondered thoughts, combined with the craft of implementation, to present a meaningful whole in an architectural design process. This imaginative spark or the eureka moment may be the resolution of an idea or the understanding of a perplexing concept. Using Vitruvius' story of Archimedes as an analogy, this exploration utilizes myth to bring concepts of inspiration to contemporary architecture. Thus, a new understanding of inspiration may assist architects to better utilize this important capacity and potentially unlock the principles that lead to understanding the beginning of design.

Keywords: imagination; design process; spark.

INTRODUCTION

'Inspiration' implies that it is based on the creative imagination. The word itself stems from 'to breathe' or 'to bring life,' and suggests ecclesiastical connotations. Scholars of philosophy and psychology, in attempting to define imagination, find that it contains numerous dimensions. The human mind contains potential to bring forth images from memory, compose images that recombine thoughts of things seen, or bring entirely new form into the mind (Casey, 1976). This article attempts to elucidate aspects of imagination to explore brief momentary revelations combined with previously pondered or ruminated thoughts in an architectural design process. The purpose is to understand architects' early design thinking and find its relevance to contemporary architectural inspiration by re-visiting Vitruvius' story of Archimedes as an analogy,

The imaginative "spark," as a faculty of the mind, depends on how images are brought to life or how their form is initiated. Connected to imitation, philosophers and psychologists, including Aristotle, Rudolph Arnheim, Sigmund Freud, and Richard Kearney, have long studied how the mind creates images and how they are affected by their relationship to an original. More specifically architects need images to encourage inspiration, record what has been seen for further use, test ideas, visualize things too complex to retain in the mind and communicate concepts to others and as such these uses of the imagination are essential for architects. As a creative visual endeavor, imagination represents the mental impressions that are personal to

each individual. Images also constitute the physical manifestations that architects manipulate in a design process. Thus, a renewed understanding of the qualities of the imagination may assist architects to better utilize this important capacity and potentially unlock the principles that lead to an understanding of conceptual beginnings.

It is possible to study documentation of what buildings meant to those who created them or those who experienced them. At some point that first hand knowledge can no longer be obtained, but these buildings can be understood through those who critically assess their current significance or speculate on their future value. The study of hermeneutics, once the sole realm of manuscripts, has been expanded to all texts including multimedia (Reeves and Nass, 2003). Since we can never alter our place in time, we can only attempt to understand a historic period (Gadamer, 1975). The study of *Objective Hermeneutics* suggests that quantitative methods can generate data but only qualitative assessment can find knowledge that is both precise and valid (Oevermann, Tilman, Konau, and Krambeck, 1987). This approach builds on the work by Paul Ricoeur that dispels the belief that historical knowledge can be in any way definitive (Ricoeur, 2004). Ricoeur writes that this validation “is an argumentative discipline comparable to the judicial procedures of legal interpretation. It is a logic of uncertainty and qualitative probability” (Ricoeur, 1991, p. 159). The study of architectural history, and design research, or the assessment of its current uses requires interpretation through hermeneutic methodology, based on analysis, comparison (including analogy) and documentation (Groat and Wang, 2001 & Snodgrass and Coyne, 2006).

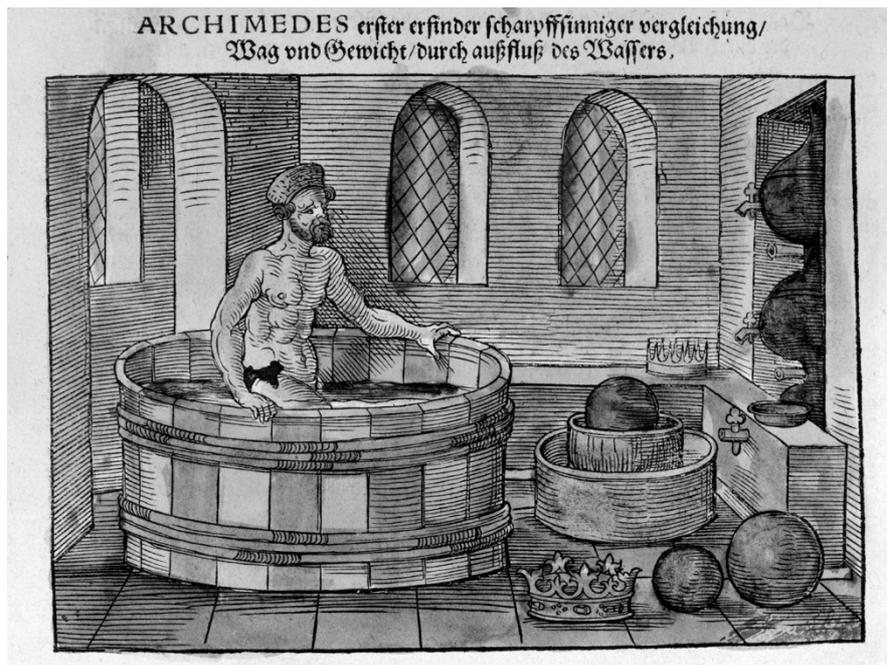


Figure 1: Archimedes of Syracuse, the 3rd century Greek mathematician, physicist, engineer, inventor and astronomer (Source: -- Copyright: Heritage Images/Corbis).

Turning to the roots of western architectural thought, the Roman architect Vitruvius wrote about the importance of the mind and imagination (Vitruvius, trans. 2004). Borrowing much from the Greeks, Vitruvius employed an allegory to explain a cognitive process of design. In his *Ten Books on Architecture*, representing the earliest and most complete text specifically concerned with architecture, he provides some historic authority and also opportunity for interpretation. His lesson from the preface of Book IX relays the story of Archimedes and emphasizes that the mind

must be trained in a way that is analogous to the training of the body. The question that arises, though, is what can be learned about the imagination by dissecting the allegory of Archimedes and the discussion regarding the accomplishments of the mind? Vitruvius tells the story of this great thinker (See Figure 1).

*Archimedes made many and various wonderful discoveries. Of all these the one which I will explain seems to be worked out with infinite skill. Hiero was greatly exalted in the regal power at Syracuse, and after his victories he determined to set up in a certain temple a crown vowed to the immortal gods. He let out the execution as far as the craftsman's wages were concerned, and weighed the gold out to the contractor to an exact amount. At the appointed time the man presented the work finely wrought for the king's acceptance, and appeared to have furnished the weight of the crown to scale. However, information was laid that gold had been withdrawn, and that the same amount of silver had been added in the making of the crown. Hiero was indignant that he had been made light of, and failing to find a method by which he might detect the theft, asked Archimedes to undertake the investigation. While Archimedes was considering the matter, he happened to go to the baths. When he went down into the bathing pool he observed that the amount of water which flowed outside the pool was equal to the amount of his body that was immersed. Since this fact indicated the method of explaining the case, he did not linger, but moved with delight he leapt out of the pool, and going home naked, cried aloud that he had found exactly what he was seeking. For as he ran he shouted in Greek: *heurēka heurēka*.*

Then, following up his discovery, he is said to have taken two masses of the same weight as the crown, one of gold and the other of silver. When he had done this, he filled a large vessel to the brim with water, into which he dropped the mass of silver. The amount of this when let down into the water corresponded to the overflow of water. So he removed the metal and filled in by measure the amount by which the water was diminished, so that it was level with the brim as before. In this way he discovered what weight of silver corresponded to a given measure of water.

After this experiment he then dropped a mass of gold in like manner into the full vessel and removed it. Again he added water by measure, and discovered that there was not so much water; and this corresponded to the lessened quantity of the same weight of gold compared with the same weight of silver. He then let down the crown itself into the vase after filling the vase with water, and found that more water flowed into the space left by the crown than into the space left by a mass of gold of the same weight. And so from the fact that there was more water in the case of the crown than in the mass of gold, he calculated and detected the mixture of the silver with the gold, and the fraud of the contractor. (Vitruvius, trans. 2004, Book IX, p. 197-203, 207-209).

By dissecting Vitruvius' description of Archimedes' discovery it becomes obvious there are three distinct aspects of imagination. First, the thinker was continually aware of his surroundings that provided precedent (the baths), whether knowingly or not. Second, in the moment of *eureka*, his mind made an immediate connection between the precedent and the problem. Last, he recognized and acted on his *eureka* moment and his experiment ultimately proved the crown was not made of gold.

While a common definition of imagination as an autonomous mental act could be "the power of the mind to form a mental image or concept of something that is unreal or not present,"

this definition does not convey imagination in its entirety (Soukhanov, 1984, p. 610). All humans experience imagination but the ability to describe the experience can be elusive. Philosophers and psychologists agree that imagination is tied to a *mental impression*; an image perceived in the mind. Different from the attitude that imagination is solely creative or independent of other faculties, the historian and philosopher David Hume felt that the role of imagination was that of mediation between impressions and aspects of memory and judgment (Casey, 1976, p. 17).

The term imagination is frequently used in contemporary culture to envisage objects which are absent from view, to change or interpret that which can be observed, or to recognize and re-use items which are known (Warnock, 1976, p. 193). The philosopher Edward Casey writes about how humans engage imagination. "Imagining is remarkably easy to enter into ... we can also imagine *whatever* and *however* we wish to ... it is more difficult to fail than to succeed in imagining" (Casey, 1976, p. 5). Although humans can imagine when they so desire, it is difficult for these new mental impressions to be radically new, because the imagination is a synthesis of memory and perception, and all that can be originated is dependent upon these (Casey, 1976, p. 8). In many cases the 'picture' found in the imagination is a combination of previously seen concepts so that the mind "... invents a concept, or calls one up, to fit the visible or audible form before it" (Warnock, 1976, p. 49). Casey uses several paired concepts to explain qualities of the imagination. The first pair is spontaneity and controlledness. "[Spontaneity is] where imaginative acts and presentations appear in an irrepressible and sudden upsurge" (Casey, 1976, p. 66). This is an example of an associative spontaneous image in the form of a mental impression, but the spontaneous phenomenon can initiate itself rather than being initiated (Casey, 1976, p. 67-68). On the other hand, humans can control (controlledness) imaginings by simply deciding to and can do so without much effort. Imagination has two additional traits explained by Casey, those of self-containedness and self-evidence (Casey, 1976, p. 87-102). "The self-containedness of imagination, then eliminates the need for extraneous evidence and allows the imaginative act-cum-presentation to be experienced as genuinely self-evident" (Casey, 1976, p. 94). The imagination is self-evident in that all information appears at once, and issues of inconsistency are unimportant (Casey, 1976, p. 94-97). The last two aspects of imagination identified by Casey are indeterminacy and pure possibility. Objects imagined cannot necessarily be known in their entirety, as they are vague or perceived as parts (Casey, 1976, p. 106). To define pure possibility, Casey writes that "... the 'purity' of imaginative possibilities lies precisely in their independence of the mutually exclusive alternatives of reality and unreality" (Casey, 1976, p. 113). This aspect of imagination makes anything hypothetical and all things possible – this is where we can comprehend the creative imagination.

The three stages articulated by Vitruvius could be equated to a typical design process. The *pre-spark* may be considered identification of the issues required for design: the time when architects begin to contemplate how best to approach the factors involved. The *spark* could be the moment that everything makes sense and a cohesive approach is made clear – the moment of *eureka*. The *post-spark* suggests the development phases where the imagination is focused and used to implement the design. Archimedes had been contemplating an issue that bothered him; he associated his experience in the bath with the volume of gold and thus, the connections worked *spontaneously* in his imagination. "Association reduces essentially to contiguity, and his laws of association predicts that the mere repetition ('a sufficient number of times') of sensations in conjunction will give each of them the power to call to mind the corresponding ideas" (Beardsley, 1966, p. 177).

Being open to *pure possibility* assisted Archimedes to make connections and then *controlledness* helped him work through the details of the 'problem.' If the mind 'free associates' and lets unusual possibilities flow – one is intentionally choosing to allow them. In the act phase, functions consist of imaging, imagining-that, and imagining-how (Casey, 1976, p. 40-45). Imaging is a sensory aspect where imagining 'that' and 'how' are anticipatory, and are both intentional and creative. The philosophy of Carl Jung provides further perspective on these aspects of the imagination claiming that passive imagination is uncontrollable, where one is overwhelmed by the

upsurge of one's own fantasies - similar to the un-containing qualities of pure possibility. Conversely, the active imagination involves a positive participation of consciousness, as the conscious self enters into its own activity within three stages of thought: the *pre-spark*, the *spark*, and the *post-spark*.

PRE-SPARK

The period of time prior to a moment of *eureka* is the free-fall of the imagination, the boundlessness of possibility and the semi-conscience thought that leads to discovery, to *eureka*, or to the spark, whether in the baths of ancient Greece with Archimedes or in the limited, brief pauses of contemporary life. Rightfully, the everyday mind exists within this stage, absorbing, creating, reflecting and consuming life as it passes through the eyes – each image stored in memory for later use destined to become part of the conscious or subconscious trail of inspiration.

There are many narratives throughout history that lead to great discovery, one of the most famous being the aforementioned story of Archimedes' discovery of a method of measuring gold. Yet in exploring this pre-*eureka* stage we can turn our attention back once again to the Greeks and stories concerning the Muses. Daughters of Zeus, the Muses or *Musae* were goddesses of literature and the arts, a constant source of knowledge, and often known for advising their worshippers (Avery, 1972, p. 363). Vitruvius referred to the Muses while describing yet another famous ancient discovery, the Pythagorean Theorem, claiming that once Pythagoras had reached his *eureka* moment, he thanked the Muses for their advisement in his discovery (Vitruvius, 2004, p. 203). Related more to inspiration, they are also alluded to in several Shakespearean sonnets, Milton's *Paradise Lost*, and in Romantic poet, Lord Gordon Byron's poem *Childe Harold's Pilgrimage* as well as various other works of modern literature (Byron, 1936, p. 33). Since the Muses represent a wealth of knowledge, they are the source for inspiration for many a poet, author, or architect and throughout history they have been associated with the "dream in which a number of ancient poets imagined themselves on Helikon or Parnassos receiving inspiration from them" (Fitton Brown, 1961, p. 23). The etymological root of the word museum comes from the Greek *mouseion*, which was the temple or shrine of the Muses. Initially, it was in reference to the ancient Library of Alexandria, which existed as a "gathering place of objects and ideas that assist individuals in understanding the world around them," in other words, it was the first museum or the first collection of precedents (Pitman, 1999, p. 2). Inspiration is usually associated with the beginning of any project or idea; it is part of the gestation or conception period of design and it is in this initial phase that the imagination is primed and educated setting the path for discovery (See Figures 2 and 3).

Without either stimulation, or external images, the imagination would be limited to its own internal boundaries, unable to erupt into the endless possibilities each image could contain. The ability to refine the numerous images that nourish the imagination is paramount, without them ideas become forever bound in a static interpretation. The Greeks again, in their many myths and moral stories, allude to the concept of over-nourishment and over-indulgence. Specifically, the story of the god Trophonius can be used as a defining metaphor (Barthell, 1971, p. 80). Trophonius, with his brother Agamedes, built sanctuaries for gods and palaces for the aristocracy of the Greek society. On one project, the brothers laid a false stone on the external wall allowing them access to the treasury they designed. They stole gold and other valuables from the vault much to the confusion of the vault's owner. However, their endeavors came to an end when the traps were placed on the treasure itself, capturing Agamedes. Trophonius, to avoid detection, decapitated his brother and fled the site only to be swallowed by the earth at the place where his oracle later functioned. Trophonius' over-indulgence and general lack of restraint parallels this the idea of sensory overload and over-nourishment of the imagination. When Trophonius became an eternal oracle, reality existed no more - just as when one becomes overwhelmed by images and unable to refine them, they become lost in a multitude of diverse impressions. The moral, of course, pertaining to the imagination, is the importance of controlling the nourishment of the

imagination, refining what is necessary and eliminating what is not in order to gain full potential. However, in order to restrain this nourishment, a *eureka* moment, or a spark of the imagination acting as a limit to the never-ending precedents, is often required.

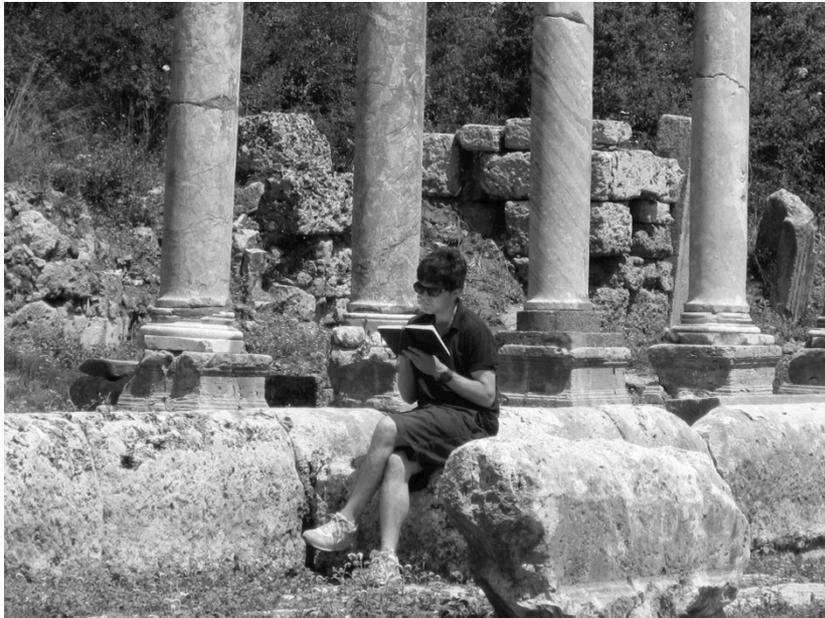


Figure 2: A Ryerson University Graduate Student sketching in Turkey (Source: Authors).



Figure 3: Ryerson University Graduate Students studying architectural precedents in Istanbul (Source: Authors).

Foreign Office Architects, a firm that had offices both in Barcelona and London before splitting to create two separate firms, created a modern version of priming *eureka* or igniting the spark. As their firm name suggested, they approached projects with a foreign perspective, allowing the local relationships and connections of a particular project to become more visible. In an era defined by globalization they argued that they long for something to identify with, something that “references

place, landscape and history ... without veering towards the kitsch of 1980's post-modernism" or something that "distills the character [and] crystallizes the ambience" (Design Museum and British Council, 2006). With each building denoting a set of particular characteristics, the firm created their own typology of projects with an emphasis on contextual design factors rather than a universal building type. Like Archimedes, they advocated their inspiration to more contextual factors while at the same time adding their own 'unintended' vision, gained experience, and the set of characteristics that fit to the project. Their pre-*eureka* process was a limited mix of foreignness, sublimity, contextualism and ultimately the unending search for identity and an escape from this "modern condition" of globalization (Design Museum and British Council, 2006). As partner Zaera Polo stated, "we want our architecture to be like entering a piece of music ... Music is about spatializing and distributing forms. It surrounds you" (Design Museum and British Council, 2006).

In regards to inspiration, Polo's metaphor can act as a near perfect definition. Precedents can surround, immerse and overwhelm human experience with endless ideas. They are what the museum encapsulates, the source of genius and the onset of discovery. However, just as a piece of music concludes so too must the precedents. Without limiting the nourishment to allow the growth of an idea, the architectural process will never come to a conclusion and design will likely never come to fruition.

SPARK

The remarkable moment when Archimedes lowered his body into the bath, he felt a unique example of imagination that may be compared to a *spark*. In this moment, he realized that a particularly difficult problem connected with a thought about a possible solution. After a long period of contemplation, in a quiet moment or when the mind is at rest, this connection appears to arrive 'all at once' (Casey, 1976, p. 66). Vitruvius' story about Archimedes is an analogy to help understand a crossing point where discordant ideas find a logical relationship. The concept manifested in Archimedes' mind required much prior contemplation. The aftermath of this process is equally important. After conception of an idea, application transforms it into practical usage requiring determination and skill. The two sides may resemble a chiasmus – where the point of crossing is the spark (Weiner and Simpson, 1971). This syntactic inversion, or reflection, can be viewed as a rhetorical inversion of the second of two parallel structures, a crisscross arrangement – with pre-spark dominating one side, the post-spark dominating the other, and the middle marking the moment of *eureka*.

Again, two of Edward Casey's descriptions of imagination can be understood here - spontaneity and controlledness (Casey, 1976, p. 87-102). Considering the story of Archimedes, spontaneity was critical to this inspiration but humans find difficulty imagining anything totally new. The imaginative images conceived by humans are usually a combination of things formally seen or transformations of things once comprehended – they relate specifically to a set of precedents already in the mind (Casey, 1976). When Archimedes "discovered" a method to measure the volume of gold through displacement, he was pondering possible solutions over a period of time. Although it appeared to be a flash of inspiration, this realization actually brought together a myriad of possibilities and his mind chose the most possible. Comparing himself to the volume of gold, Archimedes' mind reached the crossing point, the chiasmus, before stepping to the other side.

Architects experience this moment of understanding when everything they have been considering becomes clear. In keeping with myths as analogies to explain specific phenomenon, consider the example of the Greek god Hermes. Hermes was the messenger of the gods, and the inventor of fire. He exists as a parallel to Prometheus and originates from the Greek *herma*, a boundary stone or crossing point (Avery, 1972, p. 273). He was the god of roads and doorways and as an analogy to *transition*, the moment of inspiration transitions from the previous state of confusion to a state of understanding. Hermes was known for his excellent communication skills and the *eureka* moment may be the point of clear understanding equated to articulation. Once

the spark is realized, it assumes a new dimension, and returning to a previous time is impossible. Italo Calvino describes this inspiration when he writes;

The imagination is a kind of electronic machine that takes account of all possible combinations and chooses the ones that are appropriate to a particular purpose, or are simply the most interesting, pleasing or amusing (1988, p. 91).

Architects can identify with Hermes since he presided over things that required skill and dexterity. Furthermore, Hermes, as the root of hermeneutics, is also known as the “father of alchemy.” As a scientific discipline, alchemy is seen by some as an epistemological approach to change the state of materials, and by others as an opportunity to search for meaning in the obscure or ambiguous. As a search for truth it is derived from the Old French, and Arabic, “the art of transformation” (Fabricius, 1976). Although never achieving the goal of gold from various metals, the alchemists used the process as mystical or meditative opportunities. Long hours after staring into the smoking tort or inhaling the fumes, the transformation came in the form of meditation. The contemplative process allowed the mind to wander and thus relax, opening up to the possibility of *eureka*. Calvino, speaking in this context, suggests that imagination is “... aimed at tracing the lightening flashes of the mental circuits that capture and link points distant from each other in space and time” (1988, p. 48).



Figure 4: Janus, the Roman god of beginnings and transitions
 (Source: -- Copyright: Bettmann/Corbis).

With this moment of inspiration and the cross-over from the pre-spark to the synthesis and dissemination of knowledge, there is yet another related ancient allegory: the Roman god Janus (See Figure 6). Janus, the god of doorways, passages, gates and bridges, is usually depicted with two faces looking in opposite directions (Bulfinch, 1942, p. 12-13). He developed into a god of all “beginnings,” and guarded crossing places and thresholds, beginnings and endings and

acted as an intermediary between the gods and mortals. When looking opposite directions, Janus accentuates the crossing between the pre and the post and, in this way, is similar to Hermes in the sense of transition. Allowing a view of the past and the future simultaneously, this threshold may be the place of understanding and true illumination, being a privileged position it is ultimate knowledge. The symmetrical aspects of the X, recognizes equally the value of the Muses' influence and also the refinement and applications that follow the moment of inspiration.

Architects have long been given credit for their creative imaginations. Frank Gehry provides an example of a contemporary architect who relies on this momentary recognition of inspiration in his design process (Gehry, Chan, and Webb, 2004). Employing a unique design methodology, Gehry manipulates materials through tearing and assembling strips of cardboard and paper until the correct (most plausible, beautiful or logical) solution occurs to him. With a conceptual approach in mind, he observes as the folded paper is applied to a model (See Figure 7). Through the seemingly random placement of form, he quickly assesses (and compares to an idea in his mind's eye) the shapes before him. During this process he remains alert to the discovery of an appropriate solution, very much like Archimedes' quick observation at the baths. His mind draws conclusions about the proposal with quick connections (and comparison) to the client's needs, program, site and context. This occurs while he evaluates the aesthetic qualities of the form. He watches for the visual stimulus of an order system, or composition, that is appropriate to the commission being explored at any given time. This process may be likened to the ancient caduceus originally known as the "enchanter's wand" (magic), carried by Hermes. Historically the caduceus was a symbol of enlightenment and acquisition of the ancient wisdom. Thus, metaphorically, Gehry conjures Hermes' magic wand to locate the inspiration as the torn paper models speak to him as a muse. Comparable to the allegory of Archimedes, Gehry creates a scenario that keeps the "problem" in mind while he can be open to accept the spark of the imagination.



Figure 5: Frank Gehry at work in his design studio
 (Source: -- Copyright: Douglas Kirkland/Corbis Art).

POST-SPARK

The post-spark describes the phase when an idea becomes a tangible reality. It captures the potentiality of ideas and consideration of precedent of the pre-spark while exposing the spark and *eureka* moment itself; it is the process that initiates design development, the other side of the X, and the second face of Janus. With the mind already filled with precedents and enlightened with

the *eureka* moment, the post spark has fulfilled the steps needed to develop something tangible. This post-*eureka* phase of the imagination relates to Archimedes' experiments with the weight of silver and gold. His observation of the water displaced by his own volume at the baths, his *eureka* moment, was translated to this experiment and ultimately discovered the crime of the contractor. Without this phase, *eureka* moments would never become recognized. Equally, without the development stages an idea can never be realized.

Ancient Greek mythology provides yet another analogy to describe aspects of the imagination: the post-spark and Daedalus as the prototypical mythical Greek architect (Perez-Gomez, 1985, p.49) (See Figure 8). As Francoise Frontisi-Ducroux explains, "he was an Athenian and son or grandson of Metion, Daedalus was a man who had been endowed with 'metis,' a kind of practical intelligence and ingenuity which could be deployed in many ways but was mostly associated with the wisdom of craftsmanship in the Athenian tradition" (Frontisi-Ducroux, 1975, p. 90). It is this practical intelligence, inventive creativity and his method of translating the imagined to the real, that make him a perfect example of the third and final stage of *eureka*, the post spark. Daedalus acts to explain how the mind has been nourished with ideas, reconciled to a solution, making it prepared to develop this solution. Frontisi-Ducroux tells us that he was more than an architect, even stretching the limits of the term to involve an engineering perspective (Frontisi-Ducroux, 1975, p. 90). His projects became greater than simple fabrication – they approached the mystery of the divine.

The name Daedalus has been suggested by Alberto Perez-Gomez to be a play on the word *daidala* which appears in archaic literature as a complement of the verb to make, manufacture, to forge, to weave, to place on, or to see. *Daidala* were the implements of early society: defensive works, arms, furniture, and so forth. It is in the post-*eureka* stage that ideas become manufactured and visible, as Perez-Gomez writes, "the *daidala* in Homer seem to possess mysterious powers. They are luminous--they reveal the reality they represent. It is a metaphysical 'light' of diverse and often bizarre qualities, evoking fear and admiration" (Perez-Gomez, 1985, p. 50). The principal value of *daidala* is that of enabling inanimate matter to become magically alive, of 'reproducing' life rather than 'representing' it. The more primitive Homeric texts emphasize the ability of the *daidalos* to seem alive" (Perez-Gomez, 1985, p. 50). Certainly Daedalus can be linked to the *daidala* through his automata such as lifelike statues, machine-like bull (which he built for Queen Pasiphae), his wax-and-feather flying machine and finally his labyrinth at Knossos. Daedalus' ability to create the machine-like *daidala* placed him in an extremely powerful position in his society as he had the ability to create that the rest of society did not possess. Therefore, the *daidala* can inherently represent the post-spark phase and the ability to make the spark or the *eureka* moment come alive.

Humankind has a basic need to create order from chaos, similar to how the mind focuses from overwhelming sources of images. Daedalus' structure the labyrinth at Knossos serves to explain human's attempt to formulate such an order. It is not important that we know whether Daedalus' labyrinth actually existed, since it is generally accepted that the labyrinth is an analogy for a paradigm. The shared assumption that constitutes a society's attempt to set the standards of order is the 'primordial idea' of architecture. Perez-Gomez writes, "the labyrinth is a metaphor of human existence: ever-changing, full of surprise, uncertain, conveying the impression of disorder" (Perez-Gomez, 1985, p. 51). Unfortunately, since Daedalus was considered by the classical Greeks to be simply an uneducated craftsman, this degree of influence may have been somewhat unsettling to some. Perez-Gomez believes that Daedalus can be seen as an architect-craftsman of ambiguous character. He writes,

He [Daedalus] opened the statue's eyes to reveal the divinity of the gods, but he also concealed a monster within a labyrinth and a deceptive woman in a machine of leather and wood. The craftsman creates form and beauty, but also illusions. In giving form and meaning to matter, art is also in danger of

falsifying the divine truth. This ambiguity, which is a part of the human condition, is as prevalent now as it was then (Perez-Gomez, 1985, p. 52).

In classical Greek society, Daedalus was seen as a demiurge, a subordinate god who fashions the sensible world in the light of external ideas. Daedalus fashioned his *daidala* (machines) through manufacturing or fabrication, with the understanding and inspiration he gained from priming the spark, he found his *eureka* moment and constructed it. He manufactured the labyrinth to demonstrate the chaotic warnings of the monster, as a way to make the divine tangible and the imagined real.

The global engineering firm Ove Arup and Partners presents a modern example of Daedalus' qualities and of the third stage of Archimedes' creative inspiration. Known to work collaboratively with architects and urban planners, the firm exemplifies the ability to transform a creative idea into a buildable structure. Compared to the allegory told by Archimedes, the gestation of the imagination brings forth the momentary spark of logical connections. Following this inspiration, Archimedes then communicated and implemented his discovery. This action of making is as valuable as the idea itself, as architects run the risk of appearing impotent if their ideas remain unbuilt (Tafuri, 1978, p. 26-90). Ove Arup specializes in providing the structure expertise to assist in assuring unusual architectural designs become constructed, with such buildings as the Sydney Opera House, the London Gherkin, and the China Central Television Building (See Figure 9). Similar to Daedalus, Ove Arup manufactures the form often seen as an impossible illusion. This potential opportunity for falsity supports their abilities to bring fantastic architecture to fruition.



Figure 6: CCTV Building in Beijing, China
(Source: Photo Courtesy of Sam Luong).

The word 'design' is often misunderstood to mean the creative inspiration, but 'design' is first and foremost a process, one of uniting an idea with the function, economy of materials, proportional composition, efficiency and all other aspects of the design process. This combination is

reminiscent of Vitruvius and his important adage, Strength, Utility, and Grace, a truly unified and comprehensive solution (Vitruvius, 2004, p. 35). This ability to locate order out of chaos, associated with manual dexterity and the fabrication of the completed building, may be compared to a machine that brings order to the interconnected moving parts that multiply human might. The analogy of Archimedes may not be relevant without the practical lesson of implementation.

CONCLUSION

Architects might question who or what act as contemporary Muses, how they themselves are seen as Janus-like characters with both an eye to the past and to the present, and how Daedalus' ancient actions reverberate their own. In this sense, what has changed about the design process? Or have architects simply applied the same rules century after century, adjusting where necessary, subconsciously impacted by the spirit of the time. Do today's *starchitects* look inwardly or externally to locate inspiration? Frank Gehry finds his muse in the participatory process of material manipulation, Peter Zumthor or Steven Holl linger in more phenomenological beginnings and attempt to evoke emotional response from space while firms such as the Japanese group SANAA attempt to evade architecture's presence in the environment at all. More often than not, architects will find imaginative connections in the societal or sustainable realm, in the limitations of site, in the push and pull of cultural demand, in the ideas that resonate within a people, and in their ability to impact it. As Jeremy Till describes in his book *Architecture Depends*, "architecture is thus shaped more by external conditions than by the internal processes of the architect... [it is] defined by its very contingency, by its very uncertainty in the face of these outside forces" (2009, p. 1). Are Till's external conditions, then, not shaped by imagination similar to Archimedes famous bath?

In the 1980's Richard Kearney wrote about the pervasive image of postmodern culture in his book *The Wake of the Imagination*. His thesis focused on the massive influx of images of contemporary media and how they became dependent upon representation so much so that culture reflected itself, endangering imagination. If this condition still resonates today, how can architects function, and expect to be original? As with Archimedes, the combination of previous impressions is not necessarily a bad thing. But can architects focus on meaning in their intention and avoid over stimulation? They must recognize the importance of controlling stimulation of the imagination by refining what is necessary and eliminating what is not. With contemporary concerns about globalization, environmental impact, and urban cultures architects should look both forward to the future and back to the foundations of precedent – they must act as a contemporary Janus.

Recognizing that imagination occurs in many stages of the design process, like Daedalus, architects must continue to explore and discover its potential. It is important to keep the main concepts in mind while being open to new inspiration, to continually develop and discover. Not every architectural practice can, or desires to, emulate Renzo Piano's Workshop where material properties are explored and details are intensely conceived or the model-based studio of Tod Williams Billie Tsien. How can architects retain the act of implementation so that it can continue to be a critical part of design?

In contemporary architects' return to imagination, can spaces find new inspiration; can these spaces come alive for their inhabitants like they once did in the minds of the architects who conceived of them? We might question if architects are losing dexterity and the skills of a craftsman. This does not mean that architects must pick up hammers and chisels, but rather engage in the 'dexterity' of crafting spaces of imagination and inspiration using light, color and experience. Where it may be easy to design high-rise towers that need to be resolved by structural engineers, architects may be losing opportunities to utilize imagination throughout the process. We may be at risk of cutting the imagination out of the process of design entirely – especially in the commercialized world that we currently exist within. However, if, like Archimedes, we allow our imaginations to possess a *eureka* moment, then we may salvage the remnants of an imaginative architectural mind. If the architect can embrace this world, this

commercialized, consumerist context, and bring with them their imagination as just another tool that allows them the ability to envision buildings and spaces, whether they are Gehry-esque or Zumthor-ian, then they can continue to positively impact the built environment.

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SOEJOEDI AND ARCHITECTURE IN MODERN INDONESIA: A Critical Post-Colonial Study

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Abstract

Post-Colonial buildings characterize architecture of modern Indonesia. How such buildings are distinguished from the colonial ones. As one of first generations of modern architect in the archipelago, Soejoedi (1928 -1981) is considerably an important figure who tries to deal with the liberation of architecture in Indonesia from Dutch colonial traces. This study is to disclose his works and their relationship in the context of modern culture and development. Despite his trainings in Western Europe, this essay argues that Soejoedi Wirjoatmodjo was an original thinker and designer with a strong conviction that architecture is a sign of presence and contemporary awareness of current circumstances with the deeply rooted spirit of locality.

Keywords: Modernity; architecture; Soejoedi; culture; Indonesia.

MODERNITY AND ARCHITECTURE IN INDONESIA

Since 1960-s Southeast Asia areas and Pacific rims have been experiencing a dramatic change of architectural scenes that challenge the Western hegemony with regionalism, and nationalism. The emancipation of non-Western cultures is one of the most globally movements of architecture (Tzonis & Giannisi 2004: 13). The movement has been obvious in Southeast Asia as an integrated part of the search for national identity and nation building (See also Abel 2000, Kusno 2000).

The archipelago of Indonesia has been well known by historians and cultural anthropologists as a land and people with a long-standing building tradition for wet tropical climate made of bamboo and wood construction. Between the 5th and 7th century, the Indic civilization had influenced on local culture with masonry construction. The development of Indic influence was obviously shown with the significant number of Hindu and Buddhist temples in Java, Bali, Sumatra, and Kalimantan. Architecturally speaking, the Indic civilization had transformed the landscape of some areas and regions in the Central Java, with monumental and magnificent buildings,- such as Candi Borobudur and Candi Prambanan. On the other hand, the carpentry and masonry had worked hand in hand in the construction of palace and residential buildings as a hybrid of construction between the woodwork and stonework.

Court architecture in various places such as in Yogyakarta and Surakarta shows how the fusion of construction has worked at their best. The arrival and colonization of European powers in the period between the 17th and 20th century,-Portuguese, Dutch, and British Empire-, had enriched, elaborated, and improved local building construction with various designs, industrial building materials: steel and glass, and rational methods of erection and fabrication. In the beginning of the 20th century, the Dutch colonial rule established numbers of technical schools and colleges that prepared and delivered skilled workers and professionals for modern building industry in East Indies.

The Holy Grail of modernity in the early Post-Colonial architecture in Indonesia is probably not about style and form. Rather, modernity is more about political resistance and struggle for national identity and pride. Historically, modern architecture in the former East Indies colony was undoubtedly featured, represented, and characterized by the buildings, orders, and institutions of

the Dutch colonialism. Even though the end of the Pacific War in 1945 was the turning point for a political transition from colonialism to a republican independent state, it was not the case for the architecture of the country; the image of towns and cities of Post Colonial Indonesia remained the same until the early of 1960 which was being dominated by the legacy of the Dutch modernity in the Far Eastern Colony since 1830-s as the compulsory cultivation system was implemented in Java and Sumatra (Fasseur & Elson 1992). Towns and cities as well as hinterlands were built and developed to support the export of commodities from the East Indies colony to the mother land, the Netherlands. Architecturally speaking, European like modern compounds in the middle of tropical forests would have attracted investors from the continental for their business in the Far Eastern archipelago.

However prior to the Pacific War, the presence of Westerners,-Portuguese, Dutch, and British-, in the tropical islands was a story of conquest and domination over the natives. The peak of the exploitative Dutch colonialism was through cultivation system of: sugar, coffee, tea and rubber between 1830 and 1870 that brought about the irony of development: the prosperity of the Netherland and the poverty of Javanese and Sumatran farmers for decades afterward. Humanists, socialists, and liberalists in the Netherlands and East Indies felt guilty and uneasy for such harsh Master-Slave relationship between the colonial and the colonized. The Speech from the Throne in 1901 and political pressures from the socialist group and left wing parties pushed the Dutch colonial rule in East Indies to put an end totally the cultivation system, and implement the Ethical Policy (see also Bloembergen and Jackson 2006: 224). The basic idea of this policy was nothing but the politics of culpability out of guilty feeling and shame.

Under the policy, the Dutch rule offered modern education for the children of the ruling class in their colonies in the 1900s. At the first glance, the idea of modernity came up against colonialism, as the spirit of liberation from inequality, discrimination, and injustice based on race, origin, beliefs, and ethnicity. Despite the real politics at those times spoke different tones and meanings on social justice and equal opportunity, the Ethical Policy did work for the privileges though it was for very small number compare to the whole native populations in East Indies. Nevertheless, the young generations of the elites were not blind and deaf for the fact that colonialism brought about latent poverty and social injustice among the indigenous populations. The forced cultivation system between 1830 and 1870 was obvious practice of exploitation by the Dutch colonial rule. At the beginning of the 20th century, there were debates in the Dutch Parliament concerning the welfare and health of people in the Dutch colonies. The pressure of the socialist and communist elements brought about an ethical policy and program in the Dutch Indies (See also Schmutzer 1977: 14). The very idea of modernity in terms of European liberalism and humanism inspired and encouraged the nationalist movement for the preparation of liberation. They understood modernity as the ideologically liberating drive of change and transformation against the domination of the Dutch over the indigenous people. For the people under the oppressive colonial regime, modern idea of universal humanism gave a hope and light for their struggle against any form of colonial domination and exploitation.

The contribution of modernity to the indigenous populations in the Dutch East Indies between 1901 and 1942 was obvious about the awareness of national identity and civil rights; all these were made possible through the literacy program of the Ethical Policy. The modern educated young nationalists were able to learn and discuss the European ideas on French and Bolshevik Revolution, Marxism and Socialism. Based on their readings on Western history of ideas, young educated natives became aware of the fact that modernity was the necessary way for radical change and rational transformation of society and state that included a national movement and revolutionary struggle. It is unsurprisingly to understand why most native educated nationalists in East Indies embraced modernity in alignment with the socialist, communist, and liberal movements. For the conservative Dutch party, of course, such movements were nothing but extremist and terrorist activities.

The liberal political climate in the Netherlands in 1900-s gave the room for the left-wing parties to grow in East Indies. For the leftists, modernity was about the solidarity of working class

struggle with the spirit of socialism and universal humanism for the better world. They shared with the liberation movements the idea of class struggle and concerned on the welfare, education, housing, and health of the indigenous people. Accordingly, the natives should have had their right and voice in the politics; therefore the natives were needed to have representatives for their interest and power in the colonial parliament, *Volksraad*. In matter of fact, the participation of indigenous people in parliamentary legislation did not bring any significant progress and development for the native economy and their civil rights until the beginning of the Pacific War in 1942.

Unquestionably, during the Japanese occupation between 1942 and 1945, the indigenous populations suffered more than before, they sunk into deep poverty. Even though modern buildings in most towns and cities of Java and Sumatra remained as they were before the war, the owners and users of them had changed. Despite the proclamation of independence by the Republic of Indonesia in 1945 that claimed a sovereign nation and state in the former territory of the Dutch East Indies, the Dutch power tried to reinstall their administration in their former colony. Clashes and confrontations with the Republican supporters and international pressure forced the Dutch empire to leave the country in 1949.

Establishing a new nation and state was not an over night process. The newly proclaimed Republic of Indonesia was politically in struggle from 1945 to 1960-s for its nation-state establishment. Ideologically speaking, the newly constructed nation needed a culturally unifying identity for its diverse reality. The main figure of Indonesia at those periods was Sukarno who had a conviction that architecture was not only an embodiment of contemporary spirit, but also a political means and representation (See also Kusno 2000: 49, Mrazek 2002: 61). Indeed, modernity in Indonesian architecture had been indivisible from such awareness and movement in dealing with a nation building and newly emerging modern society of Indonesia.

Modernism from Western Europe and North America in early of the 20th century had been inspiring and motivating youths of Independent Movement (*Pergerakan Kemerdekaan*) in Dutch Indies for its activism for equal opportunity, social justice, and liberation from domination (Kahin et al). Sukarno, Hatta, Sjahrir, and Tan Malaka did not belong to the first generation of Independence Movement, but that after the Youth Oath in 1928. Unlike the first generation, Sukarno's generation understood modernity as political tool for establishing and confirming the newly independent nation and state of Indonesia. For the first generation of Independence's Movement, such as Soetomo, Tjokroaminoto, and Wahidin Sudirohusodo, modernity was more about ideologically encouraging spirit for independence and self-determination; they adopted and implemented modernity for educating young Indonesian generation with patriotic awareness and social solidarity among the natives.

For the first indigenous generations of Dutch schooling system, modernity was understood and experienced as acculturation of formal education based on European Dutch literacy and civilization. The native response to such Europeanization of the Javanese culture came from Soewardi Soerjaningrat or Ki Hadjar Dewantara from Yogyakarta. He responded this Dutch colonialism through educational system by establishing a Javanese elementary school system in 1922, known as Taman Siswa (Garden of Students). The Javanese way against colonialism was subtly indirect but intentional and powerful in terms of self-determination.

Prior to the Pacific War in 1942 -1945, the architectural scenes of the towns and cities in the Dutch Indies were characterized by modern buildings. The American Prairie School of Frank Lloyd Wright, the German *Werkbund* and *Bauhaus* as well as the Dutch school of *De Stijl* found their echoes and traces of influence in Batavia, Bandung, Semarang, Surabaya, Medan, Yogyakarta and Surakarta. The last two towns were well known as centres of the Javanese culture and tradition. The Dutch practicing architects in the Far Eastern Colony were heavily criticized for being ignorant and arrogant in dealing with local building culture and tradition. One of the criticism came from the renown Dutch modern architect, Hendrik Petrus Berlage (1856-1934).

As a former student of Gottfried Semper, Berlage concerned the tectonic relationship between material and construction. Accordingly, modernity in the context of the use of building materials based on their truthful and appropriate relation to the system of structure and its intrinsic properties. Berlage visited the Dutch East Indies in 1924 and gave critical comments on a bluntly imported European architecture in a tropical country. Indeed, prior to Berlage's visit, East Indies as a sociocultural entity was likely not discovered as a reality of architectural theme and context (See also Frijhof and Spies 2004: 89).

However, at least three Dutch practicing architects had been already demonstrated their sensibility for locality before the Berlage's visit: Thomas H Karsten, J. Gerber, and Maclaine Pont; their works had demonstrated a significant contribution of the Dutch architects to the architecture in East Indies. Gerber's Gedung Sate building, - built in 1924 in Bandung-, and Maclaine Pont's East and West Aula buildings, -built in 1925-6 in the campus of Institut Teknologi Bandung-, are considerably masterpieces of modern architecture in the tropical archipelago (See also Fletcher & Cruicksahank 1996: 1604). Prior to Soejoedi's enrolment as a student of Building Department of ITB in 1950, modern architecture in Bandung was flourishing with various features and traces of Art Deco, Bauhaus, and contextual ingenuity.



Figure 1: West Aula, Institut Teknologi Bandung (Source: Author).

SOEJOEDI AND HIS ENCOUNTER WITH MODERNITY

Soejoedi was neither the first nor the second generation of Indonesian movement for independence. He was born in 1928; it was the year when the youths of most ethnic regions of Dutch Indies declared their oath, *-Soempah Pemoeda-*, that they are one nation, one language, and one country of Indonesia. However, the realization of the oath took 17 years that brought about the Republic of Indonesia as an independent country in the former Dutch East Indies. The times between the end of the Pacific War and 1959 were crucial moments for the existence and establishment of the young Republic of Indonesia either by external interventions or internal conflicts. As many in his generation, as a young man, Soejoedi joined Student Fighters of Brigade 17 in his hometown Surakarta for Indonesia's Independence against the comeback of the Dutch power from 1945 to 1949.

Despite the Dutch rule left the country in 1949, Dutch teachers still stayed and taught Dutch and native students in the colleges and schools. One year later, Soejoedi became a student of Building Department at the Technical College in Bandung in 1950. His passion and interest in design found its home in this school. From the quality of his works, Soejoedi was

nominated and won as a talented student scholarship from French government for a study in *L'Ecole des Beaux Arts* in Paris in 1955. After a year, he did not feel comfortable to pursue his education in this institution for personal reason of homesick. His mentor in Bandung, Prof. van Rommondts arranged his further study at the Technical College of Delft, in the Netherland. Based on van Rommondts's recommendation, Soejoedi was able to continue his study at this institution. At the *Technische Hoogeschool Delft*, Soejoedi did not need to start from scratch. His subjects of study at the Technische Hoogeschool Bandung were acknowledged and accepted at equivalent level. During his study, he mostly spent his time for doing his design assignments. He had opportunities to encounter the works of several leading Dutch modern architects such as Jacob Bakema and Aldo van Eyck. However, he did not work his design thesis at this institution. Instead, he worked part time as draughtsman at a small firm, *Kraijvanger Architecten*, for the reconstruction of the city in Rotterdam.

However, Soejoedi had to leave Delft in 1957 without being able to pursue his degree in architecture. The political circumstances forced him to leave Delft and find somewhere else for the completion of his academic qualification in architectural engineering; then, he moved to Technical University of Berlin to pursue his qualification in the same year. He studied well with extraordinary marks for design subjects. He eventually graduated from TU Berlin in 1959 with a design thesis on Islamic boarding school and training center, *pesantren*, with the best marks. Meanwhile the political relationship between the Dutch and the Republic of Indonesia was on the rock that was the consequence of President Sukarno's policy for taking over all foreign companies by the state corporations. Sukarno believed that modernity needed a radical transformation and independence from foreign resources. Consequently, higher education institutions suffered the most because their teaching staffs were mostly the Dutch nationals. The country needed people like Soejoedi for qualified staffs in colleges and other institutions. Indeed, from early on in the school, Soejoedi was eager to engage in the higher education and training for native Indonesian generations.

In 1960, Soejoedi came back from Germany to Indonesia. He stayed and worked in Bandung as lecturer. After few months, he was promoted as the head of the department of architecture at the Institut Teknologi Bandung. During his tenure as academic staff and head of department, he laid the foundation of architectural training with an emphasis on the use and exploration of modern technology for building construction and material, especially concrete and steel structure. However, artistic approach to design was always his best interest in terms of method and pedagogy of design. Accordingly, form, function, and material are necessarily to be integrated as a geometrical and sculptural composition that works for specific purpose and context, a strong embedment to site and its surrounding setting.

According to his former students, the state of the art of building design for Soejoedi lies in the quality of its pure geometrical composition. In order to achieve this quality, designers need to improve and develop their intuitive skills in terms of learning by doing. Indeed, he realized all the time that architecture is not a pure work of art; it is a public and utilitarian endeavor with respect to aesthetic and human experience such as: safety, comfort, and health. In this regard, Soejoedi always tried to open the dialogue between reason and intuition; for him architecture is the field and playground for both human faculties in the search for something humanly useful and beautiful.

Soejoedi began his national career as a practicing architect in 1964; it was when he was called by the President Sukarno to be in charge as chief architect for national architectural projects in the capital city of Indonesia, Jakarta. For this call, he brought some colleagues and students from ITB to work with him in Jakarta. Prior to his departure to Jakarta for the large-scale projects, Soejoedi designed and built several buildings and family houses in Bandung between 1960 and 1964. As a nationalist person, Soejoedi took seriously the call of duty from the state for participating in the national design projects of Indonesia. He established his own firm, pt. Gubahlaras in 1969 with a vision of unveiling modern Indonesia through architectural endeavor.

He believed in architectural modernity as a tangible affirmation of Indonesian independence with its ingenuity. Thus, locality for him was not simply imitating and recalling traditional icons, forms, and styles. Rather than superficial eclecticism, Soejoedi tried to go beyond the formal system in the search for the spatial principles of Javanese spatial category: outside (*jaba*)-inside (*njero*), as well as the gradation of values from preliminary, *-purwa-*, intermediate, *-madya-*, and inner sanctum, *-utama/dalem-*.

He was undoubtedly one important figure of the Post-Colonial native architects from the former Dutch Colony of East Indian archipelago who could be considered as a proponent of modernist architects and designers. However, according to his notes on his design for the MPR/DPR complex circa from 1970, he believes that there is a strong relationship between architect's personality and his/her design (Sukada 2011: 44). The question leads this study to investigate the Soejoedi's case further into the sense of his originality, especially in dealing with the main streams of ideological movement of modernism.

SOEJOEDI AS A PERSON

Friends and families know well Soejoedi as a thoughtful and quite person; he just talked to his friends and colleagues the necessary things or matters. He undoubtedly was also an artist and designer with fine sensibility of composition, proportion and scale, as well as a designer with imaginative power, a hard working individual, and a man of principle. However, he was a soft spoken and polite person with high faculty for listening and observing things that matter for architectural presence.

Friends and colleagues respect him without reserve. Based on all these qualities, Soejoedi was undoubtedly considered as a well-integrated person and original designer. Unsurprisingly, if his important mentor, Prof. van Rommondts chose him as his protégé and prospective successor for the head of Department of Architecture, at Institut Teknologi Bandung. In matter of fact, Soejoedi was not only a talented student, but also a strong intellectual leader in the field of architectural design. Even though he did not write any book on architecture, his message in his works is clear and lucid that architecture was part of his personality.

As a Javanese educated person, Soejoedi was well known among his friends and colleagues as an intelligent, sensible and quite person. Professionally, he was always a highly regarded person with self-discipline, hard-working, and considerate attitude. He was never complaining and blaming others or circumstances. Instead, he always worked out everything based on careful consideration and reflection. However, He also showed deep respect to others. For things he did not know or were doubtful he just passed them on in silence.

As a Javanese person, he was trained to be modest in dealing with materialism. Modernity of German Bauhaus school has something in common with Soejoedi's Javanese approach to architectural design. Accordingly, only the essentials deserve special treatments for representing and incorporating ideas and functions. The Javanese tradition values elegant, determined, subtle and fine manners in action, communication, expression, articulation, and interaction. Furthermore, sophisticated ideas and forms in a well-organized system belong to Javanese signs of maturity and establishment. For Soejoedi, modernity and Javanese culture stand hand-in-hand in the search for the essentials.

SOEJOEDI AND POST-COLONIAL ARCHITECTURE

One important project of modernity in Continental Europe and especially in Germany was to liberate architecture from the dominance of bourgeois social milieu; this was considerably an activist movement toward a modern society based on democracy and social justice. To what extent such a program became an inspiration and direction for Soejoedi? Until recently, the question of the relationship between European modernity and Soejoedi's position remains open. However, from his design works, modernity for Soejoedi is likely indispensable a means and vehicle of liberation from the traces of Colonialism; his architecture stands out from the works of modern Dutch architects such as Albers, Karsten, Maclaine Pont, and Schoemaker. One

important proof of this is his work for the Conference of the New Emerging Forces, *-Conefo-*, and his project for Duta Merlin in 1970. Many friends and former students, such as Humar and Han Awal, confirm Soejoedi's rational approach of modern design, but from beginning of his architectural study in ITB and TH Delft he was very passionate to integrate the locality of Indonesia in all his works. The way Soejoedi incorporates the locality is never at superficial level in terms of appearances, forms and styles. Rather, he adopts the local character of Javanese architecture at philosophical level that both, the Javanese tradition and modernity, value the essentials in terms of use and cost effectiveness.

The *Conefo* was built within the period between 1964 and 1983; Soejoedi incorporated President Sukarno's creed and call for the totality of independence from East communist and West democratic capitalist political world Blocks. In this role as the man in charge for the architecture of the New Emerging Forces of formerly colonized countries, Soejoedi proposed a modern complex with no recognizable traces of precedent buildings. The similar design approach was invoked for Duta Merlin Hotel project. The project was designed to replace the previous hotel of *Des Indes*, which was on the same location; the well-known Dutch architect, F.J.L. Ghijsel designed the hotel with an extraordinary adaptation of modern art-deco architecture in the tropical climate of Java. For Soejoedi, establishing a new architecture for a national pride was probably more important than maintaining an old building with pathetic roots and traces of colonialism of the past.

Soejoedi was, of course, not alone in establishing a new architecture for the newly emerging Republic of Indonesia; Fredrick Silaban was part of this undeclared movement. Silaban and Soejoedi were great architects with their own ways for the nation building of Indonesia. In contrast to the grandeur form and style of Silaban, *-who designed the Istiqlal Mosque-*, Soejoedi understands monumentality in terms of classical architecture with strong geometrical form and sophisticated proportion, composition, and juxtaposition; he likely attempted to push modernity to the edge of its possibility with a clear cut and abstract composition and less tolerant for ornamentations. However, patterns and textures play an important role in his façade design. His treatment for material was not simply for the sake of form and function. Rather, Soejoedi tried to explore the relationship of design between them, *-material and function as well as material and form-*, by revealing the possibilities of temporal connection between material and light through patterns and texture. His designs for ASEAN secretariat, Ministry of Transportation, Forestry and Agriculture complex show these explorations. Furthermore, his intention is to manage massive areas and surfaces by breaking them into human scale elements.

Moreover, in his works, Soejoedi was very careful and diligent to deal with the site and location. The spot of his building was considered by him as the stage and platform that provides him with an effective display for his architectural message: liberation from colonial elements and move toward a new era. As any person in his generation, the existence and Indonesia as a nation and state was not simply a matter of political independence from the Colonialism. Rather, he and his generation were fully aware of the necessity for the proof that Indonesia was able to stand and sit together with other nations on equal and respectable position. As an architect, Soejoedi conceived the nation building of Indonesia was a call of consecrated duty. For him, architecture was more than just a public art; it is an embodiment of the spirit of his nation and state; all this was based on strong conviction in universal humanity and the spirit of contemporariness.

In many cases, his public buildings, *-such as ASEAN Secretariat Building, Department of Agriculture complex, Department of Forestry Tower, and the Republic of Indonesia's Embassy in Kuala Lumpur, Malaysia,* stand elegantly establishing landmarks and iconic statures. However, the monumental quality of his buildings is considerably sophisticated and subtle that is genuinely persistent without falling into gigantic and megalomaniac exposition. The monumental eminence of Soejoedi's works might be rightly said as elegant endeavors that show a strong sense of spirituality and ingenuity. How can his buildings iconic and monumental if they are not the outcome of original ideas? Heuristically comparing and interpreting his works could have diminished the nature of his works as part of his personality and originality.



Figure 2: Secretariat of Association of South East Asian countries, Jakarta Indonesia (Source: courtesy pt. Gubahlaras).



Figure 3: Former Conefo Complex, now DPR/MPR/DPD (Source: courtesy of pt Gubahlaras).

CONCLUDING REMARKS

Contemporary architecture in Indonesia is indebted to the works of Soejoedi Wirjomatmodjo. One important thing of this indebtedness is his architectural legacy of struggle for a nation state with character and integrity. Modernity in this sense becomes clear and simple that it is not about architectural style and fashion. Rather, modernity in Soejoedi's architecture is a statement and engagement for being aware of the contemporary problems, challenges, and opportunities of the modern world. In dealing with its specific circumstances, architecture for Soejoedi is necessarily

responsive in terms of ready for delivering excellent designs. Accordingly, form, function, material, and cost can be managed together to bring about the healthy, safe, and attractive built environment.

ACKNOWLEDGMENT

The main source of this essay is the data of Soejoedi's works,-sketches, drawings, reports, notes, and reports-, and collections collected and documented by pt. Gubahlaras, Architects and Planners. The author is very grateful to Mrs. Hadimah Soejoedi & Mr. Hadijanto Soejoedi,-son-, and Mr. Bambang Hudyanto for giving the author unlimited access to Soejoedi's archive at the Gubahlaras office in Jakarta. Secondary sources on person, works, and life of Soejoedi were collected from interviews, talks, and discussions with Soejoedi's friends and colleagues: Mr. Hoemar Tjokrodiatmo, Mr. and Mrs. A.M. Lutfi, Mr. Han Awal, Mr. Utomo Brodjonagoro, former students: Prof. Slamet Wirasondjaja, Dr. Yuswadi Saliya, and staffs of pt. Gubahlaras for sharing information with the author on their encounter with Soejoedi as person, colleague, and friend.

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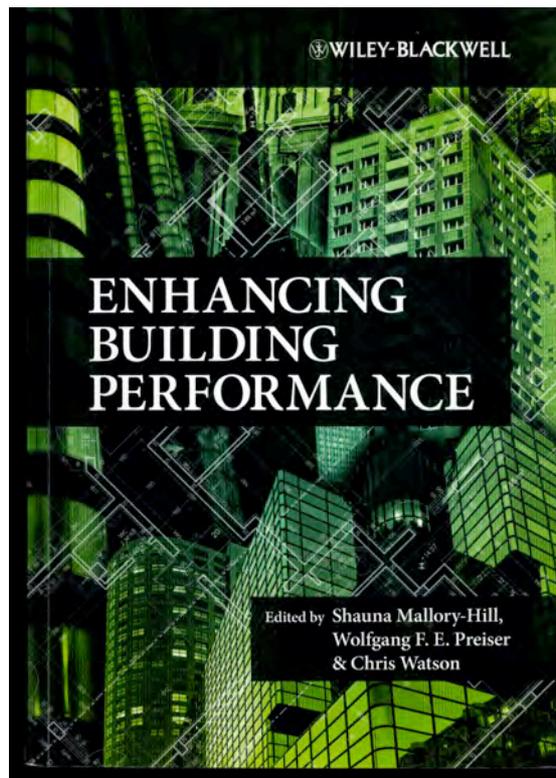
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BOOK REVIEW: PRELIMINARY REFLECTIONS ON ENHANCING BUILDING PERFORMANCE

Edited by Shauna Mallory-Hill, Wolfgang F. E. Preiser, and Chris Watson
(Wiley-Blackwell Publishing Ltd., Oxford, United Kingdom. 2012) ISBN 9780470657591

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This 2012 book is a new addition in the field of Building Performance Evaluation (BPE). This contribution consists of 26 chapters in six parts, edited by Shauna Mallory-Hill, Wolfgang F. E. Preiser, and Chris Watson, three editors with various professional backgrounds and intensive experience in the field. Shauna Mallory-Hill is an assistant professor in the Faculty of Architecture at the University of Manitoba with a wide research and teaching experience in the field of building performance evaluation. Wolfgang Preiser is a professor emeritus in the School of Architecture and Interior Design at the University of Cincinnati. Preiser holds a strong record of books and publications in the field of building analysis and post operations evaluation. Christopher Watson presents the practical experiences and adds a great value to fill the crucial gap between academics, researchers and practitioners. Many contributors come from different part of the world and offering their experience in enhancing the performance of buildings and environments on their contexts. This review highlights key features of these contributions.

Keywords: POE-post occupancy evaluation; research; professional practice; enhancing building performance.

REVIEW

The book capitalizes on developing the evaluation of building performance methodologies and cases. *'Enhancing Building Performance'* is a natural and logical development of the widely known earlier book *'Assessing Building Performance'* by Wolfgang Preiser and Jacqueline Vischer. However, this contribution is far-reaching; it stretches the philosophies of building evaluation, to present newfangled notions in initial planning, programming and Post-Occupancy Evaluation (POE). It consists of several international experiences and case studies with practical approaches and underpinning theories, focusing on evidence-based and integrative design processes, evaluation methods and tools, education, and knowledge transfer. The diverse number of case studies reveals the numerous qualities and challenges of evaluating buildings. This book targets primarily the practitioners of planning and architectural design, as it serves them best by the extensive information and outlining the assessment performance models and investigations into buildings. Nevertheless, it is indeed useful for researchers and consultants in the fields of architecture, building assessment, and facility management and this due to the fact that the book involves updated methodologies applied in assessing different building typologies worldwide. However, these are not the only intended readers, business cooperates, and decision makers will likewise benefit from the ideas of sustaining the best performance of the business cycle.

The book is designed in six parts, each of which has a specific focus-- all centered on the notion of Building Performance Evaluation. In the first part, consisting of two chapters, co-authored by the editors, and addresses the reader with a detailed insight of how BPE has evolved for the last 50 years. The chapter defines different aspects and parameters for enhancing building performance and a series of advantages that linked to the importance of research relevant to the users and their surrounding built environment. The chapter then explores the emergence of Post Occupancy Evaluation and theories that backed up this field of applied research during the late 1970's. Later, how POE evolved during the 90's till 2005, to bring out to light the concepts of Building Performance Evaluation and the crucial need for this capacity to generate more elaborative ideas of design control based on evaluative measures. Yet, the authors declared the crucial need to develop BPE for increasing the desired expectation of users and decision makers toward the environments they use and make decisions about. The chapter highlights the role of stakeholders in the assessment process and their collaborative activities to deliver objective and valid findings. Another quality is that the chapter stresses the need for extraordinary interdisciplinary research within the BPE to address the complexities between the users and their environment. Then, the authors concluded with a set of benefits that may foster the life cycle of buildings.

In chapter 2, co-authored by Wolfgang Preiser and Ulrich Schramm, they discuss the performance evaluation paradigm throughout the building life cycle. They present the process model of BPE, its evolution from various methods and cases. The study describes BPE in different phases of the building cycle, such as, a. Strategic Planning, b. Programming, c. Design, d. Construction, e. Occupancy, and f. Adaptive Reuse/Recycling. The authors take this informative chapter with an additional layer for elucidating the means of performance within different phases. They also present the required criteria to conduct the assessment while covering the literature on the effect of other sociopolitical, historical, and economic levels.

A critical insight of BPE design processes and evaluation is the main theme of the second part; it discusses several aspects of participation and feedback by the various stakeholders. The significant objective of this part is to identify vital best practices and methods to improve the performance of buildings. This part consists of 4 chapters, starts with Rodney MacDonald and Sonja Persram discussing the *'The Integrative Design Process'* (IDP) in the phases of programming and developing design strategies. The chapter covers the origins, evolution and definitions of IDP to express later how other scholars and practitioners moved forward into more

details within sustainable architecture. The main idea is to investigate the engagement possibilities of primary clients toward sustainable buildings.

The second chapter is a must read, authored by Henry Sanoff. He explicitly investigates the aspects of collaborative and participatory design process. Sanoff sums up the concept of Community Participation in the design process and its evolution since the 70's. Sanoff offers several examples that range in scale from the architectural and urban, offering a wider range of interests. The following chapter is *'Enhancing Design Programming: The Case of Detroit Collaborative Design Center and Detroit Hispanic Development Corporation'* by Sheri Blake is a step forward into collaborative design process, yet with a practical essence, it presents the advantages of workshops and detailed sessions between various stakeholders. The final chapter of Part 2 is by Chris Watson, focusing on Post Occupancy Evaluation with a theoretical brief and background. He discusses methods applied throughout New Zealand, Australia and Europe; in addition, how stakeholder utilized these techniques in refining new buildings to increase performance expectations. Watson highlights the success of POE even more on development schemes of heritage buildings.

In part three, there are 7 chapters, mostly investigating BPE in action, and they provide a wide understanding of BPE utilization in various architectural and urban typologies. What makes this part stands out from others is its multi-national and cross-cultural dimension; it includes cases from Italy, Japan, USA, Qatar, and other successful cases. Yet, there are two chapters that may have a different taste, the first by Ashraf M. Salama where he focuses on higher education teaching environments. He investigates initial vision of decision makers and architects toward the development of Qatar University's Campus against current experiences and feedback by various users. Salama introduced the use of behavioral mapping and walkthrough impressionistic assessment toward evaluating key outdoor spaces of the campus. The chapter presents major key findings into wide graphical illustrations to simplify research process and outcome. The second chapter by Carlotta Fontana from Italy is also of note. In this chapter, she investigates the performance of built heritage adaptive reuse in Milan. She focuses on the local communities' feedback and perception toward architectural values. She presents two case studies with large students' densities to assess their acceptance and perception of the technical and functional requirements in buildings. The second section of this chapter, she once more utilizes performance-based analysis on landscape environments in Milan. Her investigations highlight the essentiality to develop the public understanding and awareness of heritage preservation and the values of current natural and built environments to empower local communities in decision-making processes.

The fourth part focuses on the Research Methods and Tools, again it consists of 7 chapters, however these contributions target methods and techniques introduced to evaluate the performance of the built environment. As a matter of fact, it diversifies the approaches followed with an international essence, the cases likewise in part three present several countries and regions. These methodological approaches start by users' perceptions testing, occupant surveys, and experiences exploitation. On the other hand, it serves mostly researchers and students due the large number of data collection methods, criteria determination and selection, and the successful integrative methodological process design for several types of research work including exploratory, investigative, and applied. Some of the chapters focus on assessing the performance of work environments and others place emphasis on technical aspects relevant to green architecture. Chapters 14 and 18 focus on developing the well being of working environments and the potentialities of developing an effective decision-making process. The fourth part adds another major layer, with a major focus on the use of digitized and computation techniques to assess the building performance. In chapters 15 and 19, by Preiser & Wang and Jan Hensen respectively stress on the optimization of computing system that may aid in measuring quantitative values of performance tests. In addition, Wolfgang and Wang utilized the methods of Geographic Information Systems (GIS) to draw a relationship between various scores for several branches of a public library system in Cincinnati. On the other hand, Hensen presented scores of a

computational simulation of indoor spaces in the building cycle and the various outcomes of performance investigation. Ultimately, both are exceptional approaches that may need attention for future research possibilities. In the last chapter of this part, Clintoc Andrews, Jennifer Senick and Richard Wener present '*Incorporating Occupant Perceptions and Behavior into Building Information Management (BIM)*.' The authors discuss the notion that human perceptions and behavior may affect investigation into the building performance. Thus, Andrews *et al.* proposes a computer simulation framework based on previous POE results of green commercial office buildings. Another chapter with and extra unordinary methodological tools of drawing future results for higher performance rates in public buildings based on previous best practices.

Education, is the main theme of the fifth part of the book, and contains 5 chapters. The first chapter examines POE in Brazil, how and when it evolved among the research and academic community till it reached professional practice. The authors examined the effect of POE on various building typologies and on directing designers into the design process with more qualities exploited by the investigations. The authors even stressed that POE requires more attention within the undergraduate studies to inject within young designers the potential aspects of evaluation-led enhancements. Later, Schramm had an experience of how to utilize BPE into the construction Project Management curriculum. Schramm believes that evaluation should be introduced in the construction phase to work on cost-effective buildings of better quality. Again, Ashraf Salama presents another contribution based on his extensive experience in architectural education. He focuses on Inquiry Based Learning (IBL) through evaluation research in the process of education. Salama challenges the traditional techniques of teaching students, by how to produce valid observations and future possibilities through primary cases and best practices. Finally, the book ends with a brief epilogue by Francis Duffy, who discusses the term, the essential need for building evaluations during this era, in order to reposition the built environment with more appropriate and sustainable trends for future generations.

Enhancing Building Performance is a must read contribution by and for many who are obligated to foster the performance of buildings and environments in their contexts. Architects, planners, academics and other professionals involved in the building industry would find this book an excellent reading. Educators, undergraduate and graduate students in architecture and related fields would find the approaches, tools, and techniques utilized in the cases presented of great benefit to their current and future research work.

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BOOK REVIEW: STITCHING THE BUFFER ZONE. LANDSCAPES, SOUNDS AND TRANS-EXPERIENCES ALONG THE CYPRUS GREEN LINE

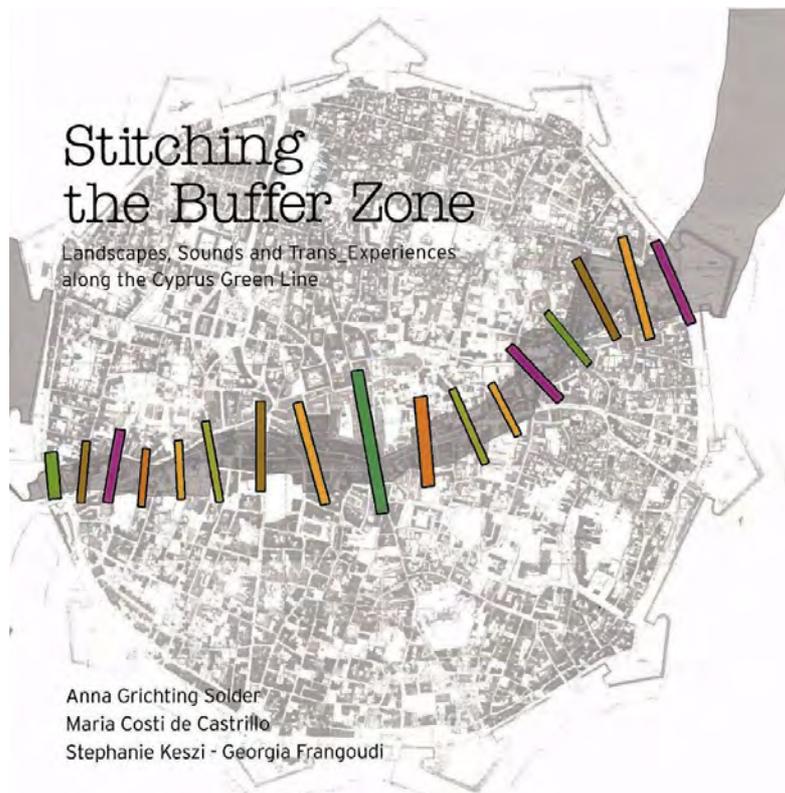
Authors:

Anna Grichting Solder, Maria Costi de Castrillo, Stephanie Keszi, Georgia Frangoudi

(A Bookworm Publication; 1st edition, 2012 - ISBN 978-9963989942)

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The launch of the book “Stitching the Buffer Zone” accompanied an exhibition of the same name at the Artos Gallery in Nicosia, Cyprus. Organized by the ARTos Foundation, the exhibition was part of a larger event entitled “Does Europe exist?” which took place from 1–15 November 2012 within the Cyprus presidency of the EU Council. Stitching the Buffer Zone was a collective exhibit which featured the works and installations of architects and urbanists Anna Grichting Solder, Maria Costi de Castrillo, Stephanie Keszi and Georgia Frangoudi and included models, plans, videos and installations illustrating the design scenarios and architectural and landscapes concepts for the future transformation of the Cyprus Buffer Zone.



Book launch and exhibition opening Artos Foundation, Nicosia, 1st November 2012 (Source: Author).

REVIEW

The product of military and political conflict, a 180-kilometer-long buffer zone has divided Cyprus since 1974. Largely undisturbed, it is an ecologically valuable area with the potential for transformative change. Cyprus became an independent republic on August 16, 1960. Fourteen years later to the day, a United Nations ceasefire came into effect that divided the island in two, following a coup d'état by Greek Cypriot and Greek elements that prompted a military intervention by Turkey and established Turkish Cypriot control over the northern part of the island. As a result, a Green Line Buffer Zone runs for 180 kilometres across the island, covering three percent of the land mass and encompassing abandoned rural villages, fallow agricultural lands, and crumbling stone buildings in the historic capital of Nicosia. Strict adherence to the military status quo in the Buffer Zone, enforced by the United Nations Forces in Cyprus (UNFICYP), has frozen development and, on a more positive note, has allowed this landscape to escape the construction boom on both sides of the Green Line: Meadows have recovered from contamination caused by pesticides and artificial fertilizers, hillside forests have been preserved, and wildlife has been allowed to flourish. Like the Korean Demilitarized Zone (DMZ), the Green Line is now really “green,” and has become a haven for wildlife and biodiversity.

The Buffer Zone is both a “territorial wound” and a future “space of reconciliation and reconstruction” and has engendered a number of projects that seek to reweave the disrupted spaces and segregated communities of Cyprus. The book - *Stitching the Buffer Zone. Landscapes, Sounds and Trans Experiences along the Cyprus Green Line* - presents three such projects with various approaches to envisioning or re-visioning the abandoned landscapes of the Cyprus Buffer Zone at different territorial scales.

The first part of the book - “The GreenLineScapes Laboratory: From a Deep Wound to a Beautiful Scar” - presents an on going initiative that seeks to initiate “healing ecologies” in the physical and psychological rift of the Cyprus Buffer Zone - where the untamed forces of Nature have engendered a spontaneous process of cicatrisation - and suggests the opportunity to create a beautiful scar through the creation of an ecological landscape of memory. [A. Grichting Solder]. Structured along three lines and projectual approaches— 1. Third Landscapes and Healing Ecologies; 2. Palimpsest: (Re)Activating Layers of Palimpsests; 3. Co-Creating Ecological Landscapes of Memory – the project and research reflects on how the Cyprus Buffer Zone might be transformed from a military dividing line into a memorial landscape of cultural and biological

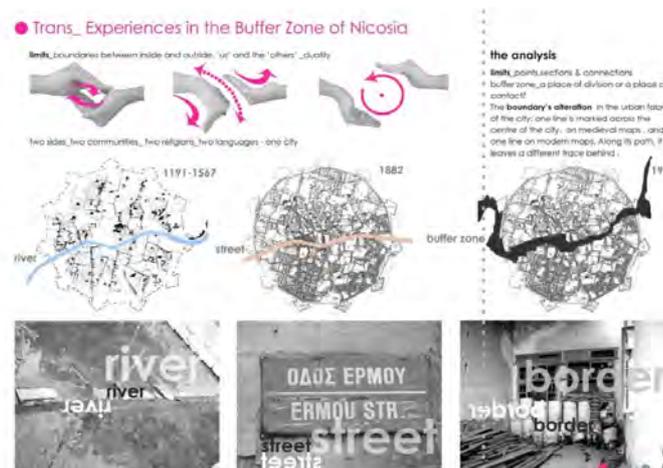
diversity, and this through a process that brings together the communities on both sides in a common vision for a peaceful and sustainable future.



Anna Grichting "GreenLineScapes Laboratory" (Source: Author).

The second chapter entitled "The Stitches - Connecting the two Nicosias again" proposes a functional stitch aiming at recreating the broken threads of the City. Sound becomes a tool in the urban context that promotes revival through encounter. Creating common and shared experiences, the project aims at surpassing this zone of prohibition, while preserving the gap in the memory of the city, also seeking to generate more stitches to occur. [M. Costi de Castrillo]

The final chapter, "Trans_experiences" addresses the experience of border crossing, and is an attempt to invent mechanisms that transfer the experience of the buffer zone into a real space in order to redefine the perception of the boundary and to generate new spatial connections and transmutations. Through transient interventions, different elements are assimilated, intermingled and transformed, leading to a new 'crossing experience'. [S. Keszi & G. Frangoudi].



Georgia Frangoudi, Stephanie Keszi (Source: Author).

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**BOOK REVIEW:
TOWARD AN IDEAL CURRICULUM TO REFORM ARCHITECTURAL
EDUCATION:
Windsor Forum on Design Education**

**Authors: Stephanie E. Bothwell, Andres M. Duany, Peter J. Hetzel,
Steven W. Hurtt, and Dhiru A. Thadani**

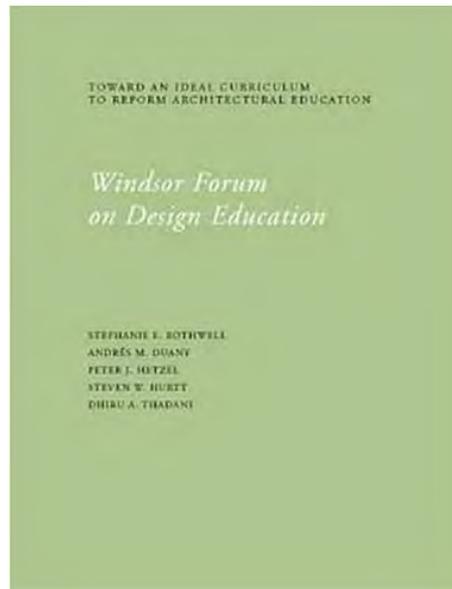
(New Urban Press, Miami, Florida, USA. 2004, 13:978-0975450604)

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The book is a forum on architectural education by stakeholders – views and opinions of different contributors on ways and methods to improve architectural design education and architectural education in general held in April 2002, Florida, USA and declaration of a conference by European Urbanists held in May 2004, Viseu- Portuga. The book gives provocative expressions, word to word of each speaker and non-attending presenters at the forum in a debate format.

Areas of improvement on the ways and methods of training architects are arguably emphasized by some speakers to the agreement of most of the other participants. For example that, health should be an inevitable byproduct of excellent architecture and community planning. Also, architects should be well broadly groomed in their education and be able to handle whatever building designs may come their ways – being modernist or historical buildings. In addition, that their learning should be city focused. As stressing the issues of health, safety and welfare and hard research as laid out in the Boyer Report, this should be a good paradigm shift toward a more civic and community-minded architectural education and practice. Agreed by all

that architects and urbanists as professional form givers should be engaged with citizens in creating forms that satisfy human aspirations, needs and improvement of their environments. As for the curriculum of training architects, they agreed on these five sections – Arts and Sciences, History and Theory, Technology, Skills, and Design for its broad education and practice. That architecture should foster collaboration with other disciplines and professions. Real places are interdisciplinary, so architecture students need to be taught to work with others in a collaborative fashion emphasizes Kate Kraft: 227. Interdisciplinary approach will foster the cooperation of diverse professions who are informed, led by the hopes, needs, and concerns for creating and maintaining livable communities.

The participants are passionate about creativity in architectural design education, which should also be sustainable by focusing on real-world situations – the peoples' values, ways of living and preservation and enrichment of the environment. Diversity in educating architects is acknowledged and praised and should be expanded to accommodate all including the art talented students, who must also learn and master fact as fashion alone is not enough. Also, that the design studio should continue to be the melting spot of training architects in schools. A balance of individual and collaborative effort should be the ideal studio experience (for example, at the University of Miami, design studios are conducted with architects and engineers). Also, universities should be the main schools for training architects and as teamwork simulates the contemporary design office, teamwork in training architects will better prepare them for the realities of practice.

As suggested that the issue of education and practice in architecture be taken as revolutionary as exemplified by Walter Gropius in Harvard University (architecture without typology) and his counterpart, Le Corbusier's call to revolution versus connection with the past (history) being a better way to think of architecture by most presenters was not well resolved due to their enthusiasm. There is claim to the importance of history by some participants that architecture is built on existing ideas and formal precedents seen in other architecture, other domains, or in nature, as we are connected and beholden to our past more than we realize or care to admit.

It is a user-friendly book and organized as the candid expressions of the various participants were presented in a debated manner and it is a thing of interest to read, just like one watching a hot debate on an interesting topic via the television. One has the feeling of the live participants as they progress with the presentation, and you would not want to stop until the end of the book when all the contributors would have empty all they have to say. Photographs of important events are shown and individual photographs and autobiographies of participants are well related, and the names of the speakers are printed at the top of any statement or opinion made. Topics are raised, introduced and asked for contributions from the participants. This is done by any of the four organizers, namely – Stephanie E. Bothwell, Andres M. Duany, Steven W. Hurtt and Dhuru A. Thadani. Also the sponsored representatives and their institutional texts are well related. The sponsors were the Robert Wood Johnson Foundation, the Community of Windsor, The J. M. Kaplan Fund and the University of Miami, School of Architecture. The types of models and education are chaptered with the names of the presenter printed at the top. The types of models are related as – Arts and Crafts, Technical, Cornell, Beaux Arts, Current European, Caribbean, Latin American, Planning and Vernacular, while the education types are just only two - Classical and the Modernist.

The book focuses on echoing the experience and candid comments, lectures and statements of the participants on ways and methods to improving the education of architects for creativity as well as for sustainability. Creativity is a life thing, should be motivated by providing the stimulated learning environments and its potentials attained with other competences later through apprenticeship, through practice, and through technical training. Architecture has to do with style and also has to do with standards too. Therefore, sustainability prompts our market economy to think more about appropriate design. On the triple bottom line of sustainability – Environment, Economy, and Equity – should belong the fourth "E" of Esthetic. As indeed, if a

building, landscape, or city is not beautiful, it will not be loved, and if it is not loved, it won't be cared for. Thus, the love of esthetics in design culture is inextricably joined with the love of the environmentally sustainable. This connection, long in coming, is the key to greening the culture of both architectural education and practice.

The challenge in the book is that any point or comment raised by any one, is accepted by majority of the participants and this they acknowledge as good, diversity in training. The book will particularly interest architects, both in training and practice and their educators, other stakeholders – the related professions, the users, public institutions, faculties, organizations and general readers as architecture affects every human being and the environments we live in.

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