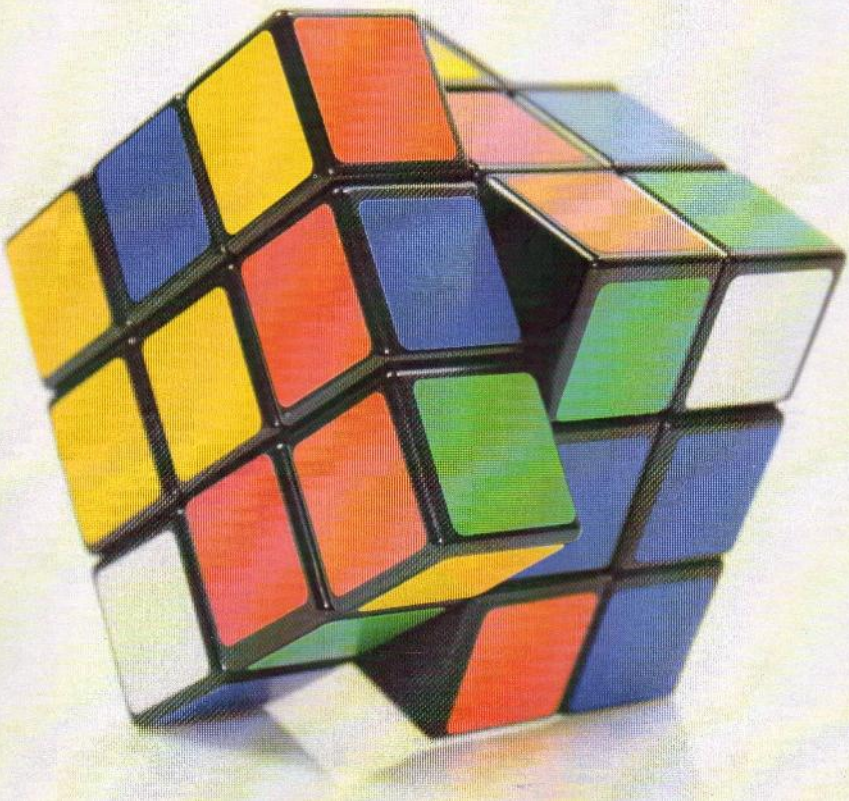
MİMAR SİNAN GÜZEL SANATLAR ÜNİVERSİTESİ YAYINLARI

CREATIVITY, AUTONOMY, FUNCTION



CREATIVITY, AUTONOMY, FUNCTION

Mimar Sinan Güzel Sanatlar Üniversitesi
Mimar Sinan Fine Arts University
Sayı / Number: 784

ISBN: 978-975-6264-97-3

Creativity, Autonomy, Function
ARCHTHEO '13 / III. International Conference of Theory of Architecture
Düzenleyen / Organized by: DAKAM

Editör / Edited by: Neslihan Çatak, Efe Duyan
Yayın Koordinatörü / Publishing Coordinator: Canan Suner

Kurumsal Kimlik Danışmanı / Corporate Identity Consultant: Bülent Erkmen
Kurumsal Yayın Kimliği Tasarımı / Corporate Publishing Identity Design:
Umut Südüak
Uygulama / Book Design: Ercan Mete

Kasım 2013 / November 2013
100 adet / 100 copies
Baskı / Print: MSGSÜ Basımevi

Mimar Sinan Güzel Sanatlar Üniversitesi / Mimar Sinan Fine Arts University
Meclis-i Mebusan Cad. No:24 34427 Fındıklı / İstanbul

Yayın Kurulu / Publishing Committee: 0212 252 16 00 / 410
yayin@msgsu.edu.tr

CREATIVITY, AUTONOMY, FUNCTION IN ARCHITECTURE

ARCHTHEO '13
Conference Proceedings
December 4-6, 2013
Mimar Sinan Fine Arts University

MİMAR SİNAN GÜZEL SANATLAR ÜNİVERSİTESİ YAYINLARI

CONTENTS

INTRODUCTION 9
Efe Duyan

The Aesthetics of Logical Form:
The Case of The Smith House by Richard Meier 11
Saleem M. Dahabreh, Arch Nanncy Assaf

Stochastic mathematical models in the process of creation – Xenakis and his legacy 26
Agnieszka Rumież

Workers Dwellings in Austro-Hungarian Monarchy: Trzic Slovenia 36
Domen Zupancic

Straw Bale Wall Design Alternatives 43
Larisa Brojan

Interior Design and Furnishings in Asian Traditional Houses:
Comparative Analysis between Safranbolu and Kyoto 51
Keiko Nagata

Maintaining Urban Identity in Confronting With Change and Uncertainty Case Study: Historical Islamic Settlements in Yogyakarta 57
Catharina Dwi Astuti Depari, Gregorius Agung Setyonugroho

The Impacts of Urban Laws in Reshaping the Built Environment in Libya 69
Abdolmonam Farag AL-Fageeh

Alvar Aalto's Abstract Paintings and His Quest for Expressive Forms 81
Tuomo Hirvonen

Performative Identity 95
Arief Setiawan

The house of Juan O'Gorman, The Crisis of Modernity and The Return to Primitive Roots 104
Luis Villarreal

Hybridized Creativity-Traditional Chinese Courtyard Houses and Contemporary Design 112
Li Han

From Autonomy to Interdisciplinarity: A Historiographical Context 120
Macarena de la Vega de León

Identity of the Place and its effect on Human Psychology and Well Being– a case study of the Upper Egypt Houses 131
Fatma Elzahraa Hussein, Shahira Sharaf Eldin

SCULPTecture 2.0: Buildings as Art Sculptures Via Development of New Digital Tools 146
Aimi Ramizah Roslan, Roslan Zainal Abidin

Constructions: Art as Architecture 156
Margarida Brito Alves

The Creative Process of Art and Architecture Meets in The Public Space 163
Marcella Bellistri

Relative Utopias As a Tool For Urban Transformation 173
Apurva Singh

On Scene. Conditions For Understand The Space/Scenery Concept. 183
Jorge Lopera Gómez

Cultural Diversity and Self-reliance, Impetus for Design Creativity 191
Mehdi Sabet

Philosophical Foundations for Design Education 208
Thomas Cline

Analysis of Architecture Curricula in Terms of Creativity 219
Armağan Seçil Melikoğlu Eke, Gülay USTA

Evolving Concepts, Revolving Doors 227
Siyaveş Azeri, Payam Mirzadjani

On the Way to Autonomous Wall: Cage Structure 237
Pınar Kutluay

The Double Life of Architecture 242
Karen Olesen

Informality: A Realm for The Autonomy of The User 251
Cristina Dreifuss - Serrano

Digital Revolution in Current Architecture: Towards a New Architectural Expressivity 259
Alessia Riccobono, Giuseppe Pellitteri

A Theory of Unobtrusive Space Utilization Measurement 270
Eren Erdener

The Depth of Surface: An evolutionary Paradigm for Digital Architecture 284
Sophia Vyzoviti

The Economic Impact on The Users' Creativity / Role of The Architect in The Building Process 293
Andreja Benko

Letting Oneself Be Given 300
Mads Tholstrup

Blind Spot House 312
Sabine Storp, Patrick Weber

Creating With Genius and Reason: The Vitruvian Lesson From Dinocrates and Alexander 329
Susana Abreu

On Meaning-Image: Coop Himmelb(l)au Architecture 345
C. Sanem Ersine

The Possibilities of Architectural Space as a Tool For Criticism – The Totaltheater Project by Walter Gropius and Erwin Piscator 360
Efe Duyan

The architectural Thought in the Cinema of Peter Greenaway in Light of Gilles Deleuze's Philosophy 361
Mika Väisänen

The Warehouse Artistically Considered: Caruso St John's Nottingham Contemporary And The Art Of Dressing a Building Appropriately 363
Pedro Engel

Palimpsest, Not Tabula Rasa: Thinking a Nonlinear History of Architecture 365
Erdem Ceylan

Vibrant Urban Places: What Makes Them Attractive to People? 367
Maria Elena Ducci

Embodied Creativity: Teaching Pedagogy in Architecture Design Studio 368
Ryadi Adityavarman

Aalto and the Modernist Manniera: A Critical Reading of the Modernism and Aalto as a Baroque Machine. 369
Emine Gorgul

Para-Desires: Digital Infrastructures and Para-Functionality 371
Mihye An

Warm and Cold Architecture: Nature, Architecture and Creativity 373
Mehdi Damaliamiri, Akram Mahdaviparsa

INTRODUCTION

ARCHTHEO Conference was organized under the title "Theory for the Sake of the Theory" on 2011 and under the title "House & Home" on the year 2012. The conference gained a special place within the theory of architecture thanks to valuable presentations by over 250 academicians.

ARCHTHEO '13 sets sail for new discussions under the title of "Creativity, Autonomy and Function". The question whether the architectural creativity depends on an independent aesthetical productivity or on an engineer-like problem solving approach, still holds today.

Aesthetic autonomy can be deemed as a shelter for the self – proclaimed creativity of the architect. It can be said that as the architectural subject gained its independence from the past in the modern world, it started to claim its rights in this field. On the other hand, during the same era, the architecture drawn closer to the engineering under the motto: "Form follows function". In modern world, this discussion was held between van de Velde, representing Jugenstil, and Multheisus and Walter Gropius tried to solve this with Bauhaus model.

Nonetheless, "which one had more influence on the final form; aesthetic choices or the function?" is a question that cannot be easily answered neither by Adolf Loos's Raumplan nor by total spaces of van der Rohe. The same also applies to both gothic cathedrals as well as to the examples from near east architecture where aesthetic was created through engineering formulas.

Besides, at this era, after postmodernism, where does the aesthetical autonomy of the architect ends and where does the function emerges, is a field on which new discussions will reign. If the functionality is addressed as a social function or as a social determination but not a spatial organization issue, then the architect needs to advocate his / her autonomy more feverishly for he / she is also an artist. Yet again, there are many examples and theoretical passages that shows that creativity does not have to be born from a well balanced synthesis of these two extremes. Other possible sources of architectural creativity must be explored.

ARCHTHEO '13 Theory of Architecture Conference aims firstly to focus on reveal the historical and actual definition of creativity and to open such topics like aesthetical autonomy and functionality into discussion with reference to historic examples and (naturally) to the pure theoretical perspectives.

Efe Duyan

The Aesthetics of Logical Form: The Case of The Smith House by Richard Meier

Saleem M. Dahabreh
Department of Architecture

Arch Nanncy Assaf
Graduate Student

Abstract

This paper addresses the aesthetics of 'how' a building is designed. Through the morphological analysis in 2-D and 3-D drawings, both relational and constructive, of the Smith House (1965-1967), the paper aims to read the intellectual form of the house within its projected form. This reading proceeds by reconstructing the logic of organization of the material construction, accordingly subdividing the space of the building into a pattern and generating its formal properties. As such, the paper argues that the aesthetics of architectural form can be read as an interaction between formal elements and abstract spatial motifs directed by design strategies and tactics, in the distinctive final form. The Smith House is chosen because it represents the beginnings of the formal vocabulary and formal logic of Richard Meier, a logic that endures throughout his later career. The paper concludes that through the tracing of 'how' the house was designed, a deeper aesthetic appreciation of the work emerges and furthermore, the development of a terminology and understanding of logical form not only serves as basis for communication, whether between teacher and pupil, architect and client, or critic and public, but can also be used as a didactic method for instructing design studios.

Keywords: Aesthetics, logical form; constructive morphology; analytic and generative diagrams.

Introduction

'What makes me tick is an aesthetic sense of order, of essential simplicity behind apparent complexity. As an artist, it is possible to create exuberant and unique objects from a small and limited set of elements and rules' (March, 1972)

Architectural buildings are complex material constructions composed of a physical structure, a system of spaces arranged by the physical structure, and a spatial experience engendered by the previous two systems (Peponis, Karadima & Bafna, 2003). The aesthetic experience of architecture has hitherto been mainly associated with the materiality of its form i.e. corporeal form, whether in its sensuous perceptual qualities (Winters 2007), in the emotional response to form e.g. Burke

(1757), emotional empathy with form e.g. Scott (1924), or the imaginative activity associated with form e.g. Scruton (1979) among others. Nevertheless, beyond the material construction of many buildings lie abstract logical structures that govern the arrangement of its construction, order it, and give rise to their formal properties. These structures are the topic of this paper.

Taking the Smith house by Richard Meier (1965-1967) as an example, this paper argues that the aesthetic appreciation of buildings requires more than the sensuous description of them, it requires an understanding of their logical forms in the sense in which Langer (1967) uses the term. The reconstruction of logical form entails a "close reading" of the building in Eisenman's terms (2008) to see *'what is not present in the building'* and to focus less on the optical and more on the visual. The manner in which close reading contributes to aesthetic appreciation is along the lines of Scruton's proposition in *The Aesthetics of Architecture* (1979) where it claimed that the aesthetic experience of an object does not depend on its sensible characteristics nor does it depend on the feelings and emotional response to that object; but rather, on the active imagination that gives an overall coherence to that complex object (Hill, 1999).

Nevertheless, active imagination here is stretched beyond what was suggested by Scruton as seeing a building as something else, or reactive imagination proposed by Bafna et. al. (2009) where one puts himself in the place of another while encountering a work of art; it depends on the Kantian propositions of 'differentiation' and 'appreciation' (Schumacher, 2011) where one sees beyond the sensible appearance of an object and accesses the principles of its creation and its underlying logic through the application of intelligence. In *The Form and Principles of the Sensible and Intelligible World* [Inaugural Dissertation] Kant (1770) called such reflexive knowledge coming from the intellect's relating several appearances to one *'experience'*. This reading is supported by Rawes (2008) proposition that especially aesthetic form of geometry can be found in Kant's shift from the *Critique of Pure Reason* (1781/1787) to *the Critique of Judgment* (1790). In that transition, an external objective geometric knowledge becomes internalized in the form of aesthetic sense-experiences and aesthetic acts of construction. As such, one can conclude that the aesthetic experience of an object not only resides in its sensible form, but also in its intelligible form, thus including 'how' it came about and the underlying orders, especially geometry and principles, which make it intelligible. Here, beauty is seen as *"purposiveness without purpose"* in the Kantian sense where the object is seen as having its own inner purpose distinct from being a means to an end and involves the independence of the artwork from any use by the observer (Hale, 2000).

The aesthetic value of logical form presented as *post-facto* rationalization is multifaceted: it has the ability to explain how the formal properties of a building arise from the relational properties its different parts within an overall structure as stated by Peponis (2005). Moreover, it imposes a sense of order on the development of a specific form from its inception till its completion. Seen through the prism of

logical form, the physical form produced cannot be judged as good or bad in itself for it does not comply with any subjective interpretation of beauty, style, or taste of the receiver but is expressive of an intellectual formal logic that can be experienced and appreciated (Eisenman, 1963). The aesthetic experience of any architectural work, while intimately linked to its visual qualities, becomes a heightening of experience that transcends the visual world to address issues of embedded order and harmony of the intellectual form residing in the sensible form.

This paper is a part of two broader and intertwined research programs: the first concerns studio teaching based on precedent analysis as a didactic tool. Analysis leads students into firstly understanding the theoretical base of any formal language and later performing subsequent exercises in modifications, extensions, or variations so as to provide them with an applied understanding of the interaction between a design language and a studio project. The second research program addresses design as a cognitive process whereby intentions are formulated in the course of design exploration. The aim is to show, through morphological analysis of form, that the creative intention behind the designed building can be, at least partially, recovered from the analysis of built form itself.

Methodology

To exemplify the aesthetics of underlying logical form, this paper examines the Smith House (1965-1967) by Richard Meier. The house is selected because it represents the launch of Meier's career; it was voted by the AIA as one of the 31 most influential buildings on modern architecture twenty-five years after its construction; it and exemplifies formal qualities and design tactics that makes it penetrable to a systematic and rigorous analysis (Din & Economou, 2011).

The systematic investigation of form in architecture falls under architectural morphology. Both relational and constructive morphology are used to analyze the Smith House. Relational Morphology as defined by Liou (1992) is synchronic in nature, studies the formal principles that govern the relationship between the parts and the configuration of the whole. Examples of such an approach can be found in Clark and Pause (1985) *Precedents in Architecture* where a number of buildings were analyzed according to the morphological attributes such as geometry, structure, and addition and subtraction. On the other hand, constructive morphology, diachronic in nature, focuses on the form making process of a building in a step by step fashion, which is informative when the concern of the research is to show 'how' the form could or has been derived. One the most elaborate examples are the diagrams Peter Eisenman rendered for his early houses (Eiseman, 1999).

The theoretical base for this method of analysis was set by Peter Eisenman (1963) in thesis *The Formal Basis of Modern Architecture* where he differentiated between two types of form: generic and specific. Generic form is a Platonic 3-D form, while specific form is an actual physical configuration realized from the platonic form, through structure and technique, in response to a particular intent and function.

logical form, the physical form produced cannot be judged as good or bad in itself for it does not comply with any subjective interpretation of beauty, style, or taste of the receiver but is expressive of an intellectual formal logic that can be experienced and appreciated (Eisenman, 1963). The aesthetic experience of any architectural work, while intimately linked to its visual qualities, becomes a heightening of experience that transcends the visual world to address issues of embedded order and harmony of the intellectual form residing in the sensible form.

This paper is a part of two broader and intertwined research programs: the first concerns studio teaching based on precedent analysis as a didactic tool. Analysis leads students into firstly understanding the theoretical base of any formal language and later performing subsequent exercises in modifications, extensions, or variations so as to provide them with an applied understanding of the interaction between a design language and a studio project. The second research program addresses design as a cognitive process whereby intentions are formulated in the course of design exploration. The aim is to show, through morphological analysis of form, that the creative intention behind the designed building can be, at least partially, recovered from the analysis of built form itself.

Methodology

To exemplify the aesthetics of underlying logical form, this paper examines the Smith House (1965-1967) by Richard Meier. The house is selected because it represents the launch of Meier's career; it was voted by the AIA as one of the 31 most influential buildings on modern architecture twenty-five years after its construction; it and exemplifies formal qualities and design tactics that makes it penetrable to a systematic and rigorous analysis (Din & Economou, 2011).

The systematic investigation of form in architecture falls under architectural morphology. Both relational and constructive morphology are used to analyze the Smith House. Relational Morphology as defined by Liou (1992) is synchronic in nature, studies the formal principles that govern the relationship between the parts and the configuration of the whole. Examples of such an approach can be found in Clark and Pause (1985) *Precedents in Architecture* where a number of buildings were analyzed according to the morphological attributes such as geometry, structure, and addition and subtraction. On the other hand, constructive morphology, diachronic in nature, focuses on the form making process of a building in a step by step fashion, which is informative when the concern of the research is to show 'how' the form could or has been derived. One the most elaborate examples are the diagrams Peter Eisenman rendered for his early houses (Eiseman, 1999).

The theoretical base for this method of analysis was set by Peter Eisenman (1963) in thesis *The Formal Basis of Modern Architecture* where he differentiated between two types of form: generic and specific. Generic form is a Platonic 3-D form, while specific form is an actual physical configuration realized from the platonic form, through structure and technique, in response to a particular intent and function.

in language i.e. ideas one thinks of, while 'how' designers realize their buildings, in terms of rules and principles, into a built form or a representation of it are ideas one thinks with i.e. the syntactic and semantic rules which govern 'how' one deploys words to create meaning.[1] According to Hillier, as long as these rules are non-discursive[2] i.e. unconscious and are not subjected to critical thinking, Hillier labels them 'social knowledge'-buildings created by them are considered vernacular buildings. Nevertheless, Hillier asserted that the underlying configurational 'ideas-to-think-with' give order and purpose to buildings. He further draws on the concept of 'architectural competence' to refer to the 'ideas-to think-with' or 'how' designs are carried out. 'Architectural competence' is a concept that Glassie borrowed from Noam Chomsky's study of language. Architectural competence refers to "a set of technological, geometrical and manipulative skills relating form to use, which constitute an account ....how a house was though of..." (Hillier, 1996, p. 44). This set of skills is referred to by Bafna (2001) as an instrumental set.[3]

Buildings become architecture only when this instrumental set made explicit and raised to the level of 'conscious' and 'comparative thought' i.e. the designer is aware of their existence, knows how to use them, and reflects upon them. Thus, 'social knowledge' becomes 'analytical knowledge' manifested intellectually in the spatial and formal configurations of the building. Thereafter, architecture exists when "we build aware of the intellectual choice, and we therefore build with reason, giving reasons for these choices." (Hillier, 1996, p. 46). Therefore, architecture only exists when there is a theoretical intent within the design process that exceeds a design task. This intent manifested in the choices made through the design process should be recognizable in logical form that systematically organizes the building and can be detected and abstracted from the final physical form and its formal attributes.

Buildings, Logical Form, and Formal Language of Design

Up until the 19th century, form was equated with a description of the sensory properties of the formal attributes of buildings (Forty, 2000). Today the form also refers to the cognitive, conceptual, and affective properties also (Peponis, 2005). The concept of logical form was coined by Langer (1967) in her book An Introduction to Symbolic Logic. Langer noted that in order to understand the different forms and relate them to each other, one needs to not to know of things in the most direct and sensuous way, but rather know about things in terms of knowing what sort of things they are; how they are made up; and what their internal relations are. Langer further

1 This view of design can be allocated within the broader view of formal languages of design mostly linked to linguistics and Noam Chomsky. Researchers that have dealt with formal languages include among others Eisenman (1963) in his dissertation, The Formal Basis of Modern Architecture, Knight (1994).

2 Hillier (1996, p. 40) defined discursive rules as "...hidden structures that we think with that have the nature of configurational rules in that they tell us how things are to be assembled, and work below the level of conscious."

3 Bafna (2001) refers to the instrumental set as conventions, rules of thumb, and operational procedures through which designers conduct their design operations in order to foresee the final design product before its construction. Thus, the designer thinks of a design problem but thinks with the instrumental set. As long as this instrumental set is on the level of unconsciousness, Bafna (2001) refers to it as tactics i.e. "the operational moves that drive design exploration in the case of any individual design, typically not in the awareness of the designer" (p. 157). He further elaborates that tactics within the design process become a strategy once the designer becomes aware of towards his tactical approach and consciously formulates and reformulates his approach (Bafna, 2001). Bafna concludes that architecture is essentially the design of a strategy for the design of buildings.

asserted that in order to know about a thing, one must know the particular form it is taking in a particular case. Thus, Langer stretched the notion of 'form' beyond the common connotation of physical *'shape'*. In her definition, anything can be said to have a form if it follows a pattern of any sort, exhibits order, and internal connection. To distinguish the abstract principles of form that belong to the intellect from shape or physical form that belongs to the sensible, Langer coined the term *'logical form'*. Langer's definition of logical form corresponds to Aristotle's *'substantial'* form meaning that which structures and governs the changes of matter in order to make a thing what it is (Hill, 2007). Thus, logical form as substantial form is the source of the order, unity, and identity of objects. Nevertheless, one should note that logical form does not explain *'why'* an object is; rather *'how'* an object came to be.

Thus, the logical form of a thing is the way that thing is constructed, the way it is put together or structured. Thus, a building has a logical form when it has a structure. Nevertheless, 'structure' is not only associated with the material construction of something, but more importantly, with how it was structured and put together conceptually i.e. its underlying system of ordering. In other words, the structure of a building is *"the schema that provides the underlying order and structure for an aspect of an architectural design."* (Akin, 2002 p 410).

Since forms are what architects manipulate in order to express their design ideas, and since the formal structure reflects the logical form of the building, it is consistent to use the term formal language to refer to how designers express their design ideas in architecture. The term language is used here not to mean that architecture is the same as language but it is analogous to a language i.e. it has something in common with a language. This commonality is two folds: the first is where architecture through design mediates between things apart from its materiality e.g. communicate meaning among other things, just like language, and the second is that architecture can be related to the syntactic aspects of a language with its structural and grammatical rules (Forty 2000).

This view is not a new one: for instance, Sebastiano Serlio in a series of books published between 1537 and 1575 treated architectural expression as a matter of language, and proposed that the treatment of different architectural elements, assembled according syntax, would evoke the use of the building. Voillet Le Duc (Cited in Knight 1994 p. 24) called for a language for design:

"Let us now return to design. The first step in design is to know what we wish to do. To know what we wish to do is to have an idea; to express that idea; we require principles of form, that is to say, rules and a language."

In technical terms, architectural formal languages can be characterized by a vocabulary and a grammar. The vocabulary is made up of a distinct set of elements, while the grammar is made up of a collection of rules that embody the compositional principles or conventions that govern how the elements can be placed

in space (Eisenman, 1963; Flemming, 1990; Tzonis & Lefaivre, 1986; Knight, 1994). Accordingly buildings can be described as a set of design elements, either elementary or combined into components, placed in deliberate geometrical relationships i.e. they have an underlying formal logic, that are governed by compositional principles.

Because of the language-like nature of architectural design, when we understand the logical form of one building we also come to understand the form of a larger class of buildings that could be generated following similar principles (March, 1976). At the same time we come to understand what the architects brings to bear on the charge given by the client, how the program of the client becomes a particular kind of building. The appreciation of logical form helps us to link the particular to a sense of creativity and potentiality, to the structure of what is possible.

Smith House: Logical Form

Before we engage the formal analysis of the Smith House, a description of the house is a foremost. Located on 1 1/2 acres of land along the rocky coastline of Darien, Connecticut, and overlooking the Long Island South, the Smith House was built between (1965-67) as a vacation house for Fredrick and Carole Smith and their two children. The house is designed as stand-alone rectilinear mass, painted all in white, constructed of vertical wood siding, steel Lally columns, glass, and brick for its chimney (fig 1). The house is of three floors (fig 2): a living room and dining room opening to outdoor terraces, and kitchen with service areas on the ground floor. Entrance area, the master bedroom and accompanying bathroom along with a two storey living room on the first floor and two individual bedrooms and a bathroom, a guest-room and library-play balcony overlooking the space of the two-story living room on the first floor. The house is topped by an outdoor roof deck.

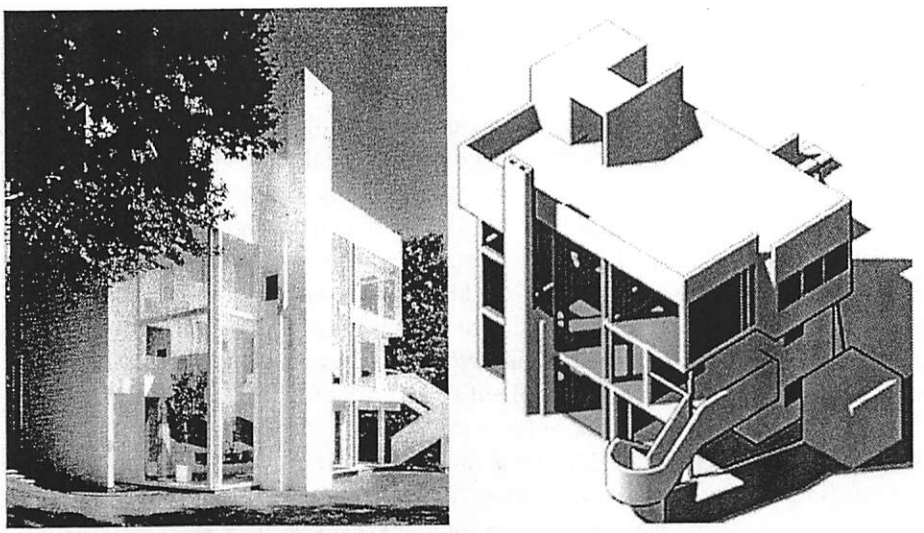


Figure 1 The Smith House is designed as a standalone mass in contrast with the surrounding nature

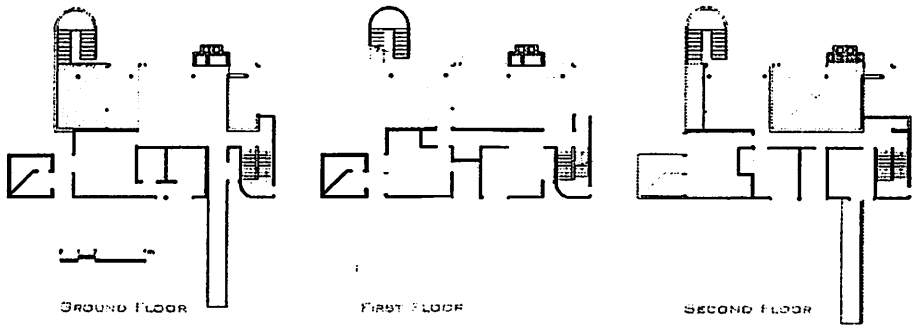


Figure 2Smith House Floor plans showing the spatial division of the house

The design of the house can be seen as a dialectic proposition between two separate but interrelated concepts: ideal and abstract, which has to do with formal design systems and principles, and the real and analytic that has to do with a design desiderata made up of constraints drawn from site and program, circulation and entrance, and structure and enclosure (Rowe, 1975). Although they are closely interrelated, interest of this paper lies in the clarification of the ideal and abstract that constitute the logical form of the house. Meier affirms the sovereignty of ideal and abstract through the 'colorlessness' and 'a-contextualness ' of the free standing mass of the house.

The generic antecedent form of the Smith House is a rectilinear block with a decisive frontality expressed its linearity (fig 3a). The longitudinal axis of the block runs parallel to the contour lines on a 45 degrees rotation from the E-W axis and opens up towards the view of the water. The importance of the rectilinear block lies in its metaphor as a scaffold where its inherent or implied order e.g. regulating lines of axis and symmetry and so on, act as a point of reference that provides the framework, which structures the relationships between elements and the spatial and physical massing of the design (Akin & Moustapha, 2004).

The interior volume of the house is subdivided into smaller volumes; Meier stratified the inner volume into three levels using two horizontal planes (fig 3b). He further utilized the longitudinal axis of the configuration to symmetrically split the house into two major zones vertically (fig 3c): an expansive open zone with a continuous volumetric system created through subtracting parts of the slabs, accordingly creating spatial interpenetrations of double volumes and interwoven spaces both vertically and horizontally through the interlocking of slabs (fig 3d), and a compact cellular zone where he created a static volumetric system. In such system, each volume is expressed as an individual entity and can only be experienced through sequential progression from one volume to another or via a connecting volume i.e. corridor (fig 3e). Accordingly, Meier organized volumetric cells linearly and inserted a transitional zone adjacent to the main axis that connects the separate volumes and mediates between the cellular zone and the expansive zone, thus accentuating the linearity of the configuration. Meier's linear configuration is clearly expressed through the planar geometry that defines the plan composition.

The programmatic requirements of the house lent itself patently to the two volumetric systems where the cellular zone houses the private functions such as the bedrooms, bathrooms, kitchen, and service areas, while the expansive zone houses the open spaces such as living areas, library and dining area (fig 3f). The creation of both volumetric systems was enabled by the use of a dual structural system: wood-framing bearing walls that surround the enclosed half of the house, while steel columns and support beams form the structure of the continuous volumetric spaces.

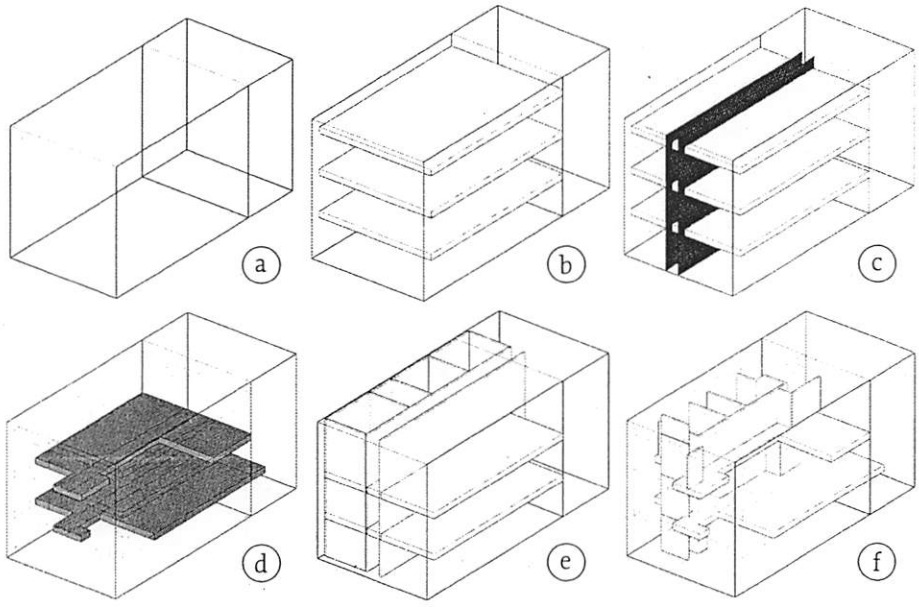


Figure 3 Animation of the internal volume of the Smith House through planar manipulation

The openness of the double volume inside is animated by the free standing structural columns separated from the outer skin, horizontal planes appear to be suspended within the orthogonal volume, and the walls define and delimit space (fig 4a). Through the animation of the inside volume by the interplay of columns, walls and knee walls, and horizontal planes, Meier provides a dynamic contrast between verticals and horizontals with a sense of 'purist' equilibrium through the balancing of these elements within a cubic volume. As such, these elements acquire a double condition; a structural role in materiality and construction and an architectural role in articulation and animation, thus becoming regulating elements that intellectually structure space and guide form organization.

Through the vertical and horizontal stratification, the generic form can be dually conceived either as a solid mass or as a series of planes juxtaposed together forming a 'thick and layered bar'. These linear bars that are straight and orthogonally organized in layers are marked by the most basic architectural elements of columns and walls (fig 4b). The overall layering is further accentuated through the emphasis on the circulation corridor running across the longitudinal axis and the introduction

of a 90° degree transverse secondary axis marked by an entrance ramp leading to the main entrance (fig4c). The dialect between the mass and the layers recalls Le Corbusier's notion of mass-surface in which a sense of ambiguity is created in the figure-ground relationship where form can either be read as either 'mass', or solid that has been cut away or 'surface', that has been built up by an addition of a number of layers or planes (Eisenman, 1963).

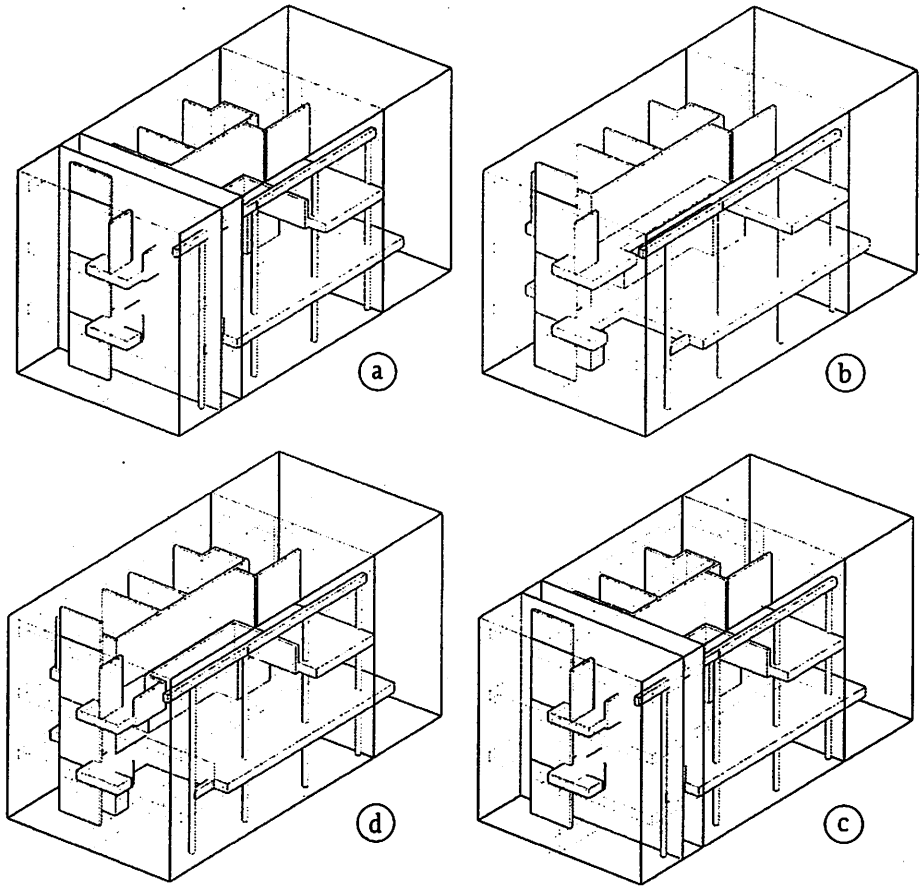


Figure 4 the manipulation of architectural elements to create the internal character of the House

Externally, the rectilinear block is not left in its platonic state; its in-elasticity is lessened and animated through subtraction and the 'collagist juxtaposition' of forms or parts of forms against or through the rectangular block of the house; Meier subtracted a part of the side of the block to emphasize the stairs and on the other side Meier subtracted two mass to create terraces on the ground and first floor (fig5a). He further added a vertical chimney across from the entrance ramp, and a sculptural stair projecting outside the block in a diagonal relation with the main stairs inside (fig 5a). The outer skin was further animated by window fenestration and the expansive use of glass in the facades (fig 5b, 5c). Innately, Meier created a figure comprised of

platonic forms juxtaposed in asymmetrical but balanced composition and animated by the use of the basic architectural elements such as the point, line, plane, and mass.

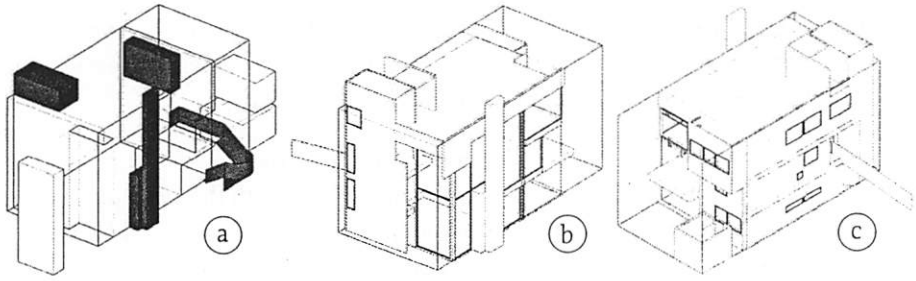


Figure 5 Animation of the outer skin of the House through addition, subtraction, and fenestration

The overall configuration of the specific form is not random; the block has been designed on an ideal geometric matrix. The allocation of walls, columns, subdivisions and additions, and the overall massing is based on ideal geometries and disciplined through Meier's use of modules and proportional systems such as the 1:√2 ratio. The overall dimension of the rectilinear block is based on the ideal geometry of two squares of 26ft x 26ft (fig 6a) juxtaposed together giving the block the total dimension of 52ft x 26ft with the overall ratio of 2:1 where a 1x1ft module standardizes the actual plan except for the allocation of the columns. The longitudinal axis of the block subdivided the house equally marking the edge of the corridor as mentioned earlier. The over block is further subdivided in four smaller quads; the edge of the first quad defines the beginning of the house's main mass, while the edge of the third quad marks the edge of the entrance ramp. Thus, the main mass of the house is within the Palladian ratio of 3:2.

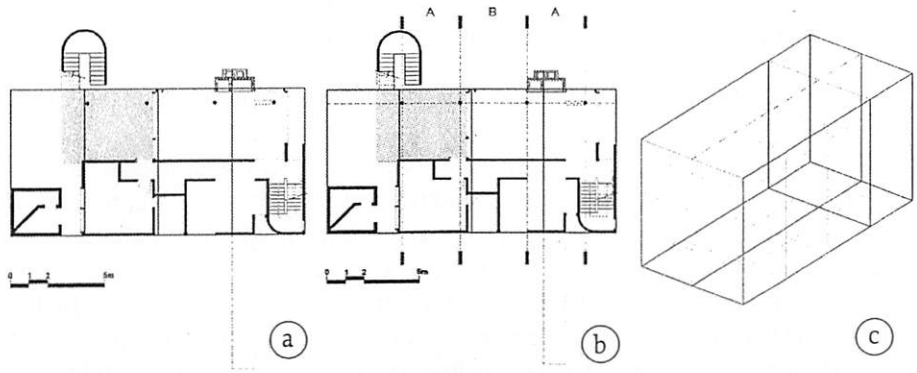


Figure 6 the geometry of the House: a two squares juxtaposed delimit the whole plan, b the module of the columns, c a 3-D of the overall organizing grid

One point though, at face value, the organization of the house seems to be based on the use of the golden section and the 1:√2 ratio, but after close examination, these geometries approximately allocate design elements but do not account for their location exactly. Their use was perfected by Meier in Smith's the direct descendent,

the Douglas House a couple of years after. Furthmore, unlike Morton's (1973) commentary about the equally spaced structural columns inside the house, these columns are not equally spaced: the span between the two intermediate columns is a feet and a half longer than the two outer spans on each side giving the house an A, B, A (fig 6b) rhythm rather than a constant one. This however, does not lessen their value as a register of the Cartesian grid used within the design.

As noted from the analysis above, the specific form of the house can be read as interplay between a figure i.e. the articulated generic form with the additional forms juxtaposed together and their spatial animation, a design field i.e. the gridded matrix with the regulating lines and proportional systems and the interaction between the previous two. As such, the logical form of the Smith House can be thought of as a three-dimensional architectural device that provides the matrix for ordering the volumetric entity. This geometrical matrix controls the overall dimensioning of the rectilinear form, marks the allocation of all structural grid/s, walls, and animated forms, and regulates strategies of addition and subtraction both locally in relation to each other and globally in relation to the overall form. Thereafter, the aesthetics of the House can be read not in the final form, rather, in the interaction between a formal language, and a design desiderata where each affect each other within the constitution of a logical form.

Conclusions

As importance, in this paper, is shifted from describing the physicality of the Smith House to understanding its logical form, we can conclude that a large part of its aesthetics appreciation lies in it being less of a traditional dwelling and more of an abstract idea of 'how' a house might be rethought of from first principles and elements; its form is of basic elements of architecture i.e. the column, the plane, mass, and volume configured together within a logical formal system.

This paper suggested that the aesthetics of exemplary building, such as the Smith House, do not only lie in their tangible and sensory attributes, it is also manifested in 'how' buildings came to be in their corporeality. This 'how' is ordered by logical form that operates between the abstract and the real simultaneously capturing the conceptual essence of the architectural work and guiding its physical manipulation. This aesthetic reading of architecture is only possible through a 'close reading' where the intellect is activated to distil the abstract from the concrete and reconstruct it logically and constructively. Furthermore, as can be seen from the formal analysis of the Smith House, the manipulation of the logical form not only skillfully articulates the corporeal form and satisfies normative criteria of order, but also brings in deeper thought and theory and renders the non-discursive discursive resulting in architecture that involves critical thinking and reflection rather than mere application of knowledge.

The importance of studying logical form and presenting it constructively is multi-facet: as the conceptual essence of a building is perceptually manifested, a better

understanding of the building in terms of formal ordering and organization is possible, thus opening it up for theoretical debate. Additionally, this type of analysis describes an architectural work at different generative stages, thus, establishing links that are not immediately available to the viewer, accordingly a better understanding of the design process can be achieved. Moreover understanding the underlying principles and order clarifies what the designer added to the design task that was not required by the design program or dictated by the site. Furthermore, these formal systems as the ones presented earlier can be used for the systematic description, interpretation, and evaluation of existing works of architecture. This can serve as a basis for communication, whether between teacher and pupil, architect and client, or critic and public.

Finally, addressing design constructively as shown earlier is not widely used in architectural education; but one might speculate that they can be used in design studios as strategies to manage the design process. The conscious use of design strategies can structure the design process especially in the early years and provide a quasi-rational base for the development of an architectural work. Although, it is debatable whether design can be taught, the capacity of 'doing' design can be greatly developed by reconstructing precedents.

Photograph credits

Photographs are from the book Richard Meier by Kenneth Frampton. (2002) by Electra Milano, and distributed by Phaidon Press. Photo Credit Studio Meier: Figures 1a by Scott Frances.

Illustration credits

Plans and sections were redrawn by the by Arch Nancy Assaf based on Meier's original drawings.

Acknowledgements

This research was made possible by a research grant from the University of Jordan.

References

Akin, Ömer., 2002. Case-Based Instruction Strategies in Architecture. [online] *Design Studies* 23 (4) pp.407-431. Retrieved January 2003, from https://www.library.gatech.edu/ejournals_frame.htm

Akin,O., Moustapha, H., 2004. Strategic Use of Representation in Architectural Massing. *Design Studies* 25:31-50. doi: 10.1016/S0142-694X(03)00034-6

Bafna, S., Hyun, M., Lee, H., Antunez, C., and Yi, L. (2009) The Analysis of Visual Functioning of Buildings," In Koch, D., Marcus, L., & Steen, J. (Eds.), Proceedings of the 7th International Symposium on Space Syntax, Stockholm: TRITA-ARK Forskningspublikation 1, 7.1-7.12

Bafna, Sonit, 2001. A Morphology of Intentions: the historical interpretation of Mies van der Rohe's residential designs. PhD. Dissertation: Georgia Institute of Technology.

Baker, Geoffrey H., 1996. *Le Corbusier: an analysis of form.* 3rd Edition. New York: Van Nostrand Reinhold
Burke, Edmund, 1757. *A Philosophical Inquiry into the Origin of Our Ideas of the Sublime and Beautiful.* Ed. James T. Boulton. Oxford: Basil Blackwell (1985)
Cassirer E, 1955. *The Philosophy of Symbolic Forms.*, New Haven: Yale University Press
Clark, Roger H., Pause, Michael (1996) *Precedents in Architecture.* 2nd edition. Van Nostrand Reinhold, New York.
Classie, Henry H. (1976). Folk Housing in Middle Virginia: a structural analysis of historic artifacts. 1st ed.Univ Tennessee Press
Dahabreh, Saleem M., 2006. The Formulation of Design: the Case of the Islip Courthouse by Richard Meier . PhD Dissertation: Georgia Institute of Technology.
Din E, Economou A., 2011. Surface Symmetries: The Smith House Revisited. [online] *International Journal of Architectural Computing,* 4.8: pp.485-505
Eisenman, Peter, 1963. The formal Basis of Modern Architecture. PhD. Dissertation: Cambridge, United Kingdom
Eisenman, Peter (1999) Diagram Diaries. Thames& Hudson, London.
Eisenman, Peter, 2008. *Ten Canonical Buildings 1950-2000.* New York: Rizzoli
Flemming, U. (1990) Syntactic Structures in Architecture. In M. McCullough, W. J. Mitchell and P. Purcell, Ed. *The Electronic Design Studio.* MA: MIT Press Cambridge, pp 31-48.
Forty, Adrian, 2000. *Words and Buildings: A Vocabulary of Modern Architecture.* New York: Thames & Hudson
Hale, J., 2000. *Building Ideas: An Introduction to Architectural Theory.* Chichester: John Wiley & Sons
Hill, Benjamin (2007) Substantial Forms and the Rise of Modern Science. *Saint Anslem Journal* [online] available at http://www.anselm.edu/Documents/Institute%20for%20Saint%20Anselm%20Studies/Abstracts/4.5.3.2c_51Hill.pdf. Accessed 5th July 2013
Hill, Richard, 1999. *Designs and their Consequences: Architecture and Aesthetics.* New Haven and London: Yale University Press
Hillier, Bill, 1996. *Space is the Machine: a configurational theory of architecture.* Cambridge; New York: Cambridge University Press
Kant, Immanuel (1770) *The Form and Principles of the Sensible and Intelligible World* [Inaugural Dissertation]. By Jonathan Bennet. [online] http://www.earlymoderntexts.com/pdf/kantinau. Accessed July 25th 2013
Knight, Terry, 1994. *Transformations in design: A formal approach to stylistic change and innovation in the visual arts.* Cambridge: Cambridge University press
Krier, R., 1988. *Architectural Compositions.*, New York: Rizzoli
Langer, Susanne, 1967. *An Introduction to Symbolic Logic.* New York:

Dover Publications

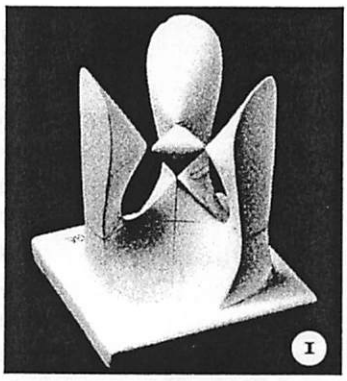
Liou, Shuenn-Ren, 1992. A Computer Based Framework for Analyzing and Deriving the Morphological Structure of Architectural Designs. PhD Dissertation: University of Michigan.

March, L. (1972) Modern Movement to Vitruvius: themes of education and research. RIBA(March): 101-109.
March, Lionel, ed., 1976. *The Architecture of Form.* Cambridge, MA.:Cambridge University Press,
Morton, D., 1973. Richard Meier. GA Global Architecture 22. 1st ed. *Japan Edita.* Unpaginated.
Pai, Hyungmin, 2002. *The Portfolio and the Diagram: Architecture, Discourse, and Modernity in America.* Massachusetts:MIT Press,
Peponis, John, Karadima C., Bafna, Sonit, 2003. On the Formulation of Spatial Meaning in Architectural Design. Proceedings of the 4th International Space Syntax Symposium: London, 2003.
Peponis, John.,2005. Formulation. *The Journal of Architectural* Vol. 10, pp. 119-133
Pevsner, Nikolaus, 1945. *Outline to European Architecture.* Revised edition (2009), Introduction by Michael Forsyth. Utah: Gibbs Smith
Rawes, Reg, 2008. *Space, Geometry and Aesthetics.* Hampshire: New York: Palgrave Macmillan.
Rowe, Collin, 1975. *Five Architects.* Oxford: Oxford University Press.
Schumacher, Patrick, 2011. *The Autopoiesis of Architecture* (vol. 1). Chichester: John Wiley& Sons Ltd.
Scott, Geoffrey, 1924. *The Architecture of Humanism: A Study in the History of Taste.* Rev. edition. Forward by Henry Hope Reed New York; London: W. W. Norton & Company, (1999)
Scruton, Roger, 1979. *The Aesthetics of Architecture.* New Jersey: Princeton University Press
Somol, Robert E.: 2010, Dummy Texts or the Diagrammatic Basis of Contemporary Architecture. In Mark Garcia (ed.) *The Diagrams of Architecture.* West Sussex: John Wiley and Sons LTD,, pp 88-91.
Tzonis A., Lefaivre L., 1986. *Classical Architecture: the Poetics of Order.* MIT Press, Cambridge, MA
Unwin, Simon, 2010. *Twenty Buildings Every Architect Should Know.* New York: Routledge,
Winters, Edward, 2007. *Aesthetics and Architecture.* London: Bloomsburry Companies.

Stochastic mathematical models in the process of creation – Xenakis and his legacy

Agnieszka Rumież
Poznan University of Technology, POLAND

Introduction: What does 'mathematics' mean to architects?



It is not easy to dispute upon the meaningfulness of mathematics in the times of an intense dichotomy of its impact: people cannot function in a contemporary technological world without the inventions inspired by theoretical mathematics. simultaneously, very few is interested in knowing what are its objectives and ambitions. The distance between laymen and professionals rarely takes such an extreme form.

Technology is only an obvious example of mathematical inspiration that went far from the kernel of so called pure reason. Logic and algebra vitally influenced artistic activity from antiquity; numbers helped to identify both measures and proportions, defined certain concepts of harmony that were driven from the natural world. Among all arts, it always accompanied architectural design, as it struggles in being immensely synthetic and thus needs great precision and accuracy.

Obviously, 'numbers went a long way to help reliably communicate [architectural] idea to someone else'[1]. The revival in understanding the importance of mathematics in architectural design can be assigned, inter alia, to the development of CAD programs and algorithms using great computational abilities of recent technology. This is one of the cases where the tool is converting the discipline.

Moreover, it is significant how formidable barrier can ignorance in basic mathematical models erect. Iannis Xenakis, while working as an engineer with Le Corbusier's studio, learned, conversely, the power of competence in this matter:

'[it] opened my eyes to the bewildering imperialism of technique over architecture, since I was repeatedly asked whether this or that project could actually stand on its own. Once in a while, when I didn't like a project, I would respond, "No, it won't hold up. You should construct it this way instead." And they listened to me[2].

Example adduced above shows possibly adverse consequences of unawareness in the abstract aspects of architectural venture. It proves at least that mathematical literacy

in its technical facet is obligatory for architects. But this is only where it starts.

'In all its long history extending back 25 centuries, mathematics has never been more vigorous, more active than now. Within this [XX] century mathematicians have experienced philosophical upheavals and intellectual advances as profound as those that have catapulted physicists into fame' **[3]**.

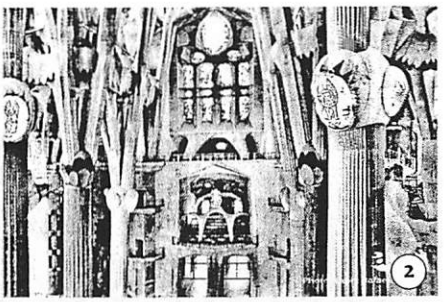
It entails that incorporating mathematics into architectural design in the XXI century can mean much more than only as a tool for communicating ideas, setting up proportions, measures and construction.

Mathematical models explored in contemporary architectural design.

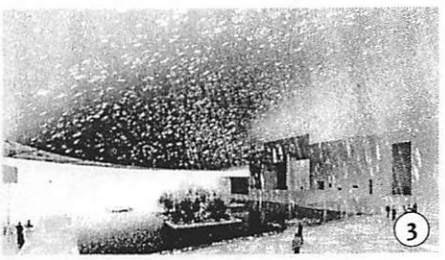
Calculus is one of the most fundamental fields of modern mathematics. Dating back to the seventeenth century, to mathematicians such as Fermat, Newton or Leibniz, has been constantly developed and inducing an innovative solutions in physics and technology.

Multivariable calculus is used for examining the notion and properties of surfaces, such as single-curvature (Frank Gehry, paper modelling design process), double-curvature (Gaudi, Xenakis, Otto) or self-intersection.

As an example may serve Sagrada Familia in Barcelona. Not only can one observe how hyperbolic paraboloid is used to determine a design of a great architect. It serves as a proof that new mathematics influenced a creative process at least as long ago as on the beginning of the XXth century.


2

In the post-digital world, where computation of complicated arithmetic is very time-efficient due to technology, immediate emergence of the visual representation of complex topologies is possible, and thus, CAD programs opens up new opportunities for digital architectural design.

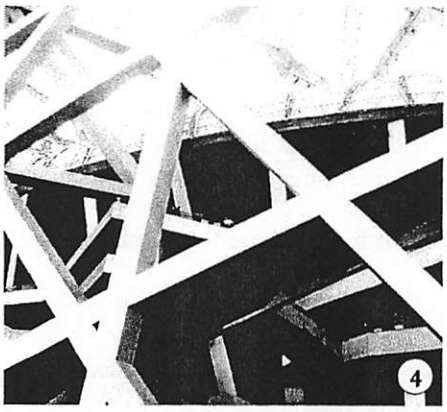

3

As a consequence, a new methodology of work with digital machine emerged, among others, perhaps the most cogent is evolutionary architecture. To introduce a concept of such a process it is good to point out its correlation to natural genetic selection:

'Evolutionary architectures propose the evolutionary model of nature as the generating process for architectural form.(...) A number of similar forms, "pseudo-organisms," are generated, (...) The selected "organisms," and the corresponding parameter values, are then

crossbred, with the accompanying "gene crossovers" and "mutations", thus passing beneficial and survivalenhancing traits to new generations. Optimum solutions are obtained by small incremental changes over several generations' **[4]**.

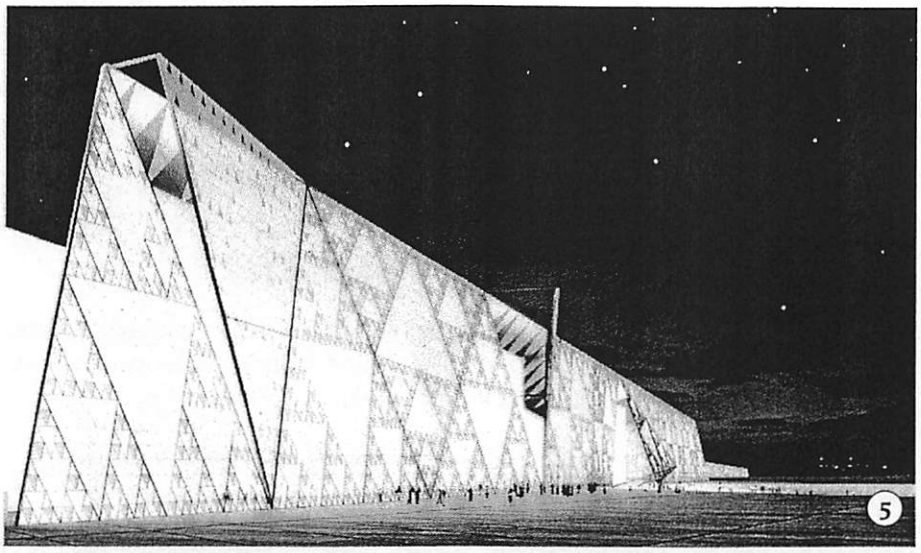
The vital aspect of such an approach lays in a distinction from a deterministic parametric design. As The latter outcome is quite precisely foreseeable, evolutionary architectures is a non-linear system, that emphasizes such an interaction of a human and a machine, that is very often surprising: rather emerging that simply rendered. This is where it is possible to see traces of chaotic (mathematically understood) models – both deterministic and stochastic.


4

Another potential concept are iterated function systems (IFS), that deal with the idea of self-similarity, both in deterministic and stochastic sense, and develop extraordinary visual form called fractals.

As an example of a direct use of one of the earliest invented fractals – Sierpinski's triangle, as a composition of the main facade may serve a project of Grand Egyptian Museum in Cairo.

'The museum is built against the Plateau Edge, which, like a clif, divides the site into higher and lower sections, causing the building to become part of the extended plateau. This new Plateau Edge was designed as a vast, sloping, translucent stone wall, inscribed with fractal patterning **[5]**.


5

Among a lot of mathematical models used consciously or unconsciously in contemporary design, there is an explicit or hidden aspect of probable (not certain) outcome. Author wishes to elaborate upon the idiosyncrasy of those systems and present a creative implementation of those abstract ideas both in music and architecture of Iannis Xenakis, whose portrait will be introduced further on.

Stochastic systems: explanation and application.

XXth century, can be seen as an age that overcomes deterministic credo. It is an epoch that kills Laplace's demon (1814) – a hypothetical intellect that knew exact location and momentum of every particle in the universe and thus was able to compute unambiguous future state of it on any given time.

Not only Heisenberg uncertainty principle, also quantum mechanics and chaos theory, all dynamically developed in XXth century and still vividly explored, prove that indeterminacy is a primordial trait of the natural world as we understand it nowadays.

Process which subsequent state is 'determined' probabilistically is called stochastic or random. While the second notion is more widely recognised, the former reveals an important semantics; *Stochos (gr)*, means aim. From this standpoint, real world populated with stochastic processes is not stripped from causality and order. Only laws and rules are equivocal and thus, less obvious and mechanical.

To show an example of process described above, it is good to present a so-called Brownian motion. While it was first observed by a botanist Robert Brown in 1827 when he looked through the microscope at particles found in pollen grains in water, it was probably more significant when adopted to the more universal model of atoms and molecules by Albert Einstein some time later **[6]**. Nevertheless, the Brown's recognition was as follows: the dust moved through the water but it was not possible to determine the mechanisms that caused this movement.

Brownian motion, later formally defined, is only one of many already existing stochastic models that are used to describe processes in the real world.

Nevertheless, for mathematicians not particular applications but an abstract aspect of the process is meaningful; this is the ability to generalise that made this model so much more powerful, at least for the sake of mentioned proof of existence of atoms.

Stochastic Xenakis, Abstraction and family of composition.

It is, analogically, the same Abstraction that allows such an artistic expression that exceeds a particular spatial, temporal or material context: '*Abstraction here is meant in the sense of conscious manipulation of laws and pure ideas, and not of concrete objects*'**[7]**.

This kind of approach to mathematical models, especially stochastic, was applied by Iannis Xenakis, one of the most influential composers of XXth century. Not only was he a musician, but was one of the collaborators of Le Corbusier in his atelier in Paris (1947-59).

As Xenakis formal higher education was in the field of civil engineering, and that was his initial assignment in architectural studio, his understanding of algebraic expressions and other logical mechanisms was very deep. He did not stop his recognition on technical issues though. His main concern was not a particular application, but the language of abstract rules that can be a foundation of the idea itself and, if applied to specific matter, an artistic object.

His decision to be more engaged with music rather than with architecture seems to be biographical not ideological. It was connected with a certain disappointment with the manners of the occupation rather than with the essence of the art field:

'When I decided to do only music, I was very distressed because architecture was very important to me. I did it because I had to make, a choice. Either go into research or become a businessman. In the sixties, I went to architects' studios and said: "Here I am! Let me introduce myself as an architect who would like to collaborate, but I don't want to be someone's slave; I want to do research". That was impossible' **[8]**.

For this reason, Xenakis research was based mainly on his musical practice and writings upon composition, but his contribution to architectural research cannot be omitted. Moreover, Xenakis admitted in 1984: *'I encoutered the same type of problems there that I still encounter in composition and for me, Le Corbusier's work was a sort of bridge between architecture and music'* **[9]**.

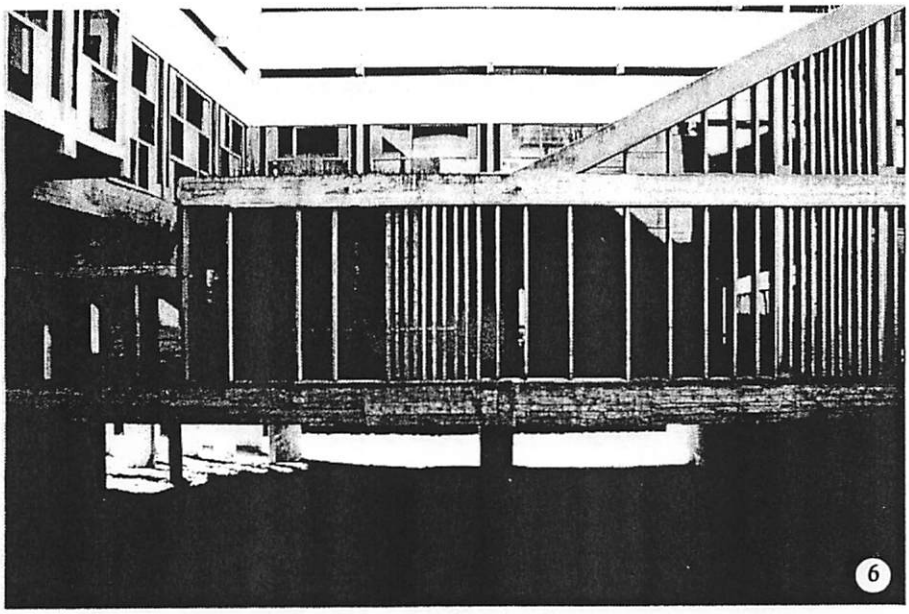
Nevertheless, it was in *Formalised Music* where Xenakis stated his manifesto upon the integration of artistic expression which is a form of composition which is not the object in itself, but an idea in itself, that is to say, the beginnings of a family of compositions **[10]**

This integration is possible due to, inter alia, nature of ideas – which is abstraction and to the fact greatly expressed by a composer: *'It is not the ear that hears, but intelligence... [Music] is the art of thinking'* **[11]**.This may be as well extrapolated to architecture which is to say that it is, after all, rather intellectual than visual.

Metastaseis and La Tourette.

Dominican Convent in Éveux near Lyon was commissioned to Le Corbusier in 1954. While his attention was suspended on Chandigarh project already **[12]** and Xenakis had expressed his will to be named a chief architect for an entire project, young Greek approved by his employer used this opportunity to fling himself into a serious architectural research.

They were both working in more or less similar period on the invention of so-called *Undulating Glass Panes* which is called by Sharon Kanach *'one of the most logical and beautiful – emblematic and permanent – outcomes of the Xenakis-Le Corbusier collaboration. (...) The result is the added dimension of rhythm in architectural space'* **[13]**.

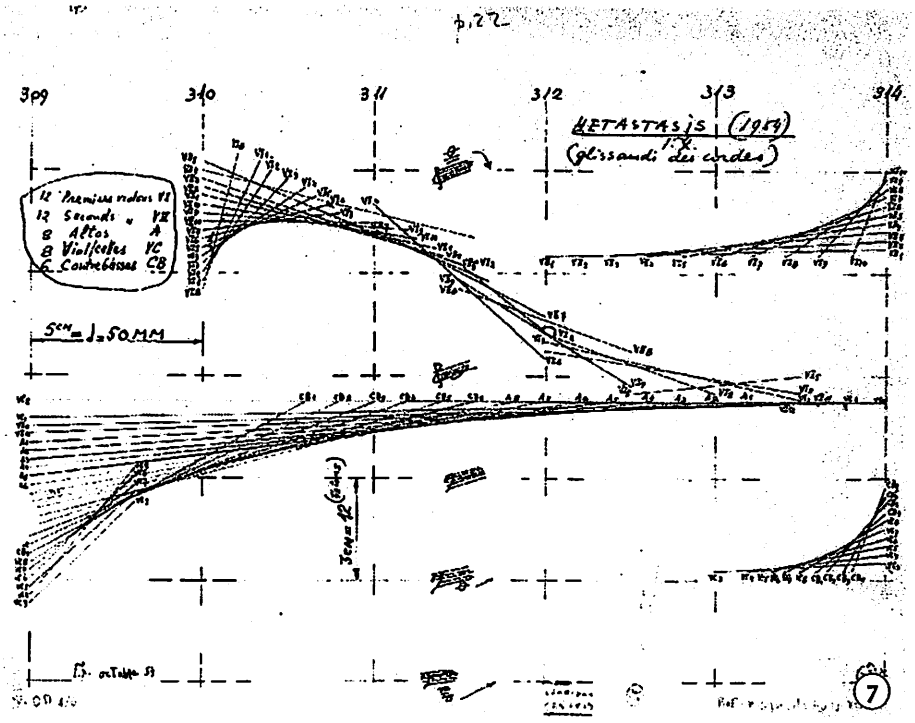


This system of glazing is characterised by one of the primary modern rules for architecture. Glass panels are independent of the supporting structure. Thin frames for them are made on site or prefabricated with reinforced concrete. Spacing of frames is arranged according to mathematical progression. For St Marie de La Tourette that was a Modulor: system of proportions - series based on Golden Section and scale of human body.

'Here, the Modulor's dynamics are given a free rein. The elements are confronted in two Cartesian directions, horizontally and vertically, by masses. Horizontally, we obtain continuous variations of the density of the frames, much like undulation in elastic mediums. Vertically, we create a harmonic counterpoint of variable densities. Both the red and blue series of the Modulor are used, either separately or intermingled, thereby creating subtle balances, summarizing the two Moduloric processes. **[14]**.

The spacing used in the convent is not a simple combination of series. By the use of only width from Modulor, controlled proportion between elements is secured, but a distribution of them is stochastic. For the amount of those elements is sufficient, the randomness of such an approach disappear in favour of an impression of ruled phenomenon of undulation.

Metastaseis is a composition for symphony orchestra of sixty musicians, where Xenakis applied series of Modulor. They were very suitable because of a specific additive property of Golden Section that is a base of it. This unique ability to regard ideas per se, eliding their material context, made it possible for Xenakis to deal with the same problem in architecture and composition simultaneously.



Nonetheless, Metastaseis apart from being based on Le Corbusier's series deals with the problem of dichotomy of sound (spatial trait) and duration (temporal trait) of notes that was relevant for several centuries of music history. That state of affairs was correspondent to the paradigm of classical mechanics, where time is objective and external to matter and its motion.

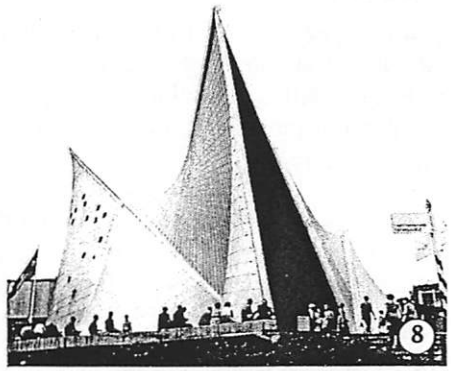
'Relativist mechanics have destroyed this approximate conception and has incorporated duration into very essence of matter and energy. In Metastaseis, duration is treated in relativist manner. Following this order of ideas, one of the essential applications is that the six algebraic and tempered intervals of the twelve-tone scale are emitted in durations proportional to the pitch relationships. Hence, scales of six durations accompany the emission of intervals[15].

Philips Pavillion, Polytopes and polyvalence.

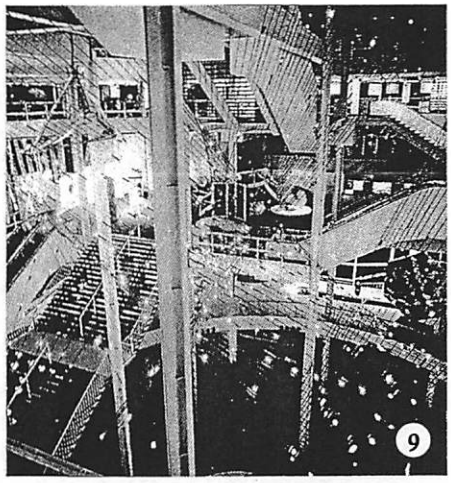
The idea of integration of arts was explicit from the earliest years of Xenakis' conscious artistic actions. It was widely expressed in Philips Pavilion for Brussels World's Fair in 1958 and analysed in his seminar 'Notes towards "Electronic Gesture"' from the same year. Xenakis stated there his admiration for the new possibilities that occurred with the new technology of electro-acoustic techniques.

'In this respect, the Philips Pavilion (...) represents a first experiment in this artistic synthesis of sound, light, and architecture, an initial step towards an "Electronic Gesture". I will conclude by saying that a new conceptual consciousness, abstraction, and a technical infrastructure, electronics, are currently stirring human civilization at this very hour'[16].

The Philips Pavilion astonishing concept was possible due to surprisingly innovative thinking of an investor representative, the artistic director, Luis Kalff, who suggested in his conversations with Le Corbusier to '*demonstrate the sound and light possibilities of Philips' technologies rather than to display any of their actual products*'[17].


8

For this reason, a sort of spectacle has been prepared. Audial part of so-called *Poeme Electronique* consisted of music of Varese (8 minutes of a main composition) and Xenakis (2 minutes of an interlude). Visual Part was designed by Le Corbusier himself and presented on 4 projectors diffusing the images simultaneously. Finally, architecture and its construction was prepared almost exclusively by Xenakis. The form was experimental: never before hyperbolic paraboloid was used as a self-supporting structure. Most of the potential contractors claimed that building it is totally impossible. Nevertheless, it was finally constructed with a 5-cm-thick shell of reinforced concrete and populated with all elements that were necessary to enclose the spectacle.


9

This project was an initial attempt for constructing a *family of compositions.* It was further on developed by Xenakis into an artistic object called *polytope*.

Polytope is an 'electronic sculpture combining light, music and structures'[18]. First of them was created for the sake of the French Pavilion for the World s Fair in Montréal in 1967. Xenakis, in contrary to Philips Pavilion situation, was not commissioned to designing the architecture, which was done by Jean Faugeron. *Rather, Xenakis created a virtual architecture within the existing structure(...). This provided the platform for five intermingled webs of steel cables based on Xenakis' signature-grandiose yet minutely calculated-hyperbolic paraboloid'.*

The event was surprisingly intermingled. The music was independent from the light spectacle. That incorporated a spectator into an intellectual perceiving of the stimuli; one signal is not subjected to another, thus, cross-references are made not allegorically but freely or even stochastically. For this reason, those artistic objects are free from specific interpretation, so can be repeatedly re-interpreted.

Summarise

Mathematics have always been present in architectural design. When its descriptive language and constructions were relatively simple, it was, in a vitruvian sense, integrated with a discipline. In the span of history, this relation was often loosened but modern movement and contemporary mathematical achievements redefined this connection.

In the post-digital era new computational capacity revitalised it even stronger, enabling a previously burdensome calculations to be done instantaneously. As a consequence, some new mathematical models could be applied to architectural design efficiently and some new techniques has been developed.

With an example of Iannis Xenakis, stochastic processes are presented as a cogent, but rarely used mathematical model, simultaneously in music as well as in architecture. While XXI century is an era of uncertainty and relativity, architectural design should explore this quite abandoned or maybe not fully utilized tool in the process of creation.

References

[1] Stelle, B.,2010. Weapons of the Gods. In: Burry, J., Burry, M., 2010. *The New Mathematics of Architecture*, London: Thames & Hudson, p.6.
[2] Xenakis, I.,1980, Preface by Iannins Xenakis. In: Kanach, S., Xenakis, I., 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press, p. xvii.
[3] Hammond, A. J., 1979. Mathematics – Our Invisible Culture. In: Steen, L. A., ed. 1979. *Mathematics Today Twelve Informal Essays.* New York, Heidelberg, Berlin: Springer-Verlag, p. 15.
[4] Kolarevic, B., 2001. Designing and Manufacturing Architecture in the Digital Age, In: *Architectural Information Management*, 19th eCAADe Conference Proceedings, Helsinki, 29-31 August 2001, p. 119.
[5]Peng, H.,Archer, F., unpublished project description. Cited in: Burry, J., Burry, M., 2010. *The New Mathematics of Architecture*, London: Thames & Hudson, p.93.
[6]Compare with: Merriam-Webster Dictionary, http://www.merriam-webster.com/dictionary/brownian%20motion, access: 13-11-2013.
[7] Xenakis, I., 1958. Notes towards an "Electronic Gesture". In: Kanach, S., Xenakis, I., 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press, p. 131.
[8] Xenakis, I., 1976. Arts/Sciences:Alloys, Cited In: Kanach, S., Xenakis, I., 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press, p. 119.
[9] Xenakis, I., 1984. On Le Corbusier, In: Kanach, S., Xenakis, I., 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press, p. 123.
[10]Compare with: Xenakis, I., ed. 1992. Formalized Music, Hillsdale, New York: Pedragon Press.
[11] Kanach, S., Xenakis, I., 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press, p. 126.
[12] Compare with: Ibidem, p. 51.
[13] Ibidem, p. 41.
[14] Le Corbusier, Xenakis, I.,1955. Modulor II, Cited in: Kanach, S., Xenakis, I., 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press, p. 45.

[15] Ibidem, p. 46.
[16] **Xenakis, I.,** 1958. Notes toward as „Electronic Gesture". In: Kanach, S., Xenakis, I., 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press, p. 134.
[17] **Compare with: Kanach, S., Xenakis, I.,** 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press, p. 93.
[18] **Kanach, S., Xenakis, I.,** 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press, p. 199.
[19] Ibidem, p. 203.

Bibliography:

[1] **Burry, J., Burry, M.,** 2010. *The New Mathematics of Architecture*, London: Thames & Hudson.
[2] **Kanach, S., Xenakis, I.,** 2008. *Music and Architecture*, Hillsdale, New York: Pendragon Press.
[3] **Steen, L. A., ed.** 1979. *Mathematics Today Twelve Informal Essays.* New York, Heidelberg, Berlin: Springer-Verlag.
[4] **Kolarevic, B.,** 2001. Designing and Manufacturing Architecture in the Digital Age, In: *Architectural Information Management*, 19th eCAADe Conference Proceedings, Helsinki, 29-31 August 2001.
[5] **Xenakis, I., ed.** 1992. Formalized Music, Hillsdale, New York: Pedragon Press.

Photos

[Fig.1] Gerd Fisher, Cubic with four A1 double points.
Fischer, G., 1986. *Mathematical Models*, Berlin: Akademie-Verlag, p. 16.
[Fig.2] Gaudi's Sagrada Famiia, 1917.
http://www.architectural-review.com/gaudis-sacred-monster-sagrada-familia-barcelona-catalonia/8633438.article, (access: 13-11-2013).
[Fig.3] Louvre Abu Dhabi – Jean Nouvelle, 2007-2015
http://www.archdaily.com/298058/the-louvre-abu-dhabi-museum-ateliers-jean-nouvel/ (access: 13-11-2013).
[Fig.4] Beijing National Stadium, Herzog & de Meuron, 2003-2008, http://upload.wikimedia.org/wikipedia/commons/5/52/Bird%27s_Nest_Stadium_Structure.jpg, (access: 20-09-2013).
[Fig.5] Grand Egyptian Museum – Heneghan Peng, 2003,
Burry, J., Burry, M., 2010. *The New Mathematics of Architecture*, London: Thames & Hudson, p.92-93.
[Fig.6] Undulating Glass Panes in Saint Marie de La Tourette Convent, near Lyon, Xenakis and Le Corbusier1954-60, photo by Witold Oleszak, own resource.
[Fig.7] Study for Metastaseis, Xenakis, 1954.
http://sites.moca.org/thecurve/2010/08/22/previewing-iannis-xenakis-composer-architect-visionary/, (access: 13-11-2013).
[Fig.8] Philips Pavilion in Brussels – Le Corbusier and Xenakis, 1958.
http://upload.wikimedia.org/wikipedia/commons/e/e7/Expo58_building_Philips.jpg, (access: 13-11-2013).
[Fig.9] The Polytope de Montréal, Xenakis, 1967.
http://www.iannis-xenakis.org/fxe/archi/real.html, (access: 13-11-2013).

Workers Dwellings in Austro-Hungarian Monarchy: Trzic Slovenia

Domen Zupancic

Abstract

The paper presents the possible way to observe development of spatial structures from urban scale to architectural scale through the eyes of prediction of possible social events. There will be presented some examples of working settlements built in Austro-Hungarian Monarchy.

The industrial revolution has brought social changes and has changed a whole set of habits of citizens. The role of workers dwellings has been constantly at the edge of decent spatial organization. Generally the workers class was not concerned as an integral part of business management. Those general ideas may seem to be correct but there are several examples prove the opposite. In example one of the oldest set of dwellings for workers is Tell el Amarna in Egypt.

Organizing the site and setting dwellings on plot played a key role how social life is going to develop. Rectangular array with quite narrow streets is an optimized composition of a squared plot. The factor of build vs non build area reveals rather dense habitation. This density has an effect on social habits of settlers. The idea that the place was meant for slaves could not be taken as granted, the precise look on plans could expose open fire places, communal rooms and some private rooms. We could set a hypothesis that houses were built not for single persons but for families or some kind of community. Narrow streets in-between the houses with one square at the entrance expose that this community had restricted access or exit of the settlement. Here the idea is the opposite: controlling the community. Narrow streets are helpful for controlling the traffic of people on the streets; they could reduce the speed of moving the people. Those are the benefits for security.

The general question is: house units provide a quality of life with fire places and streets are provide quality of mass controlling for the ruler. This is some kind of "must to do" symbiosis.

In Austro-Hungarian Monarchy those working settlements were organized the same as described before. This formula helped both groups: the owners and the workers. In terms of economy this could be named: win - win combination. Here the story of architecture and spatial organization starts.

Tell el Amarna architectural structures for labour class

Site of Tell el Amarna is an interesting site; it may be understood as village for

workers. The ground plan is almost square shaped where dwelling units with narrow streets are surrounded by a wall with only one entrance. The whole structure has 74 units, dimensions of surrounding wall are approx. 68 x 68 m the plot size is estimated 4624 sqm. 'Units have traces of hearth, so using open fire was allowed' (Zupancic, 2012: 108). Slaves probably would not have their own fireplaces due to the general security. The free space between the units is rather modestly designed and could be a narrow street to enable optimal shading the unit's facades. The second hypothesis is the streets are designed to serve as bottle necks when rebellion happens. Both ideas are plausible and are derived from the built structures at the site.

Social function of the space can be interpreted and described as working settlement or village. Functional graphical analysis of the units indicates the place was used by more than one human, probably up to 4 people or even more. Number of inhabitants per unit leads us towards estimation of the village inhabitants. In case of single occupation is the number 74, when 4 per unit than is the number almost 300 (296), when 6 per unit the number rises up to 444 inhabitants. Those numbers are rapidly rising and the indispensability need is to have architecture with firm theoretical order with no design malfunctions.

Experimenting and setting the standard

The historic development of workers'colonies was initially studied by urban development researchers for a reason – to set the building code for new settlements. Large residential buildings of the 20th century and creation of huge new cities and residential neighbourhoods have focused the attention of urban planners on previous construction experiments with ideal cities. Housing in the period of Austro-Hungarian era (1867-1918) was not an experimenting field. The building typology was quite standardised: castles and palaces were used for royal class; villas with parks were used mainly for high class and growing bourgeoisie; multi storey houses with numerous rooms and flats were built for ordinary people and were generally used as renting places. Villages with houses and auxiliary buildings were growing slowly with indigenous internal developing path, almost like evolution. Urban and rural world coexisted and not paired in the landscape.

Development of workers housing was not introduced as an issue of ethics and humanisation of the labour living conditions. The general purpose was to gain better results in working process with fewer faults and less production problems. However the producing processes lean on labour force. The living conditions in tenement houses were inhumane: overpopulation, high level of crime, diseases, alcoholism and low level of education.

All those acute problems were solved by local city governments and industrial investors. 'No monarchs and state governments were interested in the social and economic problems of towns' (Hallas-Murula, 2005: 20). 'Indeed, workers are part of the economic and political system. The problem of workers' accommodation was elegantly solved; architects introduced template plans for houses, settlements and spatial organisation for socially vulnerable groups.' (Zupancic, 2012: 108).

In history one of the finest example of paring or the coexistence of the industrial structures, palaces and social housing is *la saline royale d'Arc-et-Senans* form 17th century. The author of assemblage of the buildings with gardens and with engineering structures is the architect Claude Nicolas Ledoux. Symmetrical and centralized spatial organization was not completely realized only half of the plan was finished. Ledoux source of inspiration was the idea: 'architecture should express the crafts and labour carried out there, and of their social relevance' (Evers, 2003: 318). Ledoux introduced *architecture parlante*, descriptive architecture in translation. With this kind of an approach he developed sense of place, an appropriate decision where such structures should stand or be positioned. However his ideas were merely idealistic the urban plan for *d'Arc-et-Senans* was in that time reasonable solution including social aspects, society needs, investor ideas and labour needs. The settlement is a result of an experimental science in terms of architectural theory combined with ideas of industrialization.

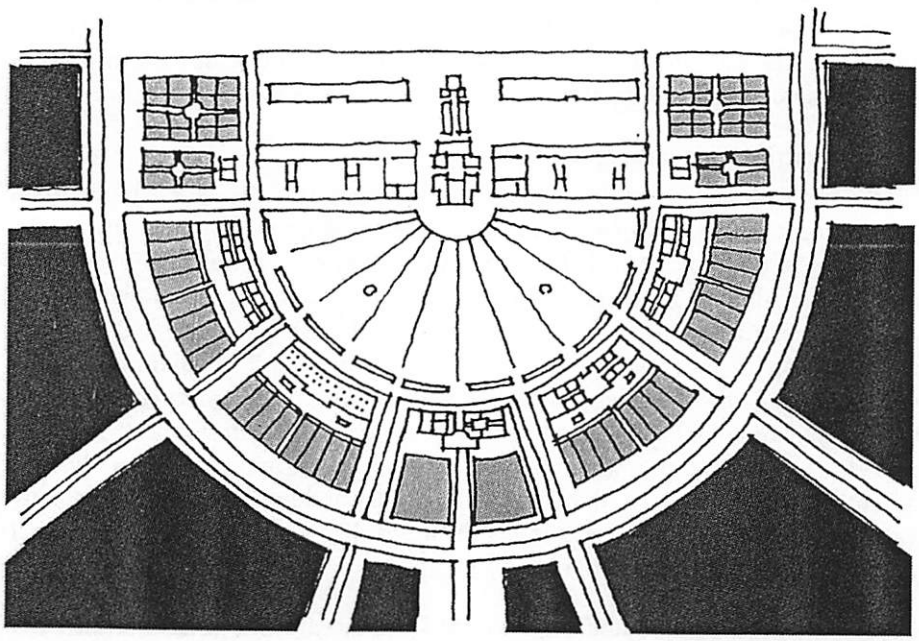


Image 1: Plan of la saline royale d'Arc-et-Senans architecture parlante by Ledoux. Sketch: Domen Zupančič.

Typology and terms of workers settlements

Our research of project group on historical centres of the Alps-Adriatic Community defined four types of settlements or urban patterns. Most general and widely used is worker's neighbourhood. The neighbourhood is inhabited by workers' families, most common the dwelling units (housing) is close to the industrial-production site. Inhabitants were employed in different factories. However housing was provided the functional and social quality were at stake. Areas were generally underdeveloped in terms of healthy conditions (low degree of light in rooms, no sewage and poor water service or not at all), criminal rate was high, no quality social life (theatre, parks, play

areas, sport, library). The owners of housing were not industrialists but real estate investors.

The next upgraded settlements were industrial settlements or neighbourhoods. How they differ from worker's neighbourhoods? In functional arrangement: the investor and the owner of housing was industrialist. Inhabitants were not mixed workers' families but they were only families employed in one factory or industry. The social effect was improved: people shared common problems with the same employer. The control was unified: the solution was generally adopted in the whole industrialized world. Generally the whole set of public buildings were placed in settlement (kindergarten, theatre, common restaurant, park). The level of criminal was lowered, hygiene standards were higher therefore diseases have been abolished and the most important was the effectiveness at working place.

In some countries were developed rural settlements as *zadruga*. They were functionally the same as industrial neighbourhoods. Difference was in the architectural typology of buildings and other build structures. Rural settlements were used for people dealing with agriculture; generally they were possessed by landlords. Those settlements were possible; the geographical and climatic conditions should be considered (flat fields, water sources, wind, etc.).

The last specialization of settlements was mining settlements. They were close to the mining locations and generally they were smaller than others or dispersed in one town. The structure of inhabitants was unified and the social role of space was common as in industrial neighbourhood.

Trzic

Trzic is the one of the finest examples in terms of workers dwellings in Slovenia. Town with factories is situated in narrow valley of the river Trziska Bistrica. Industrialist Edmund Glanzman was the owner of the cotton mill. The building structures were the same as described in Ledoux's *la saline royale*: the owner Glanzman lived in villa in the centre of Trzic, close to his villa the maiden's accommodation was positioned. The structure set on small narrow plot, the location could not offer any gardening in front of the building. More emphasis was placed on the structure; the façade has arched windows and has distinctive horizontal lines dividing storeys.

The maidens had to pass the villa when going to the mill and back. The maiden's accommodation and path way were controlled: protection them any criminal act or other deviation in social terms. The social role of architecture dialogue: labour life control.

Next location in Trzic is Preska, the housing pattern with eight semidetached houses with gardens. Location is diametrical to the maiden's building. One house has 4 units: two on the ground floor and two in the garret. Urban pattern is a rectangular grid with units at the edges with common rectangular square aligned with longitudinal axis of the pattern. Houses were inhabited by clerks.

Image 2: Slovenia, Trzic, Preska: housing with gardens and semi-public space. Photo: Domen Zupancic.

Axis is partly curved while follows the river trajectory. Northern part: Entering in this district we pass rectangular block building symmetrically designed however the building was demolished in recent history. This part of housing ends with building for factory manager. This building remained, however the site no longer reflects the prime spatial design.

Architectural dialogue is interesting: standing position in the middle of square offers a clear view towards chimney of the mill. Standing point is aligned with traffic entrance to Preska, too. The common solution was introduced by Ledoux. This nonphysical interaction ties different spaces on different location in one common place with strong expression of identity.

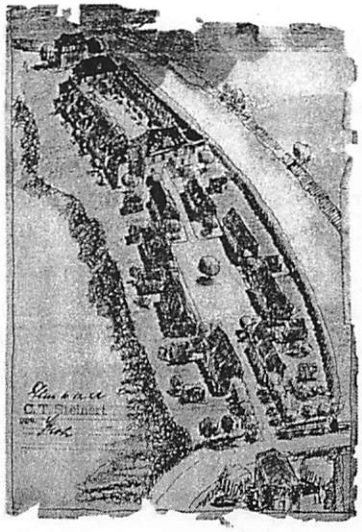


Image 3: Slovenia, Trzic: perspective drawing of Preska. Source: ZVKD Kranj, Slovenia.

Here we should point out the origin of the project; the architect was C. T. Steinert a non-Slavic, non-Slovene architect. The whole urban assemblage of the structures of the cotton mill has distinctive identity. Plans have typology of architecture from the Austrian Carinthia with German details and architectural elements. Trzic is not spatial experiment where combining industry processes it is just execution of the template industrial master plan. The intervention was merged with geographical

conditions at location. Additional units for workers were positioned close to the factory building. Building is longitudinally arranged with three link dormers on the long side with one link dormer at each short side. In the manner of architectural typology building expresses German influence. The slopes of pitched roof have more than 45° inclination. Steep inclination was used in Austrian Carinthia. Cellar and ground level are plastered and upper part has wooden coat. The building remained unchanged since it was erected in 19th century.

The structures are still in use and have not been changed for several decades. The cotton mill was closed in 20th century. Cotton mill in Trzic was quite modern in terms of technology used. Historian Mohoric explains how effective Austrian cotton mills were the 3rd in the world (calculating cotton bales / man) (Mohoric, 1960: 9-14). Effective production needed well organized production lines and organized (humanized) accommodation for workers. Social function was incorporated in urban planning and architectural design.

Image 4: Slovenia, Trzic: Austrian influence in architecture typology. Photo: Domen Zupancic.

Conclusion

Housing development for labour class was not aimed towards better life quality but towards better production results. Frist tenement houses were just investing targets for real estate investors to gain maximum profit from labour class. The land was an item for financial speculation. The step forward better social role of architecture was industrial neighbourhoods where the whole public service was planned and built. Results were positive for industry and for the society. Urban design and architectural planning proved as feasible way solving spatial problems for longer period: the structures are in use nowadays.

References

Dolgner, D., (2013): Der Architekt in Deutschland zwischen Historicismus und Jugendstil. In: Der Architekt: Geschichte und Gegenwart eines Berufsstandes. TU Muenchen.

Evans, B., (2003): Architectural Theory: From the Renaissance to the Present. Taschen, London.

Hallas-Murula, K., (2005): Suurlinn Tallinn. Museum of Estonian Architecture, Tallinn.

Mohoric, I., (1960): Bombazna predilnica in tkalnica v Trzicu. BTP, Trzic.

Zupancic, D., Juvanec, B. (2013): Material in oblika. UL FA, Slovenia.

Zupancic, D. (2012): Institutional Homes: The Evolution of Open Space in the Case of Some Workers' Colonies in History. Facta Universitatis Architecture and Civil Engineering, Vol. 10 No 2, p. 107 – 115. DOI: 10.2298/FUACE1202107Z

Straw Bale Wall Design Alternatives

Larisa Brojan

Introduction

This paper focuses on the straw bale wall functionality. It is evident from analyses of straw bale houses how diverse the design of straw bale building can be. Straw bale buildings worldwide represent the creativity of its builders and appearance diversity. From modern designs through décor enriched buildings, as the natural material lends itself to multiple architectural styles (Owens, 2009).

Straw bale building has many advantages especially in sense of ecological aspect which many times is also the main reason to build with straw bales (Jones, 2009).

Based on visual experience of architecture various feelings are generated. Therefore the comprehension of a space, building depends on personal preference. As Watt (1999) says, this is derived from a host of conscious and subconscious judgments, including personal values, beliefs and meanings; knowledge and experience of a building or space; and mental or visual stimuli based on prompts such as books, films and childhood memories.

Similar can be stated for every project in which individuals as self-builders implement through creativity their space comprehension experiences into design of their dwelling. That is in case of straw bale building which is recognized as a self-building technique evidently since the material is soft enough to be shaped. Therefore straw bale houses in many cases mirror the various aspects of owners' lives.

Basic information

Straw bales are discreetly inserted into wall composite since the layer of plaster which protects the straw from external impacts such as moisture is unavoidable, except in the case of temporary buildings when the straw bales can be exposed.

The straw bale building process can be characterized as learning by doing. It means that working process is less demanding and building technique to handle straw bales can be quickly learned. Most builders are first timers with no or little experiences and their work is based on theoretical knowledge obtained mostly from straw bale building guides or by participation on one of straw bale workshops. But for a sufficient dwelling environment well delivered details are crucial segment of design and building therefore comprehending a help from an experienced straw bale builder is reasonable.

Floor plan design doesn't need any special treatment; there are many possibilities especially when straw bale is used as an infill in timber frame structure which it is in most projects. Therefore also an open floor plan spaces can be created.

But when it comes to the realization at first special attention needs to be devoted to bales stacking, bales alignment and finally the crucial segment of plastering. Since most of builders apply the plaster by hand using simple tools, extreme precision is needed especially if leveled surface is wanted.

When bales are stacked, alignment is done by pushing and hammering the bales into right position. Next step is trimming which makes the wall smooth. Well aligned wall insures the static safety. Also many builders decide to increase the safety with mesh which also makes the plaster application easier. Plaster can be applied in case of straw building by hand or by machine. Manual, hand application is most common way though.

Bale orientation

Bales can be used flat or on-edge orientated. Bales orientated "flat" are placed perpendicular to their largest face—parallel to the plane of the tie hoops, and generally perpendicular to the straw fibers and bales orientated "on edge" are placed parallel to their largest face—perpendicular to the plane of the tie hoops, and generally parallel to the straw fibers (King, 2003).

Straw bale wall itself has certain minimum thickness of 40 cm when build in on edge orientated and 50 cm when build in flat orientated. Due to this thickness the design opportunity is taken by many straw bale builders. The openings can have for e.g. a seat or a shelf. This becomes dual an aesthetic and practical design element.

Categorization of wall surface types

For the purpose of this paper a categorization of wall surface types was formed. Final look of straw bale plastered wall mostly depends on application precision. Roughly, surface finish can be divided into four groups:

- No plaster
- Undulated wall surface
- Semi leveled surface
- Completely leveled surface

No plaster

Straw bale buildings with no plaster application are mostly set for a commercial purpose and build for temporary period. In past few years quite few structures were erected to promote straw bale building and to demonstrate the extensions of such a building. In Tallinn, capital of Estonia a huge temporary straw bale concert hall was built for a period of six months in 2011, Figure 1. The effect of the material is in uncovered straw bales, spray painted black. As the building is temporary, bales have not been plastered as normal straw construction would require but 'has been kept open to experience the raw tactile qualities of the material and accentuate the symbolic level of the life cycle of this sustainable material' (Salto Architects, 2011).

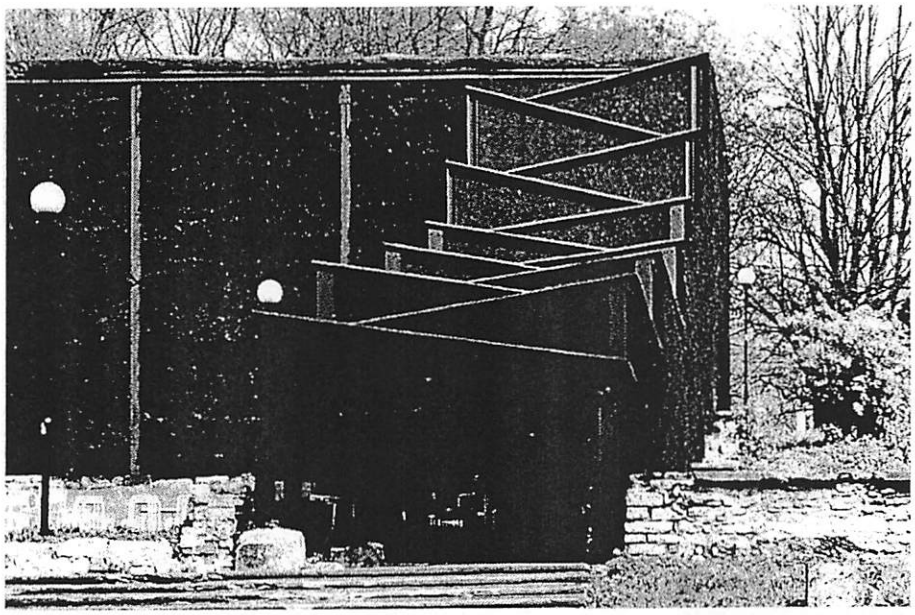


Figure 1. Straw bale Theatre in Tallinn, Estonia (Salto Architects, 2011).

An interesting showroom was set on 4th annual SF20/21 San Francisco Art and Design Show, Figure 2. 'Aim of the showroom was a reminder of an organic and earthy smell that permeated the space providing a distinct and its agricultural beginnings' (Meinhold, 2011).

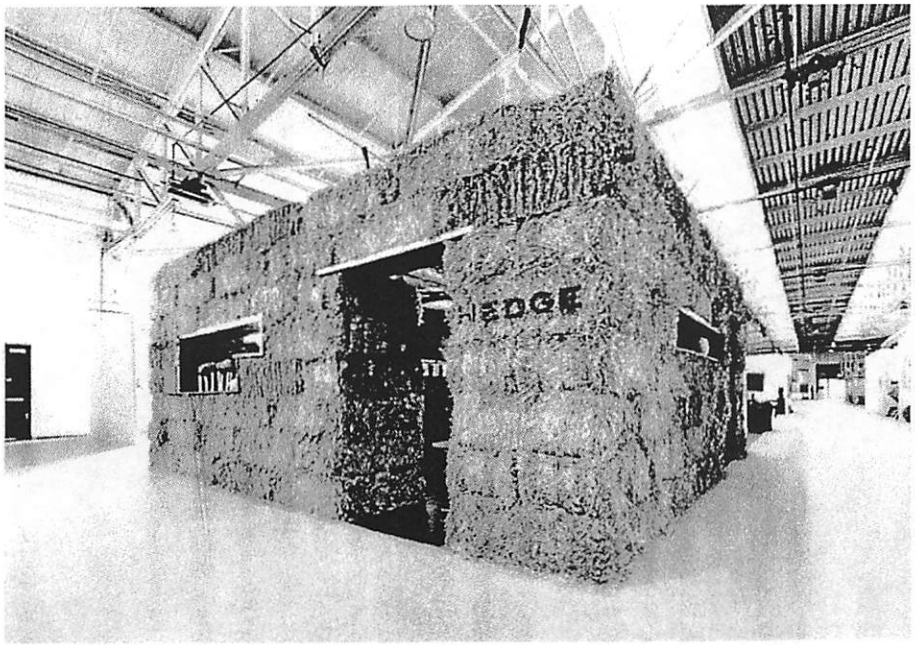


Figure 2. Straw bale showroom (Millman, 2011).

Undulated wall surface

Many builders decide to keep and expose the softness of bales. This effect is delivered with plaster application by exposing the shape of bales or simply applying more plaster on some segments of wall and not smoothing it too much as shown on Figure 3 and 4. Since the plaster is mostly manual applied and because the bales are soft an undulated surface is result. More irregular plaster application, more wall surface is undulated.

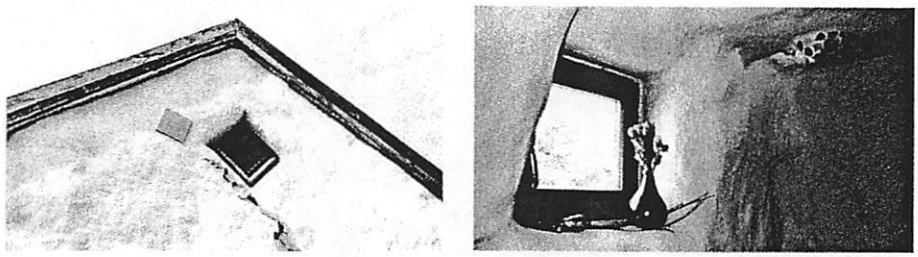


Figure 3, 4. Undulated wall surface wall outside and inside of a straw bale house.

Semi smooth surface

In this case wall surface is lightly undulating. Also, rounded corners and openings around windows or doors can be bull nosed to a nice radius, Figure 5, 6. Bales are normally at least twice as wide as timber frame construction and edges of bales are soft and neither right angle neither uniformed. Edges can be rounded manually during the plaster application or pre-done by mash straining. Both methods are widely used in practice (Lacinski, 2000). This kind of corner finish, rounded corner is also the most common one in straw bale building.

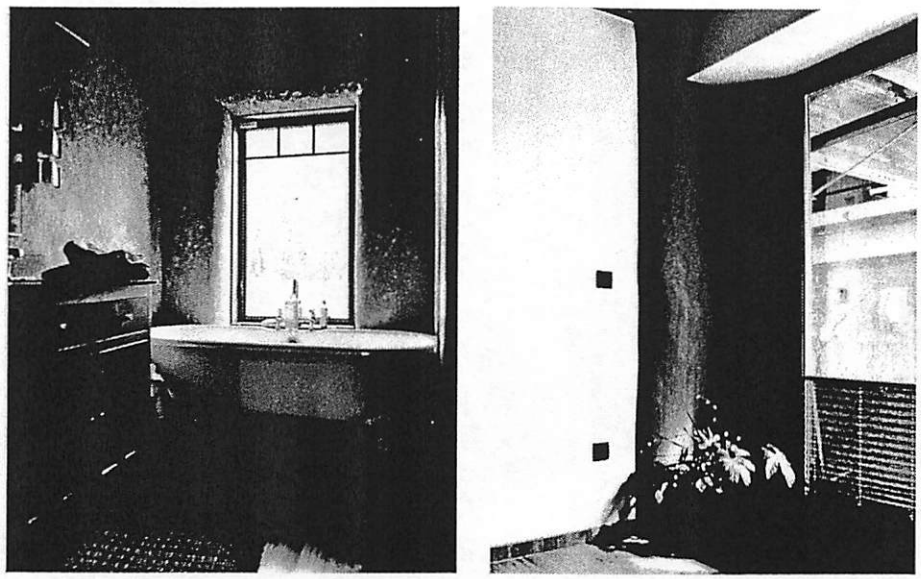


Figure 5, 6. Rounded/bull nosed corners.

Completely smooth surface

Completely leveled wall surface demands the most precise work among the discussed types of wall surface. This kind a surface treatment is mostly, but not exclusively found in straw bale structures which walls are closed with additional solid material as for e.g. wooden boards or when prefabricated wooden panel system is used plaster is applied by a machine and leveled with a frame, Figure 7.

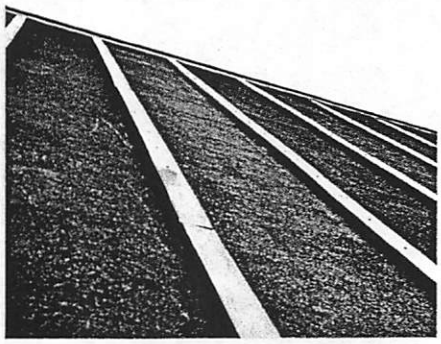


Figure 7. Example of leveled wall surface on Gateway Building in UK.

Straw bale wall decoration

There are many examples of implementation of art directly on/into wall – art as part of wall. Shape can be preliminary designed or is created spontaneously during plaster application. Owners mostly in the moment of inspiration leave the footprint of their creativity on the walls while plastering. Mostly interpretations of natural elements like sun, trees, leaves, etc. are used, Figure 8.

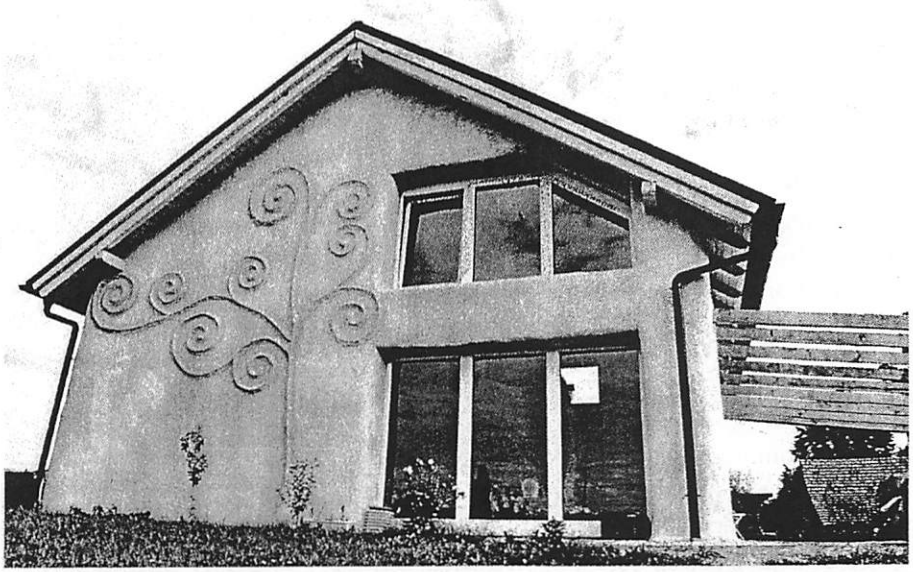


Figure 8. Decoration on exterior straw bale walls.

Creativity and functionality

To achieve optimum result a well think through concept is needed.

Concept which aims towards undulated wall surface, often incorporate decoration and furniture into walls as part of the wall. Niches, shelves, lights etc. can be created while plastering the wall, Figure 9,10.

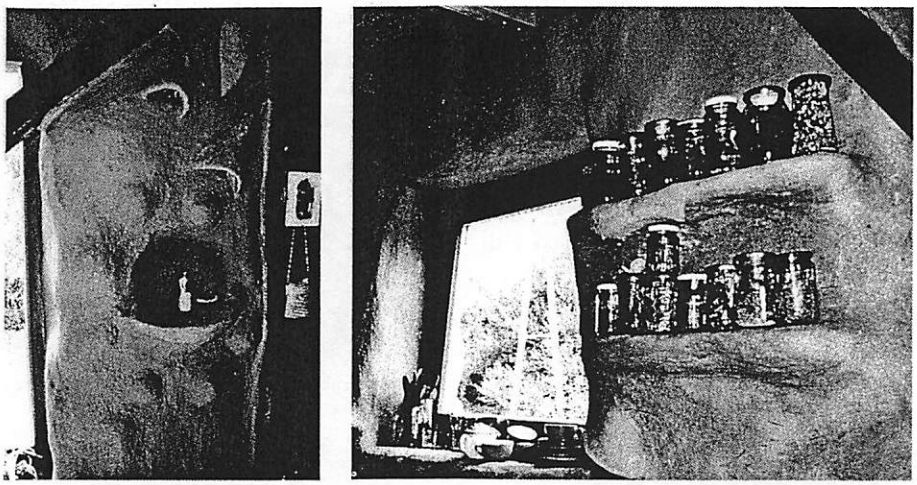


Figure 9,10. Furniture as part of the wall.

Many times the softness of curved walls is complimented in terms of its pleasant aesthetic. But to attain this kind of effect a finalization of curved details is crucial. Its realization is time consuming and demands extreme carefulness. Contrary, all kind of problems can appear. Morrison (2013) points out two main problems that occur in case of openings (window, door) shaping: 1) The shape isn't consistent from opening to opening, and 2) the curve protrudes into the opening too far. Even though the wall is curved, a trying to match each opening with a template from one window to the next will be a losing endeavor.

Discussion

Functionality of a space in dwelling unit is mostly supplemented with appropriate furniture. In case of straw bale walls special attention needs to be devoted to pre-determination of hanging furniture like cupboards or just wall decoration as pictures or other accessories. Since the plaster itself is not thick enough to hold all the extra weight and straw bale itself is to "soft" to hold extra items therefore additional substructure is needed.

The most common problem appears when reorganizing the room. Adding a new furniture – therefore if hanging elements are needed no matter how wall surface is handled load capacity is relatively low and substructure needs to be implemented.

One of the main problems engaged to wall surface appearance is discordance between undulated wall surface and straight lines of furniture. Similar dilemma appears when hanging a flat décor such as picture towards undulated wall surface. Considering the difficulties ad dilemmas caused by undulating it is practical decision to create extra storage space as part of the wall and also unexploited area is smaller.

Problem appearing of such rounded corners and undulated walls are details in connecting the elements wall and floor connection, Figure 7.

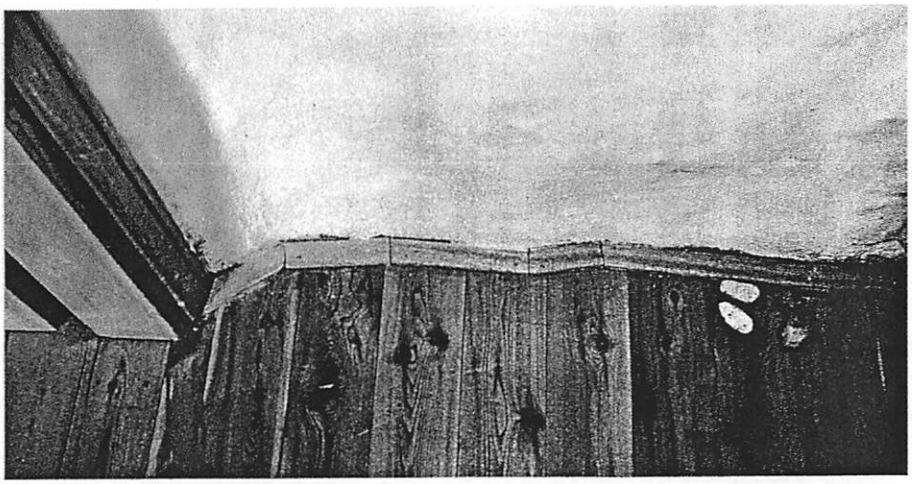


Figure 11. Detailing is time consuming.

Alternative possibility; Instead of cutting many pieces a simpler solution can be applied such as for example rope natural material with ability of folding or a recycled rubber material that is also highly flexible.

Conclusion

Emphasizing the natural quality of a building material by exposing the softness of the material through the surface treatment informs the observers about the possibility of its variety use.

Based on the diversity of design that straw bale building offers many requests can be realized. Straw bale building itself does not represent any functional disadvantages if details are carefully planned and delivered.

The results of straw bale design can meet the criteria of modern design and also can illustrate the comprehension of an individual. In any case, the user connects with his living space by creating it and in a way identify with the space he lives in.

There is no right or wrong when creativity in straw bale building is involved. But in any case, well delivered details are crucial to assure appropriate dwelling conditions. The overall picture that space as a result of creativity offers is important weather it is functional and serves to its purpose. In case of straw bale house design needs to be thought-out well to achieve optimum functionality but at the same time creativity is limitless.

References

Jones, B. (2009). "*Building with straw bales*". Devon, Green books.
King, B. (2003). "Load-bearing Straw Bale Construction". Ecological
Lacinski, P. et al. (2000). »Serious straw bale«. Chelsea Green Publishing Company, Vermont.

Meinhold, B. (2011). "An Amazing San Francisco Art Space Made of Straw Bales". ‹http://inhabitat.com›, (Oct. 20, 2013).
Millman, M. (2011). »An Amazing San Francisco Art Space Made of Straw Bales«. ‹http://inhabitat.com›, (Oct. 20, 2013).
Morrison, A., Kefee, C. (2012). »Modern look a straw bale construction«. Straw Bale Innovations, LLC, Colorado.
Morrison, A. (2013). "Watch The Curves" ‹www.strawbale.com›, (Oct. 20, 2013).
Owens, T. (2009). " The Pros and Cons of Straw Bale Wall Construction In Green Building«. ‹http://www.buildingwithawareness.com›, (Oct. 20, 2013).
Salto Architects (2013). " NO99 Straw Theatre«. ‹http://www.salto.ee›, (Oct. 20, 2013).
Watt, D.S. (1999): »Building Pathology«. Blackwell Science Ltd, Oxfrod.

Interior Design and Furnishings in Asian Traditional Houses: Comparative Analysis between Safranbolu and Kyoto

Keiko Nagata

1. Introduction

Before modernization, various local architecture and life-culture originated in each region and country in Asia. It is an argent task to understand the local architecture and life-culture properly and preserve them by re-evaluating the value of these things of unique local culture. It could be said that incorporating better elements into life through research while maintaining a unique culture is important in this period of globalization. Places you've come all the way to visit are boring with the same scenery and lifestyle everywhere. However, if you look at the world, there is a risk of community based environments and lifestyles being lost at once with rapid urban development and I think this is something that local administrators and architects should be aware of.

This paper aims at clarifying each characteristic of spatial design and life-culture of traditional wooden houses in Kyoto in Japan and Safranbolu in Turkey, both ends of Asian east and west, based on the comparative analysis of each climate and natural features. A background and the location of each city, and climate are analyzed while comparing the interior design as summer style and winter styles designed for each traditional wooden house in both cities as life-culture.

2. Features of Traditional houses in Kyoto Japan

2-1. Climate and Natural Features in Kyoto

Kyoto-city is an inland city, making up part of the eastern side of the mountainous region, and the northern half of the Kyoto Basin. As the largest of the municipalities, Kyoto City has an area of 827.90km2, total population is 1,464,990 (2008). The climate of the Kyoto Basin is typical of an interior basin, with large differences in temperature between summer and winter, day and night. Kyoto is situated latitude 35 degrees, the average temperature in August, the highest month, is 36 degrees Celsius and the lowest average temperature is 4 degrees Celsius in January (table 1). In Recent years, climate in Kyoto changes and it occurred that the days by which high temperature is observed increase (image 1) and it continues till autumn, and submersion under water by local severe rain near mountainside.

The World Heritage Committee of UNESCO inscribed "Historic Monuments of Ancient Kyoto" on the World Heritage List in 1994. Seventeen sites from Kyoto-city

and Uji-city in Kyoto Prefecture and Otsu-city in Shiga Prefecture are included, and most of them are temples and shrines in Kyoto-city.

month	1	2	3	4	5	6	7	8	9	10	11	12	average year total
highest temp (°C)	8.9	9.7	13	20	25	28	32	33	29	23	17	12	20.8
lowest temp (°C)	1.2	1.4	4	9	14	19	23	24	20	14	7.8	3.2	11.7
rainfall (mm)	50	68	113	116	161	214	220	132	176	121	71	48	1491.3

Table 1 temperature and rainfall in Kyoto

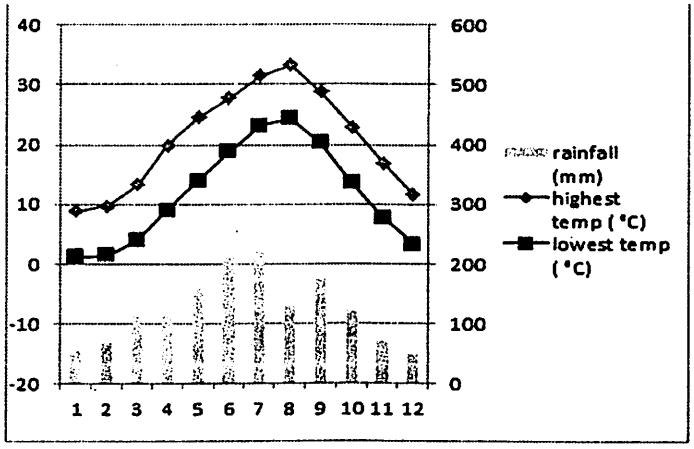
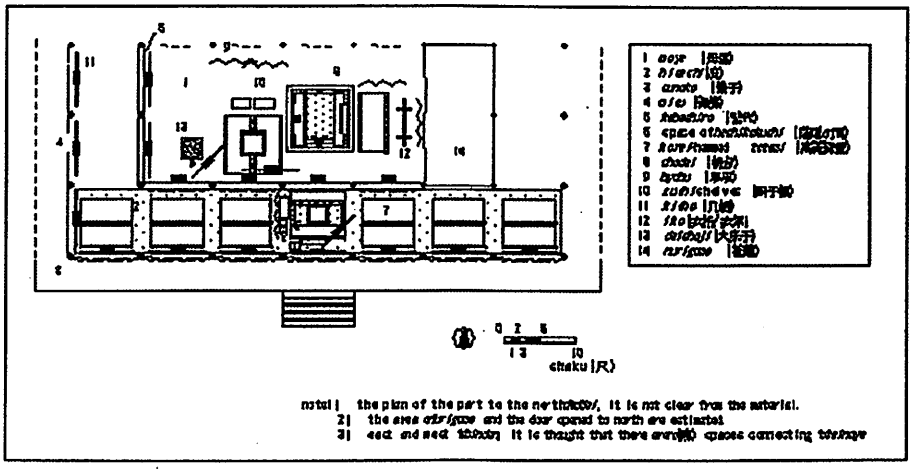


Image 1 temperature and rainfall in Kyoto

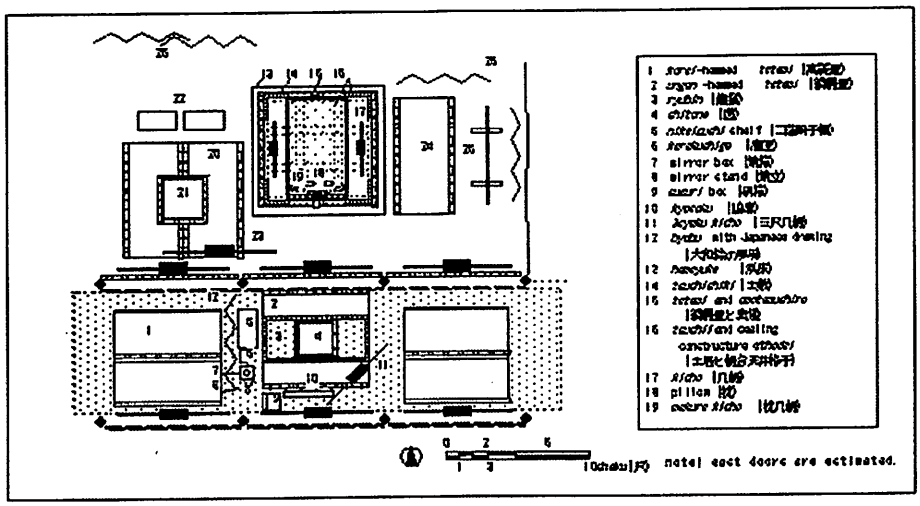
2-2. Features of Traditional Houses and Furniture

Looking at the utilization of Japanese traditional architecture and interior design before modernization since the end of 19th century, there is very little built-in furniture. It is a characteristic that movable furniture is used with the purpose changing according to each season and each scene. Because of this characteristic,



the usage of architecture in various scenes and interior designs was not preserved. Traditional books and painting materials are a useful method to analyze them.

Japanese traditional furniture was called "*dogu*", before modernization. Japanese Traditional Furniture Reference Books describe the ways to design, select, and set *dogu*; furniture. Aiming at organizing historical and cultural theory of traditional Japanese space design through the analysis of "Traditional Japanese furniture" and "space setting" in books, we have investigated all of them that exist in Japan Interior Design of Noble house is restored and shown in the plan based on the materials (image 2). The noble houses in the *Heian* era, as mentioned above, were made in *shindenzukuri* style . These buildings are functionally both for residence and public ceremony. Construction is simply organized by wooden pillars, beams and fewer walls in this style, and room spaces were easily opened to the outdoor. Most of the equipment and furnishings were separated from the buildings. Therefore if all the



movable things were taken away, nothing was left on the floor. To assist various behavior in such spaces without fixed equipment, many furniture (called *dogu*) must be used. In this period, these *dogu* were called also *chodo*, and the interior design way how to coordinate and set dogu is called "*shitsurai*" . A plan of setting of some furnishings, which were restored by the description. The dimensions of furniture are based on the description . The directions of *hare*, which means formal and bright, are south and west in this case, and it is noted that the right side of hangings faced to those directions. The descriptions indicate how to select and set each piece of furniture so we restored settings of furniture in detail (image 3). It says that, in the center of *hisashi* (image 2-6.), some *mushiro* and two *tatami* mats (image 3-2) with beautiful hem called *ungenberi* are set. More small mats, called *shitone* (3-4.) are put upon *hanamushiro* (3-3), on these *tatami*. To the west of center *tatami*, set a shelf called *zushi* (3-5) in which some objects like *yusurutsuki*, *dako*, and *uchimidarebako* are put. To the south of *zushi*, *karakushige* (3-6.), *kagamibako* (3-7.), *kagamitate* (3-8) are put side by side. A bamboo blind **lattice** were used so that the function of allowing the

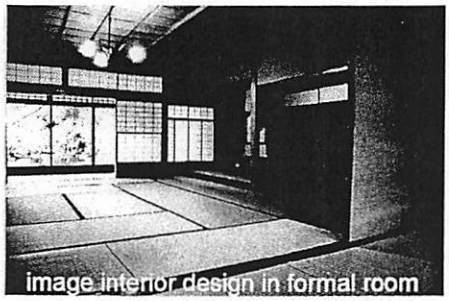


image interior design in formal room

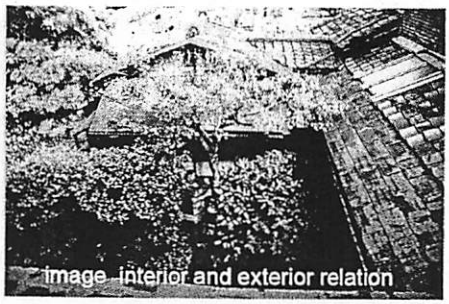


image interior and exterior relation

passage of outdoor light and the function of shielding one space from another could be fulfilled.

Traditional houses remaining in Kyoto reduces rapidly, but such houses maintain the styles with shitsurai- Japanese interior design (image4) and rooms with each object and status, by using furnishings corresponding to season and the scene (image5).

3. Features of Traditional houses in Safranbolu Turkey

3-1. Climate and Natural Features in Safranbolu

Safranbolu is situated latitude 41 degrees, the average temperature in August, the highest month, is 25 degrees Celsius and the lowest average temperature is 4 degrees Celsius in January (table 2) (image 4).

month	1	2	3	4	5	6	7	8	9	10	11	12	average year total
highest temp (°C)	9	8	10	14	18	23	25	25	22	18	14	11	16.4
lowest temp (°C)	4	4	5	9	12	16	18	18	16	12	9	6	10.8
rainfall (mm)	86	61	64	43	44	59	58	69	92	116	114	108	912.8

Table 2 temperature and rainfall in Safranbolu

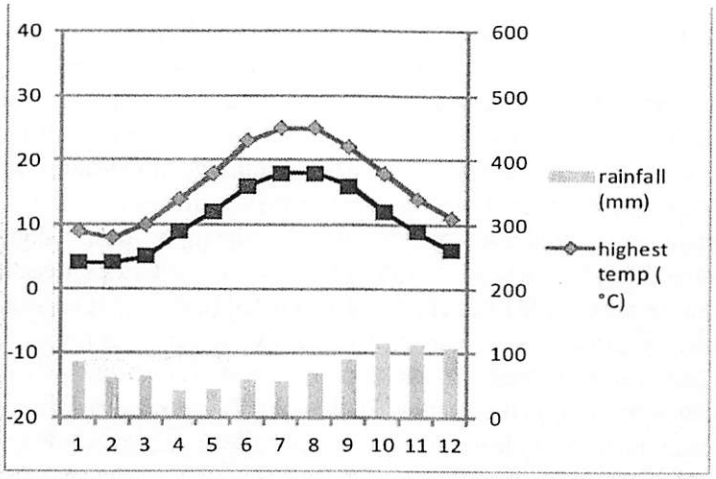


Image 4 temperature and rainfall in Safranbolu

Safranbolu is the trading city which was located in the inland of a Turkish Black Sea coastal area, and it will be a blank from the modern trunk route by development of a railroad after the 19th century.

Although it could fold and declined, it will be left behind while the rows of houses of the Ottoman Empire age have been that time as a result.

It is possible to feel the remnants of caravan city, such as the store, arts and craft studios, dealing with leather harness and commercial district in the city center.

The World Heritage Committee of UNESCO inscribed "City of Safranbolu " on the World Heritage List in 1994. Many of the traditional residence of Safranbolu were built in the 17th and 18th centuries, have typical dwelling style in Anatolia Black Sea coastal area.

Although the Black Sea coast is warm humid climate, since Safranbolu is located in a mountain slope, it becomes cold and there is sometimes snow coverage in winter. The forest spreads out as geographical environment and there was the foundation in which wooden housing culture is formed.

Safranbolu consists of four distinct districts: the market place area of the inner city, known as Çukur (The Hole), the area of Kıranköy, Bağlar (The Vineyards), and an area of more recent settlement outside the historic area. The original Turkish settlement was immediately in the south of the citadel and developed to the south-east. In this paper, traditional wooden houses in Kirankoy area are analyzed.

3-2. Features of Traditional Houses and Furniture

It is located in an earthenware mortar-like valley, a wooden dwelling is built and located in a line with a slope, peculiar townscape (image 7) are formed. The floor number of many of dwellings is three, and the first floor is a stone construction, and the second and 3rd floor are wooden, and a combined system of wood and stone.

In Case of A house, the size and the planning of the houses are deeply affected by the large size of the families, in other words a total members of a big family living together in one house. The impressive architecture of their roofs have led them to be called as "Houses with five façades". The houses are two or three storied consisting of 6 to 9 rooms, each room is entirely detailed and have ample window space allowing plenty of light. The delicate woodwork and carved wall and ceiling decorations, the banisters indoor knobs etc. all come together to form an unmatched harmony of architectural aesthetics and Turkish art (image 8).

4. Comparative Analysis

Kyoto is situated latitude 35 degrees, the average temperature in August, the highest month, is 36 degrees Celsius and the lowest average temperature is 4 degrees Celsius in January. Safranbolu is situated latitude 41 degrees, the average temperature in August, the highest month, is 25 degrees Celsius and the lowest average temperature is 4 degrees Celsius in January.

The feature common to both Kyoto and Safranbolu is carrying out the interior which utilized the craft by people's hand in interior design in the wooden house. In Kyoto, fittings are exchanged according to a season.

The material is Yoshi and a bamboo in summer, and is the glass window and shoji which were made in the Japanese paper of the bright color . In order to soften the heat of summer severe in climate, the device for being more adapted in summer is looked at. In Kyoto, although the rank and the purpose of using the room are clear, the consciousness which divides man and woman is seldom seen. On the other hand, in Safranbolu, a man-and-woman exception is clear, and there is, and the device which uses the scene from a window and provides a seat space by the window is seen.

5. Conclusions

Comparative consideration was carried out about the traditional house of Kyoto and Safranbolu which both remains as the city with the historical value.as a result, The feature common to both Kyoto and Safranbolu is carrying out the interior which utilized the craft by people's hand in interior design in the wooden house adopting to each seasonal climate. The common feature which deserves especially attention is taking in the technical design of excellent hand craft technology to interior design.

References

Keiko Nagata, (2004) Interior Furnishings and Setting of *Shindenzukuri*-Style Architecture Based on "*Masasuke-shozokusho*", AIDIA Journal Vol.4, Asia International Design Institute Association, pp.43-48

Shinzo Ogi, Hidenobu Jinnai, Makoto Takeuchi et al, (1993) an Encyclopedia of Edo-Tokyo, *Sanseido*

Keiko Nagata, (2011) Importance and Characteristic of Utensils for Tea Ceremony in Japanese Traditional Furniture Reference Books –Concept of Architecture, J Archit. Plann. Environ. Eng. AIJ, vol.76, No668, pp.1937-1942

Keiko Nagata, Mariko Okamoto, Katsuhiro Kawata, Mitsuru Senda, and Akira Naito, (1998) Bibliographical and Typological Analysis of Traditional Japanese Furniture Reference Books –the Concept of Courtesy, J Archit. Plann. Environ. Eng. AIJ, No.499, pp.185-192

Keiko Nagata, Masato Takagi, Katsuhiro Kawata, Kazuyoshi Fumoto, Mitsuru Senda and Akira Naito, (2002) Design Theory of Traditional Japanese Furniture Reference Books –the Concept of Architecture –Dimension System of Traditional Japanese Furniture Design–, J Archit. Plann. Environ. Eng., AIJ, No.557, pp.305-310

Reha Gunay (1989), Safranbolu Evleri, Kultur Bankanligi Yayinlari

Maintaining Urban Identity in Confronting With Change and Uncertainty Case Study: Historical Islamic Settlements in Yogyakarta

Catharina Dwi Astuti Depari
Gregorius Agung Setyonugroho

Introduction

Globalization impacts endangering the cultural identity of the world's traditional cities has become a major concern in Architecture. The impacts could be observed from the appearance of ambiguous-fragmented city forms. These chaotic city forms symbolize a political dualism in city planning which fails to accommodate the modern needs and the local traditions in equilibrium. Regarding the city planning, neglecting the cultural values and the architectural symbols will lead the city to monotony and globalized-characteristics which threaten the identity of the city and that of its urban forms. Facing this challenge, the city should invent the best formula to maintain its identity that allows its people to orient themselves and to have a meaningful moment while experiencing the city environment.

Bosselmann (2008) describes city as the manifestation of a collective history. Therefore, city should primarily be seen as an incremental process (Moudon,1994) where some cultural events take place. City experiences mutation through time and the knowledge about the factors determining the process is important in order to understand the city. The current pattern of a city could be well-interpreted if the knowledge about its historical and cultural events have already been understood (Bosselmann, 2008).

Regarding the factors determining the city transformation, Morris (1984) categorizes them into two types, which are the original and the later determinants. Based on his works toward the Islamic cities in Middle East, Morris (1984) asserts that the original determinants affecting the transformation of those cities include the natural factors which are topography, climatic conditions and local materials, while the later determinants come from the cultural influences caused by the Western ideology. In terms of the city forms, Lynch (1981) describes three types which among them is the city of faith. A cosmic order becomes the main factor which affects how the city elements relate to each other and creates a particular geometrical pattern (Shane, 1984). Supported by Schultz (1980), the spatial pattern of a city could be dictated by the local beliefs. People see the nature as a structure which is created by the relationship among its natural elements to express a meaning. Therefore, nature

encourages the creation of some mythological concepts in people's minds. Besides the natural elements asserted by Schultz (1980), Garnham (1984) suggests that the elements defining the identity of a place should include architectural style, climate, unique natural setting, memory and metaphor, local material, craftmenship, culture and history, social values and local activities.

Being one of historical Javanese traditional cities, Yogyakarta had experienced various political and cultural changes. Islam reached the coastal regions of Java and assimilated with the local civilization in 12 A.D. after it had formerly been influenced by Hindu and Buddhist culture. The Javanese intergrates those foreign cultural values with its own values, whose process is called as syncretism. Syncretism presents the Javanese flexibility in adapting with different kinds of cultures. Therefore, it becomes one of Javanese cultural strengths. Related to Javanese culture of dwelling, the knowledge system on city planning has developed since the period of Hindu. It is the period when the myth of *jagad gedhe*, a belief which emphasises the harmony between nature and men, has flourished. The Javanese do not see a region primarily from its physical appearance, but from a mythological cosmology point of view that requires an understanding beyond logic (Wiryomartono, 1995). For the Javanese, nature is essential because it manifests the presence of Holy Spirit which brings life to men. As the consequences, men are obliged to deliver their gratitudes to the Holy Spirit by offering some tributes (Setiadi, 2010). Physically, the Javanese spatial pattern is originally based on an ancient symbolic ordering system known as *mancapat* which governs the arrangements of spaces by distributing them at the city's main cardinal points and at its centre (Karsono, 1996). The Javanese believe that the conduct of ordering spaces has an aim to sustain the lives of all God's creations (Setyowati, 2007). Regarding its socio-cultural relationship, there are three kinds of community in Java, which are: (a) *kaum priyayi* consists of local intellectuals who tend to maintain their ancestral traditions besides the Islamic values they hold; (b) *kaum santri* consists of people whose tendency is to re-establish the authenticity of Islamic values in the local customs by rejecting practices based on any mystical beliefs; and (c) *kaum abangan* consists of people who tend to lay their customs on the ancestral beliefs more than on the Islamic doctrins (Zahnd, 2005).

Historically, the Monarchy of Yogyakarta was established as the result from the disruption occured in Mataram Islam Kingdom because of a long discord between two members of the royal family. The conflict encouraged the splitting of the Kingdom into two new monarchies, Yogyakarta and Surakarta, by signing the Giyanti Treaty in 1755. After Yogyakarta Monarchy had been established, Sultan Hamengku Buwana I who was the First King of the Monarchy arranged his region based on *mancapat* concept. A mosque was built at each cardinal points of Yogyakarta including at its center, in order to symbolize Islam and to emphasise the Sultan's hegemony. Each Mosques was surrounded by a settlement where the Islam's followers resided, and were appointed by Sultan to become the phylosophical boundaries of the Monarchy's territory. In local terms, the monarchy's territorial boundaries are called as *pathok nagari* which include the Islamic settlements in

Mlangi district at the west, Babadan district at the east, Plosokuning district at the north and Dongkelan with Wonokromo districts at the south. Each settlements also has a symbolic role as the Monarchy's cultural shield against foreign values which potentially threaten the sustainability of the Islamic moral values within the local society. Despite the fact that those Islamic settlements are unied by a similiar historical background related to the Monarchy, those settlements also experienced specific events which determined the pattern of their urban structures. It has been widely understood that the higher the complexity of those events experienced by each settlement, the greater the transformation would take place. The research has an aim on maintaining the urban identity of each Islamic settlements especially those which are related to the establishment of Yogyakarta Monarchy. Therefore, the research would attempt to reveal the characteristics of each settlements, to identify the unique elements defining the local identity including the factors determining the transformation of each settlements.

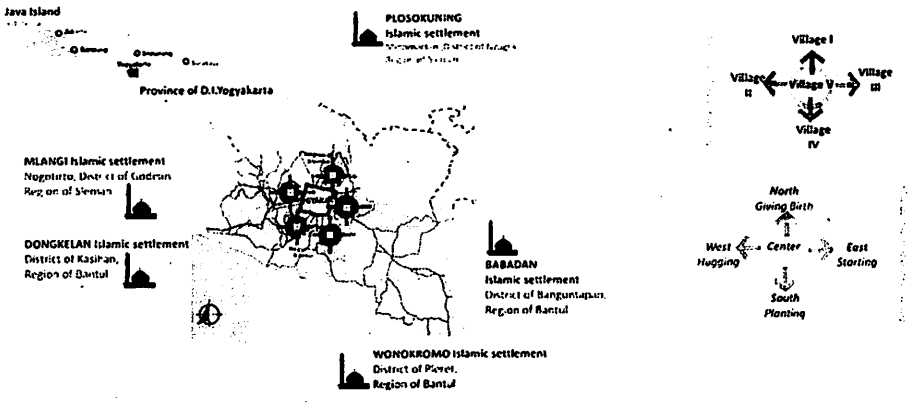
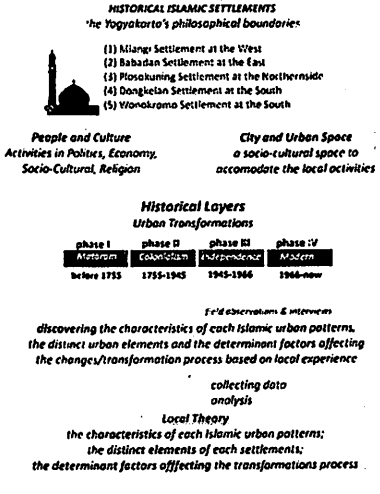


Image 1. The distribution of the Islamic settlements based on mancapat

Methods

The methodology used on this research is phenomenology by combining two analytical approaches. The synchronic approach is performed by observing each Islamic structures in historical layer while the diachronic is aimed to discover the factors influencing the changing of each settlements. While interpreting each structures, the objectivity should be maintained in order to guarantee the reliability of the research results.

The research could be divided into four phases: (1) Preparation, is the phase in which study materials from any relevant literature



Scheme 1. The research frame showing the whole process of the research

and the research tools are prepared; (2) Collecting Data is a phase in which the primary data is collected from a direct observation and deep interviews with the locals, and the secondary data is collected from literature studies; (3) Analysis is a phase in which the characteristics of all the settlements are compared based on its historical layers, in which the transformation of each settlements is analyzed, and the elements as well as the factors influencing the transformations are identified; (4) Conclusion is a phase in which the research results regarding the identity of each Islamic settlements are concluded.

Research results

The characteristics of all the research objects are summarized after comparing their urban patterns in each period, which are:

1. Mataram Islam Period (before 1755 A.D.)

The characteristics of all the research objects in this period could be explained as follows: (a) The Islamic settlements which also serve as the Monarchy's boundaries generally have a common pattern which is organic-sporadic. The hierarchy system within almost all settlements was not yet clearly defined, except that in Mlangi and Plosokuning districts; (b) The relationship between buildings and open spaces is categorized as unplanned. It was resulted from early development model which was primarily motivated by the local needs toward a suitable environment for living. The existence of some natural elements like river, fertile land including the local climatic and topographic conditions are seen as the primary considerations to determine an environment for living; (c) The unique characteristics found in Mlangi and Plosokuning districts are caused by the fact that those settlements have already embraced a particular logical system based on Islam since the period of Mataram Islam. It was expressed through the hierarchy system which was implemented in their urban structures and influenced the local socio-cultural relationship. The Mosques in Mlangi and Plosokuning districts were built long before the establishment of Yogyakarta Monarchy. As a religious building, the Mosque was utilized as a sacred place of Islam where the worshippers' beliefs were oriented. To emphasise the local orientation towards Islam, the Mosque in Mlangi as well as in Plosokuning district was once equipped with one corridor connecting the Mosque with its surroundings.

2. Dutch Colonialism Period (1755 A.D. to 1945)

The characteristics of all the research objects in this period could be explained as follows: (a) All the Islamic urban patterns could be categorized as hybrid which combines the concentric pattern where the Mosque becomes the space center, the organic-sporadic pattern which is created by a spontaneous settlements around the Mosque, and the axial pattern; (b) Related to the Islamic settlement in Dongkelan district, its urban pattern does not clearly show the main axis which once was oriented to the Mosque, especially after the local development tends to become more high-densed. After the establishment of the Great Mosque, a hierarchy system began to be applied in all aspects of the local living. Regarding the Mosque's function, it has been once utilized as a military basis for supporting the local struggling

againts colonialism; (c) The hierarchy system influencing the local socio-cultural relationship affects the spatial pattern of each Islamic settlements. In the context of culture, the local society could be classified into two groups, which are the people who have a direct bloodline relationship with Kyai or Sultan, and those who are not the direct descendants of Kyai or Sultan. The people at the first category lived around the Mosque within the inner zone of the settlement (*njero*) while the other group lived at the outter zone (*njobo*). The people who lived within the inner zone are called as *abdi dalem*, which means the servants of Sultan whose responsibilities are strongly related to the Monarchy's bureaucracy. The boundary between the two territories was defined by local streets. In order to protect the Mosque and its sacred meanings, a circular walled-gate was once built around the Mosque.

3. Independence Period (1945 to 1966)
The characteristics of all the research objects in this period could be explained as follows: (a) The spatial patterns of the Islamic settlements could be categorized as hybrid which combines the concentric, the organic-sporadic and the axial pattern; (b) In terms of Dongkelan, its Islamic settlement pattern is categorized concentric and organic-sporadic where the main street oriented to the Mosque could not be clearly identified. It is assumed that the Mosque must have been built within the settlement which was already high-densed. Until the period of Dutch Colonialism, the inner zone and outter zone relationship still existed. When the the settlements density becomes more uncontrolled, the threats upon the local hierarchy system which gives an identity to the settlements become higher.

4. Modern Period (1966 to recent)
The characteristics of all the research objects in this period could be explained as follows: (a) the Islamic urban patterns are generally categorized as hybrid which combines the concentric pattern, the organic-sporadic pattern and the axial pattern which expresses the public orientation to the Mosque; (b) In terms of Dongkelan, the settlement adopts only a concentric-organic pattern, while the grid pattern is also intergrated into Babadan's hybrid urban structure as the impact of globalization. The spatial pattern of the Islamic settlement in Babadan shows a high degree of complexity and completeness for effeciency and effectiviness reasons. It also expresses the recent development which tends to emphasise the utility aspect by accomodating the modern needs and investment possibilities; (c) Related to the Islamic settlements in Mlangi and Plosokuning districts, each local Kyai's residence has been replaced by new buildings while the Islamic settlement in Dongkelan district still maintains its unique educational buildings to express the Muhammadiyah domination over the local ideology.

Besides the general characteristics of the Islamic settlements, it is important to identify the transformation of each Islamic settlements. Related to Mlangi district, the transformation of its Islamic settlement could be explained as follows: (1) the Islamic settlement of Mlangi experiences a transformation from concentric-organic to hybrid pattern. Mosque is seen as the most important element which gives an

identity to the place, and therefore the local people respectfully maintains its location at the center of the settlement; (2) Islam which is symbolized by Mosque, has a dominant role in determining the local development. Therefore the Mosque is maintained to be hiearchically placed at the centre of the settlement. The role of the Islamic settlement was strengthened after Sultan delivered some policies. The ratification of the settlement to become Monarchy's philosophical boundary against foreign influences, and the bestowal of *abdi dalem* status to the locals, allow the local people to have some privileges which among them are being free from tax-liabilities and having specific rights to reside in Sultan's land. Recently, the hierarchical dominancy of the Mosque within the settlement has decreased because of the massive development that occurs.

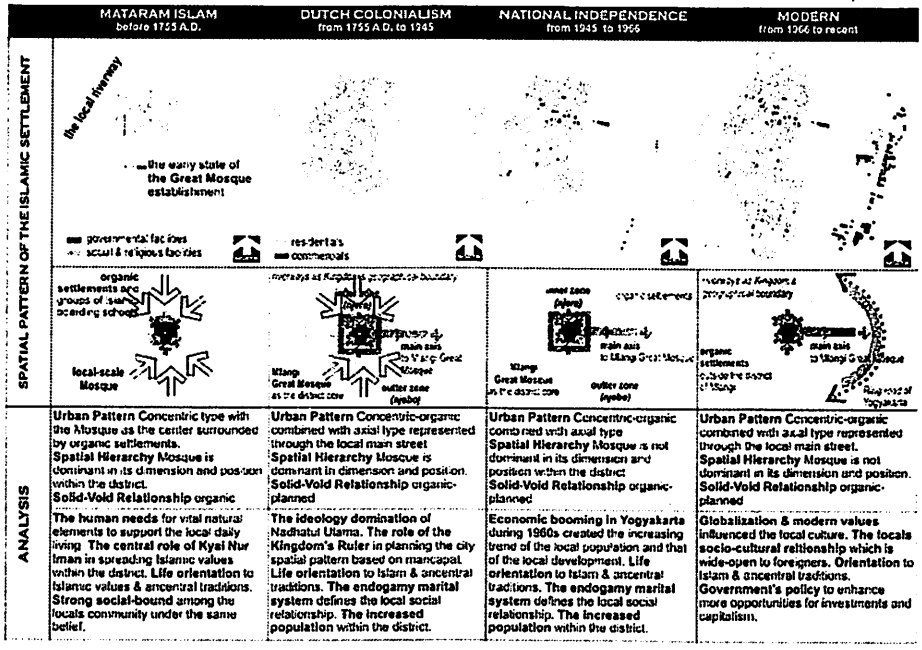


Table 1. The Islamic settlement transformation in Mlangi district

The transformation experienced by the Islamic settlement in Plosokuning district could be explained as follows: (1) the Islamic settlement in Plosokuning experiences a transformation from concentric-organic to hybrid pattern in which the axial pattern is intergrated into the existing pattern. The Mosque is maintained to become the most important element in defining the local identity although the globalization impact has caused much changes to the district; (2) the local's spatial hierarchy system emphasizes the Mosque as the most important element in defining the identity of the settlement. Similiar to Mlangi district, the role of the Islamic settlement in Plosokuning was strengthened by Sultan who initiated the settlement to become the Western monarchy's boundary and the bestowal of *abdi dalem* status to the local people. The advantages attained after receiving the status, are being free from tax-liabilities and having special rights to reside in Sultan's land. In case of

Plosokuning, Islam has been deeply rooted in local culture since the descendants of Kyai Nur Iman, Kyai Mursodo and Kyai Mustopo, actively spreaded Islam into the society. In modern period, the physical dominancy of the Mosque has become vague because of the impact resulted from the massive development occurs. New constructions around the Mosque seem to neglect the Monarchy's urban design guidelines, in which the Mosque's supremacy as the most important structure is respected and emphasized.

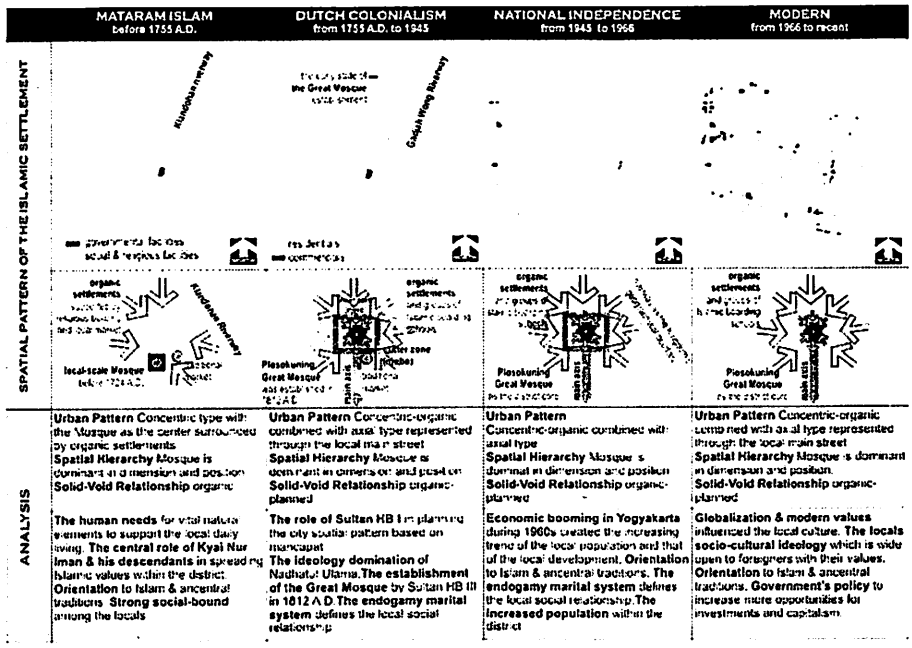


Table 2. The Islamic settlement transformation in Plosokuning district

The transformation experienced by the Islamic settlement in Dongkelan district are: (1) the Islamic settlement experiences a transformation from concentric-organic to hybrid pattern. Mosque is seen as the most important element which gives an identity to the place, and therefore Mosque is maintained to become the center of the settlement. Some events, mostly driven by economy and modern ideology, have been evidenced to significantly influence the transformation of the settlement's structure; (2) the local hierarchy system persists the same as it was by continually emphasizing the local orientation to the Mosque. Similiar to that of Mlangi and Plosokuning districts, the role of the Mosque in Dongkelan was strengthened by Sultan who initiated the settlement to become the Monarchy's boundary at the South and the bestowal of *abdi dalem* status to the local people. The advantage of receiving the status are being free from tax liabilities and having particular rights to occupy the Sultan's land. Islam has been deeply rooted in the local cultures since Kyai Syihabuddin spreaded the values of Islam into the society. In modern period, the physical dominancy of the Mosque has become vague because of the massive development that occurs.

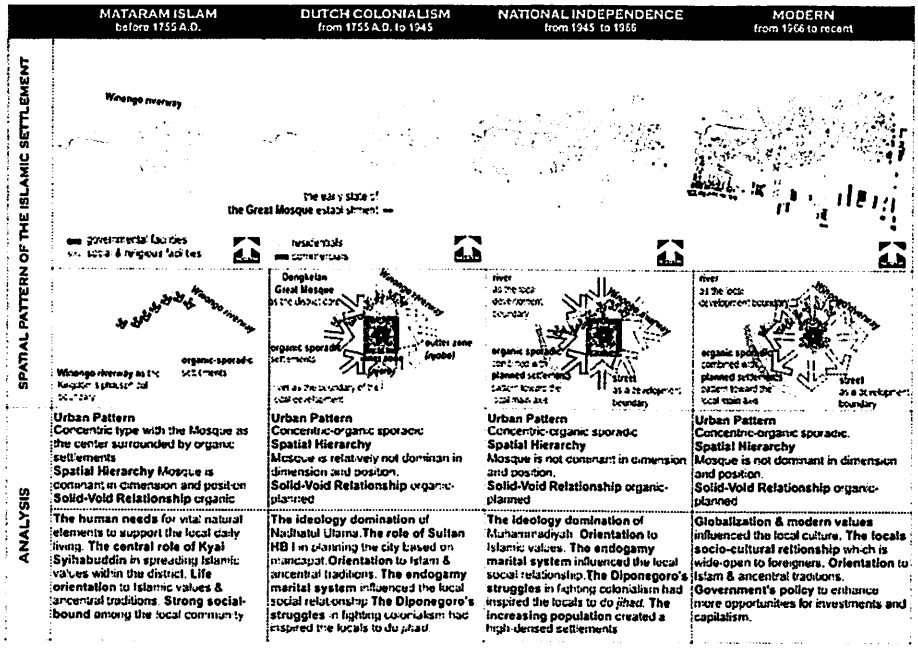


Table 3. The Islamic settlement transformation in Dongkelan district

The transformation process experienced by the Islamic settlement in Babadan district are: (1) the Islamic settlement's pattern in Babadan experiences a mutation process from a concentric-organic to a hybrid type. Mosque is seen as the most important element which gives an identity to the place, and therefore Mosque is respectfully located at the center of the district. Some events mostly driven by economy and modern ideology have been evidenced to significantly influence the transformation of Babadan's Islamic settlement in Modern era; (2) the local hierarchy system persists the same as it was, by emphasizing the local orientation to the Mosque. The role of the Islamic settlement was also strengthened by Sultan who initiated the settlement to become the Monarchy's boundary at the East and the bestowal of *abdi dalem* status to the local people. Some advantage are attained by receiving those status which among them were are being free from tax-liabilities and having free rights to occupy the Sultan's land. Islam has been deeply rooted in the local living since the descendants of Kyai Nur Iman spreaded the values of Islam into the society. The physical dominancy of the Mosque within the local urban form has gradually become vague because of the massive development occurs.

There is a dispute among Yogyakarta's society about Wonokromo's historical role in the establishment of Yogyakarta Monarchy in terms of its *mancapat* concept. Some people believe that Wonokromo was initiated by Sultan to become one of Yogyakarta's Southern philosophical boundaries besides Dongkelan's settlement. Wonokromo's Islamic settlement is believed to be one of Sultan's military strategies to strengthen the territory of Yogyakarta against its rival, the Surakarta Monarchy. The transformation experienced by the Islamic settlement in Wonokromo is

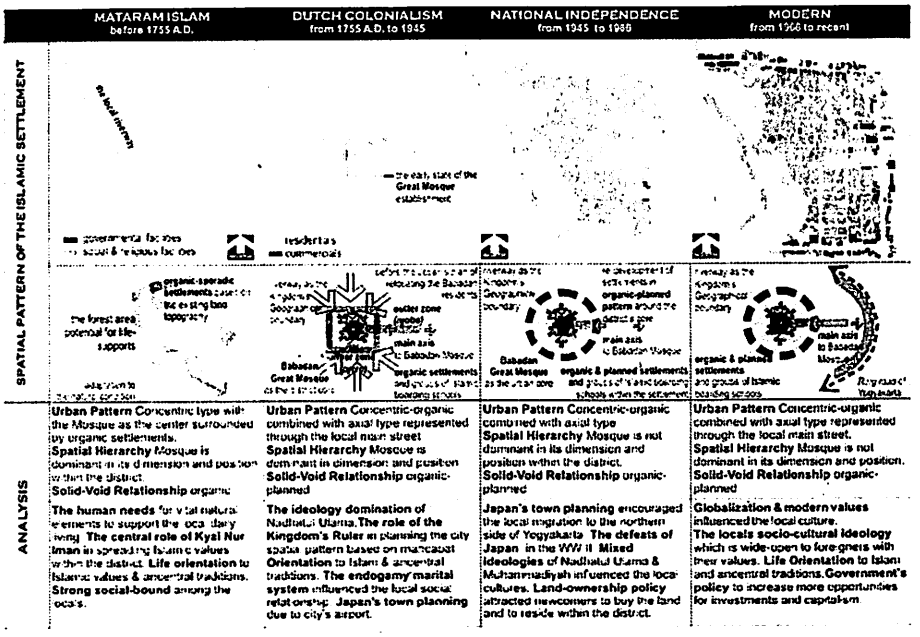


Table 4. The Islamic settlement transformation in Babadan district

relatively lesser than those in other Islamic settlements. The process could be explained as follows: (1) the Islamic settlement in Wonokromo experiences an evolution from a concentric-organic to a hybrid pattern. Mosque is seen as the most important element which gives an identity to the place. Therefore, the Mosque is maintained to become the center of the settlement which is strengthen by the street

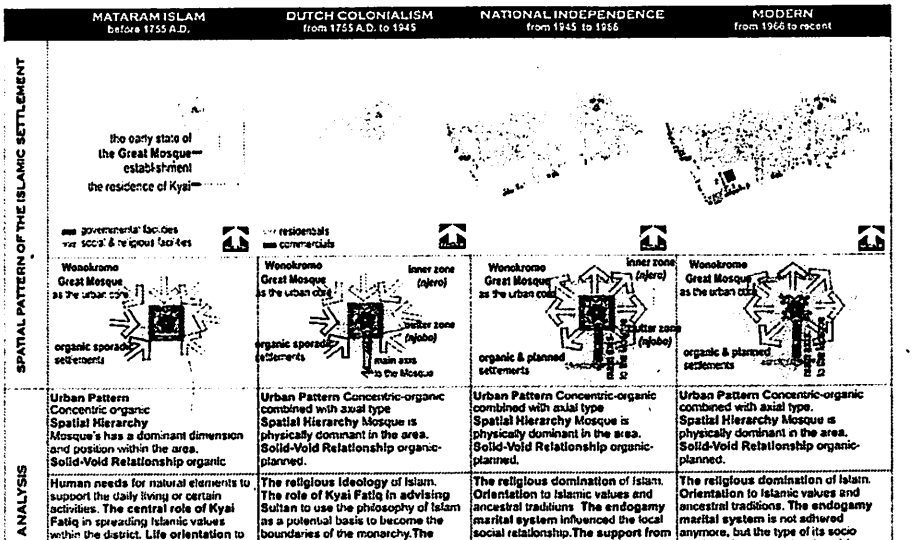


Table 5. The Islamic settlement transformation in Wonokromo district

element oriented to the Mosque.; (2) the local hierarchy system persists the same as it was by emphasizing the Mosque's location at the center of the Islamic settlement. The identity of Wonokromo's Islamic settlement was strengthened by Sultan who bestowaled the *abdi dalem* status to the local people. Receiving the status, the locals have a privilige which among them is to occupy or to reside on Sultan's land; (3) the settlement's development was influenced by two important figures besides Sultan, which are Kyai Muhammad Fatiq, welknown as a Guru of Islam since the period of Mataram Islam, and Tembong Prawiro Suwarno, a rich man from Kotagede who finally resided in Wonokromo. The latter figure had contributed in supporting the physical developments of the settlement including the renovation of the local Great Mosque; (4) Eventhough there are some globalization impacts suffered by Wonokromo, but the physical dominancy of the Mosque within the settlement is still maintained. It was caused by a strict supervision of the local authorities to any new developments, in order to preserve the Mosque's supremacy.

Conclusions

The urban structures defining the identity of each Islamic historical settlements as the philosophical boundaries of Yogyakarta Monarchy could be concluded as follows:

1. Urban spatial pattern: The most identified concentric-axial pattern among the Islamic settlements could be found in Mlangi district. The concentric-axial pattern should be maintained as the pattern which defines the identity of the Islamic settlements which also serve as the philosophical boundaries of Yogyakarta. Some considerations which should be emphasized are: (a) concentric pattern is defined by the Mosque's position which is located at the center of the settlement. The Mosque symbolizes the local orientation towards Islam and therefore it gives an important meaning to the locals; (b) axial pattern is created by the local main street which links the Mosque with the surroundings as an expression of the relationship between men and God. Through the corridor, the Moslems are also recalled to have a self-reflection toward their lives before entering the sacred space of the Mosque.

2. Spatial hierarchy system: the spatial hieararchy system within the Islamic settlements should maintain the Mosque as the most important element in defining the identity of the place. Physically, the spatial ordering system should: (a) maintain the location of the Mosque at the center of each urban patterns whether it is concentric, axial or the combination of the two patterns. Its purpose is to symbolize Islam as the main values which influences the local ideology and cultural activities; (b) manage the grain dimension of the Mosque as the most dominant structure compared to its surroundings. The urban design guidelines legalized by Sultan, has clearly defined some construction laws regarding the developments allowed in each settlements and the preservation of the Mosque's sacred value.

3. Soild void relationship: the relationship pattern between buildings and open spaces is categorized as an organic-sporadic type. The pattern is created by

the spontaneous settlements which primarily concern on the environmental considerations. Regarding the massive development now occurs, there should be a control mechanism provided by the local Government in order to preserve the identity of the Islamic settlements.

One of physical attributes which defines the urban identity of each Islamic districts is the structure resulted from certain relationship between buildings and open spaces. According to Schultz (1980), the elements defining one place identity could be categorized into two groups which are the natural elements and the man-made elements (Genius Loci, 1980). Those elements would create a certain pattern, and therefore they also define the identity of each places. Each patterns has characteristics and symbolic meanings in which the matter of faith, belief, ideology, culture and functions are embodied. The elements defining the identity of each Islamic settlements are: (1) natural elements which include river ways, the farm lands for agriculture including climate and topographic considerations; and (2) man-made elements which include the Mosques, the front yard and the cemetery of each Mosques, the local Kyai's dwelling, the main axis to the Mosque, the local Islamic boarding school (*pondok pesantren*) and *Muhammadiyah* schools.

The factors which generally determine the transformation of all Islamic settlements are: (1) the natural factors which consist of riverways and farmlands; (2) the political factors which include the city planning of Yogyakarta initiated by Sultan Hamengku Buwana I based on *mancapat* concept, the policy of Sultan to endow the status of *abdi dalem* to the local people which change the type of its socio-cultural relationship, the political atmosphere in Yogyakarta regarding the ruling power of the Dutch Colonialism, the Japan's city planning in terms of Yogyakarta's airport, and the policy of local Government to provide a large possibility for new investments; (3) ideology, religion and socio-cultural factors which include the central role of Kyai as the Guru of Islam in spreading the Islamic values throughout Yogyakarta, establishing the district as the center of Islam, the division of Islam into two ideologies *Nadhatul Ulama* and *Muhammadiyah*, the local cultural activities based on Islam and local traditions which are persistently performed, the socio-cultural concept which emphasizes the relationship between men and nature, the needs of efeciency and effectiveness which require a high degree of mobilization, the social relationship among the community which is primarily based on endogamy marital system and is now turned to be widely open to newcomers, foreign ideology or modern values, the local faith towards *jihad fii sahibilillah* whose aim is to establish the teaching of Islam by combatting colonialism, the urban design guidelines legitimated by Sultan to manage the development within each Islamic settlements; (4) the economic factors are determined by commercialism regarding the modern influences, which causes an economic activity shifting from the traditional to a modern kind. The massive urbanization occured in Yogyakarta since 1960's has also encouraged the land and property commercialism which then contribute to the increasing of buildings density in each Islamic settlements.

Bibliography

Bosselmann, P., 2008. *Urban transformation.* Washington D.C.: Island Press.
Garnham, H.L., 1984. *Maintaining the spirit of place.* Arizona: PDA Publishers.
Karsono, D., 1996.. *Thesis: Kajian perubahan bentuk tata ruang lingkungan permukiman di Kauman Surakarta.* Semarang: UNDIP.
Lynch, K. (1981). *A Theory of Good City Form.* Cambridge: MIT Press.
Morris, A., 1994. *History of urban form before the industrial revolutions.* New York: John Wiley and Sons, Inc.
Moudon, A., 1994. *Getting to know the built landscape.* Cambridge: MIT Press.
Schultz, C. N., 1980. *Genius loci: towards a phenomenology of architecture.* New York: Rizzoli.
Setiadi, A., 2010. *Arsitektur kampung tradisional.* Yogyakarta: PT.Kanisius.
Setyowati, E., 2007. Karakteristik ruang kawasan dalam Beteng Kraton Yogyakarta. *UGM: Forum Teknik,* III(3), pp. 197-272.
Shane, D. G., 2005. *Recombinant urbanism: conceptual modelling in architecture, urban design and city theory.* London: John Wiley & Sons, Ltd.
Wiryomartono, A., 1995. *Seni bangunan dan seni binakota di Indonesia.* Jakarta: PT. Gramedia Pustaka Utama.
Zahnd, M., 2008. *Model baru perancangan kota yang kontekstual.* Yogyakarta: PT. Kanisius.

The Impacts of Urban Laws in Reshaping the Built Environment in Libya

Abdolmonam Farag AL-Fageeh
Dean of Technical Faculty of Structural Engineering-Mesallata, Libya

Abstract

One of the most remarkable socio-economic phenomena that followed independence in Libya after the colonial period was the high rate of urbanization. The radical demographic transformation after decolonization coincided with the complete rearrangement of the relative condition in terms of wealth, modes of products and ways of life. In the Libyan context, almost society in 1950s was still modestly urbanized. Only 20 to 30 percent of population was living in cities.

Although independence was a major turning point for Libyan society, such independence brought many contradictions. The state was one of the poorest in the world with a 90 percent illiteracy rate. Libya was dependent on economic aid and rent acquired from British and American military bases. The discovery and the exportation of oil in 1961 had a major economic and social impact on the country. Suddenly the Libyan state became one of the richest in Africa and the Middle East. Therefore, many urban projects, mainly, housing projects had been launched. Such large-scale urban projects prior to the discovery of oil were beyond to reach. The fundamental change in the built environment was reflected in new style of developments.

The oil revolution very quickly transformed the social situation. It led to the progressive disappearance of the nomadic way of life, a huge rural migration, and inter-urban migration into main cities in Libya. In the present today, Libya has the highest urbanization rate among African cities.

The high rate of urbanization, the large influx of immigrants, and the unprecedented economic growth due to oil revenues as well a sharp shortage in the housing sector - all these facts - lead to deal with the urgent situation facing the housing sector with the variation of urban policies. Much of the urbanization that took place in the absence of any infrastructural or institutional framework required too much strain and stress to absorb such populations. Absolute priority was given to the struggle against the housing shortage, consequently, the housing policies have been focusing on the quantitative housing shortage and the yearly housing production has become the touchstone for any evaluation process. Such policies have not been reviewed and have consequently been uncritically implemented.

This paper seeks to highlight how political decisions in the name of urban laws have affected reshaping the Traditional built Environment in Libya during second period of 20th century. An analysis is intended to examine how these urban laws and policies have affected the housing sector as well as the impact of such policies, which have lasted about 40 years, on the urban fabric of residential districts. Thus, particular attention is paid to property laws declared in Libya since the 1970s and the types of housing that have been executed.

Urban housing policies in post-colonial era

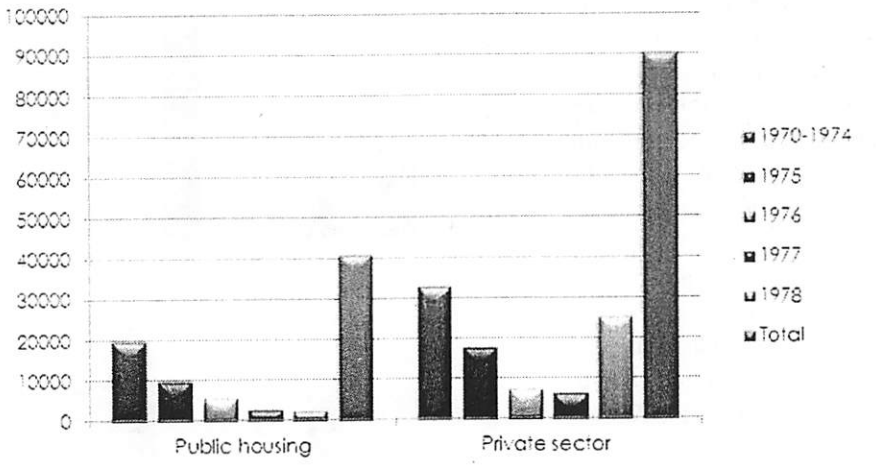
Governmental efforts in Libya have been concerned with providing health, housing facilities, and utility services at low prices to enhance the living conditions of all citizens (Russo, 2004); however, the housing policies have been focusing on the quantitative housing shortage and the yearly housing production has become the touchstone for any evaluation process.

After independence, the high influx of immigrants into the capital city of Tripoli caused a reemergence of the disorganized residential quarters or slums. As an Immediate Action, the government was not able to remove these slums; due to limited financial resources, weak urban authorities and related institutions and the high influx of immigrants were beyond the government capacity to control this problem. However, the role of the government witnessed a considerable change immediately after the discovery of oil in the late 1950s.

After the military coup of 1969 Libya, however, a new policy was adopted by directing the commercial banks to give loans for housing. An ambitious aim of the official urban policy was to solve the housing problem especially for low-income groups by establishing family and housing allowances and subsidies, and by reducing the selling price of public housing. Private investors were given a priority to achieve the task. To accelerate the process of housing supply, the government introduced the first legislation related to housing sector in 1972. The goal was to encourage the private sector by easing loans given to invest in construction projects related to the housing sector. Particular attention was paid to the investors in constructing high-rise housing (law 116, 1972).

The housing policy was aimed not only at low-income groups but also middle-income ones, living either in unsuitable houses or in huts. The main intent of this policy was to house all Libyan families by giving them the opportunity of owning adequate homes, and to enhance the standards of living of the entire Libyan population (Kultermann, 1999). Both public and private sectors were involved in housing construction during the first half of the 1970s (See fig. 1). Don Okpala (1986, p. 207) argues that:

"Since national political independence, most African countries in their housing policies and strategies have evolved through four apparent strategies in the housing sector - namely, slum clearance, direct housing construction by the government, sites-and-services schemes and



Figur 1

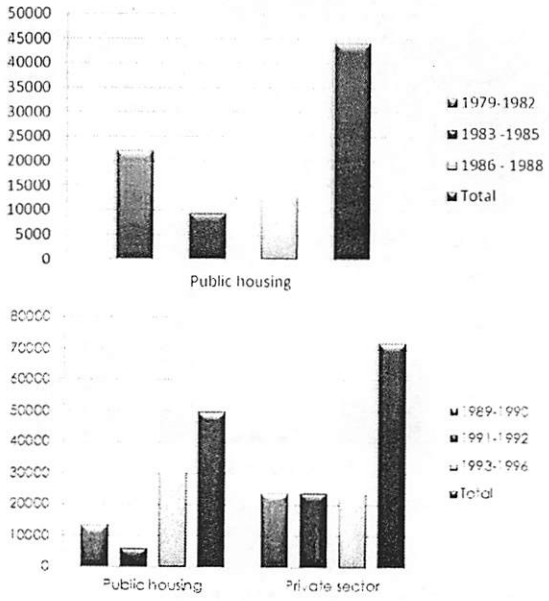
more lately slum and squatter upgrading. These strategies were not necessarily sequentially applied as listed above. Rather some were simultaneously practiced side by side".

In Libyan context, it was declared in 1975 that the goal of slums removal, at least within the capital city of Tripoli, was progressing successfully. In the period 1970 to 1975 almost 110000 units were built; among these 37.6 percent was high-rise housing (Ahmouda, 2002).

Private investment and contracting accounted for a large portion of all construction projects until new regulations concerning property ownership went into effect in 1978 with a radical political reorientation in which the name of Al-Jamahiriya replaced the official name of the Libyan republic. Among others, a law has influenced urban policies, which is basically a practice of a principle articulated in the theory of the Green Book written by Muammar Al-Kaddafi the former dictator of Libya (1969-2011). The law states that a house must belong to whoever occupies it even if the occupant is not the real owner of the house as a property. The law has given the right for each Libyan family to own an appropriate dwelling or a piece of land on which to build a house. In contrast, when someone owns more than a house or a plot in an urban planned area, he or she must choose just one house or one empty plot for construction (Law 4, 1978).

In summary, private ownership seemed to be misappropriated and confiscated by the state. The tenure of a property is defined obviously as a process of being able to stay forever and not as a rental system. As a result, the introduced law discouraged the private sector from investing in housing projects and the lease system by private people was seen as an illegal act. In practice, just a few years after law number 4 was implemented, the housing supply obviously decreased. The shortage in 1980 was 42 percent greater than that in 1975 (See fig. 2 and fig.3).

A new phase of development had started requiring the reorientation and further adjustment of the housing policy. These adjustments were expressed in the comprehensive program of socio-economic development as well as in a prospective plan for the housing sector for 1980 to 1985. The principal object of this policy was to shift the major burden in housing construction from the public to the private sector. The plan proposed a considerable increase in housing construction. The target was 206152 units to be completed, that is to say 165 percent of the previous plan fulfillment target of 50000 dwelling units had to be built each year (Omar and Ruddock, 2001). Although the law number 4 was modified in 1986 and again in 1992, it kept the same massage in essence which did not allow the lease system in private sector (Law 1986 paragraph 4, and law 1992 paragraphs 5, 7, and 8).



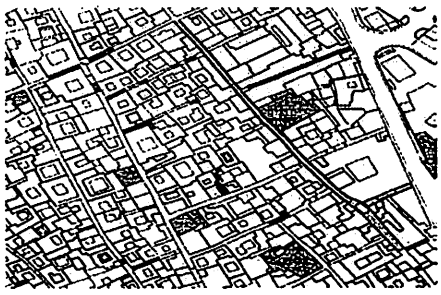
Figur 2 and Figur 3

In 1994 it was allowed for people to ask for confiscated commercial properties which were taken by the state after 1978. However, only commercial properties could be retuned back to the real owner whereas residential properties taken by the state were off limits. Private owners had no right to appeal for their confiscated properties (Law 1992 paragraph 7).

In 1995, in an official statement it was declared that a further modification of the 1978 law was needed: Due to the huge shortage in housing supply in recent years, which has caused an unprecedented increase in housing prices, the official authorities have considered intervening again to control the price and to accelerate the supply of housing stocks. This intervention by introducing a new modification of the law number 4 finally gave the right to the private sector to invest again in housing construction. The revision has been interpreted as a goal of the state to enable Libyan families to own or lease a dwelling at an affordable price. The last modification has given permission to rent for a defined period of time to non-Libyans or to rent to Libyans but with the intent of making the rent a process towards ownership by the occupants in the end (Modification of low 4 paragraphs 1, 2, 1995). In other words, the emphasis has been given to articulate clearly that the lease system, which is principally forbidden, would be understood as a mortgage system.

New patterns of housing (housing typologies)

Patterns of housing in Libya have taken many forms, including: the traditional courtyard, the modified courtyard, multi-family and high-rise apartments, and free standing or villa housing (See fig. 4).



Urban fabric with the traditional courtyard

Urban fabric with the modified courtyard

Urban fabric with free-standing housing

Urban fabric with high-rise housing

Figur 4

In 1966, a field survey conducted on defining housing typologies were executed in the capital city of Tripoli. As a result, four categories were distinguished: traditional house with a courtyard, detached houses with their own garden villa, apartment housing, and self-built temporary houses (slum camps). The courtyard house counted as 42.1 percent, with temporary housing counting as 26.3 percent, whereas the apartment house type was 11.6 percent and the villa type shared 6.5 percent of the total housing types (Whiting Associates International, 1969).

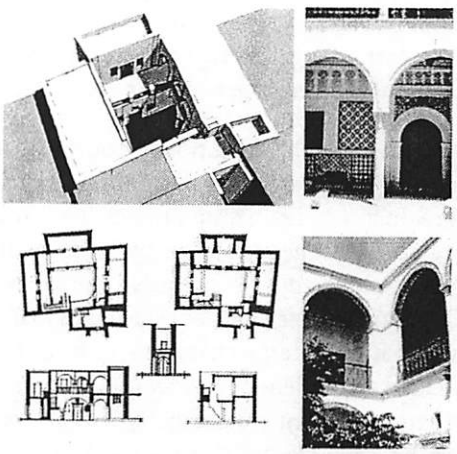
Accordingly, the traditional courtyard house was the dominant type while temporary housing revealed the high percentage of slums, which spread mainly in three main camps around the central area of the city. These slums were partially organized by the municipality; however, it was of great difficulty to remove them. At that time, it was suggested giving multi-family housing "apartments" more dominance especially alongside main roads and streets. At that time no real attempt was made to merge characters of local housing in regards to space arrangement, architectural elements as well as materials and technology of construction with other implemented housing types. As a consequence functional and architectural conflicts between local characters and imported ones have yet to be solved.

The layout of contemporary urban residential settlements is influenced by the rational way of planning and characterized by regular, incorporating a grid pattern of streets dominated by car use. The implementation of zoning principles and the execution of specific housing typology according to a proposal of zoning densities caused an emergence of social segregation defined according to the income of the occupants.

More recently, new neighborhoods located away from the center of the city are still being built using modern building techniques and more expensive materials, while within the central area of the city and along many of the main traffic routes, high-rise buildings are beginning to replace one or two story buildings. A social and economic survey, conducted on housing typologies in Tripoli in 2003, revealed that 64.6 percent were dwellings classified as courtyard and modified courtyard housing, 13.6 percent were of the villa type, and 20.6 percent were considered high-rise housing. Although the number of modern housing units was dominated by traditional and modified detached homes, the percentage of apartments completely built after the 1970 are the most important type of housing built during the last period of 30 years (NIDA, 2003) and (AL-Fageeh, 2007).

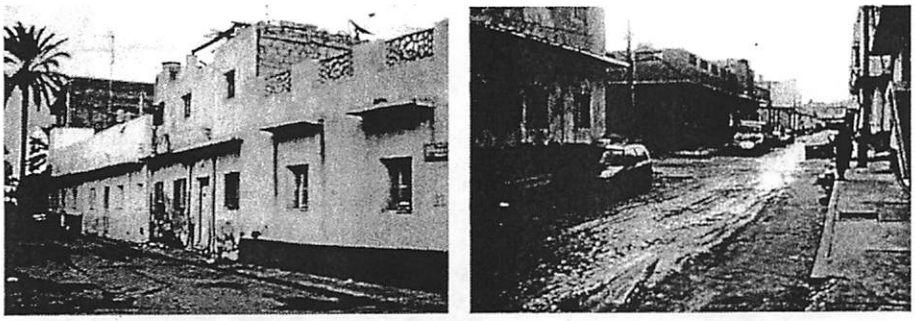
A house with a central courtyard is the main type that widely used until late of 1960s where new types have been emerged with the introduction of a new pattern of planning and urban laws. The traditional courtyard type has a central open space, which is the focal point for family domestic activities such as food preparation, children's play, and outdoor private living space. Trees and plants were integrated in this open space and in upper class homes it might contain a water fountain. Buildings were constructed using limestone bonded with clay, and sand plaster. The openings to the outside were small windows placed strategically to protect privacy and usually covered with fine metal grills named *Mashrabiah*. The courtyard houses have intricate tiles decorations, painted ceilings, and carved stone. In contrast, these houses display modest façades to the street, which convey a message of social equity (See fig. 5).

The second type is the modified courtyard which has been widely executed since late 1950s by local builders. This type of housing is known as low-rise social housing because it was mainly executed by the government during the 1960s and later for social projects. In comparison with the traditional courtyard pattern, a considerable change of functional spaces is clearly evident. The modified courtyard type has a small open area located close to the kitchen and



Figur 5

bathroom spaces. The function of the courtyard has been modified to be just a small open space unable to accommodate family domestic needs while most private family spaces must be opened towards the outside public domain, which obviously decreases the family privacy level. Street layouts, in which grid-iron patterns are implemented, influence the residential cluster morphology where most dwellings stand as semi-attached units. The opening to the outside in this case is unavoidable, due to insufficient private open space for social activities within the house; the only alternative is the use of public open spaces adjoining the units which cause social conflicts and the appearance of undesirable behavior among neighbors. Architecturally, this type of housing construction is simple and easy to grasp (See fig. 6).



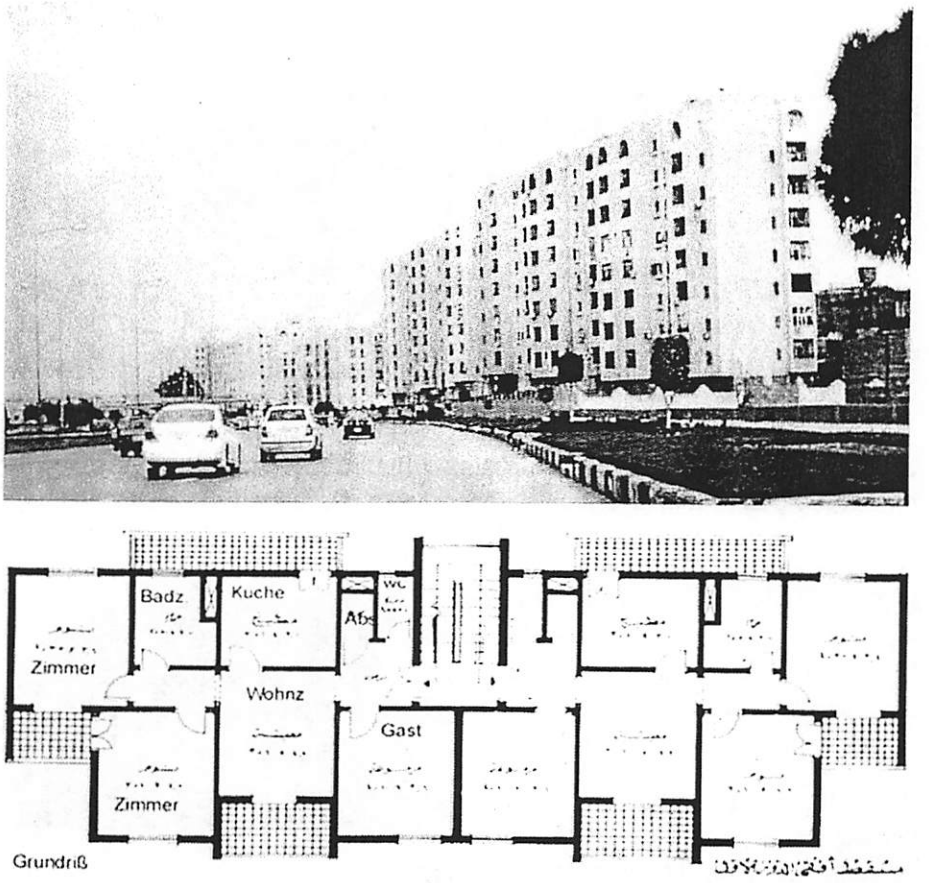
Figur 6

The third type, the villa, is a new housing pattern of residential dwelling that was introduced during Italian colonization for upper-class family. This free-standing concrete dwelling of two or three stories on a large plot between 500 to 1000 m is both popular and occupies a prominent role in the new residential areas which have existed for the last 40 years. The concept of the villa is quite the opposite of the traditional courtyard house.

While the courtyard house is inward-looking to its courtyard, all the villa openings are oriented outwards to front, back and side yards. For this type local and imported materials are used, which depend on the financial ability by the owner. Also the space arrangement of the dwelling is completely different from the traditional one in terms of internal space arrangement and the used materials (See fig. 7).

Figur 7

High-rise housing is the fourth type which was first introduced during Italian colonization. At that time, apartments were executed to house middle class Italian workers. After independence, this type of housing is widely executed. The need to solve long standing housing shortages was an important motive to build high-rise housing. The public sector during the last 30 years involved this type of housing three to ten stores high to accommodate the increasing number of workers and migrants and to provide decent housing for families. Most of this high-rise housing was built in clusters located throughout the main streets to give a modern atmosphere to the place (See fig. 8).



Figur 8

There was great confidence that modernism applied to housing and urban planning could deliver a more equal and fair society through high-rise housing which represented a powerful expression of the belief that social development could be controlled more effectively than even before. Also, there was an argument, that the new high density housing would be a practical instrument to protect nature from the urban sprawl associated with single-family houses (Turkington, Van Kempen, and Wassenberg, 2004). Another motive was related to the status of high-rise housing which could be used as landmarks and to reflect a city's urbanism and modernity.

Another motive related to the political condition which was the stimulus and support provided by the government for a radical solution of the city's housing problems such as the clearance of slums, and housing shortage.

Emerging of social and cultural conflicts

If planning and design is about creating better environments, then one should first decide what is better, for whom, under what circumstances, why and how one knows it is better, and so on. Design needs to take into consideration, the socio-cultural characteristics of people that should shape the kinds of settings to be created, and how environments affect people, and the mechanisms linking people and environments. Trying to copy forms or design by imitation in general is unlikely to be accepted or succeed; very serious mistakes are likely to appear. In the design of built environments, social and cultural structures, and institutions need to be linked to physical settings (Amos and Hardie, 2003).

Any attempt at formulating housing and space standards should start by recognizing the quality of space that has to be provided in order to satisfy users' needs. The nature of human needs, among other socio-cultural factors, is important to define space standards. The importance of social and cultural factors in the formulation of housing and space standards should be taken into account prior to executing patterns of housing that meet the social needs of population.

Each particular region and culture has developed its unique design solutions that reflect the society's habits, customs, beliefs, climate, and available technology. As a consequence, a large number of settings are being created gradually and together in what can be called as satisfying demands and leading to the establishment of local traditions of space design and life. The traditional built environment is the product of a long series of experiences reflecting the cultural and social values of its people. Therefore, living conditions, in fact, will be affected by the way these spaces are arranged within the dwelling for different activities. While social and cultural needs are variable from society to society, space arrangement and ways of design should be influenced by ways of life as well. Therefore, it is not possible to reach a universal agreement among different societies; however, a useful approach for the formulation of such standards is to look at the way space is socially defined, patterns of living, concept of privacy and other sociocultural qualities (Chowdhury, 1985).

In the Libyan context, the outcomes of unproven imported housing patterns, planning legislations, and methods of planning have caused major cultural and climatic conflicts as well as endangered of the native built environment's identity. In his research of urban housing policies employed in African countries, Don Okpala (1986, p.207,208) argues that,

"The goal of the official measures was to remove slums and to improve the aesthetic and sanitary outlook of those parts of cities ... In this earlier perspective, housing programs were used, not to meet desperate human needs, but to enhance political status and popularity.

Designed to contribute to the beautification and enhancement of the capital and other major cities, they were conceived of in unusual and spectacular terms, rather than the simpler and cheaper traditional methods, which have less publicity value. This approach proved to be largely a failure, as most of these projects were abandoned uncompleted because they were too costly of government resources, involved overwhelming political and social problems and in both the short- and long-terms, were not effective in terms of achieving their stated objectives".

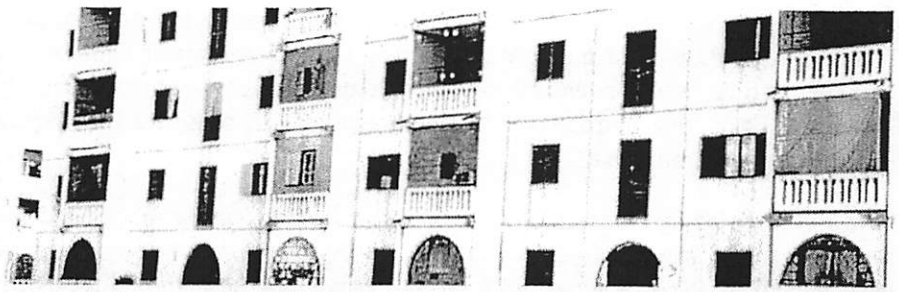
Cultural conflict, which the imported dwelling patterns (apartments and freestanding dwellings) have with its inhabitants' requirements, is being recently recognized. However, it has not been recognized yet, at least in a wide range among authorities, that a house form is an expression of the socio-cultural values of its inhabitants, to take a specific house form from specific social and cultural circumstances and impose it onto another one does mean not just implementing new forms but enforcing foreign cultural values on that public.

Also, when the authorities chose to introduce this type of housing, and the public accepted it without expressing dissatisfaction, both the authorities and the public thought it was just like importing and acquiring other modern material equipment.

With respect to the relationship between the physical layout of housing patterns and the macro climate of Libya, which is hot and dry, open spaces which appear as a result of implementing new housing patterns raise the question of the need of substantial care for such spaces. Also, in these new types the area of the dwelling exposed to direct sunlight and heat is significantly increased, which is extremely undesirable. Although climatic problems can be solved by the modern technology of air conditioning with high running maintenance costs, this modern technology was not able to solve cultural problems. What is more is that inhabitants have not changed their lifestyles and adapt their behavior to cope with the new housing forms and its cultural aspects.

Imported housing patterns, laws and planning regulation are being accused of harming the family privacy. Many semi-public and collective spaces including entries, alleys, and corridors proved to be very problematic.

Plan arrangement and architectural elements such as the balcony and the loggia are another aspect of emerging human privacy conflict (See fig 9).



Figur 8

The concept of human privacy might be defined as a process that aims to control transactions between persons; the objective of which is to enhance autonomy and minimize vulnerability. From this perspective, privacy serves three main functions: the limiting of social interaction, the establishment of plans and strategies for managing interaction, and the maintenance and development of self-identity (Abu-Gaueh, 1996).

From this perspective, it can be shown that the architectural, social, and psychological dimensions of privacy are fundamental to the daily life of people in the society. To control privacy in the built environment, architectural and behavioral variables must operate in harmony with each other in order to satisfy psychological needs.

Other problems related to imported housing types can be expressed in general dissatisfaction with plan arrangements, especially of the high-rise pattern, and its interior design problems: associated with small rooms, inadequate space for social activities related to Libyan family, insufficient storage space, and the absence of amenities such as lifts and external open spaces. Problems related to maintenance and the role of inhabitants in such a process, problems related to urban design and urban planning associated with poor location, high building density and problems of traffic and noise pollution, as well as poor internal social relations between neighbors, and wider socio-economic problems such as households in similar circumstances – all these problems - are concentrated together. In this respect, low income housing will doubtless be reflected in poor circumstances in the built environment.

A critical review of implemented urban policies in terms of social habits, values and daily needs of the local society seemed to be almost ignored which resulted social and cultural conflicts. This ignorance might have been due to an expressed desire by local authorities to follow imported planning principles widely practiced in western communities coinciding with a lack of understanding of indigenous needs in regard to social and cultural issues by foreign experts whose ideas were implemented. While the target of the planning intervention concerning the built environment had been to ease and improve the living conditions of the population, socio-cultural satisfaction is now in question. Consequently, plans have not worked out mainly because they did not properly consider the local conditions and socio-cultural needs as implementation factors.

References

Russo, Paola, 2004, Welfare in the Mediterranean Countries: Great Arab Popular Socialist Libyan Jamahiriya, by Centre for Administrative Innovation in the Euro-Mediterranean Region, Rome

Omar, Abdulmagid and Les Ruddock, 2001, Housing Policies and Strategies: The Experience of Libya, in: COBRA Conference, Salford

Kultermann, Udo, 1999, Contemporary Architecture in the Arab States: Renaissance of a region, New York, pp. 91, 92

Okpala, Don C. I., 1986, Aspects of Urban Housing and Human Settlements Policies and Strategies in Africa, in: HABITAT INTL. Vol. 10, No. 3 1 UK, p. 203-223

Encyclopedia of Libyan Urban Legislation, 2008, Tripoli, law 116 in 1972, law 4 in 1978, modiŞed low No 4 in 1992, modiŞed low No 4 in 1995

Ahmouda, K., 2002, Varianten des privaten Freiraums und deren Abwandlung im zeitgenössischen Wohnungsbau Libyens, Stuttgart, p. 104

Whiting Associates International, 1969, The Comprehensive Plan of Tripoli, Final Report, Tripoli November, p. 86-89

National Information and Documentation Authority (NIDA), 2003, Social and economic survey of Tripoli, Tripoli.

Al-Fageeh, Abdolmonam F., 2007, Toward Sustainable Built Environment in Contemporary Tripoli Neighborhood, unpublished Master Thesis, Weimar, p. 61-73.

Turkington, R., R. Van Kempen, and F. Wassenberg (editors), 2004, High-rise housing in Europe: Current trends and future prospects, Delft, pp. 7, 8

Rapoport, Amos, and Graeme Hardie, 2003, Cultural change analysis: Core concepts of housing for the Tswana, in: Tipple, A. Graham, and Kenneth G. Willis (editors), Housing the poor in the developing world: Methods of analysis, case studies and Policy, London, p. 36-39

Chowdhury, Iftekhar Uddin, 1985, Housing and Space Standards: Human needs and regional factors, in: Powell, Robert, Regionalism in Architecture, The Aga Khan Award for Architecture, Singapore, pp. 78, 79.

Abu-Gaueh, Tawfiq, 1996, Privacy as the Basis of Architectural Planning in the Islamic Culture, in: Özkan, Süha (editor), Faith and the Built Environment: Architecture and Behavior in Islamic Cultures, Vol. 11, no 3-4, p. 269 - 288

Alvar Aalto's Abstract Paintings and His Quest for Expressive Forms

Tuomo Hirvonen

In this paper, I study and analyze three abstract paintings of Alvar Aalto and I discuss how they might relate to his architectural expression in his mature era.

In 1947, *Domus* magazine published Aalto's article *Abstract Art and Architecture.* This widely quoted article is also known as 'The Trout and the Stream'. In this article Aalto (1970, pp.17-18) emphasized the interaction between abstract art and modern architecture. He interpreted that they have a shared starting point. Interestingly, Aalto had made his first personal attempts in abstract painting only two years earlier.

In fact, Domus magazine had asked Aalto to take part in the contemporary architectural discussion concerning New Monumentality. Behind this discussion was the need to create modern civic centers that would represent monumentality of that moment. Giedion (1944, p.552) postulated that it could be gained with the aid of contemporary art, e.g., in the form of murals. This would lead to new architecture and to 'the reconquest of the monumental expression'. Furthermore, it would surpass plain functionality of contemporary rationalistic architecture.

During the 1930s and 1940s writing was an important means for Aalto to reflect on his conception of new architecture. In 1945, he started his occasional painting efforts and his medium was abstract oil painting. Perhaps this action was Aalto's response to Giedion's thoughts considering that they had a close friendship in those days.

Whatever the truth, it seems that Aalto was influenced by the latest international abstract art, when he started his painting experiments. In fact, Aalto had friends among artists in New York and he visited there many times during the 1940s.

The so-called compositions in Aalto's abstract paintings, especially from the 1940s, can be described somewhat clumsy compared with his refined architectural designs. The reason for this might be his preference to Art Informel. But then, what was Aalto's intention while he painted?

The study is structured as follows: after this introduction chapter, 1) I go through the formal analysis of three paintings of Aalto. 2) I describe Aalto's personal relationship with abstract painting: the nature of the paintings and the common features in them. 3) I try to clarify the possible connection between Aalto's paintings and his architecture.

The analysis of three example paintings of aalto

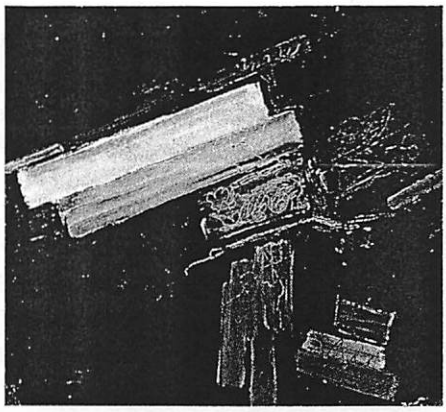
These particular paintings were chosen because they represent well the development of Aalto's painting career, which centers on the 1960s. Because Aalto made a fresh start, without definite external models, it is obvious that he did not achieve groundbreaking results in the field of abstract painting.

Aalto's experimental painting period of the 1940s lasted only a few years. After that, the 1950s were a busy time for him with big projects; hence there are no paintings from that decade. He began painting again more actively in the 1960s while running his architecture office, and, at that time, he had reached the apex of his career.

Aalto's role as a sporadic painter and sculptor has been studied recently by Erik Kruskopf. He catalogues eight paintings from the period 1945-47, about forty from the 1960s and only three from the 1970s. The majority of the paintings cannot be fixed to a certain year (Kruskopf 2012, pp.210-211).

The three paintings

The first painting is loosely composed and the focus is near the center of the picture field (i.e. canvas), where a group of more or less rectilinear shapes meet. The pair of distinctly rectangular yellowish shapes on the left has been balanced with less defined greenish rectangles and there is a contrast between the former and the latter elements. Aalto has also positioned the pictorial elements somewhat diagonally which adds the dynamics of the painting. A kind of contradiction between order and disorder is present.



Oil painting (from 1946-47): Sign M2/12 (38cm x 46cm)

There is an impression that different directions (i.e. rectangles) are in a collision course and thus in motion. In consequence, a certain tension is present in the painting. Aalto has been interested in the collision area of varying directions and he attempts to connect the differently coloured areas by a thin line that meanders densely over them.

The unity of the painting is achieved by the continuous space-like dark background colour and by the similarity of the coloured rectangle-like shapes. These seem to be in varying depths, because of a mild cold-warm colour contrast.

In the painting, nothing refers to reality although green and brown colours might intrinsically allude to nature. All in all, a feeling of depth, motion and transition is present in the painting. The paintings from the 1940s are somewhat gloomy and

Aalto used even black colour in addition to green and brown, in mostly simple compositions. This work differs from most of Aalto's abstract paintings because there are many compositional elements in it. Generally, Aalto avoided geometrical forms and rationality in his paintings. Because of spontaneity, this painting could be in some way connected with the Abstract Expressionism that was developed in the United States, especially in New York, in the 1940s. The works of Abstract Expressionists were consciously experimental and highly refined in their various forms (Anfam 2013). In that sense, Aalto's paintings are not on par with them.

Dempsey (2002, p.188) describes Abstract Expressionists in the following way: 'Like the Expressionists, they felt that the true subject of art was man's inner emotions, his turmoil, and to this end they exploited the fundamental aspects of the painting process – gesture, colour, form, texture – for their expressive and symbolic potential.'

Oil painting (from the 1960s): Sign M3/66 (55cm x 46cm)

The painting is dominated by an asymmetric yellow motif, which can be described as modified fan-shape because of its angular outline. There is instability in the painting because this motif is leaning to the left. This diagonal orientation makes the painting active and dynamic.

The sculptural fan-shape is expansive by nature. Conceptually it could be described with expressions: tension or growth. All in all, Aalto achieves an effect of motion. This formal element is pushing the limits that the canvas sets. The white foreground, the yellow main motif and the darker background, added with the varied finishing of the paint, create the effect of three-dimensionality in the painting.

The background has been painted with layers of different colours. In the top layer, the shades of gray vary from white to black. In small areas, there are remains of blue colour as accents. The paint has been mostly applied with a palette knife in a straightforward manner. Accordingly, some of the colour layers can be thick.

The dialogue of warm and cold colours creates contrast in the painting. The modified fan-shape, which appears in this painting, is a developed version of the fan motif that Aalto often utilized in his architecture. For example, Aalto has cultivated it a great deal in the layout of the Civic Centre of Seinäjoki.

This type of painting differs from the two previous ones because it has no formal motif. The untraditional composition of the painting is created with three colours. In the background, as a bottom layer, is cold yellow, which is applied thinly. Aalto has applied warm orange colour areas over it in a random manner with softly rounded movements.

Oil painting (from the 1960s): Sign M3/32 (50cm x 81cm)

The white colour is applied impasto with curvilinear gestures, which support the orange-coloured forms. These white colour strokes accentuate diagonality in the composition. They are consciously situated in relation to the edges of the canvas. The curved shapes of the paint areas and the difference between warm and cold yellow create movement in the painting.

Aalto is able to build tensions with the aid of rather slight contrasts. At the same time, everything is in balance. In this painting Aalto uses the whole canvas so that the painting seems to continue outside the boundaries of the canvas.

The orange coloured areas create a turbulent movement, which keeps the eyes of the observer in motion. There is an atmosphere of transition. This kind of vitality and spaciousness give room for the imagination and emotions of the observer. This painting represents Lyrical abstraction or Art Informel that is an artistic attitude in abstract painting to which many of Aalto's later oil paintings can be included.

Aalto's approach to abstract painting

The nature of Aalto's painting experiments

In his book *Alvar Aalto kuvataiteilijana* [*Alvar Aalto as artist*] Kruskopf (2012) states that Aalto's paintings were a kind of 'aesthetic play' and spontaneity was one of the key factors which guided Aalto while he painted. In addition, Aalto himself did not regard the results of painting as artworks separated from his architectural oeuvre (Kruskopf 2012, p.197). However, it does not mean that the paintings were architectonic sketches.

Aalto's paintings from the 1940s were ahead of their time in Finland, because non-figurative artworks were rare among Finnish artists before the 1950s. However, his paintings are somewhat amateurish and they do not fit, as such, in the strict contexts of Finnish or international abstract art. Moreover, it is known that the modern artworks get their identity and significance only in the appropriate context. Hence, a more suitable context for Aalto's paintings is the evolution of his personal architectural expression or the development of the modern architecture and especially the different mental approaches it embodied.

Aalto preferred individualism and deliberately chose a kind of anarchist attitude in many contexts. That was part of his personality. Kruskopf (2012, pp.17-18) states that Aalto's abstract painting experiments gave him a chance to break the dominant rules and doctrines. He concludes that Aalto wanted to break all the conventions, also those of avant-garde art. Kruskopf might mainly allude to Art Concrete that started around 1930, was dominating the modern art till the WWII and stayed strong to the late 1950s. The paintings that Aalto produced differ substantially from Art Concrete which excluded lyricism and aimed at absolute clarity. It followed the ideals of its founder Theo Van Doesburg (Dempsey 2002, p.159).

In fact, it seems that Aalto was searching for personal liberation by following his own instincts and expressing himself freely. Hautamäki (2012, p.213) writes about the freedom from rules in modern art: 'the antithesis of classic art, modern art, does not base on any stylistic ideal. Instead it assumes that the artists as well the audience create themselves their own aesthetic and political norms and ideals.' Undoubtedly, Aalto wanted to express his own ideals in his paintings as he did in his architecture.

Kruskopf (2012, p.159) does not analyze individual paintings in his book. However, he characterizes Aalto's later paintings in general:

Many of the paintings from the 1960s are totally informalistic, without clearly distinguishable forms. However, the others consist of form elements that have been more clearly outlined. The "intermediate examples" form the third group of paintings. In them clearly defined forms, which usually have been rounded off, are mixed with the informalistic splashes of color. From all accounts, the use of different shapes does not seem to be connected to different periods; instead they appear side by side. If one wants to look for any tendency of development, which is related to the form, one can state at most that the informalistic features have strengthened towards the end of the 1960s.

Kruskopf connects Aalto's abstract paintings from the 1960s and 1970s to 'informalism', by which he refers to Art Informel that landed in Finland in the 1960s. The term itself alludes to free form.

Art Informel was the European concurrent equivalent of Abstract Expressionism. It was a reaction to Geometrical Abstraction and was often logically labeled as Lyrical Abstraction. It is a movement in European painting that began in the mid-1940s and flourished in the 1950s. Cooper (2013) describes the nature of 'informalist' painting: 'Art Informel pictures were executed spontaneously and often at speed so as to give vent to the subconscious of the artist. (...) Sometimes there is an emphasis on the texture or tactile quality of the paint, (...)'. This description applies well to Aalto's paintings. According to Dempsey (2002, p.184) the key concepts that are connected with Art Informel are individualism, authenticity, and spontaneity, the emotional and physical engagement. As the term Art Informel indicates, paintings with carefully constructed compositions did not belong to this painting movement.

In his article, *Abstract Art and Architecture* from 1947, Aalto (1970, p.18) writes:

Perhaps the important thing is precisely that abstract art represents a simplification which enables us just to experience feelings, purely human feelings which written language somehow does not know how to transmit anymore. But, of course, this only holds good if art allows for that vast accumulation of intelligence and human feelings to which we have already referred.

The phrase "purely human feelings" in the quoted text might explain the spontaneous and somewhat unconscious forms in Aalto's paintings.

Presumably the process of the mind is important to him. It seems that Aalto is approaching the subconscious of his mind, which makes the paintings subjective expressions of his personality. This feature is supported by the fact that he painted rather quickly and it seems obvious that he did not make separate drafts before starting a certain painting.

The common features in the paintings

The technique:
The spontaneity of Aalto's physical efforts is clearly visible in his paintings. The brushstrokes are strong, clear gestures of colour in thick layers are physically present. He accentuates the forms with thick layers of paint, especially white paint, which bring about the materiality of the painting. It is a kind of impasto -technique, where he often uses a palette knife. In some cases, he mixes sand in the paint and creates very tactile and thick surfaces. In such cases he acts as if he were a sculptor. The motions and gestures of his hand become very evident. Distinctly resulting relief-effect has been an objective. (Aalto 1970, p.25) Correspondingly the materiality, the scale of the human hand and haptic attributes are important factors in his architecture.

The compositions:
Aalto does not use very strong contrasts in his paintings. This goes both with the use of colours and formal elements. He uses often white color to emphasize forms in the canvas, either the form itself or its background.

It seems that he has consciously avoided geometry and meticulously constructed compositions in his paintings. The composition itself was not important in the artistic attitude (i.e. Art Informel) which Aalto chose. Therefore, the risk that the paintings appear both simple and amateurish is unavoidable.

In his painting the motifs or elements are floating against a background like in space. At the same time, they are in dynamic balance. Very often the motif or formal arrangement is in more or less diagonal relation to the rectangular form of the canvas. This diagonality enhances spatiality, which is also supported by the way the colours are applied on the canvas. These emphasized painting gestures bring about differing directions, which in turn create tensions in the painting.

The content:
The content of Aalto's paintings seems to be at a state of change or stage of development. In fact, he changed the subject matter from painting to painting; hence there are not series of paintings from the same theme.

In many Aalto's paintings exists a kind of directed shape or painterly process that is based on some diagonal elements. It results a sense of movement and in consequence there is an atmosphere of transition or growth in the paintings.

Yellow colour probably expresses light or vitality in general. The vitality emerges also in the expansive forms and treatment of the paint in his paintings. This kind of vitality and spaciousness also give room for the imagination and emotions of the observer.

Accordingly, the medium of painting enables Aalto to express himself more freely than the design tasks allow. Ragghianti (1978, p.129) describes Aalto's architectural sketches and drawings in the following way: 'In his drawings there is a certain kind of sensation of expansion, an elevating even numinous atmosphere. It supersedes the empty, neutral or rationally postulated space and the abstract concepts of height, width and depth.' In my opinion, this previous quotation describes Aalto's abstract paintings even better than his sketches.

Above all, Aalto's paintings were personal and they represent his humanistic and undeniably expressionistic worldview. In comparison, the connection between man and nature was as important for Aalto like it was for northern German Expressionism. Already in those paintings in the early 20th Century there was 'a need to find the point where the outer and inner worlds met' (Vogt 2013). Correspondingly, in Aalto's paintings his extrovert and introvert sides of personality come together.

In general, the typical features of the Expressionist painting had been the bold use of the paint surface, the distorted and exaggerated forms and especially bold colours. Those were means to express the non-rational sides of human mind. Among other things, those features can be found in several abstract paintings of Aalto's.

What are the possible connections between aalto's abstract paintings and his architecture?

In this chapter, I interpret and piece together the features that can be shared between Aalto's abstract paintings and his certain architectonic designs. The buildings I chose to bring up in relation to the paintings are the Senior Dormitory (*Baker House*) for M.I.T. (1947-1949) and the Seinäjoki Library (1960–1965). The former represents totally new direction in Aalto's architecture and the latter exemplifies Aalto's heroic period. These decades also represent the productive eras for Aalto in abstract painting.

The connections between Aalto's abstract paintings and his architecture have been far from clear. For example Göran Schildt (1982, p.16) postulated that Aalto s

paintings were insolubly tied to his building: exercises and experiments undertaken with the purpose of facilitating his work as an architect. This is a rather nebulous and bombastic expression. One explanation for this statement is that Schildt famously became friends with Aalto, who was able to be a manipulative speaker, if wanted.

I claim that Schildt was seemingly misled by Aalto. One reason for this is the earlier misinformation concerning the actual dates of many paintings. This fact comes clearly out in the book *Alvar Aalto Synopsis: painting, architecture, sculpture* from 1970 where the dates of many paintings are set incorrectly at earlier decades, as the 1940s or the 1950s instead of the 1960s, which is the correct decade according to the latest study of Kruskopf (2012). It is possible that this was intentional on Aalto's side if he wanted to give an impression that both the painting processes and architectural design were combined and overlapping in his practice.

Contrary to Schildt's opinion, Kruskopf (2012, p.183) claims that Aalto did not experiment with abstract painting in order to create new useful forms and patterns to aid his architectural practice. I agree with his opinion as far as the paintings from the 1960s and 1970s are in question – however, the situation might be different with the paintings from the 1940s. During that decade Aalto was searching new direction in many ways.

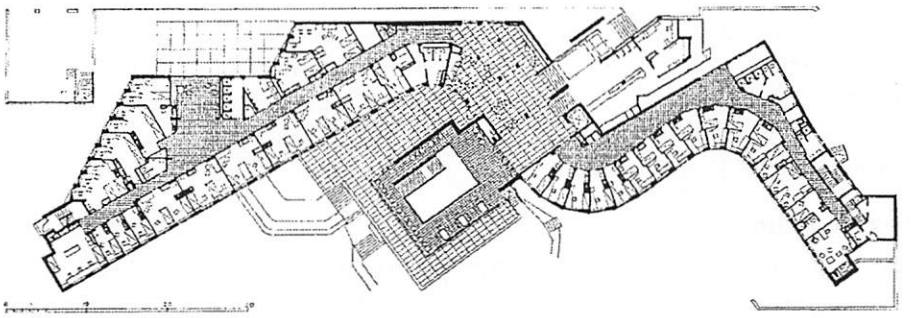
When Aalto started abstract painting around 1945 the relation between painting and modern architecture had changed since the days of Purism and De Stijl. These movements had combined definite abstract art with modernist architecture and there had been a strong influence between them.

After WWII new human values were appreciated in the field of art. Existentialism fought against rationalism in Europe and one result of this juxtaposition was Art Informel. Similarly in the United States, the Surrealists had a big impact on the new abstract art, Abstract Expressionism. Instead, in architecture, the International Style had been canonized and it had become a part of everyday life as it was merged with mass production.

Why did Aalto start painting in abstract format in the 1940s? Apart from the influence that Aalto got from contemporary abstract art, the search for new expression and forms seems to be the most obvious reason. In his paintings he did not follow the paths of his friends like Calder, Moholy-Nagy or Leger although he knew their artworks or might even have received a sort of theoretical backing from them. Nevertheless, as it was with his architecture, he wanted to go his own way.

It looks like Aalto became interested in abstract painting at the same time as the Existentialist and Surrealist influence started to become evident in abstract art. Also then, in the 1940s, it was inevitable that he had to find formal expression for the new architecture he had been searching since the 1930s when he departed from rationalism.

The debate about the New Monumentality in modern architecture was raised in the architectural world during the WWII. It might have been the other reason for Aalto to experiment in painting. In any case, he seems to have created his personal interpretation for the matter in question: he started expressing himself through abstract painting and subsequently he designed the Senior Dormitory (Baker House) 1947-49 (HirvonenFigure4.jpg) for the campus of M.I.T. in the 1940s. This building was very different in comparison with his previous oeuvre. It was much more expressive and it has a definite monumental quality. The shape of the building and the robustness of the exterior are ahead of the undeveloped appearance and earthiness of his paintings of the 1940s. However, some similarity exists.



The first floor of the Baker House

Although about 50 abstract paintings are catalogued from Aalto, only a few of them could be interpreted to depict a shape of a building or which represent a monumental shape in side profile. Mainly, the subject-matters of his abstract paintings are either non-figurative or a kind of organic forms. I agree with Kruskopf (2012, p.102) as he claims that 'the formal similarities between Aalto's particular paintings and architectural projects can be seen as the vestiges of forms, which he actually had used in his architectural practice. Or which Aalto's imagination produced while he was implementing his design work.'

This opinion is supported by the fact that Aalto completed over 40 abstract paintings during the 1960s and, even then, most of them were made after 1965. The other fact is that the majority of his architectural designs of the mature era were drafted or executed during the latter part of the 1950s. Hence, most of the paintings followed his major architectural designs. Only a few of Aalto s major designs, which were also executed by him, were sketched during the 1960s. These are Seinäjoki Library 1960-65, Rovaniemi Library 1961-1966, Finlandia Hall 1962-1971, Mount Angel Library for Benedictine Monastery 1964, 1967-69 and Alajärvi Town Hall 1966-1969.

Moreover, for Aalto, the paintings represented something different than the ordinary pencil sketch. If Aalto had wanted to study the shapes of his buildings, it would have been much easier by sketching with 6B pencil, which he normally did as he was a skilful draughtsman. Hence it is clear that Aalto was looking for something else with the aid of the painting.

Schildt has often compared Aalto's architectural expression with Cezanne's art. He (1982, p.16) describes:

One of the primary problems he [Aalto] set himself as an architect was how to combine well-balanced and expressive entities out of independent building elements. (...) Aalto worked with detached, individual forms, which he balanced against one another intuitively. As with Cezanne, the whole emerged from his spontaneous sensibility and the results of each undertaking were unique.

I would say that in his paintings Aalto was more interested in those individual forms, which Schildt mentions, rather than in complex compositions. Probably Aalto interpreted that form intrinsically retains something and he wanted to study it. In addition, the lack of the compositional complexity of Aalto's abstract paintings and the specific instability in them separates his paintings from his architectonic designs, in which the identifiable complexity is skillfully set in harmony. Anyway, this certain instability in the paintings makes them interesting while it refers to an ongoing creative process.

The fan-shape

As was previously stated, the shapes in Aalto's paintings do not relate directly with his architectural designs. However, the old architectonic theme, which can be called fan-shaped (or wedge-shaped) form occur in asymmetrical variations in many paintings.

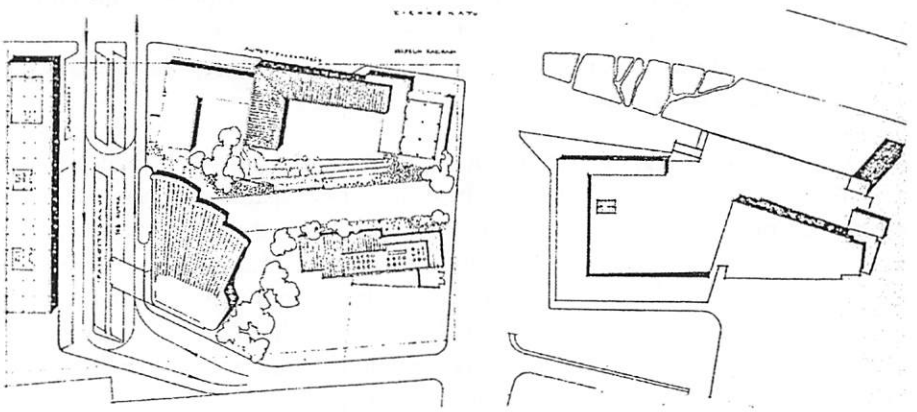
For Aalto, the fan-shape was an innovation which he utilized in some architectonic designs already in the 1930s. During that time the fan appeared symmetrical.

In his architecture, the fan-shape is associated to a function of a get-together. In other words, to a situation where a social encounter or 'drama' is involved. Sometimes it is linked functionally with an opening up towards light.

Traditionally in architecture this kind of fan-shape or wedge-shaped form has been used in the architectonic layout if one wants to distort the perspective, i.e., to manipulate the experience of a space or in order to increase intensity and tension in architecture. This was typical in Baroque architecture. Furthermore, as Schildt has proven, in some of Aalto's layouts, the connection to the 'fan-formed' theater auditorium of the ancient Greece is evident.

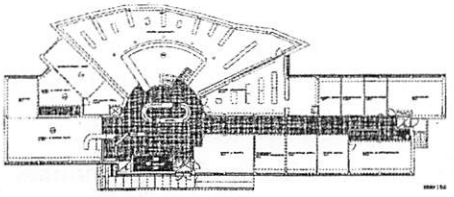
Aalto incorporated the fan-shape with the rectangular forms in different ways in the floor plans of certain buildings from the 1950s onwards. Such buildings are: the House of Culture 1952-58 (its auditorium has a particular asymmetric fan-shape), Wolfsburg Cultural Center 1958, Neue Vahr High-Rise Apartments 1958-62 and Church Wolfsburg 1959, Rovaniemi Library 1961-66, The Mount Angel Library for Benedictine Monastery 1964, 1967-70. The fan-shape can be seen both in the floor plan and in the section of the Seinäjoki Library 1960-65 (Fig. 6). Also the main auditorium of the Helsinki University of Technology 1953-60 utilizes the symmetric fan-shape in its plan and section.

The Seinäjoki Library

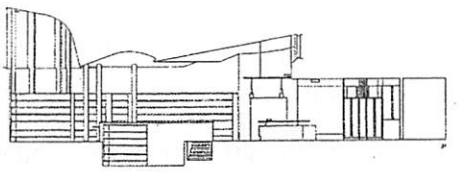


The situation plan of the first competition phase 1958

Aaltos library of Seinäjoki is part of the Civic Center, which Alvar Aalto designed in several phases. The general plan (HirvonenFigure5) is based on a competition in 1958. The previously mentioned fan-shape emerges in different ways in the situation plan of the Civic Center. In it, either the building itself has a fan-shape or it defines directions that create fan-shape form in relation to other (often orthogonal) building masses. Aalto has done this with the intention to create both cohesion and tensions between different buildings. In addition, a definite contrast exists in relation to the rectilinear (grid) town plan of the Seinäjoki town center. In Aalto s plan the asymmetric fan-shape that depicts theater, represents one form, which Aalto varied in his abstract paintings in the 1960s. Hence, the fan-shape appeared in his architecture earlier than in paintings.



The final floor plan of the library



The cross-section of the library

The library defines the inner courtyard of the Civic Center from the south. At the same time, it is a closed, but expressive object in the scenery. The horizontality of the building integrates well to the open and flat scenery of Seinäjoki region. It is possible to associate the white nature of the building to the functionalism of the 1920s and 1930s. However, the library does not fulfill the primal ideal of functionalism that the function of the building should be clearly seen from its appearance. The characteristics of the exterior of the library allude to anonymity and abstraction. The louvers in front of the windows increase the level of anonymity of the building. Because of the louvers, the interior of the building can be seen from outside only after dusk.

The library building is a fine example of the innovative complexity and of the contrast that the integration of a rectangular shape and a fan-shape brought about in a building. I.e. forms of two different kinds create one united form Aalto developed this very personal theme during the 1950s. The Seinäjoki library was perhaps the most successful version of this architectural theme.

Also inside the building, the integration of a rectangular and a fan-shaped space, with their contradictions, is well balanced in a new spatial experience. While these different kinds of spaces are nested with each other, the result is unity of the architecture. This unity is achieved through the skilful use of clerestory windows, the sculptured formation of the ceiling, the use of columns and with a sunken reading area. Together they create a rich spatial climax inside the library. The sculptural ceiling is a complicated and expressive materialization of white abstraction compared with the straightforward exterior of the building.

Similar characteristics of Aalto's architecture and his paintings

For Aalto, the human experience of the unique spaces combined with the skilful use of natural light, especially skylight, seem to be as important as the composition in his architecture. However, the compositions are more meaningful in Aalto's architecture than in his paintings.

The skilful use of natural light is a typical characteristic of Aalto's architecture. Correspondingly, in paintings from the 1960s he often uses yellow or white colour in accentuating the shapes. Hence, those colours might refer to light.

Sometimes spatial tensions between spaces possessing different characteristics are present in his architecture. The creation of tensions can be seen in Aalto's abstract paintings, as the shapes in his paintings oppose the limits that the canvases set.

From the 1950s onwards Aalto utilized the fan-shape in relation to orthogonal elements in his architecture. Correspondingly in his paintings the fan-shape or diagonal elements are in relation to the rectangular format of the canvas.

Emotion and intuition were two important features in his abstract paintings. Analogously, he emphasized the role of human life as a constitutive factor in his architecture and the 'bio-dynamic processes' which are involved in it (Aalto 1970, p.25). His paintings have a relief -like characteristics in their materiality which has analogy in the physicality, the haptic attributes and the human measure of his architecture.

However, what seems to be consistent with Aalto's mature architecture and paintings is the use of directed shape or spatial element that is somehow expressive and is in active relation with the surroundings. Also individual shapes are in relation to the rectangularity of the canvas or to surroundings in the case of a building respectively.

Aalto's empathetic attitude towards Expressionism and to the 'organic mindset' is visible in his specific architectonic designs and in his paintings as well. In them,

his personality and preferences come out in par excellence. There is an interesting contradiction and cohesion between the free form of Aalto's paintings and his refined human architecture. Aalto (1970, p.24) himself stated that the differing mediums result in different kind of materialization of ideas. Perhaps, in the end, he needed both media to express his personal view of life.

Architecture and abstract painting are different mediums

The compositions in Aalto's architecture are much more complicated than in his paintings. Moreover, his architecture is substantially more multi-level than his paintings. In that sense, they can't be compared although they have links with each other. However, the formal motifs of Aalto's abstract paintings reflect the development and characteristics of his architectural thinking which he aimed to actualize from the 1940s onwards.

In the 1940s Aalto was searching for a new direction to his architecture also through the medium of painting. It seems that Aalto was looking for shapes that have dynamics in a sense that there was like an evolution going on within a system. This has similarities with the organic architecture. In his architecture, after 1945, Aalto was able to achieve new monumentality, which contains emotions and mental issues like memory. This is in concord with his idea that abstract art could only be understood through emotion.

Aalto's abstract painting exercises have their deeper roots in his sympathy towards the early Expressionism of the 20th Century added with his personal notion of human life. These features had a role in his architecture from the 1940s onwards. His paintings and architecture share features like experience, emotion, intuitiveness, growth and tensions, even an atmosphere of transition.

Towards the end of the 1960s and especially in the 1970s, Aalto deliberately tried to express himself by abstract paintings and he moved on to a freer expression in painting, leaving the explicit formal motifs behind. It seems that he was approaching the subconscious of his mind. Because of this the paintings are subjective expressions of his personality.

Aalto was able to include a certain kind of sense of expansion to his paintings and even to his architecture. His best paintings were able to convey the vitality and humanity of his architecture. The paintings represent individualism, authenticity, spontaneity in addition to an emotional and physical engagement. I conclude that for Aalto, especially the fan- or wedge-shapes represent or symbolize vitalism, growth, hopefulness.

To a certain extent Aalto can be considered an expressionist, not least because anarchist attitude has often been connected to Expressionism in art history. Like previously has been noted, Aalto wanted in general to break rules and conventions of the main stream. This goes both with his architecture and abstract paintings. Furthermore his paintings open up the complex introvert - extrovert side in him.

References

Aalto, A., 1947. Abstract Art and Architecture. In: B. Hoesli, ed. *Alvar Aalto Synopsis: painting, architecture, sculpture/ Alvar Aalto.* 1970. Series: History and theory of architecture; 12/ Gta. Basel: Birkhäuser Verlag, pp.17-18.

Aalto, A., 1970. The Relationship between Architecture, Painting, and Sculpture. In: B. Hoesli, ed. *Alvar Aalto Synopsis: painting, architecture, sculpture/ Alvar Aalto.* 1970. Series: History and theory of architecture; 12/ Gta. Basel: Birkhäuser Verlag, pp.24-26.

The Alvar Aalto Foundation. 1999. *Alvar Aalto: Arkkitehti / Architect 1898 - 1976.* Helsinki: Rakennustieto Oy.

Anfam, D. *Abstract Expressionism.* Grove Art Online. Oxford Art Online. Oxford University Press. Available at: <http://www.oxfordartonline.com/subscriber/article/grove/art/T000252> [Accessed May 25, 2013].

Cooper, P. *Art informel.* Grove Art Online. Oxford Art Online. Oxford University Press. Available at: <http://www.oxfordartonline.com/subscriber/article/grove/art/T004408.> [Accessed June 9, 2013].

Dempsey, A., 2002. *Styles, Schools and Movements. An Encyclopaedic Guide to Modern Art.* London: Thames & Hudson Ltd.

Giedion, S., 1944. The Need for a New Monumentality. In: P. Zucker, ed. *New Architecture and City Planning.* New York: Philosophical Library, pp. 549-568.

Hautamäki, I., 2012. Taidekritiikin perusteet. [The Essentials of Art Critics]. In: M. Heikkilä, ed. *Nykytaide, kritiikki ja hermeneuttinen filosofia.* Helsinki: Gaudeamus.

Kruskopf, E., 2012. Alvar Aalto kuvataiteilijana. [Alvar Aalto as Artist]. Helsinki: SKS.

Ragghianti, C. L., 1978. Alvar Aallon luovat mielikuvat.[Aalto's creative ideas]. In: A. Ruusuvuori, ed. *Alvar Aalto 1898 1976.* Helsinki: Suomen rakennustaiteen museo, pp. 129-133.

Schildt, G., 1982. Aalto as Artist. In: J. Pallasmaa, ed. Exhibition: Villa Mairea, Noormarkku 1.7.-1.8.1982. [Noormarkku], Mairea Foundation.

Sert, J. L., Léger, F., Giedion, S. [1943] Nine Points on Monumentality. In: J. Ockman, ed. 1993. *Architecture culture 1943-1968: a documentary anthology.* New York: Rizzoli.

Vogt, P. *Expressionism.* Grove Art Online. Oxford Art Online. Oxford University Press. Available at: <http://www.oxfordartonline.com/subscriber/article/grove/art/T027174> [Accessed 27 August 2013].

Figures

Fig. 1., 2., and 3. in Kruskopf, E., 2012. Alvar Aalto kuvataiteilijana. [Alvar Aalto as artist]. Helsinki: SKS.p.154, p.166 and p.180.

Fig. 4. in Quantrill, M., 1983. Alvar Aalto: A critical study. Helsinki: Otava. p.110.

Fig. 5. in Penttilä, J., 2009. The face of the city. The Seinäjoki civic centre by Alvar Aalto. p.54. Thesis.

Fig. 6. and 7. in Alvar Aalto Museum, 2011. Seinäjoki Cultural and Administrative centre 1951-1987. Architecture by Alvar Aalto no. 16, p.32 and p.34.

Performative Identity

Arief Setiawan
Southern Polytechnic State University, Marietta, Georgia

The issue of place and identity in architecture may have been elucidated ever since architecture has been theorized. In the western world, the writing of Vitruvius, the source of architectural theories for almost two millennia, already discusses the importance of place in informing a design, in terms of materiality, geographic and climatic, and also cultural symbolic. Other major texts in architecture from other civilizations, such as Vastu-purusha-mandala, also discuss the way in which places inform the design. The engagement with the notion of place suggests a concern with the specifity and externality that inform the generative process of architecture, in place of generality and the internal logic of architecture. In the nineteenth and twentieth century, the rise of romanticism in art and architecture, and nationalism in a broader cultural realm, prompts the concern about architecture that will reflect a specific group of people. One of the factors of that drives this view is the notion of community, in which an organic bond between its members exists. Further, this organic bond ties not only the members, but also the community and its land as well as the community and everything that it produces, including arts and architecture.

Identity in Architectural Texts

In the more immediate past, the theory of regionalism represents this concern in the history of modern architecture. At the roughly the same time as the emergence of Modernism in the 1930s, Lewis Mumford brought forth this issue. In his lectures, such as recorded in his writing *The South in Architecture*, Mumford attempted to problematize the interaction between universal and the particular, especially within the context of the rapid development of the modern world based on the technical inventions and innovations (Mumford, 1941 [1967]). Instead of simply contradicting these two conditions, Mumford saw the possibility of them informing each other by highlighting the possibilities of adaptation and the sensibilities to locations. He argued that the universal could be adapted to local conditions and constraints.

In the 1980s, Liane Lefaivre and Alexander Tzonis brought back Mumford's notion of Regionalism. However, Lefaivre and Tzonis framed Mumford's regionalism within the context of contemporary globalization as a strategy of resistance (Lefaivre; Tzonis, 2001). Thus, regionalism is a critical, counter response to the universalization and homogenization of the world. The primacy of the specific over the universal is the critical content of critical regionalism. However, similar to Mumford that appreciated the technical culture, Lefaivre and Tzonis also worked within the mode of modernist aesthetics. The technique for critical regionalism was the technique of defamiliarization that was invented by the Russian formalists in the early twentieth century. In this technique, familiar objects were juxtaposed in

unexpected ways in order to raise the awareness to such objects. In a way, critical regionalism still operated in the mode of collage and montage of modern arts. The theory of critical regionalism achieved more attentions through a series of writings by Kenneth Frampton. More specifically, Frampton highlighted the potential of the tectonic aspects as the way to articulate the regional aspects (Frampton, 1983 [1986]). In his view, the tectonic aspect, that is, the investigations of the native texture of materials and the possibilities of construction, provided the locus for the meanings of architecture to emerge.

Another trajectory of the investigation of the particularities in architecture appeared in the emergence of New-empiricism. Starting in Scandinavia in the late 1940s, New-Empiricism put the emphasis on learning from the local and vernacular as the generative source of architecture. This movement was then picked up by the *Architectural Review* in England, which, in turn, promoted the notion of the functional tradition. In the spirit of New-Empiricism, the notion of the functional tradition—a reaction against the drive toward universality—argued that new architecture should benefit from learning from the way ordinary structures and settlements had been built as proper responses to needs and environmental factors. This interest in the local and vernacular also provided the impetus for Sibyl Moholy-Nagy to write a history of architecture based on the studies of such architecture. In a study for the Yale architectural journal *Perspecta* in 1954 that was then expanded into a book in 1958, Moholy-Nagy argues that vernacular architecture, or anonymous architecture in her term, provided the evidence of the successful relationship between human and the natural environment (Moholy-Nagy, 1954 [2004]). Vernacular architecture embodied successful relationship between culture and nature. In her work, besides the formal and spatial aspects of architecture, Moholy-Nagy brought in another aspect that inform the understanding of architecture, that is, the performative aspect. Architecture, in her argument, is a function of site and climate, form and function, and materials and skills, all of which are specific to a particular locale. The crux of her argument then, is that architecture is a human effort to manage the living environment through the built forms.

Considering the site condition, Victor and Aladar Olygay studied the effects of the environmental conditions on the generative process of architectural design. Elaborating a thesis by Jean Dolfus that architectural styles are a function of the environmental conditions rather than cultural factors, the Olgyays then used the analysis of environmental factors, including climatic data, the sun orientations, shading, air movement, and material properties to develop a series of design parameters. As a result, the Olgyays suggested a matrix of design strategies on the scale of a building as well as a settlement. In a way, this way of approaching design abstracts a locale into a series of objective environmental factors.

In a more design-oriented approach rather than technical-oriented approach as in that of the Olgyays, Jane Drew and Maxwell Fry developed a design methodology that response to the climatic conditions. In their book, they posed architecture as a

problem of form that responds to specific conditions. They argued that architecture was a function of the human needs, climatic conditions, and building materials. However, similar to the Olgyays, Drew and Fry reduced locale into objective environmental factors. Furthermore, the design responses were based on formal and spatial strategies, such as the design of roofs, walls, and organization of rooms, that were derived from Corbusian architecture.

Identity in Buildings

As in theories in architecture, works of architecture that intend to engage the notion of place also varies in their approaches, exemplifying varying degrees of considerations of a place. This section of this paper aims to sketch out some examples of this interest in architecture. It is not, however, intended to be a comprehensive and definitive representation of such explorations. This part attempts to points out examples from different periods and places to paint a picture of this aspect of architecture.

Indeed, in the trajectory of the modern architecture in the twentieth century, the explorations of the notion locality appeared as early as in the work of Le Corbusier. In general, Le Corbusier's design for houses belongs to two major categories: those which are based on his heroic period, that is the Maison Citrohan and Maison Domino types, and those that followed the type of Maison Weekend and a house type for the foremen. The former explored the possibilities of arrangements of elemental, standardized units deployed within a field organized by the datum of the concrete frames. In fact, this type took advantage of the flexibility and possibilities offered by reinforced concrete structure. Formally, the characteristics of this type were the essence of Corbusier's five points of architecture, as appeared in his famous villas in the 1920s and 30s. In a way, this type was a vehicle for Corbusier to explore a universal approach to architecture derived both from the machine aesthetics and the Beaux-Arts traditions. In contrast, the latter type seems to act as a vehicle for Le Corbusier to explore aspects of architecture that were the opposite of those that he exploited through his five points of architecture. In this type, Corbusier explored rudimentary building techniques, structural walls, and figurative roofs, including sloped roofs and vaults. Examples of this type included Maison Errazuris in Chile and Maison Jaoul. In the Maison Jaoul, Corbusier designed the parti as a series of parallel bars, running on east-west direction. The east-west orientations exposed the north and south wall to the sunlight. Instead of using ribbon windows as suggested in the five points of architecture, Corbusier used a series of small windows, mostly vertical-narrow slit on the walls. The use of vault for the roofs articulated the house as a series of bars. Technically, these vaults sat on top of walls that supported them. However, the plan still betrayed the idea of fluid space. The vaults themselves were of different spans. The palette of materials for this house was limited to concrete for the floors and the vault and Catalan tiles for the covering. The use of vaults suggests the memory of ancient Roman ways of constructing buildings. In this line of though, French is a part of the Latin culture of the Roman empire. Hence, the formal aspect of the design refers to the abstraction of the Roman building traditions. The choice of materials, that is, the use of the Catalan tiles, also reinforces this abstraction. In

a way, the intentionality of the design exemplifies a montage of the modern life through the use of concrete and the fragments of the memories of the past, that is, the vault and terracotta tiles. The response to the environmental condition of the locale is about controlling the light that entered the house.

In the 1930s, the Museum of Modern Art in New York inaugurated the exhibition titled the International Style. The main characteristic of this architecture was the reliance on geometric purity and on the monochromatic color. As suggested by its name, the International Style spread widely in Europe and America. However, the second generation of Modernist architects, such as Alvar Aalto, Kunio Maekawa, and Oscar Niemeyer, started to problematize the universal nature of the International Style. Factors such as local natural elements, historical, and social concerns started to inform the design. One of the major figures of this second generation, Alvar Aalto, broke away from this geometric purity and whiteness of architecture. Aalto incorporated curves and eventually, a wide range of palette of materials. Notably, Aalto used materials that are commonly used in Finland, such as bricks and woods. His masterpiece, Villa Mairea, was an essay of a passage from the white, geometric volumes at the front to a wooden, rustic hut at the back. Along this passage, Aalto choreographed a procession of materials derived from local area, reminding us of the Finnish forests. These materials were incorporated in the structure, the surfaces, and on the details. The parti of the house was based on the courtyard type with L shaped mass defining the boundaries of the courtyard. Aalto used similar strategies in his summerhouse in Muuratsalo, albeit with a more limited palette of materials. The house featured Aalto's experimentation with a floating foundation as a response to the condition of the soil. This technique was a response to the glacier underneath. Formally, in this house, Aalto also used gently sloped roofs. The environmental condition was addressed through the considerations of light and views. Besides careful attentions to the light and views, the response to the natural factors of the place also lied in a less visible manner, that is, through the idea of the performance of the structure. Visually, the use of materials that highlighted the textures and colors of local materials served as another link to the locale. Overall, the house also acted as a frame to celebrate to the views to and the feelings of the Finnish forests.

Younger generations of Modernist architect engaged the issue of place and identity of varying degrees. One of the examples was the early work of Paul Rudolph in Florida. In his design for the Cocoon house, Rudolph developed a house that was basically a roof wrapped with walls of louver. The house demonstrated a strong linkage to Miesian design, a building on a low platform with a roof suspended of columns. However, the transparency of Miesian architecture was replaced by the opacity of the wall that Rudolph designed. In this house, instead of using glass walls wrapping around the volume, Rudolph used wooden louvers that act as the vertical enclosures. The house echoed a contemporary interpretation of the Neo-classical architecture, and, at the same time, established a linkage to the place. The louver wall was abstraction of a common feature of vernacular architecture in the American South, that is, louver windows. Rudolph took this element, dissociated,

enlarged, and turned it into the basic module of the wall pattern. Thus, it served as an icon of architecture of the region. In terms of the performance of the building, the elevated platform allowed for air to circulate underneath the floor, thus contributing to the cooling down of the house in hot Florida region. This strategy work in tandem with the way the louver wall operated, in which it acted as a breathing wall that allowed air to circulate into the house.

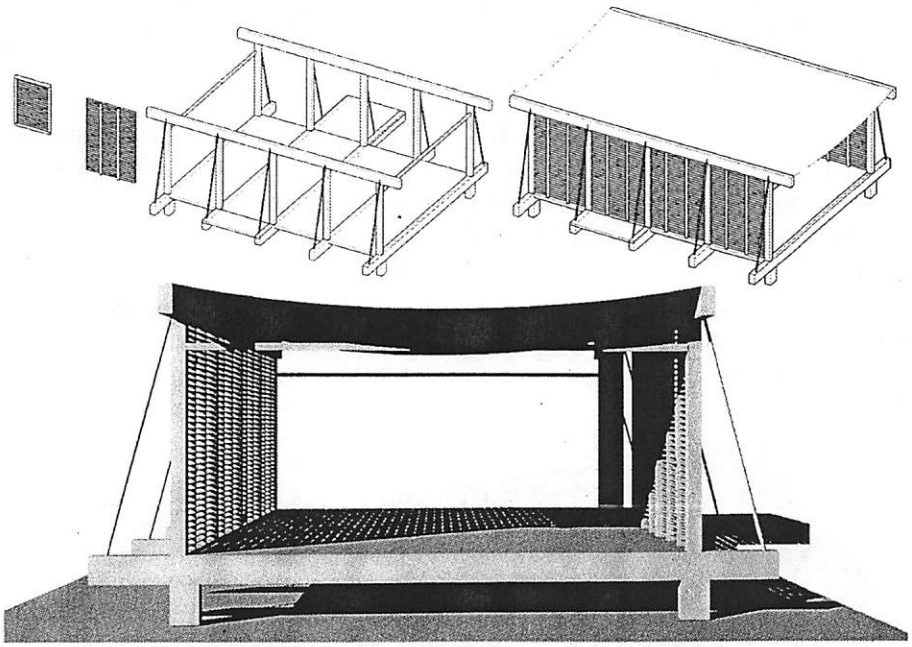


Figure 1: Diagrams of Paul Rudolph's Cocoon House, at 9:00 am. Source: (Author 2012)

As modernization took a rapid pace all over the world, modern architecture also spread outside Europe and North America. In this vein, Le Corbusier was commissioned for several projects in India. Indeed, Jane Drew and Maxwell Fry developed their theory of regional, modern architecture based on their work in Asia and Africa. However, this part of the world also yielded different kind of modern architecture that engaged the notion of place. An example of which was the work of the Sri Lankan architect Geoffrey Bawa. In 1965, Geoffrey Bawa and his partner Ulrik Plesner were commissioned to design an all-girl farming girl on a site in rural Sri Lanka. The program of the school included classrooms and dormitory. Bawa and Plesner arranged these programmatic components as two long, parallel bars around an elongated courtyard. The two buildings themselves were lined with verandahs facing the interior courtyard, therefore creating an intermediary zone that cooled down the air before they passed into the buildings. The overhangs of the roofs also created shades that protect the walls from a direct exposure to the sun. The main buildings were characterized by the use of steep roof that, in proportion, dominated the appearance of the building. The use of clay, round tiles or Portuguese tiles gave the roof textures and colors that relate to building traditions on Sri Lanka. However,

beside the shape, proportion, and color that lent the school its visual characteristics, the design of the roof also worked with the climatic condition in the island. The roof created a large volume at the top of the building, which allowed hot air to rise up and then escaped out through openings on the top of the gables. This air movement in turn drew cool air in. The vertical enclosures were half wall, which runs about two-third the high of the building, thus allowing air to circulate freely creating cross-ventilation. Punctuations on the wall, covered with wooden trellis, provided rhythm beside facilitated air circulation. Bawa and Plesner integrated the buildings with the landscape, utilizing vegetations, such as palm trees, into the design. Besides lending the design with the sense of picturesque, these trees also served to filter the tropical sunlight and to ease the wind. In essence, Bawa and Plesner created a diagram of roof-umbrella and wall-enclosure. The design of the school related to the place on the spatial level through the use of the courtyard type, which was the essence of the wall-enclosure; on the formal level, the connection was achieved through the use of steep roofs, that is, the roof-umbrella and through the selection of materials. However, more than simply operating on the formal and spatial levels, the school also operated in a similar manner to the long tradition of buildings in the island in creating an ambience of a living environment in the tropical region.

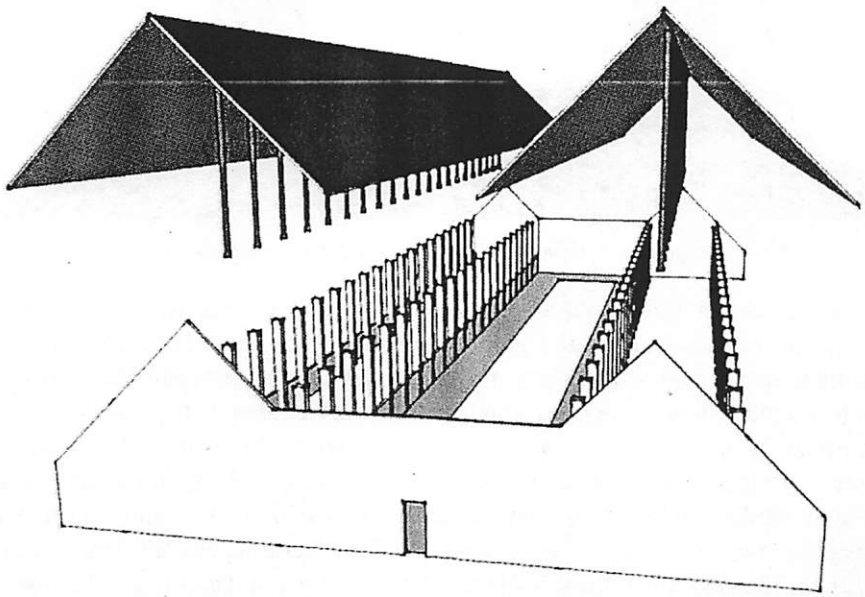


Figure 2: Diagrams of Geoffrey Bawa an dUlrik Plesner's Yahapath Endera Farm School. Source: (Author 2009)

An example from a more recent time is the work of Renzo Piano in New Caledonia, a French territory in the Pacific Ocean. In the Jean-Marie Tjibau Cultural Center, Renzo Piano designed a series of ten tall buildings that lined-up on a promontory in Noumea, resembling a collection of huts in a Kanak village. Piano took the task of facilitating a cultural center for the Kanaks by designing buildings derived from his interpretation of Kanak architecture. Formally, Piano designed each of the

building in the cultural center as tall buildings with curved walls. This seemed as an abstraction of the tall, cylindrical form of Kanak huts. For the wall of the structures, Piano used woods slats installed on frameworks that created an effect of the textures of the woven reeds used as walls and roofs in local buildings. Despite this similarity in texture, the cultural center employed contemporary materials, including natural and laminated wood, aluminum, and stainless steel. The walls itself were actually a double wall, with another layer of made of glass forming the secondary wall. This double layers wall worked as a ventilation strategy, creating venturi effect. Hot air rose up and drew in cool air in between the layer of the wall, which, in turn, helped to regulate the internal temperature of the buildings.

Identity Enacted

The notion of identity in architecture suggests the conception of a design as a vehicle that expresses the specifity of a place. In this vein, the consideration of a place points to two ways of understanding a place, that is, as a cultural entity and as a natural condition. These two aspects of a place inform the way architecture problematizes the engagement with a locale. The overview of some of the literature and building examples suggests the way in which architecture vacillates between these two poles. The consideration of a place in cultural terms often leads to the emphasis on the iconology and the iconographic aspects of architecture. In this line of thought, iconology is defined as the formal and spatial logic of architecture that specifically emerges from a particular culture. This aspect also includes the tectonic aspects, primarily the choice of materiality and texture. Further, iconology feeds into the iconographic reading of architecture, in which particular formal and spatial logic carries symbolic meanings. In a way, this angle suggests architecture as a cultural artifact that embodies the way of life of a particular society through built-forms. Theories of identity and place in architecture such as regionalism and critical regional very much work within this way of thinking. On the other hand, consideration of a place as a natural condition seems to lead to the reading of a locale in terms of abstract, objective functions of geographic coordinates. In this mode, the consideration of a place produces a series of abstraction of a place mainly in terms of climatic factors, including exposure to sunlight, wind, and air. To some degree, this abstraction of a locale based on natural factors implies a generalization, in which different places with similar geographic and climatic condition were then lumped together. The term "region" expresses this primacy of generalization over the specifity of locales. Design approaches that are informed by this mode of thinking of a place, such as that of Drew and Fry, proposes design solutions that may be applied in different cultural settings. In true modernist spirits, the abstraction of nature and the drive toward universal design strategies, even if they were tailored to the notion of a region, provide the impetus of this consideration of a place. Examples of work suggest varying degrees in which design responses vacillate between these ways of engaging a place.

How then can architectural design problematize these poles of cultural- and natural-based theories of identity? In terms of the generating principles of architecture,

Farshid Moussavi has proposed to approach this issue from the Deleuzian perspective (Moussavi, 2009). Instead of dwelling on the search of rules that govern the formal and spatial logic of architecture, she proposes the consideration of Deleuze's concepts of "affect" and "affection." According to Deleuze, affect is the intensity of an object that will stimulate reactions on the body. In other words, it is the qualities of an object that will stimulate reactions of the body. In turn, affection is the condition of the body as a result of the interaction with the object.

Following this line of thought, it is possible to draw a link between the performative aspect of architecture with the notion of architecture as a mnemonic device that carries the memories of a place. In his well-known characterization of architecture, Walter Benjamin singles out architecture as an art that is appreciated in the state of distraction. Architecture forms the physical setting for daily activities, which, then fades away from our attention, precisely because of its ever-presence. However, it becomes the apparatus that regulates daily life, informing our life through the repetitive nature of the everyday. Further, the relationship between the body and architecture is not only limited to the visual aspect, such as our relationship with other forms of art, but also, and more importantly, every sense of our body. It is both visual and tactile. At this juncture, it is possible to bring another Deleuzian term that Moussavi brought in her thesis, that is, the notion the machine as a system that works in interconnectivity with different entities. Thus, architecture can be seen as an entity that works together with the body. In terms of architecture and identity then, this interaction leads to the reading of a place. The affect of an architectural design stimulates affections that recall the identity of a place. It is a Proustian moment of the involuntary memory, in which the affects of a design brings back both physical and perceptual affections. Thus, affection, then, includes both physical and emotional reactions, such as perceptions. In this line of thought, the notion of performative in architecture is cast in a different manner. It is not only the way a building performs in terms of comfort, but also the way a building invokes varieties of perceptual responses. Experiences are the result of physical construct. With the advent of digital technology in our age, then the possibilities to simulate the intensity generated by the properties of the design are wide open.

References

Anderson, Stanford, "Memory in Architecture," in *Daidalos,* no 58 (Dec. 1995):23-38

-, "Memory without Monuments: Vernacular architecture," in *Traditional Dwelling and Settlement Review (TDSR)* Vol. XI, no. 1 (1999): 13-22

Banham, Reyner, *The Architecture of the Well-tempered Environment,* 2nd edition, Chicago: The University of Chicago Press, 1984

Benjamin, Walter, "The Work of Art in the Age of Mechanical Reproduction," in Walter Benjamin, Hannah Arrendt, ed. *Illuminations,* New York: Schocken Book, 1968.

Canizaro, Vincent, "Introduction," in Canizaro, Vincent, *Architectural Regionalism: Collected writings on place, identity, modernity, and tradition,* New York: Princeton Univ. Press, 2007, 16-33

Drew, Jane; Fry, Maxwell, *Tropical Architecture in the Dry and Humid Zone,* New York: Reinhold Publishing Co., 1964
Frampton, Kenneth, "Prospect for a Critical Regionalism," [Yale Architectural Journal, 1983] reprinted in Kate Nesbitt, ed., *Theorizing: A new agenda for architecture,* New York: Princeton Architectural Press, 1996
-, *Studies in Tectonic Culture,* Cambridge, Mass.: the MIT Press, 1995
Lefaivre, Liane; Tzonis, Alexander;, "Tropical Critical Regionalism: Introductory Comment," in Alexander Tzonis, Liane Lefaiver, Bruno Stagno, et.al., *Tropical Critical Regionalism in the Age of Globalization,* Great Britain: Wiley-Academy, 2001, 1-13
Moholy-Nagy, Sibyl, "Environment and Anonymous Architecture," in Perspecta no. 3, reprinted in Robert A.M. Stern, Alan Plattus, and Peggy Deamer, et.al., [Re] Reading Perspecta: The first fifty years of the Yale Architectural Journal,, Cambridge, Mass.: the MIT Press, 2004
-, *Native Genius in Anonymous Architecture,* New York: Horizon Press Inc,, 1958
Moussavi, Farshid, *The Function of Ornament,* Cambridge, Mass.: ACTAR/Harvard GSD, 2009
Mumford, Lewis, *The South in Architecture,* New York: Harcourt Brace, 1941; reprint Cambridge, Mass.: Da Capo Press, 1967
Olgyay, Victor, *Design with Climate: Bioclimatic approach to architectural regionalism,* Princeton: Princeton University Press, 1963

The house of Juan O'Gorman, The Crisis of Modernity and The Return to Primitive Roots

Luis Villarreal

Analyzing the evolution of Modern Architecture through the first half of the Twentieth Century, even in its very beginnings, it is possible to find stylistic tendencies that emerge from the hermetic and autonomous vision that characterized the phenomenon in its origins.

In such way, from the radicalism of the Avant-garde Movement, Modern Architecture was born, based mainly in the purest and most absolute geometry. Nevertheless a few years after the effervescence of the new style, after having been baptized as the International Style, a new vision emerged, in some cases from the same notable architects that promoted, years before, the modern proposal. This new tendency began to lose its autonomy, acquiring a more relational and heteronomous character, building a new architecture distinguished by the freedom of its shapes and ornaments; an attitude related by some authors to the mannerists of the 16th Century.

That is how some tendencies that particularize this new architectonic proposal appeared, trying to adapt themselves to specific site conditions (geographic, climatic, social and cultural), or in a special idealistic sensibility, to link the architectural oeuvre to its own land and nature, interpreting and abstracting its spirit and essence.

In this way the new proposal begins to walk away from the pragmatic paradigm to give way to a certain evocation of myth, understanding the architectural phenomenon as a physical and metaphysical medium, including its own real and super-real dimensions. In other cases the concept of *Gesamtkunstwerk* (total work of art) evolved into an integration of the arts, dissolving the limits of the artistic disciplines, making architecture a real complex and multidisciplinary phenomenon. But this path could not been drawn if modern architecture had not lost its abstract lexicon in order to acquire a figurative and relational language.

That is the case of Juan O'Gorman, an architect in the Modern Mexico of the 1930ś to 1950's.

Juan O'Gorman began his professional career with Le Corubusier's "*Vers une architecture*", specifically with his own and very particular reading. O'Gorman is the author of the first rationalist house in Mexico, built in 1929, followed by a series of schools distinguished by their nakedness and frugality, even for the *lecorbusieran* proposal. Later, inside his rational proposal and thanks to his relationships with the

revolutionary Mexican intellectuals, he built some private residences where the ones made to Diego Rivera and Frida Kahlo in 1932 can be highlighted.

Nevertheless, after his years of rational influence during 1930's O'Gorman departed from architecture in order to devote himself to his loved canvas and mural painting. Removing himself from the Avant-garde O'Gorman developed his own language, characterized for its exuberance and its calling to use Mexican archaic roots with a certain surrealistic touch.

During the late 1940s O'Gorman began to explore new techniques in his mural paintings, introducing small colored mosaic pieces extracted from all around Mexico. That is how he came to design the project to cover the facades of the Central Library of the National University of Mexico. The realism that characterized his pictorial oeuvre is shown in the university mosaics through some scientific topics and prehispanic allegories.

This pictorial search derived years later, during 1950's in the development for his architectonic proposal. A new proposal characterized by its figurativeness, its literal invocation of an idealized ancient world, but at the same time, as the surrealist artists did, by its will to unify opposites in a new whole. Frank Lloyd Wright and his Organic Architecture was another figure to quote in this new architectonic paradigm. It is possible to say that O'Gorman's new architectonic proposal was a strange and marvelous combination of these elements with a genuine intention to create a new architecture truly modern and truly Mexican.

That is how in 1950's this promoted and defended realism was materialized into architecture. In the South of Mexico City, in the neighborhood of *El Pedregal*, O'Gorman built his own house. The neighborhood was situated in a place well known for its volcanic rocky surface. Luis Barragán was the architect behind the project of the neighborhood, tracing its streets, gardens and squares, trying to meet nature in his own evocative and mystical style in contrast with the aggressive rocky shapes of the site.

In contrast, O'Gorman tried to directly relate his proposal to the place, looking for an architecture that emerged from its own land; according to O'Gorman, if nature was aggressive, then architecture must have to be as well.

"These buildings complement the mountains and the landscape around them in such a perfect way that their shapes seem to be produced by the miraculous grown of some extraordinary seed sown by men, that is without doubt the seed of genius and human imagination."[1]

---

1 Juan O'Gormn specifically refers to the temples of Ankor-Vat and Ankor-Thom in Cambodia, in which according to his very words, are really *"polychromed and painted architectural-sculptures or sculptural architecture where there is a complete plastic integration, in what the architectural complex does as a whole, as well as its sculptural-painterly fragments, which represent what we call today in mythology "the cosmic concepts of the creation of the world"*, meaning that the themes and form have a unity of a cultural synthesis of the people that built them". Included in Luna Arroyo, Antonio. *Juan O'Gorman. Autobiografía, antología, juicios crtíticos y documentación exhaustiva sobre su obra.* (Juan O'Gorman. Autobiography, Anthology, Critical Judgements and Exhaustive Documentation of his Work) (México, D.F.: *Cuadernos Populares de Pintura Mexicana Moderna*, 1973) 282-283

Avoiding any generalizations, O'Gorman tries to particularize his proposal, creating a fusion with the site, or even more, a kind of emersion from the earth. The project continues with the sinuous shapes of solidified lava defining the particular interiors of the house. The result is an almost natural cave which recalls some Italian mannerist constructions of the 16th Century, like the grottos built by *il Tribolo* in the Boboli Gardens in Florence four centuries before.

The house fuses with the landscape in its very nature, because of its suggestive shapes and the gardens that surround it, while at the same time surprising the visitor when discovering it for the first time. It is a kind of surrealist *objet trouvé*, in the way that the fantastic constructions of Bomarzo[2], or the idealistic buildings by Gaudí in Spain can be. O'Gorman's particular reading of the Catalan architect's oeuvre tried to discover the essence of each site and represent it in a very metaphoric and transcendental way, avoiding any mimetic and ecologist superficial perspective[3].

The cave, as a model of The House, could have different readings that widely contrast and complement each other. In one hand the cave archetype recalls the very origins of Architecture, a kind of unconscious desire to return to the essence of the dwelling. On the other hand, the cave evokes directly or indirectly the womb, an idea particularly linked to the surrealist proposal[4]. Besides, with a clear intention of declaring its own national identity, O'Gorman recalls the myth of the cave in the Mesoamerican cultures; the cave as an entrance to the underworld, but also as a return to paradise[5]. In a modern perspective, O'Gorman tried to practice in his very particular way, Frank Lloyd Wright's Organic Architecture[6].

This attitude is very distant from the one that defines his beginnings. His conflict between aesthetics as an end and as means was resolved in the construction of

---

2 Or the delirious pavilions built years after by the English Edward James in Xilitla in the Potosinian Forest in the Northeastern Mexico.

3 In his own words, O'Gorman refers to Gaudí as *"(...) a sublime artist who expressed in an original, fantastical and delirious way, the longing for a spiritual improvement of humankind in an epoch that is tired, bored and spent, that only produced "art" to amuse sophisticated intellectuals"* (Luna Arroyo 1973, 274-275)

4 That is precisely the reverie condition that pushes us to our birth-house, it's like a deeper necessity, the one that makes us come back to the womb (as Dalibor Vesely explained in his extraordinary essay about Surrealism, myth and modernity from 1978), or the intrauterine architecture proposed by Tristan Tzara as the only way to a true architecture.

5 About this topic, Doris Heyden writes: *"Mesoamerica's mythology and religion are embedded with caves as a theme, it is possible to say that all caves in this area are sacred (...) Many rituals were celebrated in caves and there were deities related to them (...) Caves were symbols of the creation of life and death."* Doris Heyden *"Aspectos mágico-religiosos de las cuevas"* in Ernesto Vargas, ed., *Las máscaras de la cueva de Santa Anita Teloxtoc.* Included in: Juan Coronel Rivera, *"Piedra enredadera"*, en *Juan O'Gorman*, ed. Mauricio López Valdés (México, D.F.: Grupo Financiero Bital, 1999) 239.

6 O'Gorman expresses about Wright *"I thought that it would be very important in Mexico to make a house, a building, applying the general principles of Frank Lloyd Wright's Organic Architecture, the great modern North American architect (...) Principles of Wright's Organic Architecture go beyond Functionalism and constitute a true Architecture (...). In one hand, Organic Architecture is based on a harmonious relationship to landscape, that is to say, with the regional geography where it is done, that is why it is considered as regionalist (...) Organic Architecture seeks to have the building become a vehicle of harmony between men and land, relating it with geography of the region where it is built. On the other hand, Organic Architecture seeks buildings to become a vehicle of harmony between men of the region where it is built, that is to say, inside tradition. In such a way that Organic Architecture, updating traditional elements, creates a common language, comprehensible to every man and woman of the region where it is built. In other words, it is related with national historical development and in these conditions, Architecture is not anymore a particular fashion, but an original creative extension of the particular tradition of the country where it is made (...). Maybe if I practiced Wright's teaching instead of Functionalism (Rationalism), I've would made in my country a more signiŞcant architectural work (...) Master Wright himself knew the house and congratulated me because it seemed that it was very important in Mexico to apply the concept of Organic Architecture"* (Luna Arroyo 1973, 154-187)

this house when he accepted the victory of aesthetics, completely abandoned the Rationalist Avant-garde. His aesthetics showed a drastic change, from the satisfaction of basic physiological needs to the expression of the irrational, subjective and magic contents of the unconscious[7]. This is why that O'Gorman's proposal is related to the ideas that gave birth to Surrealism and its cathartic reverie, engendering what Breton called "convulsive beauty"[8]

"It is too strange for Mexicans, but maybe it begins a new regional tradition. Most mortals, maybe, see their houses as castles, but architects often consider theirs as laboratories. In order to prove their ideas about housing, they and their families eat in semi-caves, use pedestal chairs, sleep in subterranean bedrooms an cultivate mural gardens."[9]

That is the way O'Gorman justifies his own audacious intervention.

Nevertheless O'Gorman didn't limit his work just to finishing what Nature had begun before, but complementing it with other construction elements generating a comfortable and habitable dwelling. For this purpose, he built an adjacent pavilion divided into two stories, where he placed the kitchen and the study downstairs, and the bedrooms and bathrooms upstairs. In this sense, Burian (1997) admits that even in the expressive character of the house, O'Gorman never rejected rationalism, but rather subsumed into an exploration of Surrealism and organic architecture [10]. But in spite of its function, the adjacent pavilion refers to Mexican tradition by the use of a Mayan false arch to build a big and luminous window.

As surrealists did in their attempt to find the union of opposites, O'Gorman tried to internalize the exterior and exteriorize the interior through the use of natural light inside, and location of gardens on the rocks that define the inner and outer spaces. That is why a big skylight is located at the end of the east side of the living room illuminating part of the rock where some plants grew in an almost natural way, and provoking luminous and colorful sparkles reflected from the mosaics on the floor.

The plastic integration of the arts that was one of the principles defended strongly by O'Gorman in these years[11] is completely implemented in his house. For O'Gorman the separation of plastic arts produced since the birth of Modern Age had provoked a rupture in the conception of artistic oeuvre. In his house, ornamentation wasn't intended to be superimposed to the building (of what the Central Library

7 Víctor Jiménez, "*Un arquitecto de nuestro tiempo*" in *Juan O'Gorman*, ed. Mauricio López Valdés (México, D.F.: Grupo Financiero Bital, 1999)

8 Miguel Ángel Alonso del Val in his text "*Surrealismo entre dos mundos*" (Surrealism between two worlds) refers to this house as primitive and surrealist, "*(...) where the industrial and the archaic are mixed as in many surrealist works that have their source of inspiration in mechanics and the mythic*".

9 [without signature] "*Ideas. Juan O'Gorman construye su casa*" (Ideas, Juan O'Gorman builds his house), in El Universal. Mexico, January 9th, 1952. P. 6, cited in Ida Rodríguez Prampolini, "*El creador, el pensador, el hombre*" (The creator, the thinker, the man), in Juan O'Gorman, ed. Mauricio López Valdés (Mexico City: Grupo Financiero Bital, 1999) p.39

10 Edward Burian refers to this aspect by writing: "*For O'Gorman, this juggling act was not one of total exclusion of one idea in favor of the other, but rather of the weighting and prioritizing of both notions that are threaded throughout his architectural career. Later in his career, technical rationalism was not completely rejected, but rather subsumed into an exploration of Surrealism and organic architecture.*" (Burian 1997, p. 133)

11 Like his mosaic murals made for the Library of the National University of Mexico in Mexico City and his contributions to the inner mosaic mural in the Diego Rivera's Anahuacalli museum.

of the National University of Mexico was blamed), but a real integration and interdependence between every element of the artistic object.

Integration is based then on a mixture of ornamental elements mainly of prehispanic character placed over rocky lava shapes resulting in a fantastic, provocative and delirious oeuvre.

Evocating a romantic and idealized version of the Mesoamerican past, O'Gorman created a particular scene decorated in every surface (inner and outer), in every corner, with the mythical fauna of the prehispanic world (jaguars, snakes, monkeys, butterflies), with enormous human masks, and Aztec warriors and deities.

Monumentality and figuration try to revive the mythical past, since, in O'Gorman's words, it is where the key to discovering our unconscious is found, a kind of Ariadne's thread which links to our own essence[12]. Convinced of his proposal, O'Gorman doesn't deny the existence of certain fetishism in his work, arguing that, "*when man stops believing in his fetishes, he stops creating, (becoming) into an automatic repeater of (...) curiosities*" (Luna Arroyo 1973, 224). That is the case of the prehispanic styled snake that tops off the terrace in a mix of fantasy and myth, or two toy soldier figurines that flank the main entrance (these particular elements are a tribute to Ferdinand Cheval and his *Palais Ideal*[13]. As homage to Cheval's oeuvre, O'Gorman uses suggestive and sinuous geometries and profuse and free sculptural ornamentation, producing a grotesque atmosphere of fantasy and reverie.

Juan Carlos Arnuncio in his essay "*La actitud surrealista de la arquitectura*" (The surrealist attitude of Architecture) finds in 16th Century Mannerism an antecedent for the 20th Century surrealist proposal. In his text, Arnuncio refers to Arnold Hauser when he expresses about Mannerism:

"It is not just about choosing strange, shocking and astonishing motifs, but it is about representing the common in an unusual way. The astounding effect doesn't have to distract and unsettle, but it must express that any person is always a stranger between this worlds of things, and is never able to establish contact with them."[14]

An opinion that is completely valid for O'Gorman's oeuvre.

For Hauser, Mannerism represented an effort to merge opposite aspects with the intention of creating a new reality. Also, Mannerism represented a kind of

12 The house represents the O'Gorman's effort to recover the Mexican lost conşcience (Burian 1997), the one that sleeps from the Conquest, the one that in spite of the Şve centuries of oppression has survived in the popular traditions, considered by O'Gorman as a "*spring (...) where the necessity to express the longing and aspirations of the national majorities is born*" (Luna Arroyo 1973, 281)

13 O'Gorman refers to Cheval writing: "*Finally I want to mention as an example of an inventive and marvelous architecture, the one made by that humble but brilliant man, the mailman Cheval, which without being an architect, built in Hautes Rives, his own house with material picked up in his wheelbarrow during his labor journeys. With this wasted material he built with his own hands and working during all his life, an incredible and marvelous construction left from him to Humanity for joy and free pleasure of everyone who contemplates it, and that today the place where it is built is called the Magic Palace*". "*Abstracción y realismo en la Arquitectura hoy en México*" (Abstraction and Realism in Today's Mexico's Architecture" included in (Luna Arroyo 1973, 285)

14 Here author refers to Arnold Hauser's text "*Historia social de la literatura y el arte*" (Social History of Literature and Art) included in (Arnuncio Pastor. 1985, 104)

reaction before an excess of rationality, which is why sometimes its proposals were emphasized with critique and provocation, with a touch of grotesque irony. In this sense O'Gorman expressed the purpose of his house as "*a cry of protest in favor of humanism in the mechanic desert of the "marvelous civilization*" where we live in, which tries to destroy any expression based on the humanist nature of man". The result of this strong critique of Modernity is without doubt a grotesque, paradox and paradigmatic object. Characteristics, besides the marvelous, the fantastic, and the unconscious, which recall the convulsive beauty proclaimed by Breton, the same characteristics that the founder of Surrealism found in Gaudí and Cheval's oeuvre. In this sense when referring to Gaudí, and in particular to the chapel of Santa Coloma de Cervelló O'Gorman wrote some words that can remind us of his own house:

"(...)It rises from earth like an erupting volcano, an expression of chaos and origin (from where everything came, and where everything goes) which spills lava blistered with emotion. This project for this building is a chant to the creating matter of all that exists, which transforms itself into sublime harmony and dynamic rhythm and that represents everything that is exalted in man. Gaudí trigged architecture to return it to its point of origin, and without any limits or obstacles created an expressive form, which incarnates everything we feel and are as mineral, vegetal and animal, but at the same time reintegrates the man his faith and love in order to live with hope for a better world."[15]

That is how in his words O'Gorman finished what was his "*most complete and satisfying work that I (he) made in architecture. It is an example of organic architecture and could be called modern and Mexican*"[16]. With what he meant, a particular and unique architecture, evocative of ancestral myths, a shelter of artistic and traditional expressions through a figurative language, which builds close links with the essence of its people.

In 1969 O'Gorman was forced to sell the house because of economic reasons and returned to his functionalist house built years before. The new owners decided to modify the house little by little until its total demolition that same year. The protests of O'Gorman's friends weren't enough to stop the act. Raquel Tibol, a critic of the oeuvre commented in those days about its destruction: *"(...) Aztec deities that decorated the façade don't exist anymore, they had to be destroyed in order to make habitable one of the most obvious of O'Gorman's architectonic fails."*[17]

Nevertheless the words pronounced by Diego Rivera when visiting for the first time O'Gorman's house remain:

"Juanito, you have achieved in Mexico the first modern house in a style clearly Mexican, according to the art movement that we call the Mexican Movement. I congratulate you with all my heart and it seems to me that from here it will emerge, for the future, a great architecture.

15 (Luna Arroyo 1973, 257)

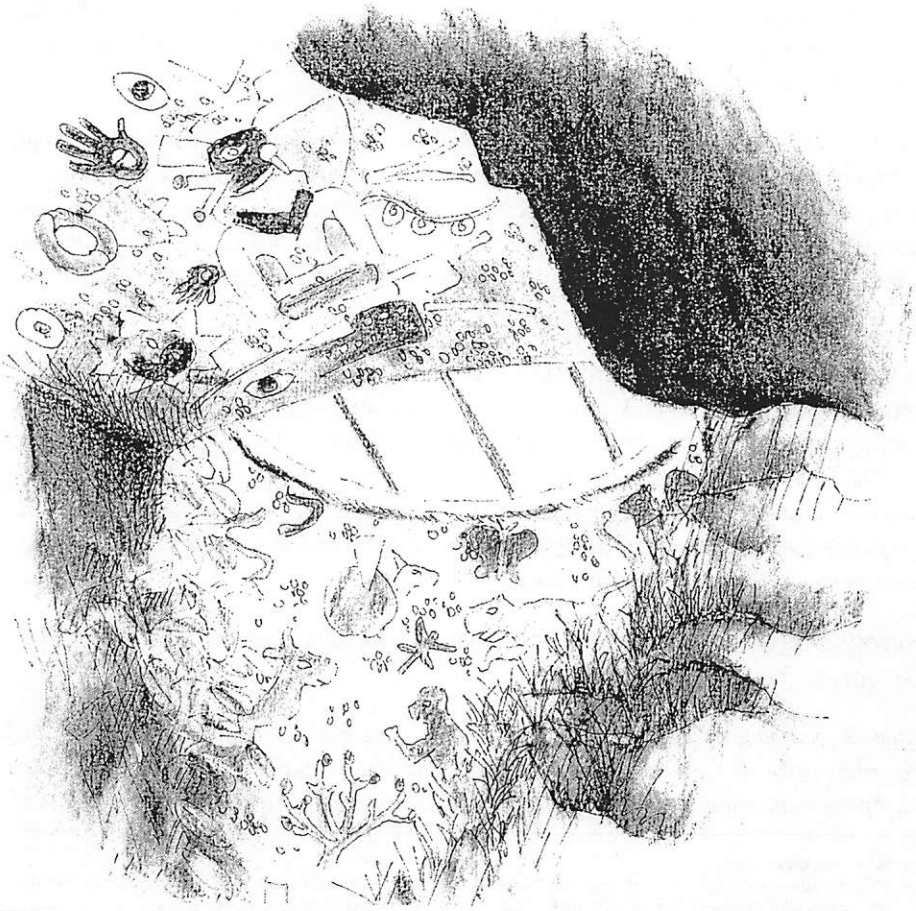
16 O'Gorman's words included in Keith Eggener's "Contrasting Images of Identity on the Post-War Mexican Architecture of Luis Barragan and Juan O'Gorman", Journal of Latin American Cultural Studies, 9, n° 1 (2000): 30

17 Raquel Tibol words included by Elena Poniatowska *"Los zurcidos invisibles de Juan O'Gorman"* (Juan O'Gorman's Invisible Darns) in *Juan O'Gorman*, ed. Mauricio López Valdés (México, D.F.: Grupo Financiero Bital, 1999) 17.

This one is a kind of seed that can fructify and gives to Mexico architecture with national and regional value that will make of you a famous person even when you are no longer alive."[18]

This fantastic architecture didn't consolidate to serve as a model for other posterior experiences, its unique and particular characteristics made of it a singular and unrepeatable object, becoming more a work of cult (and thus, of reference), than of resource. As a real surrealist oeuvre, O'Gorman's house shows an essence mixed with appearance, avoiding the easy solutions that define this impossible formula, but expressing everything it has in an explosive and irrepressible way. Its sincerity and genuineness expressing a deep (and mad) love for its land and people are without doubt its greatest virtue, which will make it last forever.

This experience (unfortunately lost when the house was destroyed) speaks about a character, made fearless by his convictions, most of them revolutionary and radical, building very disparate architecture, keeping his roots deep in his land and in his culture, but at the same time reflecting the contradictions and complexities of a man that didn't know the impossible.



18 Luna Arroyo, *Juan O'Gorman*, 188

References

A.A.V.V. *O'Gorman.* México, D.F.: Grupo Financiero Bital, Américo Arte Editores, 1999.

Arnuncio Pastor., Juan Carlos. *La actitud surrealista en la arquitectura. Entre lo grotesco y lo metafísico.* Valladolid: Universidad de Valladolid, 1985.

Burian, (ed.) Edward R. *Modernidad y arquitectura en México.* Barcelona: GG/ México, 1997.

Eggener, Keith L. «Contrasting Images of Identity in the Post-War Mexican Architecture of Luis Barragán and Juan O'Gorman.» *Journal of Latin American Cultural Studies,* 2000: 27-45.

Eggener, Keith. *Luis Barragan's Gardens of El Pedregal.* Nueva York: Princeton Architectural Press, 2001.

Jiménez, Víctor. *Principio y fin del camino.* México, D.F.: Consejo Nacional para la Cultura y las Artes, 1997.

Luna Arroyo, Antonio. *Juan O'Gorman. Autobiografía, antología, juicios crtíticos y documentación exhaustiva sobre su obra.* México, D.F.: Cuadernos Populares de Pintura Mexicana Moderna, 1973.

Hybridized Creativity-Traditional Chinese Courtyard Houses and Contemporary Design

Li Han
Virginia Commonwealth Unive sity - Qatar, Doha, Qatar

Abstract

The purpose of this research is to examine hybridized design methodology through the redesign of the Chinese courtyard house. In recent years, various design disciplines and design elements from different periods and cultures have converged, adding knowledge, variety and originality to design. There are numerous design precedents of combinational design. Nevertheless, it is largely unclear how hybridization has been affecting design process and creativity. Literature shows that traditional design methods may reinforce repetitions and therefore hinder creativity (Lawson, 1980). Will a hybridized design generate more originality? How can this methodology be implemented? Given our complex living conditions, will crossbreeding in design provide more adaptive solutions? These questions can only be answered through design projects which intentionally employ hybridized design methods.

Introduction

The purpose of this research is to examine hybridized design methodology through the redesign of the Chinese courtyard house. The first question to ask before this research begins is, why hybridized design?

A hybrid is the offspring of two different breeds, varieties, species, or genera (Merriam-Webster). In the natural world, hybrids often outperform their parents. Previous cognitive psychological research on creativity suggests that the generative capacity of the human brain might specifically result from combinatorial processes (Runco, 2007). Due to the scarce literature concerning the design intentions and methodologies in the past, it is believed that variegated designs were created mostly unintentionally—through inspiration, intuition, or functional demands.

In the Middle Ages, inhabited bridges—as an offspring of building and bridge and a combination of architecture and infrastructure —were built to accommodate a wide range of urban functions; they linked various urban activities from one side of a river to the other. In recent years, the domains of various design disciplines have converged at an unprecedented speed, often yielding interesting results and adding knowledge and variety, as well as originality to design. For example, architecture is making its presence felt in cutting-edge fashion; as a result, wearable 'dwellings' are able to act as both shelter and clothing (Quinn, 2003). Nevertheless, not all the design decisions

are driven by explicit design intentions; some designs, good or bad, have never demonstrated clear design intentions. Yet failure to recognize the strong presence of hybridization in contemporary design will lead to insensitivity in interpreting design solutions, which ignores the rapid convergence in this complex world. Moreover, this convergence raises several questions: Does hybridization change how designers design, or vice versa? Have designers become more conscious while employing hybridization as a designing tool? Or have designers been influenced by the diverse world surrounding them? Will hybridized design models generate more creativity and become an important or even necessary method in searching for new forms, symbols or ideas?

To answer these questions, it is necessary to take a closer look at both creativity and hybridization. Creativity is the ultimate goal for all design. Inevitably, the search for design models will be led by and evaluated according to this criterion. This principle will provide a guideline and direction for how the design models will be evaluated.

Literature Review

Creativity

Creativity is an indispensable part of design. Design cannot exist without it. Where does it come from? How do we evaluate it? Wallas (1926) described the creative process as following four steps: preparation, incubation, illumination, and verification. A designer is also a creative person.

According to Dr. E. Paul Torrance (1966), known around the world as the "Father of Creativity," creativity can be quantified through the Torrance Tests of Creative Thinking (TTCT). The test includes Figural and Verbal TTCT. The Figural TTCT assesses five mental characteristics: fluency, resistance to premature closure, elaboration, abstractness of titles and originality. The Figural TTCT, closely related to design thinking, has offered an initial point for investigation with respect to design activities. Furthermore, Sternberg developed an 'investment theory,' suggesting "Creativity requires a confluence of six distinct but interrelated resources: intellectual abilities, knowledge, style of thinking, personality, motivation, and environment" (Sternberg, 1996). Creativity has been studied from the perspectives of behavioral psychology, social psychology, psychometrics, cognitive science, artificial intelligence, philosophy, aesthetics, history, economics, design research, business, and management. Yet, unlike many phenomena in science, there is no single, authoritative perspective or definition; nor is there a standardized measurement technique. Nevertheless, a growing number of scholars and educators believe that there are methods of increasing the ingenuity of an individual. Among them are Alex Osborn, creator of brainstorming and founder of the Creative Education Foundation (CEF), and Sidney Parnes who followed Osborn as president of CEF. They both contributed to building the CPS (creative problem solving) model. The six steps of CPS—Mess-finding, Fact-finding, Problem-finding, Idea-finding, Solution-finding and Acceptance-finding—have provided the guidance for a systematic approach

to inventive and workable solutions, as well as a foundation for further research (Parnes, 1992).

Hybridization

In ancient times, many design ideas were generated through inspirations from nature. To some degree, this might be a direct result of the living environment when human beings were surrounded most of the time by the natural environment. This also proved Sternberg's theory on creativity which stated environment is one of the resources. Time has changed. Today, the majority of human beings spend most of the time indoors and in front of computers. In addition, people are no longer living in the simple and homogenous environment. The living conditions for many are very complex and diverse. It is a cross-fertilized environment. To some degree, all six resources—intellectual abilities, knowledge, style of thinking, personality, motivation, and environment (Sternberg, 1996) for creativity have been influenced by the living environment. Given the world we live in today, some may argue that hybridization is an intrinsic component of any creative practice. Cyberculture has shaped the world into a global village. In the cultural domain, the demarcation of regional, national and international is diminishing as a result of cross- pollination. The whole world is coming together rapidly, tearing down many barriers—language, culture, religion, etc. Hybridization is happening in every aspect of people's lives. It changes how people think and behave. Abnormal and foreign ideas, concepts, and ideologies can be adopted overnight. On one hand, the mainstream cultures have exerted major influence; on the other hand, non-mainstream cultures exert less influence—all through hybridizations, willingly or unwillingly. One is seeking to purify the whole world; another one is seeking to translate and revitalize. When McDonald's opened its franchise in Southeast Asia, it adopted the local taste and offered spicy ketchup sauce (chili sauce). While McDonald represents the mainstream cultures— its purpose being to expand its fast food empire—it also has been transformed by adopting other culture elements. The mixed taste of french-fries and chili sauce is a good example of that.

Having made enormous impact in every aspect of people's lives, hybridization is also changing the paradigm of the creative industry. It is believed that hybrids were created mostly unintentionally; some were developed by designers who had cross-cultural backgrounds; others were invented by designers who had multidisciplinary backgrounds; or, in McDonald's case, influenced by local culture. Nevertheless, it is necessary to further investigate the intentional design process. What if designers intentionally mix and mingle ideas?

Research Model

Previous cognitive psychological research on creativity suggests that at least some of the time, and perhaps a great deal of it, the generative capacity of the human brain might specifically result from combinatorial processes. At least there seems to be an implicit consensus in that direction among neuroanatomical investigations (Runco, 2007). There is no lack of precedents for hybrid design; nevertheless, it has been

unclear as to what mechanism fosters the proliferation of cross- breeds in design and all other aspects of modern society. Before knowing the driving force behind the hybridization phenomenon, it is necessary to classify the design precedents. Both a chair applied with a design motif derived from an animal leg and a wheelchair that functions as a chair and a transportation device can be hybridized design solutions. However, they are not the same type of combinations. The design models of hybridization may involve many design subcategories – theory, style, function, shape, material, lighting, sustainability, etc. Are there any design precedents for hybrids of shape and sustainability, or style and lighting, or for more than two subcategories? The classification process not only will inform us about how hybridization was used both consciously and unconsciously as a design tool in the past, but also it will lead us to a question of how we can use this design tool to reach new creative design solutions. Figure 1 outlines the research model.

Each design element—function, form, material, color, cultural identity, etc.—consists of unique characteristics which are defined as design genes. The proposed research model on hybridization comprises three levels—identification of design genes, treatment of design genes, and evaluation. The assumption is that this design model can assist designers in generating design solutions more efficiently and effectively.

Two research projects on courtyard houses were developed based on the research model. The purpose of these projects is to implement hybridized design methodology and to understand its full potential of it. Much like natural science research, this approach focuses on the manipulation of design genes. In hybridization, repetition can be applied together with scale (enlarge or reduce) to allow design elements to seamlessly flow or merge into other design elements. The treatments for design elements might be to bend, twist, merge, dismantle, weave, etc. They can be applied to anything which has a physical form; however, the treatments for the function or cultural identity have to be interpreted and applied in more abstract ways.

Research Project One

The first step is to identify the design genes— the design elements that can be integrated into the new hybridized design. This step is inclusive. In the case of Chinese courtyard houses, there are two groups of design genes— the local and the foreign, or the familiar and the unfamiliar. In scientific research, natural hybridization involves successful matings in nature between individuals from two populations or groups of populations, which are distinguishable on the basis of one or more heritable characters (Harrison, 1990). The same theory can be applied to design research.

The design genes should come from groups that are distinguishable based on inheritable traits. In the case of courtyard houses in Beijing, many Chinese design elements— doors, windows, patterns, corridors, kiosks (In Chinese is called Ting Zi. It is the casual gathering place in Chinese gardens. It normally has even numbers of columns and a roof structure. It opens on all sides.), Chinese wooden structure system (In Chinese is called Dou Gong. It is a unique structural element

of interlocking wooden brackets, one of the most important elements in traditional Chinese architecture.), roof design, etc., are identified as the local design genes. In addition, other design elements, which represent the foreign, the new functionality and modern lifestyles, are also chosen. For instance, the open kitchen concept represents a foreign design gene.

The second step is to modify and merge the design genes by applying treatments. The treatments for hybridized design are no different than any conventional design method; however, the objectives differ. Hybridized design aims to mingle and merge design elements; therefore, the treatments should enhance the future merging process. For example, repetition is a very common treatment or a design language that often can be applied to doors, windows, columns, etc. In hybridized design, simple repetition may be applied together with scale (enlarge or reduce) so that one design element can seamlessly flow or merge into other design elements. The treatments can be bend, twist, distort, abstract, dismantle and reassemble, attach and merge, scale, overlap, repeat, etc. Each treatment is worthy of more in-depth research by itself. The goal of this project is to demonstrate the methods to upcycle the existing design elements, so that social and cultural continuity are maintained.

The new courtyard houses comprise many individual two-story houses. Each house is about 60 square meters. To reflect the social transformation in courtyard living—from the private place for a single family to a shared place for multiple families—the new design has adopted a semi-open concept with houses on four directions to form a sense of enclosure, but no enclosed entrance and walls. Residents are able to walk freely from one to another. The overall structure is influenced by Chinese aesthetics and use of color, and yet is more fluid with curved corridors and roofs, reconciling tradition and modernization. Guided by the rules of hybridization, treatments—bend, twist, distort, abstract, dismantle and reassemble, attach and merge, etc. —are applied to traditional design elements. The ridge of the roof (Wu Ji) merges with the column and becomes one design element. Comparing with the traditional roof, the new design is more dynamic and creates beautiful patterns. Inspired by the bamboo frames for vines planted in traditional Si He Yuan, the roof structure extended out and created a hollow shading to reinforce the beauty of light and shadow and to allow them to interact with the physical forms. The entrance to each individual unit sits back to avoid unpleasant encounters. The kiosk in the center of the courtyard is a hybrid by itself, taking the Chinese pattern and the basic form of a Chinese kiosk and mingling them with contemporary design language.

The new courtyard houses are the offspring of the traditional house through hybridization. The juxtaposition of the old and the new seem to suggest that visual continuity and harmony can be easily achieved, even though the building technique and the use of materials are different. Unlike the modern apartment buildings, which protrude out from the tranquil skyline of traditional Si He Yuan, the new hybridized courtyard houses are more sensitive and less overpowering to the existing environment.

Merging, as a main hybridized design method, is applied to furniture design and space planning, in both function and aesthetics. The flower pot, lighting fixture, low seating, table, decorative panel that creates visual privacy, and shoe rack are all merged into one piece of furniture, providing a more efficient use of space. Traditional Chinese patterns are modified, bended and twisted to embrace modern design language. The wavy suspended ceiling structure resembles the Chinese roof design and Dou Gong. Infused with light and shadow, the space aims to reinterpret Chinese sensitivity with modern design language.

Limited on space, the second floor needed to accommodate multiple functions. Hybridization allowed the designer to easily extend the design thinking and take advantage of height where the staircase is combined with the wardrobe and bathroom. Two floating structures resembling the Chinese roof design are used again to provide the sense of enclosure for the open concept bathroom and bed, and to create spaces within the space. They also function as the light source. Semi-transparent materials and carved panels are used to allow light to penetrate.

As the design continues to evolve, a different color scheme is applied to the same design. The mood of the space has been dramatically changed after adopting the new color scheme. The hybridized quality seems to be strengthened, while the Chinese taste seems diminished. The exploratory attempts end at this point; however, the research should continue. The same cycle can be repeated either with the same courtyard house or with something else. More analytical reflections are needed. Given the complexity of hybridized design, it is hard to draw any conclusion without further investigations. However, this research project may generate more discussions around the topic of hybridized design.

The third step is to evaluate the design solutions. Like hybridization in scientific research, the manipulations of design genes may succeed or fail. Therefore, evaluation is crucial. Many criteria might be applied to evaluate the solutions— aesthetics, creativity, user acceptance, efficiency, feasibility and so on. Referring back to the research model illustrated in Figure 1, this research model can be further developed by replacing creativity with other evaluation criteria. The author hopes to address this in future research.

Research Project Two

In research project two, space planning moved away from a rectilinear approach and disintegrated the courtyard into three houses with more dynamic spatial relationships. The research projects provided insight and visual evidence of sensitivity of Chinese aesthetics to the modern realm.

Discussion

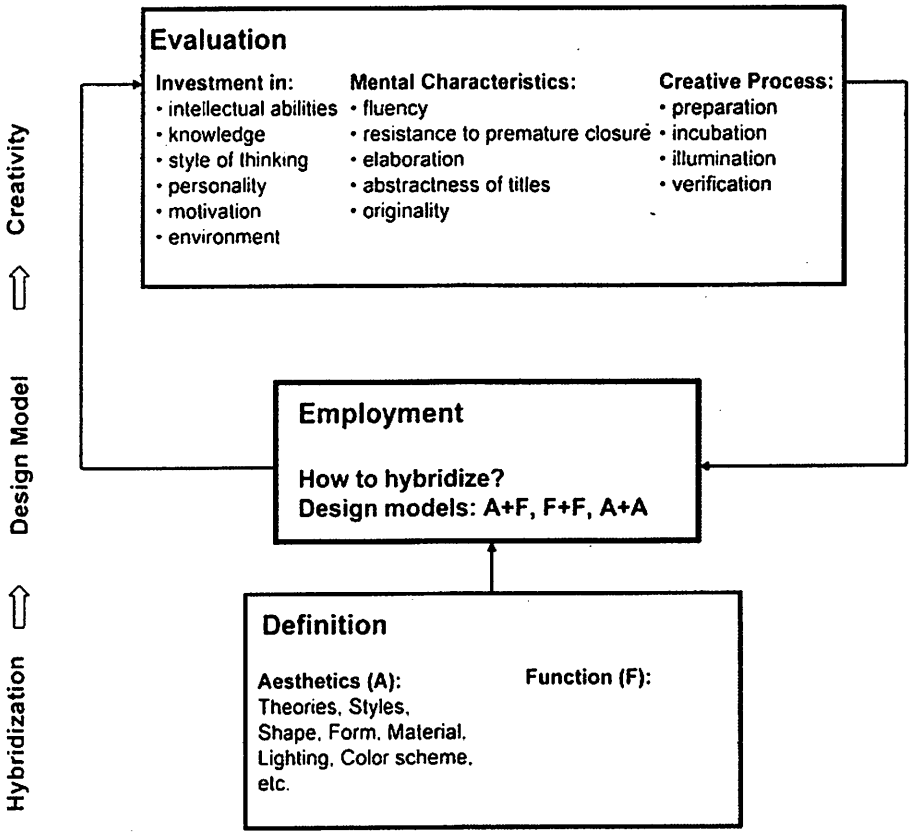
The research on hybridization in design encompasses a vast number of design topics, spanning the whole spectrum of design. The proposed research model, comprising three components— definition, employment and evaluation—is only the beginning.

Future research may focus on revising the conceptual framework and employing the research model to generate and evaluate design solutions. In addition, future research will be a collaborative effort, encompassing many design research projects. Each research project can be considered as independent research. For example, one research project may concern only two of the subcategories of design aesthetics—style and lighting. This research project may evolve into a design project—seeking design solutions for reinterpreting a historical or regional style with contemporary lighting technologies.

It is critical to evaluate design solutions. The results of each research project will be used to evaluate the effectiveness of the design model of hybridization. Those research projects will be designed so that they reveal the correlations between variables. For example, a research question can be, "How does the hybrid of color scheme and structure affect the elaboration in design?" The experiment itself can be "to apply a contemporary color scheme to a nomadic tent design." The two independent variables of this research construct are "contemporary color scheme" and "nomadic tent structure." The dependent variable is elaboration. The interactive treatment is applied to "color scheme" and "tent structure." Subsequently, a research hypothesis can be formulated, followed by a series of design projects. Figure 1 shows the conceptual framework of evaluating design solutions through creativity. It is suspected that the use of the design model of hybridization will assist designers in generating design solutions more effectively and efficiently, thereby accelerating the thinking process.

The research on hybridization is likely to be a continuing effort, and it should not be a linear research experience. Evaluation results might be used to revise the first and second stages of the research model, definition and employment respectively. Furthermore, instead of finding the design model of hybridization to be a creative tool, the research finding may show the opposite to be true. The proposed design model may also encourage the recycling of existing ideas rather than the generation of novelty. At the current stage, the design model of hybridization seems to allow conscious repetition of creative mental processes and the generation of ideas to happen instantaneously. In addition, the creative process of hybridization can never be a simple equation as illustrated in the research model. Sociologist Milton Gordon (1964) described the three types of assimilation processes as Anglo conformity, cultural pluralism (salad bowl) and melting pot.

This observation concerns only the complexity of social interactions; nevertheless, research from other disciplines continues to offer insightful conceptual frameworks for future research of hybridization in design.



References

Lawson, B. R., 1980. *How Designers Think.* London: The Architectural Press Ltd.

Parnes, S. J., 1992. *Source Book for Creative Problem Solving.* Buffalo: Creative Foundation Press.

Quinn, B., 2003.*The fashion of architecture.* Oxford, UK ; New York: Berg.

Runco, M.A., 2007. *Creativity.* Burlington: Elsevier Academic Press.

Sternberg, R. J., & Lubart, T. I. ,1996. Investing in creativity. American Psychologist, vol. 51(7), pp. 677-688.

Torrance, E. P., 1966. *The Torrance Tests of Creative Thinking (TTCT).* Princeton NJ: Personnel Press.

Wallas, G., 1926. *Art of Thought.* New York: Harcourt, Brace and Company.

Gordon, M. M., 1964. *Assimilation in American Life: The role of race, religion, and national origins.* Oxford University Press.

From Autonomy to Interdisciplinarity: A Historiographical Context

Macarena de la Vega de León

Throughout the history of modern art and architecture in the twentieth century, the idea of autonomy has been repeatedly used (and maybe even abused). But, can architecture be regarded as an autonomous discipline? Such a question has no easy answer. Thus, 'it becomes clear that the concept of autonomy post-1968, and today, must be rethought', as was recently stated by Peter Eisenman (2008, p. XI). A quick, transversal and not easily justified look over the twentieth century reveals several different theoretical approaches both to autonomy and its supposedly adversary: interdisciplinarity. This paper's aim is to attempt a clear, chronological presentation of the chosen texts and the main ideas they contain, in order to understand where the debate stands today.

The essays that will be discussed can be classified in two groups, according to their century of publication. Different historical texts published between 1933 and the 1990s will help describe the historiographical context and two special issues of the *Journal of the Society of Architectural Historians* offer a more contemporary approach. Apart from Eisenman, every author discussed in this work was historian, writing mainly history.

Such an overview can start with no other author than Emil Kaufmann, and his definition of autonomous architecture as opposed to the Baroque. His conceptualization of autonomy is mainly defined in 1933, first in the essay "Die Stadt des Architekten Ledoux: zur Erkenntnis der autonomen Architektur", followed by the book *Von Ledoux bis Le Corbusier: Ursprung und Entwicklung der autonomen Architektur.* The next stop proposed is one of the first theoreticians to urge architects towards interdisciplinarity: Reyner Banham. He defended throughout his career, and especially in the early 1960's, the idea that architects and other specialists should collaborate together. He then edited two series of articles for *The Architectural Review*: 1960 and "On Trial" in 1962. Moving forward another 30 years, two authors can be found defending opposed standpoints. On the one hand, Kenneth Frampton wrote in the essay "Reflections on the Autonomy of Architecture: A Critique of Contemporary Production" that 'nothing could be less autonomous than architecture' (1991, p.26). On the other hand, Peter Eisenman explained in "Autonomy and Avant-garde: The necessity of an Architectural Avant-garde in America", that 'it remains for us to continue to explore and expand the possibilities for such an autonomy' (1997, p.78). His text was presented at the conference "Autonomy and Ideology: Positioning an Architectural Avant-garde in North America, 1923-1949", hosted by Columbia University and the Museum of Modern Art in New York, February 1-3, 1996. The gathering of authorities in architectural theory such as Colin Rowe, Beatriz Colomina,

Detlef Mertins or Robert Somol showed how autonomy was still a key word in debates on architectural theory. Two are the special issues of the *JSAH* that provide this work with a contemporary view: first, "Learning from Interdisciplinarity", published in December, 2005 and second, "Learning from Architectural History", published in March, 2006.

In discussing profoundly these texts, the intention of this study is to look for the shifts in the concepts of autonomy and interdisciplinarity that have occurred over the past eighty years in architectural thought, being aware of the fact that key figures on the matter, such as Aldo Rossi, have been left out. There is another point of view that could be considered in further research. Autonomy has been used recently as one of the tools for historiographical research by contemporary scholars such as Anthony Vidler in his *Histories of the Immediate Presen: Inventing Architectural Modernism*, and Gevork Hartoonian in *The Mental Life of the Architectural Historian: Re-opening the early Historiography of Modern Architecture.*

Erkenntnis (discovery), *Ursprung* (beginning) and *Entwicklung* (development) of autonomous architecture

'The idea of "architectural autonomy", the notion that architecture, together with the other arts, is bound to an internal exploration and transformation of its own specific language, has surfaced periodically in the modern period' (Vidler, 2008, p. 17). And one could add to Anthony Vidler's words that it still does re-surface. Vidler is meant to be a guest in this chapter due to the fact that Emil Kaufmann first works have not been translated yet into English, apart from the quotes that appeared in the *Histories of the Immediate Present.*

Throughout his career, Kaufmann maintained a single objective: 'to deal with a period that has been badly underrated and misunderstood' (1955, p.IX). This period is none other than the post-Baroque. He first presented the work of Claude-Nicolas Ledoux; then, still in France, Boullée s and Lequeu s; and in the end, he widened the field of his research to incorporate Italy and England. In a time when Neoclassicism was undervalued as a decadent period in the history of art, his discovery of Ledoux's work helped the historian to map the development from Baroque unity and heteronomy to revolutionary multiplicity and autonomy. In his book *Von Ledoux bis Le Corbusier*, autonomy is mainly described as a mode of composition, characterized by a free association of elements lacking hierarchy and by a self-sufficient isolation. This means a multiplicity (*Vielheit*) of parts that, after a long period of transition, was able to 'disintegrate' Baroque's unity (*Einheit*). Thus, autonomy was for Kaufmann one of the formal categories, inherited from Heinrich Wölfflin s *Grundbegriffe*, and applied in an innovative manner in order to re-evaluate a body of work that had been forgotten and neglected by previous scholars. He wanted to recognize 'France as pioneer of a new art and creator of a new architecture' (Vidler, p. 27).

However, autonomy in Kaufmann's discourse is not only a formal category that links him to the tradition of art history and helps him to establish a distinction between

the Baroque and Ledoux's work around 1800. Autonomy is also the link between Ledoux's revolutionary architecture and Modernism, represented in France at the time by Le Corbusier. In *Von Ledoux bis Le Corbusier* this relationship is rather weakly described, but the idea that the discourse of modern architecture should start in the late eighteenth century has been taken up by several authors such as Philip Johnson, Aldo Rossi or Peter Collins.

Apart from an aesthetical category and a historiographical tool, Kaufmann gives autonomy an ethical meaning, connecting Ledoux's work with the ideals of reason and simplicity, characteristic of his own time, the Age of Reason.

'At the moment when, with the Declaration of the Rights of Man, the rights of the individual are affirmed, at the moment when, in place of the old heteronomous morality, Kant instituted the autonomous ethic, Ledoux laid the foundations of an autonomous architecture' (Vidler, p. 28).

Going back to the introductory words of Vidler that opened this chapter on Kaufmann, is he only speaking about the autonomy of architectural language? Is autonomy *only* a formal and compositional category that has to do with architectural language and not with a more complete disciplinary meaning of Architecture (with capital A)?

Interdisciplinary architecture after 1960

Reyner Banham looks for an *autre architecture* in 1960 after Sir John Summerson 'proposed 1957 as a year of architectural crisis and change' (Banham, 1960a, p. 9). '1960' is a series of 6 articles published in *The Architectural Review* between January and June that begins not discussing the autonomy of architecture, but architecture itself:

'In the midst of these competing bids for intellectual dominion, the architectural profession, is apt to draw back into itself a little, scribe a line around the status quo, about as far out as it can reach without straining and say "Everything beyond this line in NOT Architecture, and no real concern of ours"' (1960a, p. 10).

Banham attempts to define Architecture, with capital A, while taking stock of the situation in the 1960-1, "Stocktaking": 'Architecture, as a service to human societies, can only be defined as the provision of fit environments for human activities' (1960b, p. 49). In this same essay Banham introduces his idea about engineers as collaborators with architects, in a first step towards interdisciplinarity. But it is not until the essay 1960-2 "The Science Side", that the art historian explains that architecture's relationship with science has to be with technology as well as with human sciences, especially sociology and anthropology. 'They provide us with an understanding of what people need in buildings' (1960c, p. 189).

'To define a problem effectively requires knowledge of the field of study, plus a knowledge of methods, plus a knowledge of equipment to be used. It is not necessary for one person to have all this knowledge. In fact two persons with specialized knowledge overlapping can produce excellent results' (1960c, p. 188).

Exactly at this point, Banham introduces his critique of contemporary architects. 'It seems to be no longer a question of whether architects should try to master this mass of information or not, but how much longer can they put it off.' The historian let the architects know that it is the intellectual climate of the profession of architect that is under revision and recommends the collaboration with sociologists and engineers in the essay 1960-3 "The Future of the Universal Man." This essay includes the opinions expressed by Anthony Cox, Gordon Graham, John Page and Lawrence Alloway in a symposium hosted by Reyner Banham. Two interesting ideas are introduced: first, the idea that architects understand sciences as a threat and, second, the need to consider building as team work. 'The future of the *universal man*, if he is not to become a battered relic, [...], appears to lie in his becoming first a qualified technician' (1960d, pp. 259-260).

Although the word 'interdisciplinarity' in not used as such in this series of articles, Banham urges architects to abandon prejudices and change their attitude. In his opinion, it is about time to collaborate with scientists, technicians and people from every discipline involved in building. His critique of contemporary architects is even harsher in the next series he edited in 1962, where their attitude resistant to change is directly put "On Trial".

Disguising architects' anxiety and envy

After having described Banham's judgment of architect's attitude as harsh, a stronger word should be used to describe Kenneth Frampton's critique of contemporary production. Frampton explains that 'the hypothetical autonomy of any given practice is relatively delimited by the sociocultural context in which this practice unfolds' (1991, p.18). Architecture is the least appropriate discipline to become an exception. There are certain economical, sociological and historical boundaries that cannot be ignored. The key word here is practice, and is this practical meaning of architecture that theory sometimes seems to forget. In his opinion, architecture 'is both a cultural discourse and a frame for life' (1991, p.18). It should always be remembered that architecture is 'appropriated by the society' and not an architect's propriety.

'... architectural practice has been slowly and surreptitiously undermined in the course of this century by the increasing privatization of society. (...) It is obviously difficult to sustain the legitimacy of architecture in a society that is constantly being overwhelmed by the innovations of technoscience, by demographic change and by the ever-escalating cycles of production and consumption that constant modernization serve to sustain. Lacking a collective *raison d'être*, architecture has turned first this way and then that in an effort to legitimate itself and to bring its practice into line with the dominant discourse, be it applied science as the reality principle or applied art as a psychosocial compensation' (1991, p. 19).

Is autonomy an instrument for architecture to legitimate itself? Once again it depends on whom you ask and there is a radical difference comparing Frampton's

discourse with what will be stated below. According to Frampton, it is just a strategy that attempts to compensate for a superficial context in which convenience is more valued than culture. Such a use of architecture is not a legitimization, but a justification of architect's 'anxiety and envy', envy either of art or science.

Frampton intends to define both a practical and theoretical discipline based on two ideas: first, that the possibility of architecture being understood as discourse is largely denied; and second, that 'nothing can be less autonomous than architecture.' In his opinion, behind the preoccupation with the autonomy of architecture lies nothing but anxiety and the need to *sell* architecture as a form of packaging.

'Under such skeptical circumstances, architects often feel constrained to perform acrobatic feats in order to assure attention. [...] There is no logical imperative, however, that these conditions demand an artistically fragmented, over-aestheticized expression in the field of architecture. On the contrary, one may argue that such a level of disjunction needs, even demands, an architecture of tranquility, and architecture that lies beyond the agitations of the present moment' (1991, p. 26).

Re-conceptualizing Autonomy and Ideology in the 1990s

As has already been stated above, for Peter Eisenman autonomy is one of the many concepts that needed to be rethought after the changes in theory and practice of architecture occurred in 1968, that led to post-Modernism. Re-thinking has been a popular activity in architectural theory since the 1990s and autonomy has not been an exception.

Robert Somol, editor of the book published about the conference on Autonomy and Ideology in America, considers that 'one project for the contemporary avant-garde would be to advance a practice that registers the various frames that allow it to come into being' (1997, p.30). Within this framework he proposes that there are two opposite agendas, 'critique theory' and design, and that it would be naïve to believe that any one of these genres could exist in pure form, that, for example, there could ever be a purely critical endeavor, untainted by circumstance' (1997, p. 30). The relationship between theory and practical design is stated by Robert Somol in a way that is similar to Frampton's discourse.

However, it is Eisenman's approach that is of interest at this point. He uses autonomy as a critical tool to state a difference, to distinguish. In his discourse about the Avant-garde, he introduces the idea already discussed about the connection between autonomy and disciplinary practice.

'The problem for architecture has always been to define its autonomy by attempting to remove it from precisely the social practice that supposedly defines it. This removal or displacement has various functions. For one, it defines the autonomy of architecture as transgressive of its time and place, thus counter to any idea of *zeitgeist*. This idea of autonomy as transgression of architecture's social practice –cutting it off from its previous modes of legitimization – is already a condition of its avant-garde nature' (1997, pp. 75-76).

After Frampton's critique, in Eisenman's text autonomy appears linked or cut c from the idea of legitimization. He focuses on Venturi's and Rossi's 1966 worl *Complexity and Contradiction in Architecture* and *L architettura della città*, to exempli a new understanding of autonomy. 'The idea of architecture and its own historic language in both Venturi's and Rossi's cases becomes a condition for autonom (1997, p. 73). If attention is paid to the use Eisenman makes of words, not on language and discourse appear, but also 'the question of the autonomy of time' or tl denial of the *Zeitgeist*. This could mean a new way of understanding a not-disciplina autonomy, which according to Eisenman 'was introduced by both Venturi and Ros as a historical time internal to architecture' (1997, p. 76).

Once again, a question arises. In a time when autonomy is still being rethought, the are different positions about its true nature. Should it be considered as a complet disciplinary concept? Should it be considered as a tool of legitimization? Should it l considered as a "condition" applied to partial element of analysis such as language time? Should it be considered as both at the same time?

Learning is a two-ways path

The word 'Interdisciplinarity' (not the idea) is brought into this work by the *Journal the Society of Architectural Historians* in 2005, in a special issue entitled "Learning fro Interdisciplinarity" and edited by Nancy Stieber. Her introduction begins with a k question: 'Is architecture history an autonomous field? Institutionally, the answer ambiguous' (Stieber, p. 417).

'The interdisciplinarity of architectural history has long been acknowledged l contributors to the *JSAH*. [...] We have witnessed an intensification of intere in multi-, trans-, and interdisciplinary research on the built environment. In tl past fifteen years, articles in the journal have demonstrated the imbrication architectural history with cultural geography, anthropology, economics, politic history, sociology, literary theory, psychology, philosophy, archaeology, urb history, art history, the history of science, the history of tourism, cultural histor film studies, visual studies, genre studies, and postcolonial studies' (Stieber, p. 417).

The objective of this special issue was to ask architectural historians several to refle on several questions about the discipline's future. 'What theories have been mo prevalent and most productive of new work on space and the built environme in fields outside architectural history?' (Stieber, p. 417). And once other disciplin are taken into account, 'what are the questions that architectural history shou be addressing now and how do they relate to the questions being raised outsi the field?' (Stieber, p. 417). Different answers are explored and can be summariz in three 'sites of cross-disciplinary reciprocity' (Stieber, p. 417). First, John Arch (social theory of space), Gwendolyn Wright (cultural history), Darell M. Abramsc (history), and Dianne Harris (social history) identify architecture as 'an active age in historical change' (Stieber, p. 417). Second, Carla Yanni (history and sociolo of science), Hélène Lipstadt (sociology), Mario Carpo (architecture) and Arinda

Dutta (organicism) defend the value of non-art-historical methods and 'encourage a reconceptualization' of what the discipline does. Third, these essays 'illustrate the contested autonomy of architecture' providing historical overviews of the interrelations of architectural history and other fields.

In the early twentieth century, Wölfflin or Kaufmann understood that their analysis needed new formal categories. Eighty years later, new analytic tools are still required. For example, the notion of identity lies at the core of what Harris would propose 'as a starting point for a new kind of social history of the built environment' (Harris, p. 422). Even the notion of built environment sounds new and would be considered in this new kind of history as 'a stage for the performance of these shifting and impermanent personal and/or group identities and a significant tool for the construction of identity' (Harris, p. 422).

Explaining the notion of methodological eclecticism, the need of methodological changes, Carpo refers to Manfredo Tafuri and how he recognized that 'the inherently interdisciplinary nature of architecture requires continuous methodological readjustment on the part of architectural history' (Carpo, p. 426). He urges that architectural history should learn even from architectural theory and criticism in order to include concepts like transcoding, invoked by Michael Hays. Carpo also reflects on the importance of tradition and classical historians like Sebastiano Serlio or Andrea Palladio, despite the fact 'that they actually cheated to make history fit their plans. [...] But we still study them –which seems to imply that we can still think we can learn from them' (Carpo, p. 426).

Even after what has been stated when analyzing Banham and his defense of sociology, according to Gwendolyn Wright a question still remains: 'How do built environments affect individuals and societies?' (Wright, p. 437). She recommends cultural history methodology to shed some light on architecture and its autonomy.

'Architecture is dynamic, creative, sometimes even obstinate, not simply a response to or reflection of abstract, anonymous forces. Yet the conceit of its autonomy brackets out vigorous contention about meanings, uses, and new forms –where culture comes alive' (Wright, pp. 437-438).

Moving on in the opposite direction, we will now consider what other disciplines can learn from architectural history. In "Learning from Architectural History", included in *JSAH*'s following issue, twelve scholars from other fields of research comment on what they have learned and might learn from architectural history: Paula Findlen (history of science), Linda Levy Peck (early modern history), Leora Auslander (European social history), Lizabeth Cohen (American social history), John Czaplicka (contemporary history), Maiken Umbach (urban history), Stephen Daniels (landscape history), Richard Schein (cultural landscape studies), Denyck W. Holdsworth (geography), Daniel E. Nye (history of technology), Linday Biggs (history of technology) and Giuliana Bruno (visual studies). This issue is also edited and introduced by Nancy Stieber: 'A significant challenge to our field is, I believe,

to make the considerations internal to architectural understanding more accessible to others' (Stieber, p. 5). The built environment can be seen by different historians as a tool to understand 'consumption', modernization, nationalism and other phenomena. According to Stieber, what really makes architectural research distinct is the 'reliance on visuality'. Thus, other historians need architectural historians to provide guidance on this analytical tool.

'As architectural historians we need to convey not only the experience of architecture, (...) but also the effectiveness of the analytical tools we and architects have developed for making sense of architecture' (Stieber, p. 6).

Findlen's essay also examines the notion of identity. Cultural history 'has asked questions about human behavior that make the spaces in which activities occurred far more visible' (Findlen, p. 7) and has broaden the knowledge about how people elaborated their social identities. In her opinion, historians should rewrite histories on important architects like Christopher Wren and Andrea Palladio 'that not only describe how they changed their world through buildings but how and why their world inspired them to design and build' (Findlen, p. 8).

Levy Peck's essay reflects on the history of 'consumption' and how it affects societies. In her opinion, identities can be re-shaped and re-invented through consumables and meanings can be transformed as objects move across cultures and into new contexts.

These essays also contain bits of advice for architectural historians. For example, Auslander has 'sought from historians of architecture answers to questions about the intentions of those who constructed buildings and the actual effects of those structures' (Auslander, p. 10).

'The works whose authors pause to patiently explain the meaning of a lintel or a dormer, who bother to trace the law that mandated the minimum size of a room or pitch of a roof –and the debate behind the legislation– and who seek to uncover not only who commissioned a building but who actually built it, cleaned it, and used it later in ways utterly unintended by those who designed it, provide deeply satisfying insights' (Auslander, p. 11).

Czaplicka brings criticism to the issue, in a way similar to Banham's and Frampton's. He also urges architects to move beyond prejudices and their resistance to change.

'But the lessons architectural historians might learn by considering such broad contemporary discourses and comparing them to similar ones in the 'old' West is often obscured by their limited perspectives and canonic cultural preferences built into standard studies of European architecture' (Czaplicka, p. 13).

This critical tone continues in Umbach's essay, in which she urges us 'to think of architecture not (only) as the object that needs to be explained, but as the object that does the explaining' (Umbach, p. 14). She, too, believes that architectural historians

ought to provide guidance to other historians on learning to decipher material sources. 'Yet this analysis has to move beyond older paradigms of style, toward a notion of the aesthetic performance of identity, a performance of which the rooms, houses, and cities we inhabit leave a material trace' (Umbach, p. 15).

To summarize, every scholar should look forward all the more to the continuing engagement between disciplines and, as stated above, to move and look beyond traditions and prejudices. So what does the history of architecture and, thus, architecture itself offer to those studying other research fields? The answer to this question is found in Holdsworth's essay:

'It helps shed light on landscape, on landscape making, on identifying the specific people that have helped shape places through their designs of buildings. But as long as 'architecture' implies styles, architects, and floor plans alone, "architectural history" appears to have less to offer that a "history of the built environment" that looks beyond pedigreed buildings to connect architecture to broader social and economic forces' (Holdsworth, p. 19).

Rethinking, reshaping, readjusting, reinventing, rewriting and reconceptualizing autonomy and interdisciplinarity

Rethink, reshape, readjust, reinvent, rewrite and reconceptualize autonomy and interdisciplinarity is exactly one of the objectives of the present ARCH THEO conference. There is still curiosity and necessity for such a debate on these concepts. As stated above, the idea of autonomy has been in constant transformation over the twentieth century, and it still is. According to the texts presented here, two positions could be considered as opposing (perfectly embodied in Peter Eisenman and Kenneth Frampton) both of which are possibly right and both fitting autonomy into their respective agendas. On the one hand, it seems accurate to consider autonomy a social discipline, involving peoples life and circumstances and, therefore, in constant need of collaboration with other disciplines, practical and theoretical. On the other hand, that same collaborative nature makes the architect, ultimately responsible of the work and *'universal man'*, want to search for something that distinguishes architecture, be it in its nature, language, discourse or time.

It seems appropriate to include the idea of boundaries in this conclusion. Should architecture stick to its boundaries? Should architects (theorizing and practicing) draw that line that, using Banham's example, defines what architecture is and what is not? According to Eve Blau, in a 1999 essay for the *JSAH*, architectural history 'has expanded far beyond the traditional parameters of the discipline' (quoted in Stieber, 2005, p. 417). Perhaps it should also be stated that embracing the new should not mean forgetting entirely about tradition or about the true practical meaning of architecture in society. Moreover, these same boundaries could be included in Frampton's strategies that compensate architect's fear of the unknown. Is the need to define the autonomy of architecture only an excuse to hide insecurity? Or is it a way

for architecture to legitimate itself, to distinguish it from other disciplines? Does architecture really need to be legitimated beyond its meaning and use in society?

Many questions arise when reflecting on the interesting essays selected and presented in this work. Is it possible to unify these two supposedly opposed positions? And, once again, is it really necessary? Do these standpoints exist outside theory, debates, books or conferences? Contemporary approaches have shown the necessity to consider architecture also as practical and global. But, how can we talk about collaborating with other disciplines, when no collaboration exists within the field of architecture between theories and practice? The idea of collaboration between theory and practice in architectural research is important; lately it has been forgotten in many ways, and thus ought to be taken into account. This does not mean that one should be at service of the other, just that communication and imbrications should be expected and not considered out of order. Would that be possible or positive? Is it even necessary? This conference would not have been held right now if the answer was no.

Our conclusion is that, for the moment, there is no conclusion, only more questions. Should those questions be answered? Maybe not yet, but they should be rethought, reshaped, readjusted, reinvented, rewritten and reconceptualized.

As Stieber suggests, 'the object of this exercise was open-ended. Most of these essays end with questions that invite us to rethink the nature of our field, its object of enquiring, and its methods. The good news is that we are still working out the rich implications for research of the numerous questions generated outside the field. There is ample work to be done!' (2005, p.418).

Bibliography (arranged alphabetically by author)

Banham, R. ed.,
1960. Architecture after 1960. *The Architectural Review*, January, 127, pp. 9-10.
1960-1: Stocktaking (of the Impact of Tradition and Technology on Architecture Today.) *The Architectural Review*, February, 127, pp. 93-100.
1960-2: The Science Side. *The Architectural Review*, March, 127, pp. 183-190.
1960-3: The future of Universal M. Symposium with Anthony Cox, Gordon Graham, John Page & Lawrence Alloway. *The Architectural Review*, April, 127, pp. 253-260.
1960-4: History under Revision. *The Architectural Review*, May, 127, pp. 325-332.
1960-5: Propositions. The editors: J.M. Richards, Nikolaus Pevsner, Hugh Casson & H. de C. Hastings review the trend of the series. *The Architectural Review*, June, 127, pp. 381- 388.

Eisenman, P.,
1997. Autonomy and the Avant-Garde: The necessity of an architectural Avant-Garde in America. In: Somol, R., ed. *Autonomy and Ideology: Positioning an Avant-Garde in America.* New York: The Monacelli Press, pp. 70-79.
2008. Foreword: [Bracket]ing History. In: Vidler, A. *Histories of the Immediate Present: Inventing architectural modernism.* Cambridge: MIT Press, pp. VII-XII.

Frampton, K., 1991. Reflections on the Autonomy of Architecture: A Critique of Contemporary Production. In: Ghirardo, D., ed. *Out of Site: A Social Criticism of Architecture.* Bay Press, pp. 17-26.
Hartoonian, G., 2011. *The Mental Life of the Architectural Historian: Re-opening the Early Historiography of Modern Architecture.* Cambridge Scholars Publishing.

Kaufmann, E.,
1933a. Die Stadt des Architekten Ledoux: zur Erkenntnis der autonomen Architektur. *Kunstwissenschaftliche Forschungen,* vol. II, pp. 131-160.
1933b. *Von Ledoux bis Le Corbusier: Ursprung und Entwicklung der autonomen Architektur.* Vienna.
1955. *Architecture in the Age of Reason: Baroque and post- Baroque in England, Italy and France.* Harvard University Press.
Somol, R., 1997. Statement of editorial withdrawal. In: Somol, R., ed. *Autonomy and Ideology: Positioning an Avant-Garde in America.* New York: The Monacelli Press, pp. 19-39.

Stieber, N., ed.,
2005. Learning from Interdisciplinarity. *Journal of the Society of Architectural Historians,* December, vol. 64, n° 4, pp. 417-440.
Stieber, N., Introduction, pp. 417-418.
Harris, D., Social History: Identity, Performance, Politics and Architectural Historians, pp. 421-423.
Carpo, M., Architecture: Theory, Interdisciplinarity and Methodological Eclecticism, pp. 425-427.
Wright, G., Cultural History: Europeans, Americans and the Meaning of Space, pp. 436-440.
2006. Learning from Architectural History. *Journal of the Society of Architectural Historians,* March, vol. 65, n° 1, pp. 5-24.
Stieber, N., Introduction, pp. 5-6.
Findlen, P., History of Science: How Buildings Matter, pp. 7-8.
Levy Peck, L., Early Modern History: the Built Environment and Luxury Consumption, pp. 9-10.
Auslander, L., European Social History: Questions for Architectural Historians, pp. 10-11.
Czaplicka, J., Contemporary History: The Politics of Architectural History and the Construct of a "New" Europe, pp. 12-14
Umbach, M., Urban History: What Architecture does, historically speaking..., pp. 14-15.
Vidler, A., 2008. *Histories of the Immediate Present: Inventing architectural modernism.* Cambridge: MIT Press.

Identity of the Place and its effect on Human Psychology and Well Being– a case study of the Upper Egypt Houses

Fatma Elzahraa Hussein

Shahira Sharaf Eldin

Architecture Department, Pharos University, Alexandria, Egypt.

Abstract

The processes of globalization, notable at all levels of contemporary world, and tied to processes of homogenization, especially in architecture and urban design, are affecting the definition of the place and its identity and culture.

This paper conduct a thorough study on the prototype of dwellings in Abotej which is an ancient city in Assuit governorate; Egypt. Abotej lies on the Nile shore and is famous with its old vernacular houses.

Houses spacesare discussed according to psychological and social well-being and how would they affect behavioral patterns and sense of community.

This comparative study must be taken into considerations when designing new residential projects for people in this area.Guidelines resulted from this research must direct the processes of creation of new residential dwellings with respect to identity of the place and based on understanding of its past and urban morphology.

Keywords: Culture, Homogenization, Human behaviour, Psychology, Psychosocial, well being.

Introduction

Communities by definition are, "a group of people having common ties or interests and living in the same locality or district and subject to the same laws."(Coelho, 2010) The idea of common interests, common locality, and common laws applies to various scales and sizes of communities.National, provincial, municipal, districts, neighborhoods and even housing developments could all be called communities.

We used to know that the smaller the scale or size of a community, the stronger the communal ties. The strength of the ties between individuals is the measure of the strength of a community; this is what social scientists call social capital. It is impossible to measure or quantify social capital scientifically, but it is tangible. In order to evaluate how the different housing typologies identifiedearlier address social capital, typical developments are evaluated to determine the level ofconsideration given to social capital and social connectivity in general.

In the following case study, the comparison willattempt to evaluate whether design decisions in housing typologies are being used to connect individuals and thecommunity and if the new designs of dwellings aredirected at strengthening the bonds between individuals especially in this small village.

Vernacular architectures, built by people whose design decisions are influenced by traditions in their culture, have been gleaned through a long period of trial and error and the ingenuity of local builders who possess specific knowledge about their place on the planet, and thus are valuable in promoting climate-specific passive building technologies to modern buildings(Zhiqiang (John) Zhai, Jonathan M. Previtali, 2010).

Architecture is a symbolic and intentional Endeavour seems to reflect the psychology of its designers regardless of time, culture and perhaps even species. Space, form, and light are elements that are often incorporated either purposefully of unconsciously for aesthetic or practical reasons but more pointedly give creatures meaning, purpose and stability amidst an ever changing physical universe of seeming chaos.Answers to such questions are rarely gathered during typical pre-design planning process.

So it was necessary to high light on the importance of the needs & the psychology of the clients & users in the designing process which could be studied in the ***Environmental*** *psychology.*

The ***Environmental psychology***is a field of study that examines the interrelationship between environments and human affect, cognition and behavior (Young, 2013)also it is the study of transactions between individuals and their settings figure(1). The way a building is planned determines human access to or views of the natural environment while inside the building, which also affects human health and wellbeing (Paul R. Martin, Fanny M. Cheung, Michael C. Knowles, Michael Kyrios, Lyn Littlefield, J. Bruce Overmier, Jose M. Prieto, 2011).

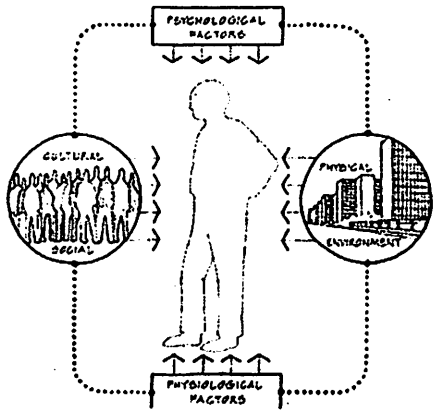


Fig.1 illustrates the factors affecting Environmental psychology (Source: Moore, G. T., 1979)

This paper examines the aspect of environmental psychology that deals with this interrelationship between humans, interior spaces, and the natural environment. The way a building is planned determines human access to or views of the natural environment while inside the building, which also affects human health and wellbeing. This paper examines the aspect of environmental psychology that deals with this interrelationship between humans, interior spaces, and the natural environment.

Thepurpose of the comparison of housing types will be to compile design concepts and principles, the creation of social capital in an urban environment.With a housing on the development and unit level, and determine the most effective typology for typology determined, preliminary information and a determination of the elements which directly impact social capital development will be explored. The information gathered from the case studies process will be used to influence the typical occupier, site selection and finally the design process. The end conclusion of research will be a housing development design recommendations in order to rebinding community socially.

Contextual background

Abutej City geographic location

The Assiut Governorate is the oldest Egyptian governorates and has gained importance in ancient Egypt because of its central location between the regions of Pharaonic Egypt and for being a major center for commercial convoys destined for the Western Desert oases and the beginning of a road trail that up to forty Sudan's Darfur.The governorate of Assiut is counted among the oldest governorates of Egypt and the capital of upper Egypt , considering its privileged middle location which attracted different civilization through history from pharoanic, to Roman, Coptic and Islamic eras thus introducing Assiut as a worthy tourist attraction(Governerate, 2012).

The center Abutejis one of the leading centers in the province of Assiut due to its geographical location, as it is located at a distance of 28 km from the city of Assiut in the south, and is bounded on the east the Nile River, and west of Western Desert, and from the north center of Assiut, and South Center Sadfa. The total number of inhabitants in 2012 wasof 330.051 thousand. Assuit total area is about 137.00 km 2, representing 0.5% of the total area of the province. And total reins grown up to 27,905 acres, and the most important crops: cotton, wheat, sorghum, maize, faba bean. Also it containsthe followingof god Mosque sultan Farghal the most important monuments in the center. (Governerate, 2012)

Abutej big city in Upper East located on the west bank of the Nile figure (2), a Pharaonic city from more than four thousand years, it was the political capital of a

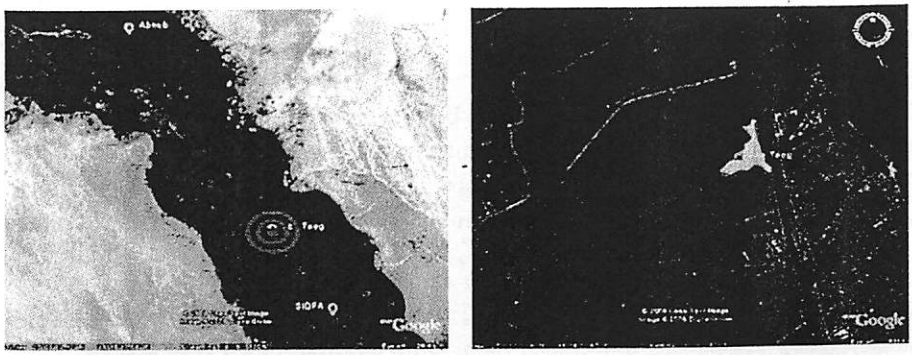


Fig.2 showing Assuit governorate on the river Nile and Abutej province in Assuit (Source: maps.google.com)

region X in Upper Egypt, and was named in hieroglyphs "boutique" which meant any store because it was the repository for goods durin Pharaohs Era. ThenGreekcalled it "Abutica "The captain" Taputaki "then misrepresented to" Botej "As Arabs income added character to the ground so it became known as Abutej, which is the current used name.(Governerate, 2012)

Purpose of the Study and Methodology

This study deals with the issue of continuity in thepattern of lifestyle within the present Egyptian Abutej community with the aim of seekingevidence on such continuity and to explainthe repercussions of previous socio-economicvalues on the actual residential built and lived in environment.

It is a longitudinal study based on site visits by the authors to detect theactual aspects of the built-environment. The fieldin-depth qualitative study, exploratory in nature isdone on a random sample in one of the main village in Abutej.

It focuses on changes that are obvious in both theexterior and interior spaces, on the use of patternsof the walls and on the residents' lifestyle.

The tools used for data gathering are:

- Annotated photographs of the interior spaces of the actual visited residences, and the surrounding exterior space.
- Semi-structured interviews with the residents enquire on the demographic characteristics, the duration of residency and the description of the residence. The interviews also focus on the level of present satisfaction with the old dwelling unit, and on the residents' future plans concerning renovation of their units.

Data analysis depends on several factors:

- The tribal background of old houses and habits which are documented to help in the longitudinal assessment.
- Studying psychosocial value of space and social well-being which includes three main approaches to be applied to all types of buildings(Heerwagen, 2008):

a) Beyond Survival: Design for Well-Being.
b) Environmental Preferences and Well–Being.
c) Design for the Senses.

Abutej's inhabitant Life style

The people of Upper Egypt villages seem to be very kind, brave, tough and generous. In the past they used to work with agriculture as a main job beside other small handcrafts but nowadays other types of jobs like doctors, engineers & lawyers are available. But agriculture still always remains a side work with their career jobs.

Upper Egypt people are very traditional & religious either if they are Muslims or Christians whois obvious in the attitude of the Upper Egypt woman since she still stacked to her rational custom called *(Malas)* which is like a big black cloak to wear over her clothes when she goes out.

Abutej's inhabitant architecture.

All theseprevious traditions & life style are reflected on the design of Abutej's inhabitant's own houses.Their old houses were affected by the Arabian Islamic houses being rectangular or square shape in plan with the presence of the court in the centre of the house.

Families used to build their houses near to each other to form a linear cluster and several lanes *(El darb)* branched off on either sides of the main streets and reached the habitations. Many of these lanes were blind alleys *(zuqaq)* and had a private use. *(El darb)* which is a very small narrow street with a gas lamp on its entrance to light was provided with a gate which was closed during the night for security purposesfigure (3).

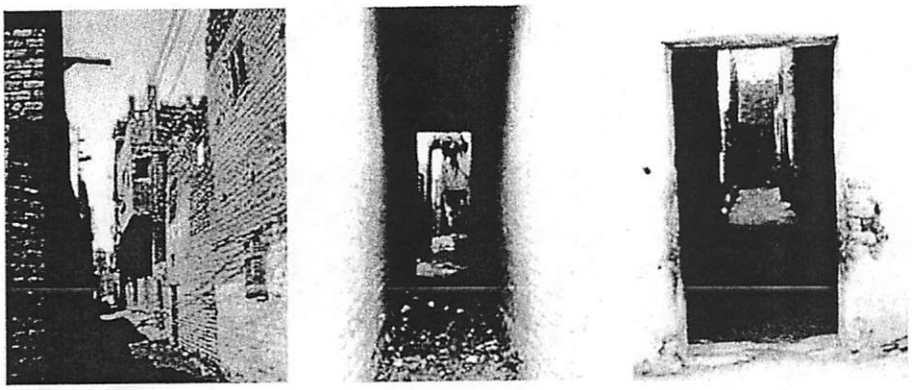


Fig.3 showing El darb in different places in El zayera village -Abutej province (Source: authors)

Any typical Abutej's oldhouses were always composed of two floors. The first floor'smain components were as follow:

• *El Mandara*: guests reception room, used to have its own entrance which is different than the house's main entrance, figure (4).

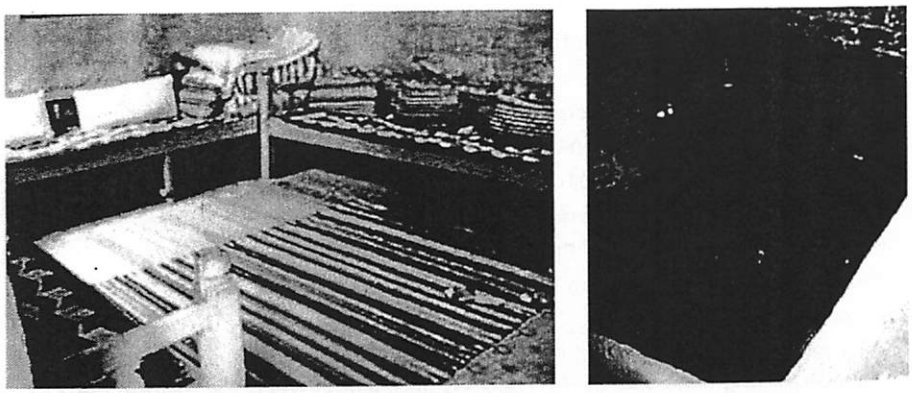


Fig. 4 showing old house main components respectively : El mandara in the left picture and old house's court yard on the right picture (Source: authors)

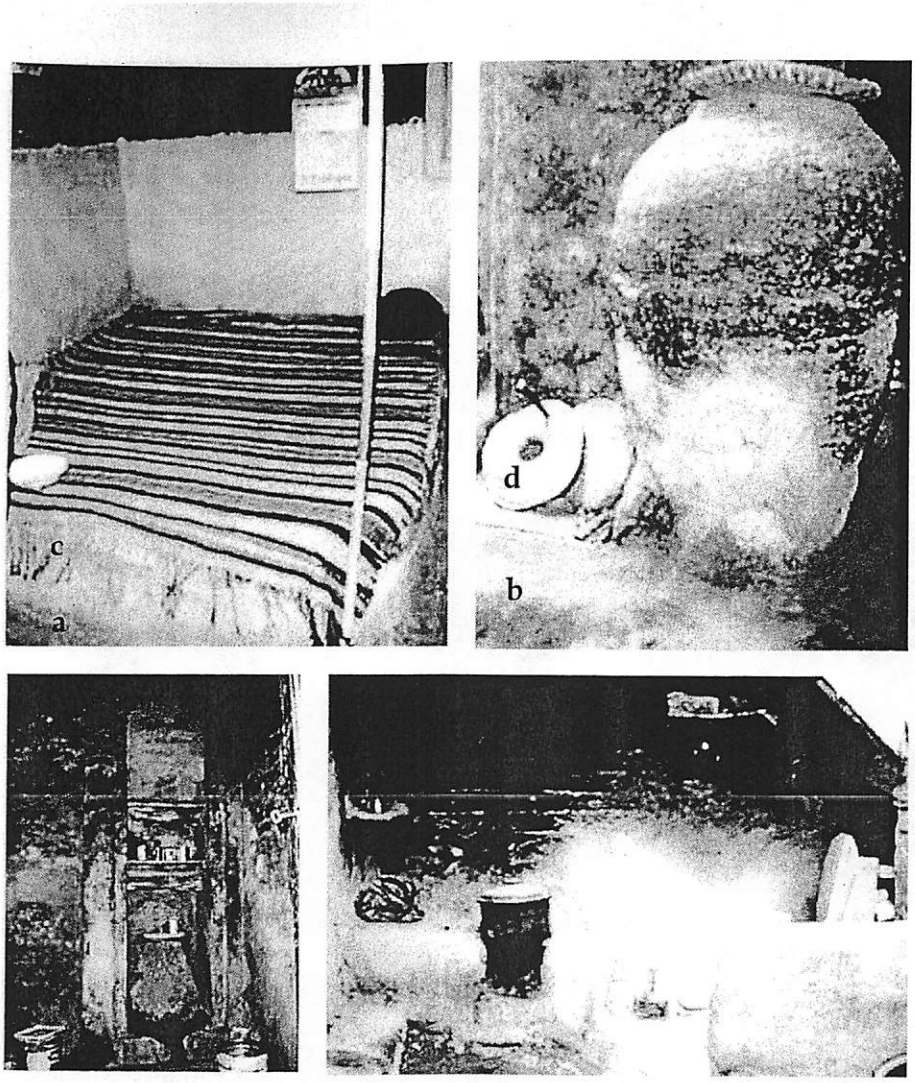


Fig.5 showing old house's court yard main components: a) El Mastaba, b)El-zeer, c) El Swama'a, d) El Kanoon (Source: authors)

Houses's court yard, as shown in figure (4) It contains five main components figure (5):

- *El Mastaba* : a big built-in coach (fixed furniture) serves as the living area.
- *El Sawma'a* : a built dried grain container (fixed furniture).
- *El Kanoon*: the old traditional stove .
- *El Zeer*: the house drinking water container.
- Storage room: a small room for storing the house other tools.
- The second floor usually contains from one to four bed rooms according to the house scale and importance.

Other important elements in the house are organized as follow:

- The bathroom always lies in the transitional level between the ground and the first floor.

- The furnace (oven) is either found in the ground floor in the court yard or in the first floor and is used to bake the everyday bread, as shown in figure (6).
- The animal barn is either found in the ground floor in the courtyard or as a detached barn adjacent to the house, as shown in figure (7).
- The well is situated inside the house at the ground floor and is used to supply the big family house with its water needs, as shown in figure (7).
- The Roof is used to contain some animal small cages like (chickens and rabbits), figure (8).

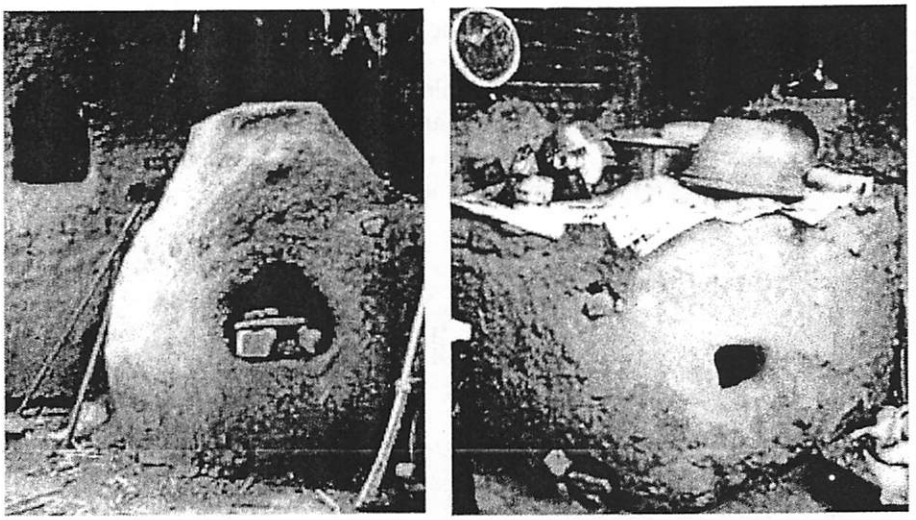


Fig.6 showing furnace in the old house's court yard , Zaghlol House furnace on the left and khedr house furnace on right (Source: authors)

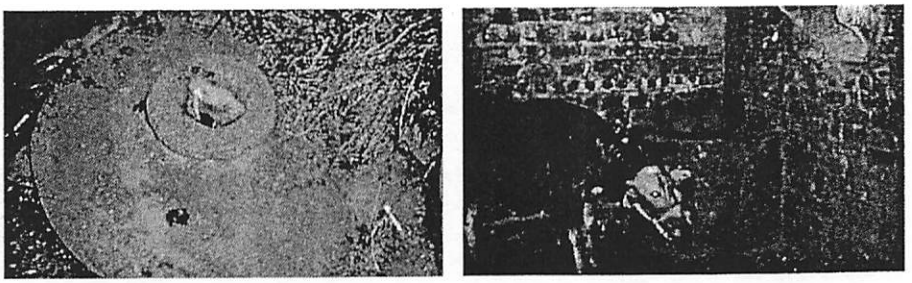


Fig.7 showing The well (on the left) and the animal barn (on the right) (Source: authors)

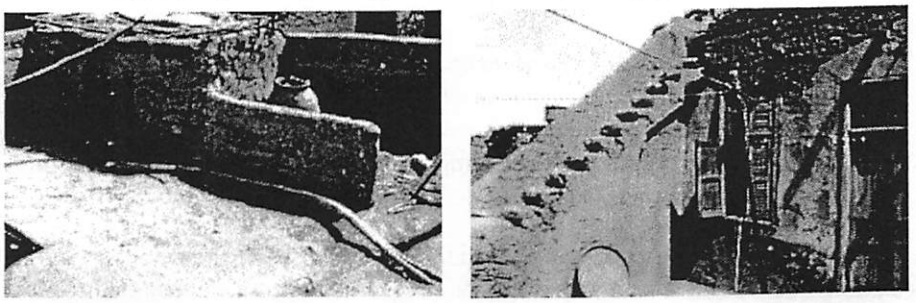


Fig.8 khedr house roof as an example of old house's Roofs (Source: authors)

Spaces in Abutej'sanalyzed old houses

Khedr House and Zaghlol House were the old vernacular houses prototype found in El Zayra village to be study as an example for the Upper Egypt houses.

Khedr House figure(9)was built about 100 years old, it was once the villages mayor's house, its area is about 170 m2 and consists of a ground floor and 2 upper storeys. The house contains all the previously mentioned elements of the typical old abutej house except that the animal barn is not reached through the house court but it is adjacent to the house. Special palm wood ceilings and the wall finishing material are also distinguished characteristics of this typical old house.

Zaghlol House figure(9)is the second example to be studied. This house is about 90 years old. It was owned by a rich & important family in the village. This house area is about 255m2. Zaghlol House contains all the mentioned elements of the typical old abutej house except for the following remarks:

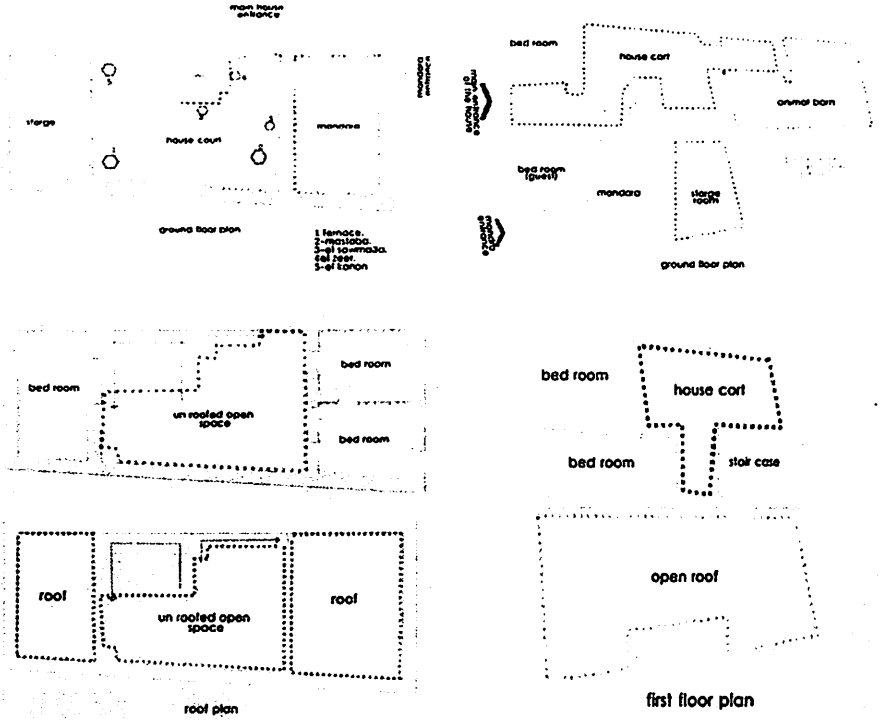


Fig.9 showing old house's plan Khedr House (on the left, 2 floors) and Zaghlol House (on the right, 1 floor) (Source: authors)

1) El mandara has a big opening in the ceiling because it's away from the house court & it was done for light & ventilation.

2) This house has 2 bedrooms in the ground floor one attached to the mandara which is a guests room so we can see that this was a big house also this house ceiling was made of more expensive type of wood & not palm wood .

Description ***of vertical spaces and facades in Abutej's analyzed old houses:***

The walls of the living areas were high, which created a shady patch close to the wall itself. For similar reasons, the roofed open areas in the courtyard located on the south or east end were open to the north and west to allow access to late evening breeze; they offered an endurable living-and-sleeping area during the heat of the summer.

Openings were high and small to enter light and enhancing airflow in accordance to orientation.The courtyard was the hub of all women activity where there were several big pottery or metal pots for storing flour and other cereals. Furthermore, within the courtyard, a sheltered area from the sun and wind functioned as the main living open area. Ground floor's height was usually around 4.30 m and the upper floor height was 2.90 m as they were used for bedrooms only, as shown in figures (10) and (11).

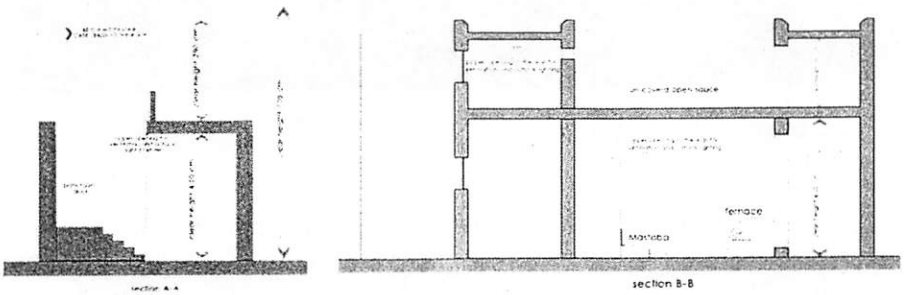


Fig.10 Khedr house sections and it shows the thick walls, the very high roofs and the small high openings (Source: authors)

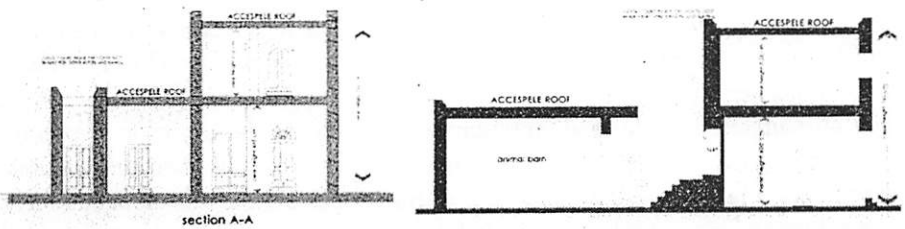


Fig.11 Zaglols' House sections and it shows the thick walls, the very high roofs and the small high openings (Source: authors)

The results of the semi-structured interview and visits done by the authors of this paper revealed that spaces inside the house were spacious; they accommodated few pieces of furniture that consisted of one or more beds.Wooden chests were used for storage and straw dishes were used as trays for food during meals.

Old housesare bearing wall building type.The exterior walls were about 50 cm and the inner walls were about 30 cm thickness. They were built up of green bricks (unburned mud bricks) or red bricks (burned mud bricks) according to the owner's ability and finance. The bricks bonding material was a paste of mud and

red dust(*homra*) which was manufactured from the burned bricks and the wheat outer skin (*tebn*).Rich families used to make a kind of wall finishing material which looks similar to nowadays cement mortar but it consists of water, (*homra*) and (*shek*) the finest degree of wheat outer skin (*el tebn*). These types of walls used to isolate temperature so people inside the house were somehow protected from the hot weather.The decoration of its exterior doorway, as shown in figure (12) was a mix of vivid colours andtextures of adobe brick accompanied by figurative andgeometric images in mud.

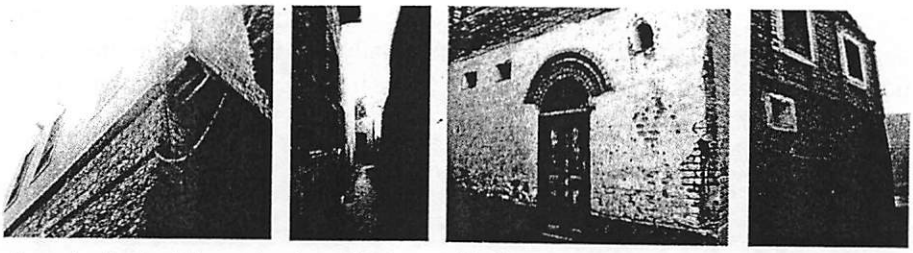


Fig.12 showing the old houses elevations with its' external finishing materials, door shapes and the small windows the upper pictures are for Khedr House elevation and the lower pictures are for Zaglols' House elevations (Source: authors).

The house ceiling house is a flat wooden ceiling as a result of the Arabian house design effect. The ceiling is a normal wooden flat roof, sometimes it was finished internally with the same mortar of the walls. Palm wood is commonly used in the ceiling instead of wood because it is locally available and cheap material.

Current changes as observed in the new Abutej's house prototypes:

When watching nowadays prototype, we can conclude that the compact and organic vernacular settlement pattern has been replaced by scattered and detached buildings with various heights settled randomly on the open land or next to the new roads. New construction is a deformed imitation to the old houses in Abutej, as shown in figure (13). Spaces are used for the same requirements of the old traditional houses but with new materials addition as well as untraditional architecture elements such as balconies and large windows in the facade loosing the identity of the design and the sense of the place.

Fig.13 Nowadays prototype design (Source: authors)

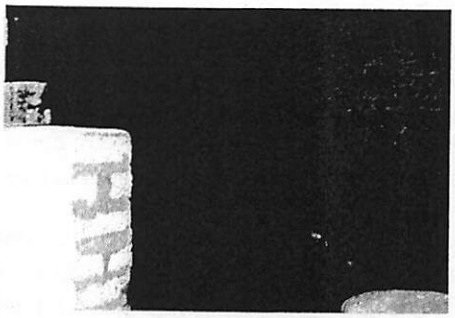


Fig.14 New house animal barn(Source: authors)

Continuity evidencedin the design of the new prototype: new (Mohamed Hussein) house:

It is an attempt to reach modernization influenced by Abutej residents'traditional old house design, their life style and daily needs.

Site visit done by the researcher revealed the following similarity in usage scheme comparing to the old house:

- The house has still contains the animal barn inside it separated from their living space. figure (14)

- The house still contains *el mandara* but it's altered by adding a private bathroom to it. figure (15)

- Stair case at the new prototype is without a ceiling acting as a small court supplying the space with light and ventilation. figure (16)

- This house consists of two floors; the ground floor containing *el mandara*, one bedroom and the animal barn. While the first floor contains two apartments to cover the increase in population in such areas.

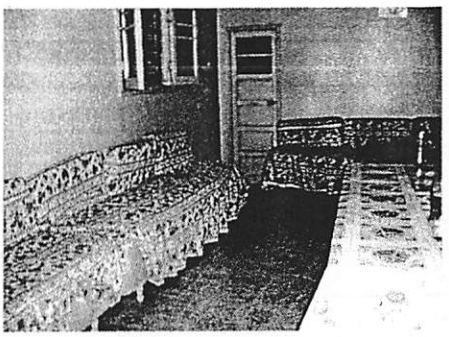


Fig.15 New house Mandara
(Source: authors)

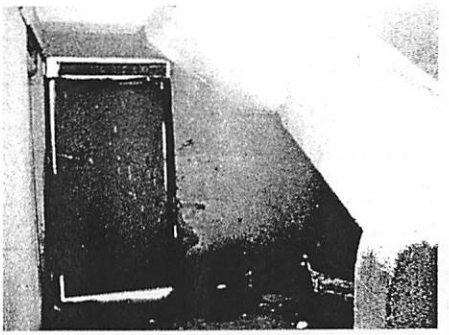


Fig.16 New house un ceiled stair case
(Source: authors)

***Comparison* of psychosocial value of space and social well-being between the old and new houses in Abutej:**

According to previous research by (Heerwagen, 2008); psychosocial values of space are studied by comparing well being needs, connection to nature and sensorial design.These parameters were used in the following to compare between the two vernacular old buildings and the new prototype.

A) Beyond Survival: Design for Well-Being

Alioğlu classified three important spatial characteristics of the sectional pattern identifiable in the urban silhouette which constructs a strong relationship between the building and its site. These are open spaces (courtyards and terraces), semi-open spaces (arcades and aiwans) and enclosed spaces (living units and service areas) (Coelho, 2010).

Social engagement, cultural meaning, relaxation and Visual privacy are the main well being needs that should be addressed in building design. There are thirteen aspects that should present in the house's design to fulfill the well being needs. Table (1)

Basic Human needs for Well Being	Abutej's old houses (Khedr and Zaghlol houses)	Abutej's new house prototype New(Mohamed Hussein) house:
Social engagement	√	√
Cultural and Collective Meaning	√	√ (not Ideal)
Relaxation and psychological restoration	√	√ (not Ideal)
movement between interaction and solitude	√ (not Ideal)	√
information sharing	√	√ (not Ideal)
Connection to the nature	√	√ (not Ideal)
Opportunity to exercise	√	√
Sound levels similar of nature	√	X
sensory variability	√	X
An interesting visual environment with aesthetic integrity	√ (not Ideal)	X
Sense of social equity and respect	√	√
personal comfort	√	√ (not Ideal)
Making sense of the environment	√	X

Table (1): Thirteen aspects that should present in the house's design to fulSll the well being needs evaluation in old and new houses in Abutej (Source: authors)

b)Environmental Preferences and Well–Being

Because humans evolved in a natural landscape, it is reasonable to turn to the natural environment for clues about preference patterns that may be applicable to building design. Table (2)

Environmental Preferences and Well–Being	Abutej's house old prototypes (Khedr and Zaghlol houses)	Abutej's new house New (Mohamed Hussein) house:
Prospect and Refuge	√	√ (not Ideal)
The Hearth	√	√ (not Ideal)
Connections to Nature and Natural Patterns	√	X
Daylight and Sunlight	√	√ (not Ideal)
Ephemeral Qualities of Space	√	√ (not Ideal)
Natural Comfort	√	X

Table (2): Factors affecting environmental preferences and well being in old and new Abutej houses (Source: authors)

C)Design for the Senses

Given our affinity for nature, are there general properties of living things that might serve as valuable design guides. Table (3)

Characteristics of living organisms and life-like processes that works as design guides.	Abutej's house old prototypes (Khedr and Zaghlol houses)	Abutej's new house New(Mohamed Hussein) house:
Movement	√	X
Organized Complexity	√	√ (not Ideal)
Fractal Patterning	√	√
Organic Shapes	√ (not Ideal)	X
Emotions and Shapes	√	X
Multi Sensory	√	X

Table (3): Comparison between old and new houses in Abutej according to characteristics of living organisms and life-like processes that works as design guides. (Source: authors)

Conclusion

Change is quite discernible in Abutej's residents' current physical and social surroundings. The way a building is planned determines human access to or views of the natural environment while inside the building, which also affects human health and wellbeing. This paper examined the aspect of environmental psychology that deals with this interrelationship between humans, interior spaces, and the natural environment. The size of each living unit that a family accommodates varies; moreover each unit has an access to a semi-open space that helps to keep the relationship between common spaces either by visual communication or common use. As proven in Chart (1), the old house type outperformed in the three parameters

affecting psychosocial value of space. This indicates that new housing prototypes must take with respect to old vernacular ones in its design guidelines. Also time should be given to locals to express themselves and their needs in house's space usage. Empowering people through emphasizing the relation between historic vernacular values and the local inhabitants' needs and aspiration must be the main concept in the new settlements' designs.

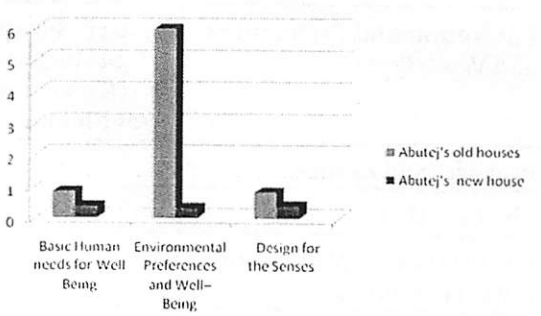


Chart 1: The extent of which each house type achieved psychosocial values of space (Source: authors)

Special concern for spatial organization of old vernacular houses might be taken into consideration. A courtyard house could either be a small shelter for the poor in dense settlements without functional differentiation among spaces or could be turned out to a huge noble house serving to comparably clear functional specifications that implies a kind of territorial depth which helps inhabitants to adjust their levels of privacy better whenever it is needed. Analysis of users' needs satisfaction in the old houses can be the aspiration of the design for new house prototype and variation of functional spaces.

Unfortunately, due to the general building development trend having nothing to do with the context and needs of the local user; towns and cities getting more identical day after day started to lose their character in every aspect. However, beyond the matter of psychosocial values, vernacular architecture contains great amount of data to guide the new housing production in favor of lessening the energy consumption and being in harmony with the geographical, natural and cultural conditions.

Also, proper and sensitive economic uses of old buildings must also be encouraged whenever possible. Moreover facilitate adding facilities such as electricity, natural gas, sewage and water systems (eco sanitation) with sensitive solution that avoid any leakage that might destroy old structures will help the whole town be alive and will facilitate the continuation of regular maintenance of the old houses to retain the sense and the identity of the place.

Finally, urban planning of the housing units must reconsider community bonding changes as a result of the new prototype design and must invent rewarding solutions.

Bibliography

Coelho, R., 2010. *Architectural Development of Urban Social Capital: Cohousing in Downtown Toronto.* 1st ed. Toronto, Ontario, Canada: Ryerson University.

Governerate, A., 2012. *Assuit Governerate electronic portal.* [Online] Available at: http://www.assiut.gov.eg [Accessed 20 July 2013].

Heerwagen, J., 2008. *WBDG National Institute of Building sciences.* [Online] Available at: www.wbdg.org[Accessed 10 August 2013].

Moore, G. T., 1979. *Architecture and Human Behavior: The Place of Environment-Behavior Studies in Architecture.* s.l., wisconsin Architect, pp. 18-21.

Paul R. Martin, Fanny M. Cheung, Michael C. Knowles, Michael Kyrios, Lyn Littlefield, J. Bruce Overmier, Jose M. Prieto, 2011. Environmental Psychology. In: F. M. C. M. C. K. M. K. L. L. J. B. O. J. M. P. Paul R. Martin, ed. *IAAP Handbook of Applied Psychology.* United Kingdom : Wiley-Blackwell, pp. 440-470.

Young, R. D., 2013. Environmental psychology over view. In: S. R. K. Ann Hergatt Huffman, ed. *Green Organizations Driving Change with I-O Psychology.* New york: Routledge Academic, pp. 22-45.

Zhiqiang (John) Zhai, Jonathan M. Previtali, 2010. Ancient vernacular architecture: characteristics categorization and energy performance evaluation. *Energy and Buildings,* 42(3), p. 357–365.

SCULPTecture 2.0: Buildings as Art Sculptures Via Development of New Digital Tools

Aimi Ramizah Roslan
Architect, Pakatan Reka Arkitek, Kuala Lumpur, Malaysia
Roslan Zainal Abidin
Professor, Infrastructure University Kuala Lumpur, Malaysia

Abstract

This paper aims to investigate the potential revival of SCULPTecture (sculpture + architecture) as the mainstream of architecture today in a more relevant approach in both aesthetics and functional values, parallel to the fast development of digital tools and to learn from the past criticism of its lack of internal functionalities despite having a state-of-the-art external appearance.

SCULPTecture is a distinctive architectural style initiated in the 1980s by Spanish architect, sculptor and engineer Santiago Calatrava. In late 1990s, Frank Gehry's Guggenheim Museum in Bilbao was a success and the term 'Bilbao Effect' was born, proving two main points to the criticising rationalists and minimalists – a building with aesthetics functions well to the extent of becoming the catalyst of social, political, cultural and economical development of a city; and architects are artists. The artistic and iconic building trend is followed by Zaha Hadid and Patrick Schumacher's Parametricism in early 2000s.

Advancement of digital tools has allowed the current development of the algorithmic design and emergent technology, where buildings are not just designed for the sake of inhabiting but visually as a piece of art. These tools has eventually enable architects to overcome design limitations and constraints in order to express their artistic gene to make large-scale 'sculptures' a living reality. This paper concludes of how far SCULPTecture could possibly make an impact to the global architectural streams with recent technology, considering the impediment factors of public acceptance, political interference and most probably rejection from fellow form-follows-function architects.

Sculptecture Before Digital Tools

The movement of creating sculptural architecture, or Sculptecture in the recent centuries could be dated back in Antoni Gaudi's works. In contrast to architectural sculpture, sculptural architecture is an approach of designing buildings inspired from the three-dimensional artwork [1]. Sculptural architecture's varies in mary eras, from the space age Googie, Expressionism, Blobitecture to Parametricism. Gaudi was

long known as an artist and it is visible through his architectural works. If one views architecture from the question of form rather than technology, Gaudi's organic designs was the answer prior to the invention of digital tools and technology. and of the Expressionists like Bruno Taut and Hermann Finsterlin.

In the 1960s, a group of English architects called themselves the Archigram, towhich Peter Cook belonged were interested in inflatable architecture as well as in the shapes that could be generated from plastic. Ron Herron, also a member of Archigram, created blob-like architecture in his conceptual projects from the 1960s, such as Walking Cities and Instant City, as did Michael Webb with Sin Centre [2].

Buckminster Fuller's work with geodesic domes provided both stylistic and structural precedents. Niemeyer's Edificio Copan built in 1957 undulates non-symetrically invoking the irregular non-linearity often seen in Blobitecture. There was a climate of experimental architecture with an air of psychedelia in the 1970s that these were a part of. Frederick Kiesler's design for the Shrine of the Book which has the characteristic droplet form of fluid also anticipates forms that interest architects today.

Spanish architect Santiago Calatrava, who is also a structural engineer, prolific sculptor and painter, made a debut in continuing the tradition of Gaudi and other 'sculptural' architects with a very personal style that derives from numerous studies of the human body and the natural world. Calatrava claimed that the practice of architecture combines all the arts into one [3].

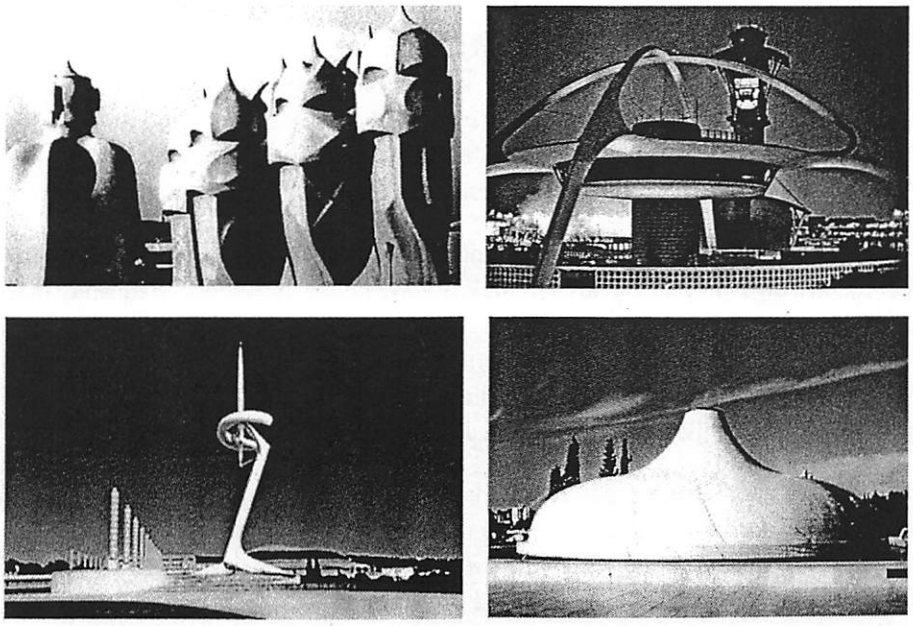


Figure 1: Clockwise; Casa Mila (Gaudi); LAX Theme Building (Paul Williams); Monjuic Tower (Calatrava); Shrine of The Book (Kiesler) (Source: Google)

Decline of Sculptecture: Rise of The Modernist 'Layer-Cake' Trend

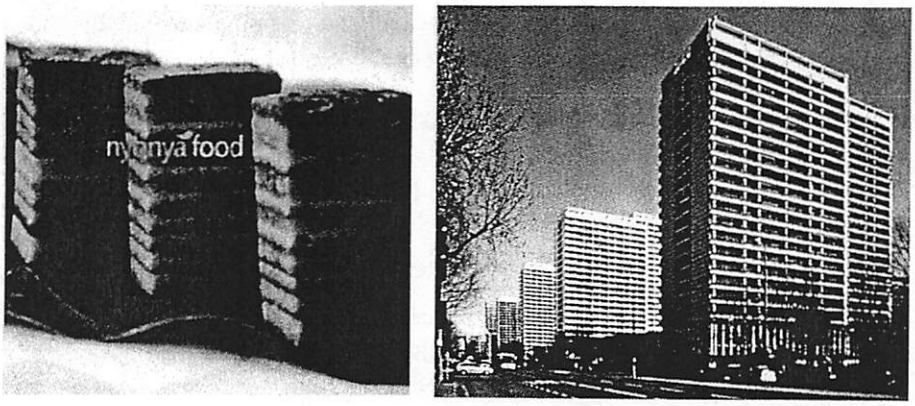


Figure 2: Left to right: Typical layer cake compared to tower block buildings (Source: Nyonyafood and Wikipedia)

A layer cake is a cake consisting of multiple stacked sheets of cake [4]. It has a physical characteristic of a repetitive layer being laid on top of another and it continues as high as the baker makes it. The same analogy applied to architecture referring to bulky block buildings with repetitive homogenous shape of plan arranged on top of another. The 'layer-cake' architecture trend has been colouring the scene in this field since the rise of modernism prior to the invention of digital tools, and strangely, still being practiced today. This trend is the result of conforming to the cult of industrial images [5].

Modernist architects claimed that architecture should be free of clutter and unnecessary elements, breaking away from cookie-cutter design and traditional aesthetics to pursue designed that fully inspired by internal layout and function [6]. Though there were varying degrees of Modernism, all share the same principal of 'Less is More' whereby architecture is defined as clean, functional and simple.

The production of architectural drawings in those years were limited to manual hand drawings unlike via digital tools today, hence it is understandable that architects had the restriction to produce out-of-the-box design. The era was also where the industrialisation, manufacturing and prefabrication of building modules were rapidly taken place [7]. It answers this trend and the rise of former modernists in promoting their philosophy of simplified shapes and forms at the time.

The form of building erected in real life is mainly depending on the architect's skills and ability of what he or she is able to produce on paper through the availability of technology. The higher capability an architect has in mastering the tools, the higher variety the product can be shaped up. Without the technology and designing architect to master the tools, it is a loss of opportunity for architects to express their artistic skills and chance of building a masterpiece through this limitation.

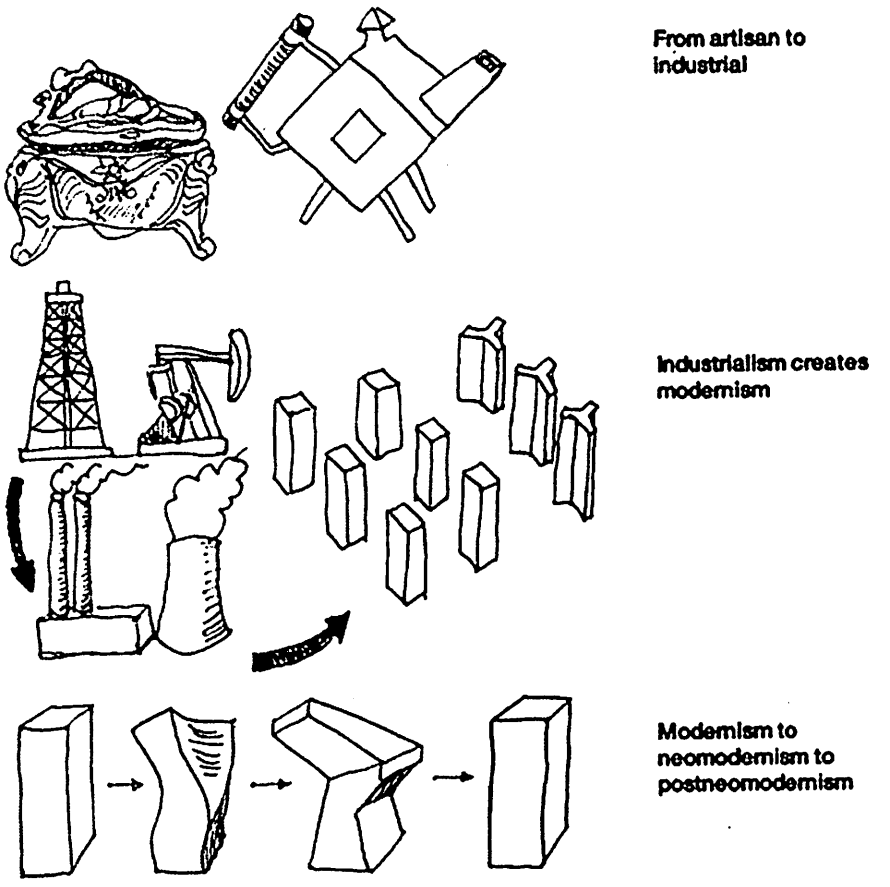


Figure 3: Sketches by Nikos Salingaros showing the development of architectural trend depends on the technology available at the time (Source: Archdaily)

Intervention of Digital Tools

A big shift in architecture is happening as a new class of software tools allow human to control intellectual forces many times more powerful than human minds to design and construct buildings that could not otherwise exist.

The invention of Building Information Modelling (BIM) in late 1980s has lead to the rebirth of experimental architecture into a new dimension. From the generic 2D of to the generated algorithmic forms, these digital tools have brought a new spectrum of architectural design limit by transforming the modernist industrial look into symbolic and indefinite forms. It has lifted up the possibilities for architects to explore and experiment forms to engage complexity into reality where architects of earlier eras would have found nearly impossible to construct.

Forms could be derived by manipulating the algorithms of the computer modeling platform. Some other computer aided design functions involved in developing this are the non-uniform rational B-spline or NURB, freeform surfaces, and the digitising

of sculpted forms by means akin to computed tomography [8]. In mid 1990s, architect Greg Lynn experiments in digital design with meatball graphical software and coined the term Blob architecture [9]. This was followed by more architects and interior designers to experiment with this software to create new and unusual sculptural forms. Despite its seeming organicism, Blob architecture is unthinkable without this and other similar computer-aided design programmes.

Digital tools are now an integral medium in most aspects of today's neo-modernism, but the artistic expressionist nature of Sculptecture makes the use of computers especially pertinent. Three-dimensional modeling and animation (virtual and physical) assists in the conception of very complicated spaces, while the ability to link computer models to manufacturing jigs (CAM -Computer-aided manufacturing) allows the mass production of subtly different modular elements to be achieved at affordable costs [10].

Peter Cook's Kunsthaus Graz Museum (2009), known as the 'friendly alien' in Graz, Austria has been noted by architecture critics of its resemblance to the imaginative form of Rod Herron's futuristic Walking City concept (1964), Cook's former colleague of the avant-garde group Archigram. Due to the absence of technology of at the time, Herron's manifesto remained in black and white [11].

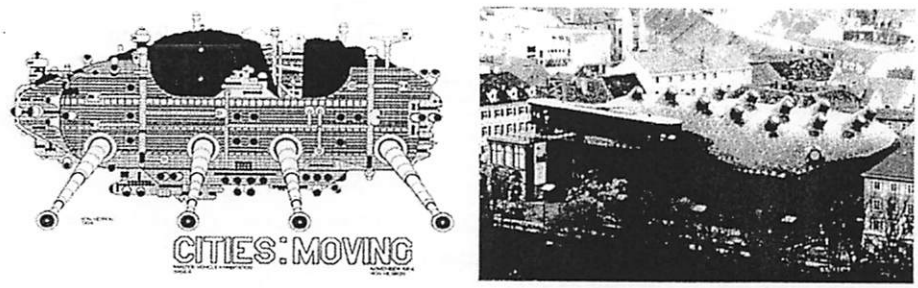


Figure 4: Left to right: Archigram's concept of Walking City; Kunsthaus Graz Museum by Peter Cook (Source: Archigram)

Success of the 'Bilbao Effect'

The Bilbao Effect has created a new spectrum of sculptural architecture definition. The term was born upon the dying city of Bilbao in Spain which was transformed into the travel destination of 21st century and plucked a gritty industrial city out of obscurity and into the annals of architectural wonderlust [13]. By throwing a massive iconic sculpture in the middle of a dying city has transformed Bilbao into a world attraction revitalising its social, economical, cultural and political situations.

The Guggenheim Museum of Bilbao designed by American-Canadian architect Frank Gehry is one of the most admired works of contemporary architecture aside from being the catalyst of its urban regeneration success. The building has been hailed as a 'signal moment in the architectural culture' because it represents one of those rare moments when critics, academics, and general public were all completely

united about something. The existence of the building was much from political intervention [13].

Computer Aided Three Dimensional Interactive Application (CATIA) and digital visualizations were used by Gehry in making the museum a product of the period's technology. Computer simulations of the building structure have made it feasible to build shapes. The giant sculptural building catapulted architecture and tourism into a different realm. People began to want to travel to Bilbao just to see the glimmering building of titanium itself - not for the art inside - and the thought of including a structure in your travels became not a dusty, crumbly aside, but a spanking new catalyst dubbed as 'the new aphrodisiac'. Bilbao attracted around 1.3 million people of its first year of opening, three times the expected number [14].

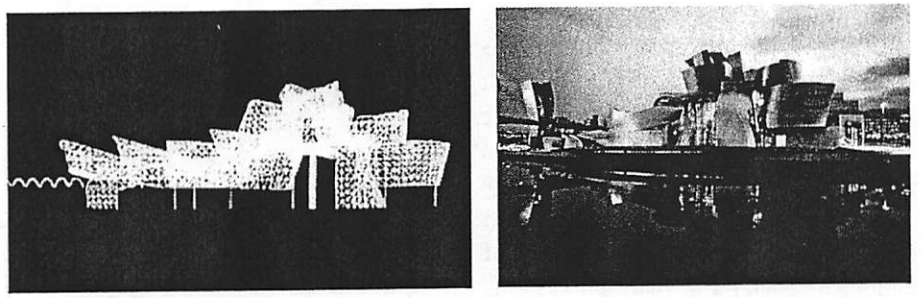


Figure 5: Left to right: The Guggenheim Museum of Bilbao 'constructed' on screen via CATIA; completed building (Source: ArchitectureGroupie)

The Eden Project by Grimshaw Architects is another Sculptecture masterpiece that has taken the charms of Bilbao Effect into St. Austell, a remote town in the country of Cornwall, Southwest England. The project was completed in year 2000, built on a reclaimed Kaolinite pit took the form of series of plastic geodesic domes. It has been named 'The Best UK Leisure Attraction' at the British Travel Awards for the third year running and keep receiving the public support despite the country's challenging economic times [15]. The domes are a complete alien to the surrounding context of Cornwall, but its unique sculptural form has managed to pull in millions of visitors into St. Austell. This has eventually regenerated the local economic income and highlighting St. Austell and its surrounding towns on the tourism map.

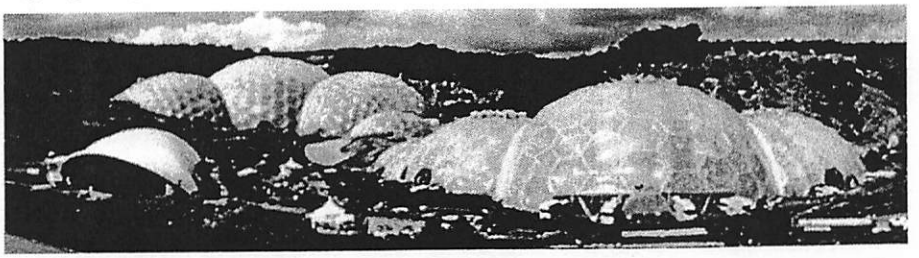


Figure 6: Eden Project near St. Austell, Cornwall, is seen as a giant geodesic dome sculpture stands out from its surroundings (Source: WMedia)

Sculptecture To Shape Neo-Modernism

Zaha Hadid, Frank Gehry and Santiago Calatrava are a few starchitects that shares the common identity – their works are recognised sculptural masterpieces. Hadid who is celebrated as the 'Queen of Curves' has evolved architecture though her Parametricism approach. Her philosophy claims "There are 360 degrees, so why stick to one?" [16]. It is insufficient for architecture today to directly implement an existing building typology; it instead requires architects to carefully examine the whole area with new interventions and programmatic typologies.

From Walt Disney Concert Hall to Guangzhou's Opera House, digital tools have instigated the birth of experimental architecture pushing the field into a new dimension. In parallel to what Hadid said, the tools enable squares to be unlocked and formulation of forms could be derived from a loose nature. For instance works by London-Melbourne based architect group Kokkugia promotes exploration of generative design methodologies developed from the complex self-organising behavior of biological, social and material systems [17].

Figure 7: Swarm Matter exploring the generation of ornamental geometries through agent based formation of non-linear hierarchies and emergent patterns (Source: Kokkugia)

Aranda/Lasch suggests systems over principles, using the discipline likes crystallography, molecular structures and cosmology as guidance to shape today's architecture. Algorithmic techniques in digital tooling such as spiraling, weaving, packing, blending, cracking, flocking and tiling could be applied to emulate infinite forms [18].

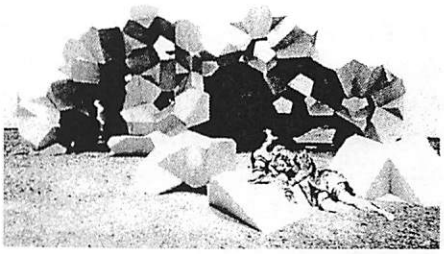


Figure 8: Aranda/Lasch's Grotto, a temporary summer pavilion using the technique of tiling (Source: Aranda/Lasch)

Throughout the Sculptecture timeline, sculptural buildings are mostly turned out to be iconic buildings. The recent trend since the last decade has seen these buildings as landmarks in projecting the local image, identity and political ideologies. For example, the Beijing National Stadium or the 'bird nest' built for the 2008 Olympics was a symbolic mega sculpture representing the Chinese culture to the world. The design, engineering and construction of the stadium depended heavily on generative design (also termed computational design) [19]. Sculptecture does not only stand as a landmark, but also has becoming a favourable object for the public to set a picturesque background for tourism and imaging purposes. A visually pleasant looking building attracts the public to assimilate with the culture it has brought aside from boosting the profile of the area its representing.

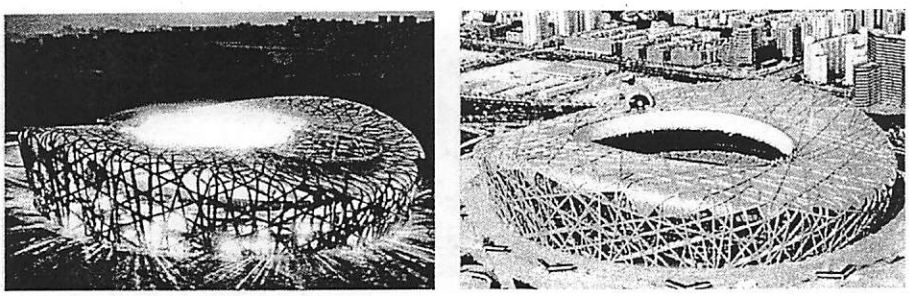


Figure 9: Left to right: Comparison of a computer modelled Beijing Olympic stadium and the actual constructed stadium (Source: Chinadaily)

Criticism

The decline of Sculptecture prior to the rise of functionalist modernism movement was mainly due to the critics at the time of the 'form follows function' rationalists regarding the useless aesthetics and ornaments.

Despite Calatrava's contribution with his design, the world's architectural jury (including practitioners, academics, elected and appointed governmental leaders, effected members of the public and critics) now concur that Calatrava's 'sculptural' structures do not often serve as they should. Besides frequently going over budget and taking too much time to complete, they more often fail functionally on one level or another [20].

Zlote Tarasy, a mixed used development that invaded the post-communist Polish capital Warsaw was built with ambitions to act as a catalyst for the city center's future re-generation. The award winning scheme designed by the Jerde Partnership has become a central node of the city. Its distinctive fluid form is in contrast to traditional Warsaw skyline of classical buildings and communist block estates, especially to its neighbouring socialist-realism Palace of Science & Culture. Warsaw Business Journal reported the building has provoked varying emotions from local architects, businesspeople and voluntary organisations from the very beginning. As one of the most dramatic developments in Warsaw, it has been bemoaned by some Warsaw-based architects for the alien, Americanised contribution it will eventually make to the landscape [21].

Architects feud with conservative fellows and historians is very common when it comes to constructing a new 'foreign' building into the context. Hadid's design for the New National Stadium in Japan for 2020 Olympics has been protested by an elite group led by prominent architect and fellow Pritzker Prize winner Fumihiko Maki, architect Sou Fujimoto, urban historian Hidenobu Jinnai, and architecture critic Taro Igarashi. Maki critised the design as 'too massive,' and would pose numerous problems from the perspective of cost and safety, in addition to disrupting the visual harmony of the neighboring area. The Sankei Shimbun newspaper also criticized Hadid's design for historical and heritage reasons [22].

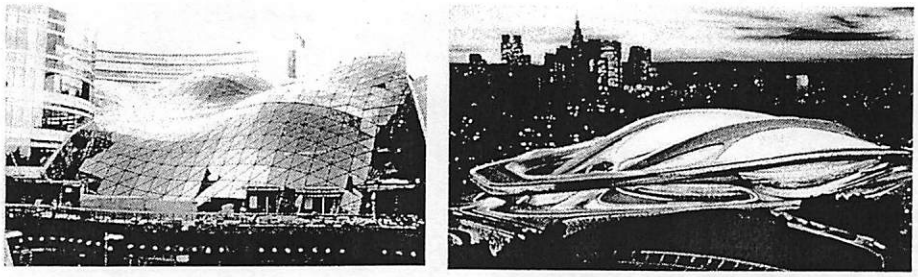


Figure 8: Left to right; Zlote Tarasy in Warsaw; Hadid's new national stadium in Tokyo (Source: Budowle, Blouin Art)

Conclusion

It could be encapsulated that comparing to Sculptecture 1.0, recently there are less critics on architectural features, usage of space and building utilisation, but rather barbs on costs. Zaha Hadid in response to relating her 'out of the box' design to high cost said it is all on people's assumption; luxury is not in the quality of material but the quality of the space.

It is evident that the enhancement of today's digital tools has allowed architects to further explore and experiment their design to an unlimited extent, of how the term generative form derived. An architect's role is re-defined; they are now artists. Jim Paul in his writing 'Changing the Face of Architecture' argues that human are fond of impressive design. Impressive building like the Beijing National Stadium for instance has raised the profile of generative design and to some extent, architecture will never go back to what it was [23].

The public acceptance towards these mega-sized sculptures into their cities has increased globally as seen in Bilbao and other similar cities. The revival of Sculptecture has proven that architecture is not for inhabitants to live in, but also to be looked at and appreciated as an art piece rather than solely on its function. This trend has redefined architecture into a larger context to regenerate the society, economy, politics as well as setting up a new culture.

Current wider usage of 3D printing means a new way of creating not just scale models of buildings but also the actual structures themselves. Though at the moment it is slow going but the potential for dynamic new forms and efficient construction is great.

Whether Bilbao, St. Austell, Beijing, or Graz, these cities will not become of what they are today if their iconic Sculptecture were plain boxes. And of course, without the digital tools, the contemporary architecture as a whole will not be of what is it today.

References

[1] Archdialog, 2011. *Someone Has Built It Before.* Available: http://archidialog.com/2011/10/03/zaha-hadid-and-the--sculpture-buildings-trend. [Accessed 5th Oct 2013].

[2] **Cook, P.,** 1999. *Archigram.* Princeton: Princeton Architectural Press.
[3][12][20] **Favermann, M.,** 2003. *Calatrava's Costly Architecture as Sculpture: A Starchitect Whose Legacy Is Being Questioned.* Available: http://www.berkshirefinearts.com/09-26-2013_calatrava-s-costly-sculpture-as-architecture.htm. [Accessed 27th Sep 2013].
[4] **Wikipedia,** 2012. *Layer Cake.* Available: http://en.wikipedia.org/wiki/Layer_cake. [Accessed 19th Aug 2013].
[5] **Quirk, V.,** 2013. *The Quest to "Liberate" Architecture from Modernism's Evils: An Interview with Nikos Salingaros.* Available: http://www.archdaily.com/397653/. [Accessed 1st Aug 2013].
[6] **DBO Team,** 2011. *MODERN ARCHITECTURE DEFINING CHARACTERISTICS: 10 Attributes That Define Modern Architecture.* Available: http://distinctbuild.ca/modern_architecture_defining_characteristics.php. [Accessed 2nd Aug 2013].
[7] **Wikipedia,** 2013. *Prefabrication.* Available: http://en.wikipedia.org/wiki/Prefabrication. [Accessed 6th Sep 2013].
[21] **Paul, J.,** 2009. Be Current: Generative Design Is Changing The Face of Architecture. In: Angus, W.S *Bentley Magazine, Volume 6 Issue 3.* Dover: Seth Nichols. 21-23.
[8] **ANY Magazine. Greg Lynn,** "Blobs, or Why Tectonics is Square and Topology is Groovy", ANY 14 (May 1996)
[9] **John K.W,** 2003. *Blobitecture: Waveform Architecture and Digital Design.* Rockport Publishers.
[10] **Salingaros, N.,** 2008. *Anti-Architecture and Deconstruction.* 3rd ed. Umbau-Verlag.
[11] **Cook, P & Fournier, Colin,** 2004. *A Friendly Alien: Ein Kunsthaus fur Graz.* Hatje Cantz Publishers.
[13] **Tyrnauer, Matt,** 2010. *Architecture in the Age of Gehry.* Vanity Fair.
[14] **Chessher, M.,** 2004. The Bilbao Effect. *AW - American Way.* 7 (1), 1-8.
[15] **Gayle, C.G.,** 2013. *The Eden Project in St Austell voted best UK leisure attraction for third year running.* Available: http://www.cornishguardian.co.uk/Eden-Project-St-Austell-voted-best-UK-leisure/story-20027209-detail/story.html. Last accessed 3rd Nov 2013.
[16] **Goodread Inc,** 2013. *Zaha Hadid Quotes.* Available: http://www.goodreads.com/author/quotes/167635.Zaha_Hadid. [Accessed 31st Aug 2013].
[18] **Aranda, B., Lasch, C.,** 2006. *Pamphlet Architecture 27- Tooling.* New York: Princeton Architectural Press.
[19][23] **Lubow, Arthur,** 2006. *The China Syndrome.* Available: http://www.lonelyplanet.com/poland/warsaw/shopping/shopping-centre/zlote-tarasy. [Accessed 6th Sep 2013].
[17]**Architizer LLC,** 2013. *Firms- Kokkugia.* Available: http://architizer.com/firms/kokkugia/. [Accessed 8th Aug 2013].
[22] **Darryl J.W,** 2013. *Blouartinfo: Fumihiko Maki Protests Zaha Hadid's Design for Olympic Stadium.* Available: http://enjp.blouinartinfo.com/news/story/970652/fumihiko-maki-protests-zaha-hadids-design-for-olympic-stadium. [Accessed 12th Oct 2013].

Constructions: Art as Architecture

Margarida Brito Alves

In early twentieth-century art, it's easy to identify a general urge to overcome the traditional boundaries between different media, and to notice the development of obvious transits between art and architecture in particular.

In fact, during the first decades of the twentieth century, in the context of the historical avant-gardes, took place a transgressive process that revealed clear convergences and synchronicities between these two areas – as shown by examples as diverse as the strong urban inspiration of several futurist paintings; the relation of Neo-Plasticist architecture of Gerrit Rietveld and J. J. Pieter Oud with the painting of Piet Mondrian; the translation of Suprematism's pure geometries in the work of Konstantin Melnikov or even Lissitzky's *Prouns* – produced in the context of Russian constructivism and which were defined as an "interchange station between painting and architecture" (Tupitsyn, 1999: 9). Other paradigmatic examples are the much referenced influence of Cubism in Le Corbusier's architecture; or the entire program defined by Walter Gropius for Bauhaus between 1919 and 1928, aiming to interconnect architecture, art and industrial design.

Following this lead, twenty years later, postwar artists recovered this interchange process between art and architecture, relaunching a quest that became even more consistent over the second half of the century. In the scope of the dynamics created by the neo-avant-gardes it was mainly from the mid-1950s, that a renewed contact zone between these two fields started to be explored, and which later became characterized not only by a mutual influence or complicity, but by the use of a formal language that seemed to share an entire tectonic or constructive lexicon.

In association to the revisions of Modernism that were then beginning to be envisaged, art keenly absorbed the most varied influences of adjacent disciplines, and it was also then that architecture – which has always been linked to different areas – stood out as a very strong reference.

In the British context, this tendency was immediately explicit in the projects of the Independent Group – a collective that gathered critics, artists and architects (notably the architects Alison and Peter Smithson, the critics Lawrence Alloway and Reyner Banham, and artists such as Richard Hamilton, Eduardo Paolozzi or William Turnbull), who, in 1956, organized the very well known exhibition *This is Tomorrow*, presented at the Whitechapel Art Gallery in London.

Rebutting the formalist orientation that determined the 1940s and the beginning of the 1950s, *This Is Tomorrow* sought to establish a multidisciplinary perspective. As stated by Lawrence Alloway in the exhibition catalogue's introduction, it was

"devoted to the possibilities of collaboration between architects, painters and sculptors" (Alloway, 1956). In that sense, it presented the work of several groups of authors, who had as common feature "the suspension of the supposed purity of their respective specialism", enabling them to "aim at simultaneous mastery of several channels of communication". (Alloway, 1956).

And in another text of the same publication, David Lewis, directly appealed to the collaboration between artists and architects:

Some of us, in our generation, recognize the need to move towards a wider and fundamentally different kind of inclusiveness – an integration of men closer in spirit to the aim of Mondrian and of the Bauhaus, but bearing the character of the present. We feel the need, as they did, for an inclusiveness that implies a growth. The artist-architect relationship must imply creative participation between different individuals. (Lewis, 1956).

This orientation became consistent over the following decades and kept being translated into projects that, although having its origin in the field of architecture, revealed clear extensions to an artistic dimension.

In a framework determined by slips between artistic categories, and given its inherently three-dimensional condition, we must specifically bring into account the transformations that had meanwhile changed the concept of sculpture – which, since the beginning of the century, had gradually drifted from an autonomous, narrative and figurative model, and went through a process of spatialization. Within this process, the practice of "constructing" substituted molding and carving – and the meaning of "sculpting" reached a transgression point that would lead Rosalind Krauss, in a widely quoted text that was initially published in 1979, to insist on a extemporaneous definition for sculpture, describing it as an "expanded field" (Krauss, 1979) in which architecture emerged as one of its containing vectors.

In late 1970s, it was crystal clear that architecture had in fact become a model for art. At a certain level, this tendency was already evident in most Minimalist works of the 1960s – in which architecture, and the language of modern architecture in particular, was an obvious reference, recognizable not only by the human scale that those pieces adopted, but also by their regular geometries, by the use of industrial materials, or by their modular and project-oriented nature. Concerning this matter, it's extensively known the way artists like Donald Judd, Robert Morris or Sol Lewitt incorporated an architectural dimension in their work, having developed pieces that brought special attention to issues related to space and that frequently overlapped art and architecture. For Carl Andre, in particular, sculpture should, indeed, be conceived as "place".

Nevertheless, it was the post-minimalist generation that thoroughly explored this connection between sculpture and space. By the end of the 1960s, in the wake of Minimalism, not only new paths that addressed and problematized space were being developed, they also specifically tested a notion of "construction".

If we take into account that in 1948, Italian historian Bruno Zevi tried to enunciate the features that distinguished artistic activities – arguing that "sculpture acts on three dimensions, but the man stays out, off, watching the three dimensions from outside", and that, in turn, "architecture is like a large sculpture excavated, into which man enters and walks" (Zevi, 1996: 17) – it becomes all too evident the enormous transformation that the concept of sculpture had suffered in the meantime. And it's particularly ironic to point out that, according to Zevi's definitions, in early 1970s, sculpture had, literally, become architecture.

Continuing to explore an intersection area, during that decade many artists, who sought to address real space, configured their works as an overlap between art and architecture, following different architectural methodologies and procedures – albeit without submitting those works to the rules of architecture. Appropriated and imported into a different context, and used as an artistic language, the formal lexicon and the operating processes of architecture kept being freely tested, since these had not to fulfill any function or to comply with any kind of social restrictions.

In a context where architecture worked as inspiration, the archetype models of architectural construction were taken as a source of recoverable shapes that could be sculpturally translated – besides carrying different connotations that could be evoked in the work, thus introducing in it an enriching metaphorical component.

Resorting to the history of architecture became an alternative to face the exhaustion of a reductive modernist language, and it was in this framework that George Kubler's *The Shape of Time*, published in 1962, stood out as a strong theoretical reference for a new generation of artists and architects. In that essay, Kubler contributed to the discussion of Modernism and de-dramatized a return to past models by referring to Art History as a result of renewed recurrences to earlier forms –"Everything made now is either a replica or a variant of something made a little time ago and so on back without break to the first morning of human time" (Kubler, 1990: 14).

By the end of the 1960s, inspired by this kind of perspective and extending minimalist assumptions, many artists explored simple shapes, addressed surrounding space as part of the work of art and used building materials in a depersonalized manner. Nevertheless, setting a different frame, they configured increasingly complex pieces, and even broke with minimalist simplicity by constructing sculptures that worked as structures and not necessarily as single elements. Those works included different pieces that had to be sequentially learned, as a lasting journey. They encouraged interactivity and related to the viewers as if they were intended to be used and not just visited.

We can recall several examples of works that by then were directly addressing architecture, such as the controversial interventions carried out by Gordon Matta-Clark on architectural structures; such as the performative installations of Vito Acconci; such as Bruce Nauman's famous corridors, or Dan Graham's glass pavilions, but it is worth drawing attention to the way artists like Mary Miss or Alice Aycock

used elements usually related to architectural construction – designing installations, temporary in most cases, and that sometimes were mistaken for architecture, despite their functional exemption.

Interested in simple constructions such as grids and fences, Mary Miss began to develop compositions that combined basic constructive elements and that were produced with relatively inexpensive materials, such as wood, iron or wire. Gradually, she began to design larger structures, and her formal vocabulary became more open and complex by exploring the most diverse and identifiable architectural references: towers, staircases, mazes, wells, ruins, shelter pavilions, bridges, etc..

Perymeters / Pavilions / Decoys, one of her best known works, was temporarily settled between 1977 and 1978 in the Park of Nassau County Museum in Roslyn, Long Island. It comprised three wood towers with subtle size variations, two semi-circular dirt hills, and a hole dug in the ground, configured as a rectangular patio. These constructions, which could be accessed, were integrated at different places of the park and there was no visual connection between all of them. They worked therefore as a scattered structure that could be discovered in a disorderly and progressive manner over the random walks of the park visitors.

Adopting a similar approach, Alice Aycock has also produced ambiguous constructions, establishing a direct relation to the public and re-contextualizing numerous formal archetypes from the history of architecture. For Aycock, sculpture wasn't at all a stable category, and, such as architecture, worked as a process that could individually be revealed to the viewers by including a phenomenological dimension. The structures she designed emphasized a psychological component and, though seemingly familiar, they often configured a disturbingly strange and uncomfortable experience.

Based on recognizable shapes, those constructions were presented as metaphors, or as architecture doubles, which transformed and reversed the meanings and feelings that these same shapes would usually arouse – as in *Low Building with Dirt Roof (For Mary)*, a wood, dirt and stone construction, which was built in 1973 in Gibney Farm, a property of her family located in New Kingston, Pennsylvania. That work recreated the archetype of a house but at the same time it established a tension in this idealized model, since it had the peculiarity of having a very reduced height, appearing to be almost completely buried. Crawling, and driven by an irrational curiosity, the viewers would venture to enter its cramped and inhospitable interior space, where they experienced a feeling of claustrophobia and instability.

Connecting sculpture and architecture, the constructions of these two artists cracked thereby the minimal simplicity by being defined as complex structures that had to be phenomenologically discovered. They related to the viewers as if they were intended to be used and not just be visited – a condition that set them not only as objects to be viewed, but also as spaces to be experienced, if not inhabited.

This formal revisitation strategy was also followed by Iranian artist, Siah Armajani, who, since the late 1960s, has developed different work series based on a typological research of architectural shapes.

Characterized by a conceptual procedure, initially those series corresponded to drawings or tridimensional models made in different scales. In time, Armajani's research gained an increasing amplitude and over the following decade was consolidated in "Dictionary for Building" – a project that questioned the shape and the function of the basic constructive elements of a house. Exploring a process of identification, isolation and recombination of several elements, it consisted of a body of work in which doors, windows, stairs, tables or cupboards were used as a lexicon that allowed combinations, juxtapositions or variations – with a greater or lesser degree of surprise, as exemplified by *Table Reading Window* (1974-75), *First Floor Window and Attic Window* (1974-75), only tested as models, or *Closet under Stairs* (1985), which was produced in real scale.

Persisting on his research, Armajani created different pieces that took furniture and architecture as references, and at the end of the 1970s, he began to design his well-known *Reading Spaces* – sculptures produced in an architectural scale, and that associated a function. After presenting in 1979, the *First Reading Room* at Max Protetch Gallery in New York, Armajani developed the same type of project in public or semi-public contexts, such as parks and college campuses, thus favoring places where his works were part of an everyday environment. Establishing a clear communication between artistic and utilitarian dimensions, these structures fulfilled a function – and hence erased the boundaries between sculpture and architecture.

Another good example of the this kind of approach is the work of Portuguese artist Pedro Cabrita Reis, who, although started by painting and drawing, since the late 1980s has been exploring sculpture and installation. Using shapes and devices that relate to architectural construction, many of his works combine a sense of shelter, protection or even dwelling.

Yet, the focus of his work is not to follow a simple logic of reproduction or restatement of existing models, but to explore a deliberate intention to build a parallel world. A symbolic and metaphorical reality, based on a founder and constructive gesture – the very same gesture that defines architecture.

Pedro Cabrita Reis mostly uses recycled and found materials, focusing on elements that somehow had a previous existence – a kind of a history that remains in an allusive and evocative dimension, although their re-appropriation and re-contextualization sets them in a new perspective. In his work we can therefore identify a physical, literal and material component, but also a subjective, and even emotional, one – a duplicity that is reinforced by the titles of various of his pieces, such as a series of plaster and wood structures from 1990, which includes *The House of Serenity, The House of Murmurs, The House of Oblivion*, or *The House of Passion and Thought.*

The relationship between art and architecture has thus remained active in the work of many artists who emerged in different contexts throughout the decades of 1980 and 1990, and who pursuit a dialectic between the two fields – such as Danish artist Per Kirkeby, who, besides a pictorial research, develops sculptures that recover ancient materials and traditional construction methods, privileging an architectural scale that relates to monumental and functional buildings; or Spanish artist Cristina Iglesias, who, taking elements like windows, arches or columns, builds compositions that establish connections to previously existing constructed elements. Among the artists interested in that relation, we can also mention Rachel Whiteread, who has been producing works with an evident architectural character, as her famous casts – and in particular her controversial project *House* –; or the German artist Gregor Schneider, who, in catatonic process of duplication and spatial overlap, develops disturbing constructions inside existing buildings.

More recently, several other artists have taken on a politicized drive in their work, establishing a dialogue between art and architecture that aims to criticize the latter – as exemplify many of the works of the Cuban group Los Carpinteros, or of the Slovene artist and architect Marjetica Potrc.

Los Carpinteros produce sculptures and installations that intersect processes of architecture and furniture, recognizing the former as a "source of obsession" (Los Carpinteros, 1999).

In the 2000 Havana Biennale, they presented, for the first time, *Ciudad Transportable*, an installation consisting of a set of aluminum and fabric elements, which, on a small scale, recreated an urban setting that included various kinds of buildings – such as a housing block, a factory, a hospital, a university, a prison, a church, or a warehouse. This installation defined a nomadic urban structure, and sought to recapture an architectural utopian dimension that established the minimum core elements of a city. And in 2007, at the Faena Arts Center in Buenos Aires, Los Carpinteros presented *El Barrio*, a chaotic jumble of twenty cardboard houses, which directly addressed architecture by criticizing the absence of urban planning of contemporary cities and their exponential growth.

As for Marjetica Potrc, she explores an interdisciplinary process based on a critical perspective that aims to redefine social dynamics. Interpreting contemporary architectural practices, her work includes site-specific projects that try to define alternative and sustainable ways of building and dwelling.

Using the gallery as a displacement space, in 2003, at the Palm Beach Institute of Contemporary Art in Lake Worth, she presented *Hybrid House: Caracas, West Bank, West Palm Beach*, an "architectural case study" that critically juxtaposed slum structures from three different contexts. Another example of her approach is *Xapuri: Rural School*, an installation presented at the 2006 São Paulo Biennale, which resulted from a two months period she spent in Acre, a remote Amazon region in Brazil, where

she studied the traditional houses known as "palafitas", considering their adaptation to contemporary society.

As the works of all these artists show, as a back and forth movement, the interchange between art and architecture is part of a long and open-ended process that keeps being extended and re-created.

We can thus recognize a wide number of architectural procedures on contemporary art, which confronts us with constructions that, leading to different interpretations, brought new meanings to familiar shapes.

References

Alloway, Lawrence (1956). Introduction 1. In *This is Tomorrow.* London: ICA, 1956
Krauss, Rosalind E. (1986). *The Originality of Avant-garde and Other Modernist Myths.* Cambridge, Massachusetts / London, England: The MIT Press
Lamster, Mark (editor). (2004). *Mary Miss.* New York: Princeton Architectural Press
Lewis, David, (1956). Introduction 3. In *This is Tomorrow.* London: ICA.
Picazo, Glòria (editor). (1995). *Siah Armajani. Espacios de Lectura – Reading Spaces.* Barcelona: Museu d'Arte Contemporani de Barcelona, 1995
Tupitsyn, Margarita (1999). *El Lissitzky. Beyond the Abstract Cabinet: Photography, Design, Collaboration.* Barcelona /Porto: Museu d'Art Contemporani de Barcelona / Museu de Serralves
Zevi, Bruno (1996). *Saber ver Arquitectura.* São Paulo: Martins Fontes.

The Creative Process of Art and Architecture Meets in The Public Space

Marcella Bellistri

The object of this paper aims to highlight how the design of urban public space, in the contemporary history of art and architecture, has united the creative experience of artists and architects.

On one hand, since the 60s, there has been a progressive tendency by some artists for creative experimentation in open *three-dimensional space*, outside the confines of art galleries.

In fact, the work of some artists such as Richard Long, Christo and Dennis Oppenheim, exponents of Minimal Art and Land-Art, has resulted in experiments that have taken action in the field of *external environment*. Through the use of primary forms, these artists have operated with the main purpose of critically modifying the reading of outside space.

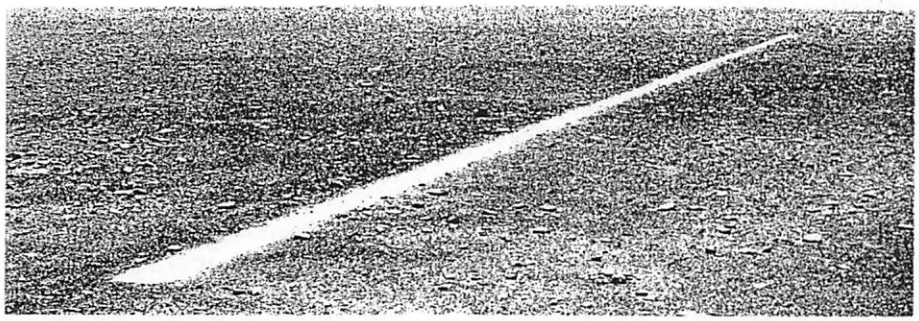
On the other hand, architects, landscape architects, urban planners, called upon to intervene to restore the centrality of public spaces at the margins of social life, are pushed ever closer to reconsider the creative process of their projects and to use art as a meta-language of communication between social behaviour and architecture.

Since the 80s there has been a real tendency for architects to redevelop city spaces through a new interest in the poetic charge of the design. In particular in these years, there is a need to redevelop the existing city due to the increasing speed in which we are witnessing the decline of some areas. Projects of public urban space are called upon to improve the physical quality of the old and abandoned city spaces.

Certainly, the premise of these experiences / projects have been based on some theoretical studies of the sixties, from the U.S. school as well as those of the German school. In fact, interest in the urban environment, and more particularly the relationship between behaviour and identification, became a top priority in the discussion of public spaces at the end of the decade.

Various studies have appeared on this subject, born out of the context of anthropology, psychology of perception, psychoanalysis and research on behaviour. These studies contributed to an enrichment of the relationship between architecture, urban planning, urban environment, arts and social sciences and highlight the importance of the project for the external environment.

Starting from the fact that the public space is the place for social relations between individuals, it is important to inspire people's confidence in the environment. This is crucial for a positive evolution of these relationships.



Richard Long
Dusty Boots Line, 1988

The need to create *emotional territories* is called for in order to allow integration with the built environment, stimulating a sense of identification and attachment of people to the places where they live, together with their fellow citizens.

'When public spaces are successful they increase opportunities to participate in communal activity. This fellowship in the open nurtures the growth of public life, which is stunted by the social isolation of deprived and marginalized areas. In the parks, squares, markets, waterfronts, and natural areas of our cities, people from different cultural groups can come together in a supportive context of mutual enjoyment. As these experiences are repeated, public spaces become vessels that carry positive communal meanings' (Carr, Francis, Rivlin and Stone, 1992).

Therefore, the elements of structuring the design of public space not only characterize the three dimensional space but the space itself becomes the bearer of new values, oriented to raise sensitivity in people, their sense of belonging and identification with the public city space.

The *public space project* brings into play all the disciplines of design and art, emphasizing their affinities but paradoxically also picking out the peculiarities of their creation and process.

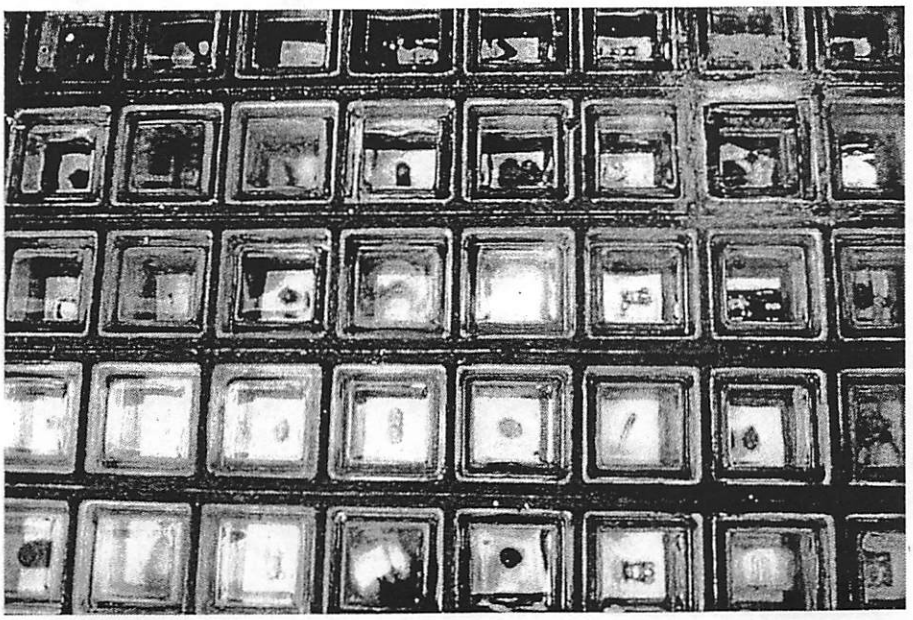
The creative process of architects and artists is becoming more and more about the quality of the design and the materials used. This in turn focuses on the dematerialisation of the elements through which the composition of space takes place: the quality of the material as rhythms, colors, textures, properties, etc.

This paper is about a number of contemporary European urban public projects concerned with the re-development of city spaces, which can be seen as examples of unifying the creative experience of artists and architects in the renovation of open public space.

A project example is the one commissioned for an artist in 2000 to create a work in a public space in a Normandy town, to reconfigure matter through art and social issues. This work involved the participation of all the townspeople, invited to donate a small item to be included in the artwork / project.

Hérouville Saint - Clair was officially established in 1960 with a new urban plan, *La ZUP, Zone à Urbanizer en Priorité* in order to cope with an ever increasing demand for housing. The population increase was due in large part to a migration from Africa and Southern Europe. The town displayed a character of *multicultural* identity, and at the end of the 90s was the scenario for intense social unrest. During François Geindre's two decades of administration, a huge effort was made towards the integration of the various ethnic groups and a series of projects were programmed with the intention of making the town lose the image of a *dorm*.

Among the initiatives is the creation of a work by artist Joel Hubaut. La Ligne is a glass floor that stretches for two kilometres in the town centre. It consists of glass cubes, containing a collection of small items donated by the inhabitants of Hérouville. In the collection phase, which lasted a year, the objects were placed in clear plastic bags and displayed to the public. The context of La Ligne *redeems* this collection of little value, which acquires within the work of Hubaut a strong value, a value of immediate identification by an entire community.

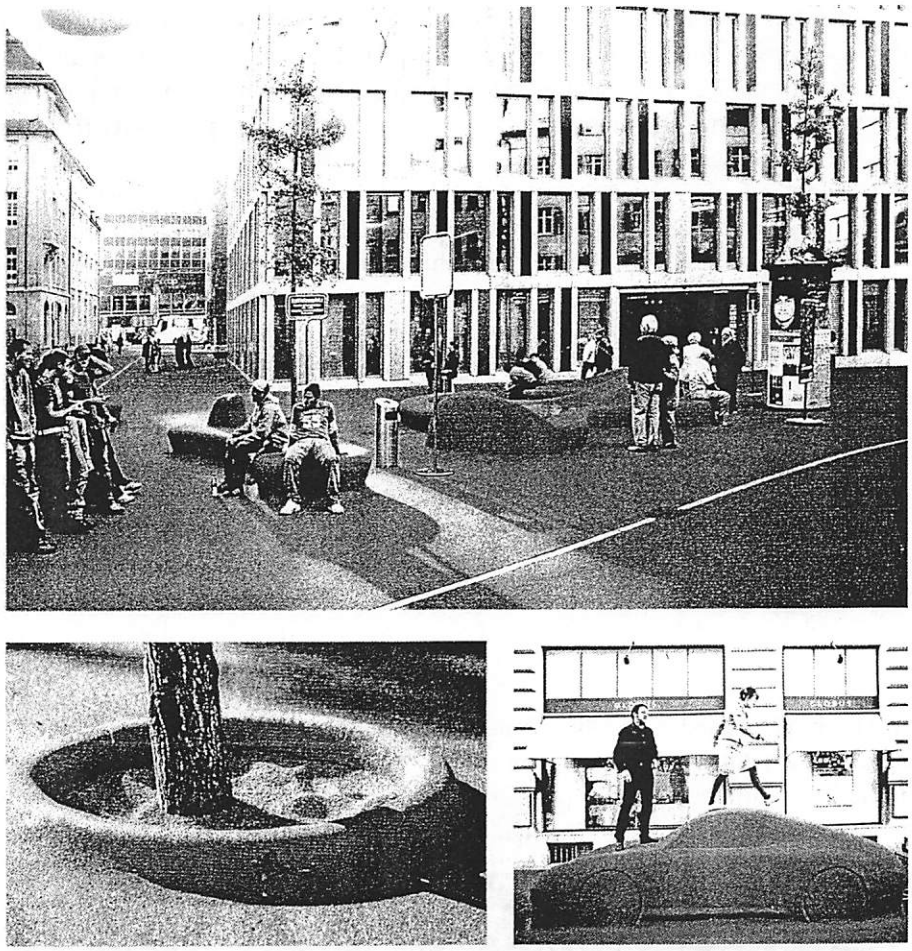


Joel Hubaut, La Ligne, Hérouville Saint- Clair, France, 2000

Another important public commission was the one given by the City of Strasbourg to accompany the tram route in 1999. The project for the only underground station on Line A of the tram system was commissioned for artist Barbara Kruger. She made use of the architectural elements as supports for its texts and its images. Inscriptions of texts can be found on the platforms, on the stairs and across the cement beams, metal inserts on the floor and a huge photo fresco. Here the phrases and images are used as detonators of attention to consciousness through elements of the *urban decoration* such as billboards, posters and others. While we await the arrival of the train it occurs to read these short messages. The idea is to organize the artwork as a treasure hunt. A treasure made by words, scattered on the eleven paths leading down to the station, on the twelve triptychs steel nailed to the ground, on the concrete beams and screen prints hanging on the wall. Words such as: *espoir, hoffnung, hope; rire, jeu, travail.* Towering over the tracks is a giant inscription: *L'empathie peut changer le monde.*

A further project, is one designed by Carlos Martinez and artist Pipilotti Rist, as a result of a design competition to create a public urban space at St. Gallen in Switzerland in 2006. The main idea behind the project was to create a homogenous environment that contrasts with the built and unifies the fragmented character of an urban area. The project was realized through a strong concept: extending the sense of intimacy that a home possesses, in the collective space. Hence the name of the project, Urban Lounge. The homogeneity of the space is achieved through the use

Barbara Kruger, Textes - Tram Ligne A, Strasbourg, France, 1999, Photo Anaïs



Pipilotti Rist, Carlos Martinez, St. Gallen, Switzeland, 2006
Photos Hannes Thaimann, Marc Wetli

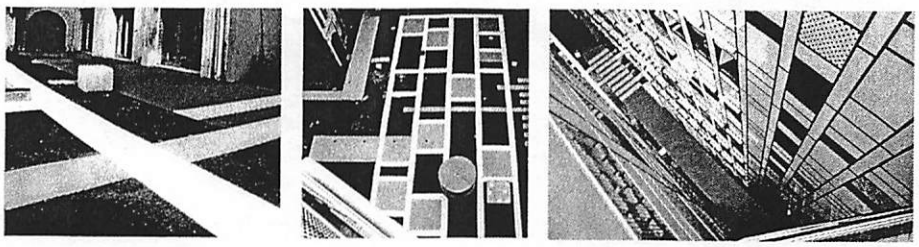
of a unique matter, a red carpet, granulated rubber surface soft to the touch, which flows all around the buildings. The perception of the area is modified through the unification of all the squares and streets using a pavement that creates a whole, extending beyond the pedestrian area. The red colour is in contrast to the introverted, heterogeneous character of the district. The main idea is that of a lounge which is accessible to everyone, as well as fulfilling the desire to create harmony and quality so that the area becomes a pleasant location near the city centre.

The uniform surface of the ground takes on the form of a sheet that hides a complete set of furniture. Seats, benches, tables and even a shape of a fake car emerge from the red carpet. The carpet lends to the idea of a lounge, conveying the same atmosphere to the façades of the buildings. The relation between interior and exterior is altered, as the outside walls of the buildings become interior walls of a living area.

Even for the design project of a courtyard at Stresamannstrasse by Topotek 1 in Berlin in 2000 colours were used as a medium to merge the presence of ancient and modern buildings. According to the designers, the surface treatment not only serves to emphasize the presence of objects built, but also it is an entity that has its own independent identity. The surface of this courtyard provides access to the interior of the building and a garage below ground. The aim of the designers was to find a design that could complement the horizontal surface of the courtyard along with the vertical buildings. The design of this court draws its inspiration from road signs and follows the same logic of the design of the facade of a modern building belonging to the courtyard. The material used for paving the surface is asphalt and the colours used were yellow, red, white, as those used to paint the streets. Signs that are characteristic of the street are used as artistic elements. Common materials, shapes and colours prescribed by the code of the street have been transported to a new environment, configuring an abstract world of information, a geometric pattern reminiscent of Mondrian's paintings.

Exchange Square, sited in the heart of Manchester, was implemented by Martha Schwartz in 2000. Martha Schwartz's work can be described as an eclectic mix of formal principles of Art of Gardens and contemporary art movements such as Pop Art.

This project is located in a lively commercial district. Due to the existing topography, differing modeling levels gave origin to the project. The public space is organized through the differentiation of parts/areas. Height differences, already present, are managed through a system of ramps and stairs. The highest and most extensive



Topotek 1 , Geschaftshaus Stresamannstrasse, Berlin, Germany, 2000
Photo Hanns Josten

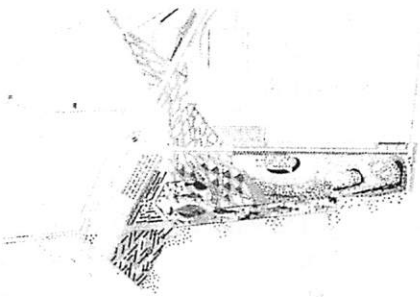
part, is the area where most commercial activities take place. In this area, paving stones were inserted with metal rails and glass panels were fitted and illuminated by colored lights.

Benches are able to slide on rails. By installing tracks, a reference to the important development of the railway in the city's history is being made. In the lower level a channel has been excavated that resembles the layout of the historic *Hanging Ditch.* The edge channel is reinforced by a row of birches and ends with a fountain of water where jets are arranged in an arc.

Martha Schwartz, Exchange Square, Manchester, UK 2000

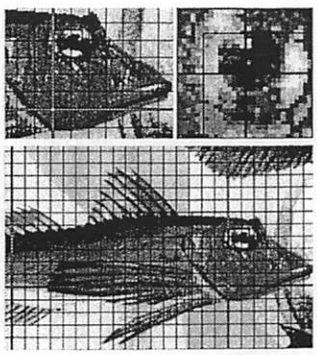
In the context of the work undertaken by the city of Barcelona for the Universal Forum of Cultures in 2004 there are two important implementations.

The implementation of the largest urban park in the city is called Parc Litoral. The aim of the project was to integrate old and new industrial activities and services of the city with the construction of an ecological park. Approximately 1,000 metres have been recovered from the sea to create an artificial beach in the city. For the project, the main purpose was to find a gentle way to integrate the industrial scenery into the public sphere.



Through the creation of a public space such as the colorful Parc Litoral you are able to achieve appropriation and identification by the people who make use of it. A sequence of spaces, distinguished by the design of the pavement, connect the public transportation system with the Mediterranean.

The first space, the access, covers the whole complex, and organizes the movement towards the sea. The second, the sea front, gives access to the pier. Every stage of the sequence has a different surface treatment, using materials- the stone - and technique -the mosaic - with a traditional figurative pattern for which



Abalos & Herreros, Albert Oehlen
Parc Litoral, 2004, Barcelona

the artist Albert Oehlen was commissioned. The main objective is to give to the place its own identity through an uninhibited Pop manipulation and various ornamental patterns.

Near Parc Litoral is the project of the Esplanade by architects José Antonio Martínez Lapeña and Elías Torres. This is a large and complex project that has sought to integrate different activities - industrial and urban - with the project of a public space. There was a need to redevelop one of the few open spaces in the dense urban fabric of Barcelona and to connect the artery of the Diagonal with the sea.

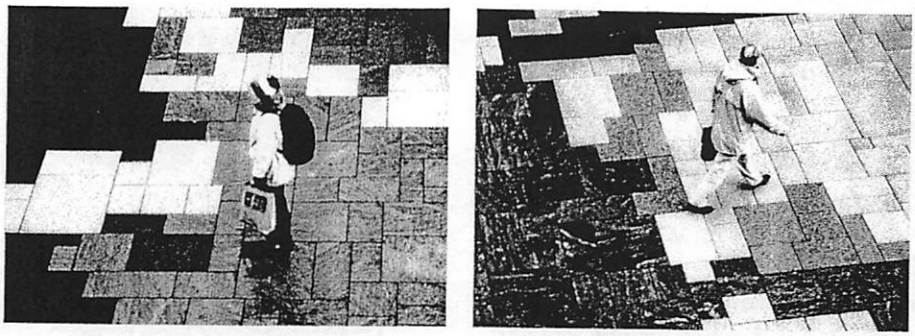
This public space is located in the vicinity of a number of technological facilities such as a power plant, a plant for the incineration of waste and a water treatment plant. In this case the problem was also to find the most appropriate way to integrate these different activities.

A complex network of technological systems, power lines, water supply lines, telephone lines, etc. lie underneath the paving.

The pavement has been designed as a fabric patchwork. Sudden and unexpected work means that the material used can be replaced by changing the original colours, enriching the color range.

Two shelters are built to provide shade to the area. The refurbishment has also affected the waterfront, which is connected with the sea through a series of fingers like constructions extended towards the sea. The connection is arranged through a series of ramps and stairs that allow a descent toward the port activities.

Another project in Barcelona is the Parc Nou Barris, by architects Andreu Arriola and Carme Fiol, implemented in 1999. The starting point for this urban space project is taken from the series of paintings by Picasso in Horta de Sant Joan, in 1909. The architects entered the *game* of architectural composition using this Cubist painting, producing a landscape materialized in three dimensions. Here the eastern outskirts



Arne Sælen, Arkitektgruppen Cubus, Bjørn Nørgaard
Vejle Traffic Centre, Denmark, 1999

of the city's urban void is transformed into an abstract geometric landscape, able to orchestrate multiple meanings and perceptions of the place.

In fact, we are in the presence of a vacuum resulting primarily from building interventions in this part of town with no continuity or relationship. The first problem to be faced by the designers was re-stitching up this space with the existing urban fabric. This space is bordered by towering residential buildings, the centre contains a neoclassical building, the town hall, and a modern building that houses the 'forum of technology'. The designers have faced the problem of creating a new reality with a pre-existing urban landscape which is varied and fragmented. To resolve the tensions of this space, Arriola and Fiol are inspired by the Cubist current. In fact, cubism uses the multiplicity of perspective views to generate volumetric forms. The transposition of the cubist landscape painting into the urban space produces articulated topography and terrain modeling. The idea of fragmentation is used as a means of fluid communication between the separate parts.

Even the inspiration for the design of the new square in the city of Vejle in Denmark, in 1999 by Arne Sælen, Arkitektgruppen Cubus and sculptor Bjørn Nørgaard in 1999, is taken from a painting by Norwegian artist Edwin Blix Hansen. The project concerns the re-design of the square in front of the station and the bus terminal. The city of Vejle is a major hub of trade routes in the heart of the peninsula Jutland, Denmark. Six different types of granite colors were used to interpret and for this painting on the paving. The surface was created with forty different types of tiles for form and with three types of sanding. The stone used originated from China, India, orway, Portugal, Sweden and Turkey.

Bibliography and sources of images

a+t, In Common IV: Collective Spaces, 2007, Urban Lounge, *a+t,*, Vitoria - Gasteiz (Álava), a+t Publisher

Abalos, I., Herreros, J., 2000, *Recycling Madrid,* Barcelona, Actar Publisher

Bellistri, M., 2004, *Nuovi linguaggi per il disegno del suolo,* Università Mediterranea di Reggio Calabria

Bellistri, M., De Rose, F., 2001, *Gradozero Architetture,* Cannitello (RC), Biblioteca del Cenide

Celestini, G., 2002, *L'architettura dei parchi a Barcellona. Nuovi paesaggi metropolitani,* Roma, Gangemi Editore

Car, S., Francis, M., Rivlin, L. G., Stone, A. M., 1992, *Public Space,* Cambridge, Cambridge University Press

De Fusco, R., 1967, *Architettura come mass medium. Note per una semiologia architettonica,* Bari, Dedalo Edizioni

Domus, Uno Spazio Comune / A Common Space, 1998, *Domus,* Milano, Editoriale Domus S.p.a., n.802

Marcus, H., 1968, *La dimensione estetica,* Milano, Arnoldo Mondatori Editori

2 G, 1998, Abalos & Herreros, *2 G,* Barcelona, Editorial Gustavo Gili, n.22

Topos, 2002, 10 Jahre Topos: Perspektiven Europäischen Landschaftsarchitektur / 10 Anni di Topos: Perspectives of European Landscape Architecture , *Topos,* n.40
Topos, 2003, Gestalten mit Stein/Designing with Stone , *Topos,* n.43
Topos, 2002, Promenade / Promenades, *Topos,* n.41
Topos, 2002, Offentlicher Freiraum / Public Open Space, *Topos* n.39
Topos, 2000, Materialien / Materials, *Topos* n.32
Topos, 2002, Platze / Urban square, *Topos,* Munchen, Callwey
Topos, 1999, Barcelona in progress, *Topos,* n.29
Weilacher, U., 1999, *Between landscape architecture and land art,* Basel, Birkhauser
Zardini, M., 2003, Asfalto: Il carattere della città, Milano, La Triennale di Milano, Mondatori Electa

Relative Utopias As a Tool For Urban Transformation

Apurva Singh
New Delhi, India

In Literature, "Utopian" refers to both Schemes of perfect or Ideal Existence and International Communities possessing perfect socio-politico-legal system.

Utopian ideas, which fundamentally claim as well as aspire to make the world a better place, give meaning to architecture and prevent it from being directionless or too objective in its approach. A new understanding of utopia, that it is malleable rather than rigid, expands its reach while demonstrating its relevance to the current debates about the core objectives of architecture.

Architecture and Utopia both develop together along with their own social dimensions. Since generally the realizations of utopia are removed from current time and location, the idea portrays limitations while suggesting expanded prospects for those projects. Viewing projects in this manner could have a possible positive effect on architecture, mainly by reinforcing the social elements back into the architectural thought process.

Since utopias intend to replace current conditions with improved ones, their concern with the future is equally matched by their concern with the present and past. In the timeline between the present and future, Utopias are *'distant non-places'* (Coleman, 2005, pg.219) placed with an undefined *topos*. This shows flexibility of place and occasion. Although true, that not every utopian vision is viable for any place or time, it gives us the opportunity of making a choice. Such thought process allows for the re-evaluation of designs based on the current outlook and values of society, as well as the re-interpretation of previous theories to equate their relevance to the current set of situations.

The Architecture of creating communities and 'Mega' architectural projects in response to the evolving society and technology are both fundamentally utopian. It can be said, that all architectural thoughts, when without constraints, are Utopian. Since every architect searches for an ideal solution to a set of parameters, the first solution arrived at, is almost always utopian in nature. The resulting project is where the goals are non-architectural in intent and the language used to arrive at the semantics is architectural.

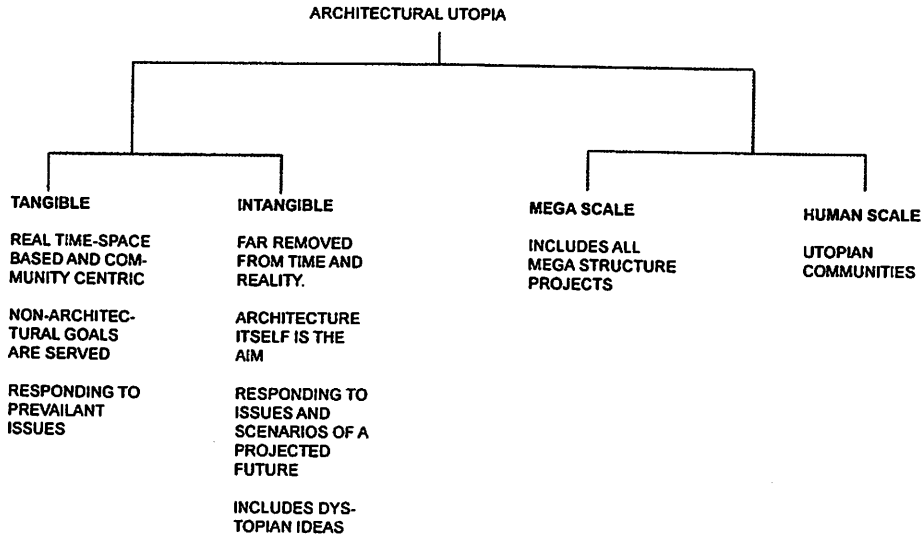
To broadly classify architectural Utopias into categories that would envelope all the projects and theories, we arrive at two kinds of classifications:

Based on Tangibility

1. Far removed from time and reality (intangible)
Where architecture is the aim.
2. Real time/space and community based (tangible)
Where non-architectural goals are served.

Based on Scale

1. Mega-scale: Structural Utopia
2. Human-scale: Community based Utopia



Mega-scale Utopias take into consideration the prospects of structural innovations, technological advancements, engineering solutions, built performance, sustainability of the system and formation of new techniques to solve socio-economic and cultural problems faced by the society. Problems such as scarcity of land, natural resources, economic support and the exponential increase in population, environmental degradation, protection against natural disasters and urban encroachments. Albeit it lacks the connection to the humane aspect of architecture, thus fails to entice people towards its promises.

The notion of the *human-scale* i.e. community based utopia involves understanding human activities and behaviors as the underlying factors governing architectural design.

In mass utopia, individuality is unaccounted for. Whereas in "humanized" utopia, every man is considered different and excellent: so there is creation of architecture where 'excellence' can flourish. It establishes that any proposed project should provide enough variety so that there are possibilities of different pursuits by different people inhabiting it.

If we compare the definition of utopia in relation to man and to architecture at different times in history, Monumental expansion vs. social expansion can be measured at each point.

In an attempt to understand the situation in terms of Utopian aspirations in modern times, Bernard Gendron defined the four possible principles of modern Technological Utopias:

1. *We are presently undergoing post-industrial revolution in technology.*
2. *In the post-industrial age, technological growth will be sustained.*
3. *Technological growth will lead to the end of economic scarcity.*
4. *The elimination of economic scarcity will lead to the elimination of every major social evil.*

(Gendron, 1977)

These claims need to be re-evaluated in the present context.

The advantage of technological growth, industrialized construction techniques and modular elements has been greatly embraced by contemporary architecture. Parametric, computer aided designing and engineered materials have made construction of non-traditional as well as mega scale structures possible. Unfortunately, these advantages function in an environment where the ultimate goal is either economic gain, pure aesthetic expression or building performance efficiency. The social and human aspect is, least to say, sidelined.

At this point the question of relevance of architectural Utopia arises. In current times, is there an absolute vision of ideal existence with a perfect socio-politico-economic system, which is in any way dependent on architecture? What role can architecture play in redefining the social interactions between societies largely dependent upon social media and virtual space as means for communication? The *topos* of society today is as ambiguous as that of Utopia itself.

On the question of relevance of previously established Utopian theories, Sociologist Karl Mannheim argued that *relative* utopias could be realizable whereas *absolute* ones are not. (Mannheim, 1936)

Relative Utopias are elements within the theory, which directly respond as possibilities intended to provide solutions to problems in the existing conditions. So defined, a *relative utopia* is an advisory archetype that suggests the varieties of approach that might lead not just towards solving current architectural and urban concerns, but also to the fulfillment of the intrinsic ideals in its encompassing proposal. The recognition of *absolute utopian* architecture as a theoretical critique and interpretation for existing or past practices, with an aim of bringing improvement or change, lessens the rigidity in acceptance of Utopia in architecture theory. While having a 'bigger picture' helps in bringing the projects to a tangible fruition.

Incredibly large projects that stubbornly resist realization, often referred to as '*absolutist utopias*' (Coleman, 2005), may nonetheless contain possibilities for

application as smaller, intrinsic elements (*relative utopia*). Foe example, '*Le Corbusier's totalizing urban schemes were so vast in scope as to guarantee they would remain forever unrealizable, even though they influenced his thinking through of smaller projects, one such example of which is La Tourette.*' (Coleman, 2005) His other urban schemes Villa Radiuse (1924) and Villa Contemporaine (1922) although unsuccessful at being realized in totality, led to inspire many projects such as the master plan of Brasilia and many contemporary commercial residential developments.

Of course, we'll find examples throughout history where attempts have been made to realize utopian theories in their entirety. As well as architectural projects, which resemble famous theories, albeit only in form or visual aspects. It is the understanding of the social aspirations of these people, whom the theory tries to capture, which mark the difference in success between prevailing practices and the one that society aims to achieve.

Broadacre City by Frank Lloyd Wright, in 1932, gave us the first preview of the "Suburban" life. Which, years later became the blueprint of most suburban settlements in America. When broken down into elements, the agenda not only proposed ownership of land as an empowering tool focusing largely on individualism and identity but also led into the possibilities of dwindling interactions and alienation between people. The positive factor was that '*...the individual could now work based on what he wanted to do or liked to do because he was no longer completely dependent on others for his success.*' (Wright, 1932) Another example is the proposal for underground utilities lines and large-scale landscaping for aesthetic reasons.

In a process similar to natural selection, the aspects most suited to the needs of the people got accepted into architectural practice, while the ideas difficult to substantiate or otherwise unreasonable in nature, such as distribution of exorbitant amount of land, were left unrealized.

While stating that the influence utopias have on architecture is largely neglected, it concurs that we tend to dismiss even the positive aspects within the theories because the combination of utopian ideas and architectural space often produces ambiguous results.

In architecture, hostility towards 'Utopia' can be sourced to the following reasons:
- First, the association of the word *utopia* to vagueness. Emphasizing it as unscientific and thus ambiguous in character.
- Secondly, the view that Utopian theories need to be realized in totality for it to be relevant or to bring about change in the social setup. Leading to the idea of Utopias as being rigid and uncompromising.
- Unwillingness of the general masses to accept major change.
- Utopias suggesting a new way/change of habitat are least acceptable when successful examples are not available; which are not available due to hesitance in experimentation. Thus creating a catch-22 situation, leading to projects being left unrealized.

• Utopias considering good human nature as a prerequisite for its successful establishment often fail due to lack of faith from the public.
• The idea of Utopia changes from generation to generation, thus making it impossible to sustain the project or to develop the idea for a long term.
• *'The failure of supposedly scientific social visions to bring about a more humane existence confirmed that socialist ideology is no more scientific than utopias are.'*(Coleman, 2005)
• The failure of past utopian settlements to produce or sustain a more humane habitat, confirmed that architecture, in isolation, is not enough to guarantee utopia. By an understanding of successful and failed Utopian Projects, one can derive reasons for the survival or failure of each.

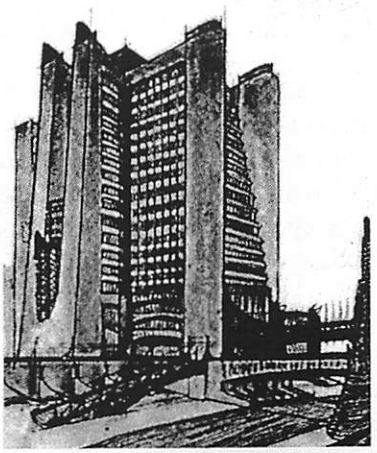
Attempts at utopian communities such as *Arcosanti* by Paolo Soleri (1970), New Harmony by Robert Owen, the Oneida community by John Humphrey Noyes (1848), among many others showed promise, but eventually succumbed to failure. While mega projects such as the *Dome over Manhattan* by Buckminster Fuller (1960), *City in the Air* by Arata Isozaki (1962) and the works of Archigram were so technologically demanding that it was impossible to achieve them in totality at the time. Multiple reasons contributed to the failure in mass acceptance of these communities and proposals:

Reasons for failure

• Lack of interaction and exchange of resources with the outside world, which created isolation.
• Lack of a steady reliable source of income, which conflicts with the vision of the community.
• Dissolution of ideologies within the younger generations.
• Indifference towards current environmental issues.
• Structural and/or Technical complexities.

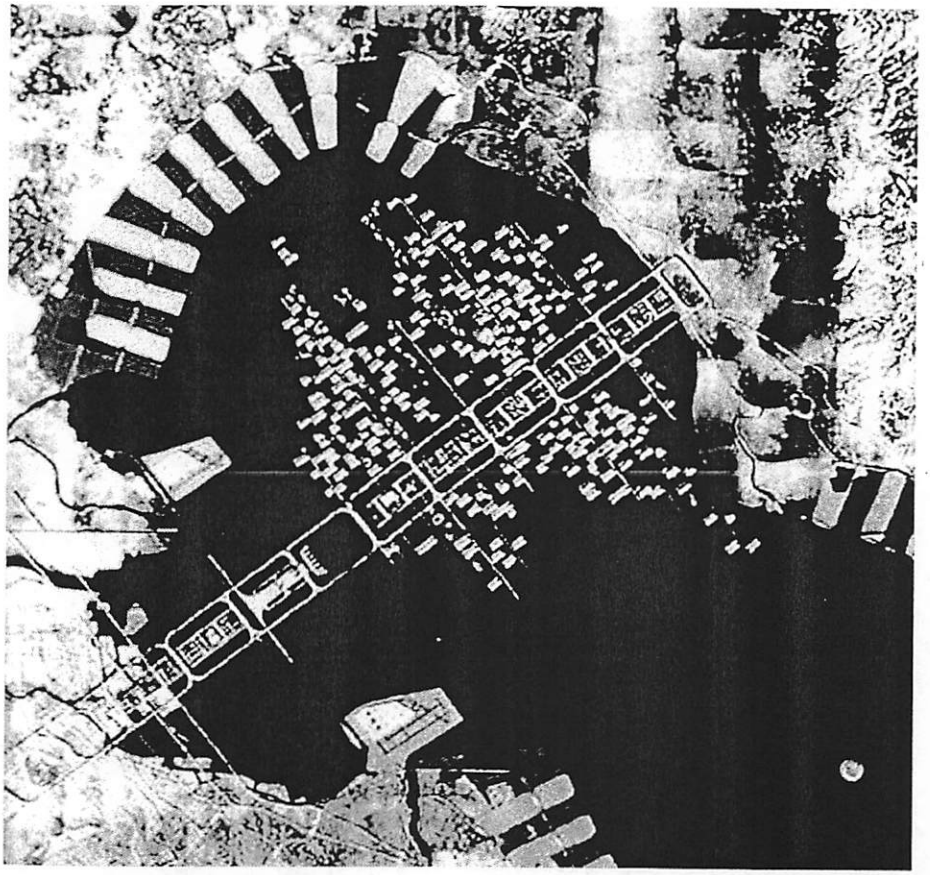
Hence these aspects need to be taken care of any 'Utopia' to sustain and grow. These communes defined a new way of living by creating a harmonious coexistence within nature and man.

The most famous example of a utopian idea embraced by architectural and urban practice is the *Garden City* by Ebenezer Howard (1902). It acted as an archetype for ideal urban planning, with realized projects such as the city of Welwyn (1920) and Hampstead (1909) proving the validity of the theory through their success.



Another example of the time is Antonio Sant'ellia's *La citta Nouva*, which in an almost prophetic way, provided imagery of the future of cities, embracing motion and activity. As the

first example of high-rise development and transit-oriented design with multi-level circulations, its influence can be seen in the development of all major cities across the world; along with the influence of the proposal *Une Cite Industrielle* by Tony Garnier (1918), '*which represented the culmination of several philosophies of urbanism that were the outgrowth of the Industrial Revolution in 19th-century Europe.*' (*Cite Industrielle.* 2013) It also presented the division of zones according to function, which later became one of the cornerstones of city planning.



The Redevelopment of Tokyo Bay by Kenzo Tange (1960) provided multiple elements relevant to modern urban design, the greatest being: a shift from radial centripetal system to linear development and Land Reclamation. It can be credited for providing the theory behind the realization of multiple projects: The master-plan for Skopje (1965), Kansai Airport in Japan (1968), Flevopolder (1968), Palm Islands Dubai (2001) and most recently Marina Bay in Singapore (2010).

The utopian proposal *Megastructures* by Fumihigo Maki (1964), and the design proposal for the mile-high *Illinois* by Frank Lloyd Wright (1956) are examples of the theories that preceded their technological counterparts. '*These answered the question of how to adapt a building (or city) to unpredictable growth and change.*' (Banham, 1976)

Their validity and value came under question of necessity and their possible indifference towards the humane and environmental aspects of architecture. With progression in technologies and the needs and values of the society, the relevance of these projects met favorable conditions. The result is visible in projects such as the Burj Khalifa in Dubai (2009), the proposed projects *X-seed 4000* and *Shimizu City* as well as Moshe Safdie's Habitat 67.

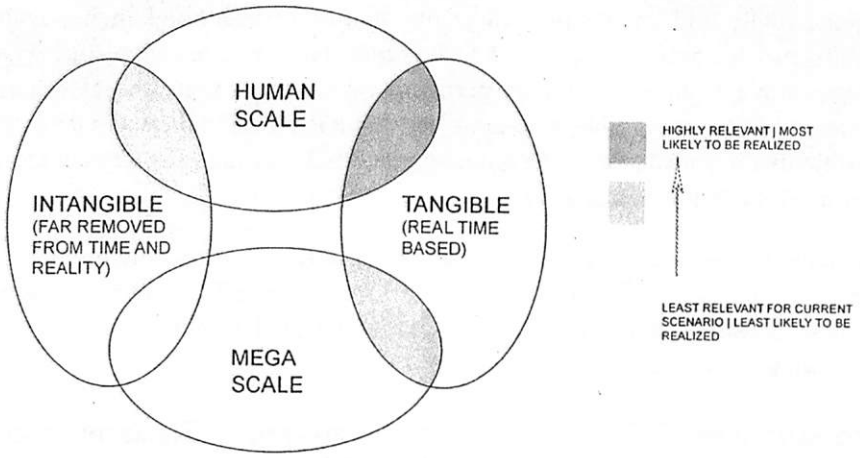
Utopian theories, which were once considered a threat to the environment or otherwise irrelevant to their time, have re-surfaced as possible solutions to issues such as increase in population density, scarcity of land, lack of infrastructure and degrading environmental quality.

UTOPIAN THEORIES	REALIZED PROJECTS (EXISTING AND PROPOSED)
Garden City by Ebenezer Howard (1902)	Welwyn (1920) and Hampstead (1909)
La citta Nouva by Antonio Sant'ellia (1914)	Paris Infrastructure development
Une Cite Industrielle by Tony Garnier (1918)	Linear, transport-based Urbanization
Ville Contemporaine (1922), Ville Radiuse by Le Corbusier (1924)	Hong Kong residential development (2010), Brasilia, Brazil
Broadacre City by Frank Lloyd Wright (1932)	Masterplan for Phoenix, Suburban Settlements
The Illinois by FLW(1956)	Burj Khalifa (2009), Future Kingdom
Redevelopment for Tokyo Bay by Kenzo Tange(1960)	MASTERPLAN FOR SKOPJE (1965), Kansai Airport (1968), Flevopolder (1968), Palm Islands (2001), Marina Bay (2010)
Dome on Manhattan by Buckminster Fuller (1960)	Dome on Houston (2010)
Works of Archigram (1963-1970)	Pompidou (1977)
Megastructures by Fumihigo Maki (1964)	Habitat 67 by Moshe Safdie (1967), Tai Koo Shing(1984), X-seed 4000, Shimizu City
Phalanstère by Charles Fourier	Unité d'Habitation by Le Corbusier

Reasons of Success

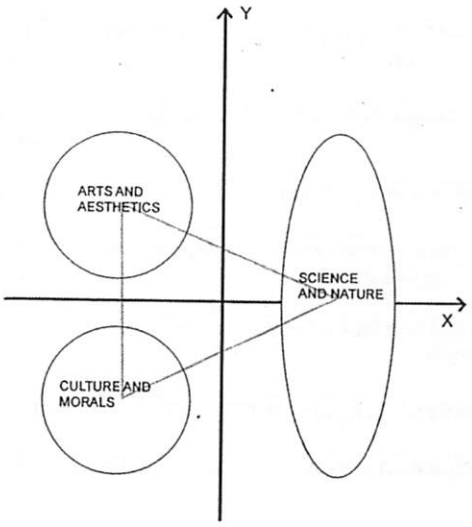
a. Utopian projects, when divided in the following four quadrants, show us the likelihood of their success in terms of ease of acceptance and an establishment of need/ their relevance in addressing current and future issues.

b. Theories considering most parameters and aspects of development (Culture, Science, Nature, Aesthetics) are more successful and are likely to be realized.



Architectural Utopia and Social Utopia are inseparable under the question of sustainability. Therefore, interdependence between the two brings stability in the scenario, and thus enhances viability.

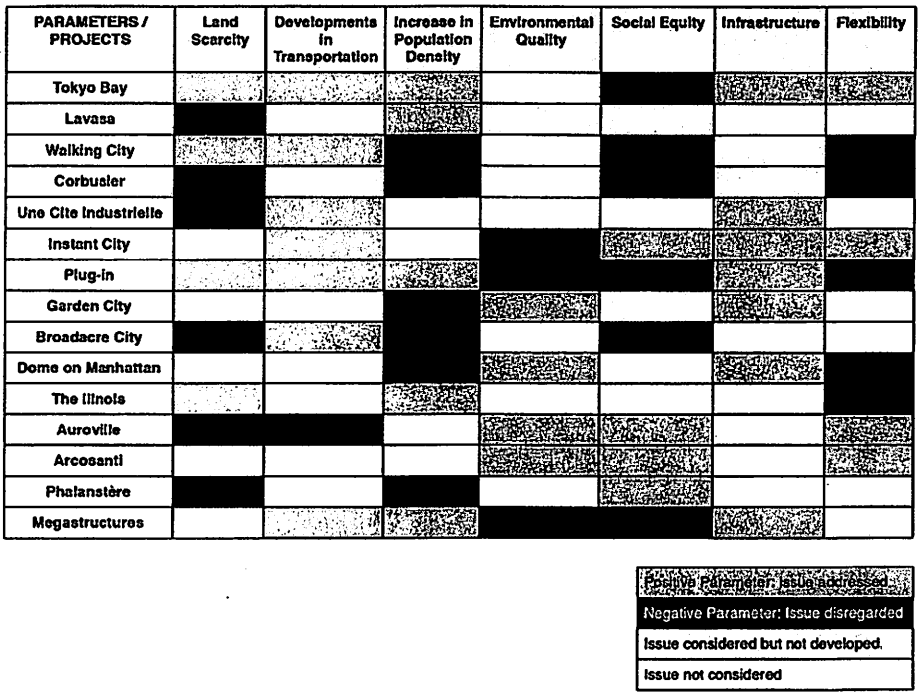
c. Sub-dividing the theory and extracting tangible elements helps in realizing the project i.e. smaller utopian ideas emerging from larger ones. This approach makes the Utopias relevant in multiple scenarios and helps us readdress certain issues of architecture and urbanism.



The following table analyses each "Utopia" on tangible parameters to judge their relevance under specific issues of urbanization. And estimates the use for its components (sub-utopias) in future architectural and urban developments.

The parameters of comparison are through the responses of the Utopian proposals to the following issues:

1. Land Scarcity
2. Developments in transportation
3. Increase in population density
4. Environmental Quality
5. Social Equity
6. Infrastructure
7. Flexibility in Design and scope for future expansion



What can we learn from Utopia?

Suggestions for further study:

Evolution of Utopian Ideas: Architectural Utopias are a collaborative representation of the socio-cultural-political and economic state of a society at a particular time. It is an expression of the aspirations of the society at large. Current state of architectural education (in USA/Europe) promoting dystopian architecture at a conceptual level shows general thought process and a possible direction of the future built environment.

Sustaining Utopia: The role of architecture in sustaining Utopian Communities through studies on attempts made around the world.

Architectural Inventions, visionary drawings :Inventions in various fields derived from inspiratory "visionary" architectural drawings; and how architectural utopias inspire creation across various fields.

Components of Utopia: Dismantling each theory to find common components.

Futuristic Theories of the past: What is their relevance in present context?

Is "utopia" applicable in the 21st century?: In current architectural context, do "utopian" ideas still have any significance, or a more realistic approach has come into practice. Is there any scope of Utopia in Trans-modernism?

Has the architectural scene moved from ideas of a mechanical utopia to a more human-centric approach?

Current State of the World: Architectural Designs which might withstand the climate change and other issues of sustainability, and stay relevant for a considerable period of time.

References

Banham, Reyner, 1976. *Megastructure, Urban Futures of the Recent Past.* London: Thames and Hudson.
Cite Industrielle. 2013. *Encyclopædia Britannica Online.* Available at: http://www.britannica.com/EBchecked/topic/118760/Cite-Industrielle
Coleman, Nathaniel, 2005. *Utopias and Architecture.* Oxford: Routledge.
Gendron, Bernard, 1977. *Technology and the Human Condition.* St. Martin's Press.
Mannheim, Karl, 1936. *Ideology and Utopia: An Introduction to the Sociology of Knowledge.* San Diego: A Harvest Book, Harcourt, Inc.
Wright, Frank Lloyd, 1932. *The Disappearing City.* New York: W. F. Payson.

Bibliography

Banham, Reyner, 1976. *Megastructure, Urban Futures of the Recent Past.* London: Thames and Hudson.
Cite Industrielle. 2013. *Encyclopædia Britannica Online.*
Coleman, Nathaniel, 2005. *Utopias and Architecture.* Oxford: Routledge.
Conrads, Ulrich, 1964. *Programs and Manifestoes on 20th-Century Architecture.* Cambridge, MA: MIT Press.
Cook, Peter, 1994. '*Some Notes on the Archigram Syndrome*', Perspecta, Supplement 11, Yale 1967, reprinted in *A Guide to Archigram,* 1961–1974, London: Academy Editions.
Fishman, Robert. *Urban Utopias in the Twentieth Century: Ebenezer Howard, Frank Lloyd Wright, Le Corbusier.*
Fuller, Buckminster, 1969. '*Utopia or Oblivion*' in *Utopia or Oblivion: the Prospects for Humanity,* New York: Bantam Books.
Gendron, Bernard, 1977. *Technology and the Human Condition.* St. Martin's Press.
Koolhaas, Rem and Mau, Bruc, 1995. *S, M, L, XL,* New York: Monacelli Press.
Lin, Zhongjie, 2010. *Kenzo Tange and the Metabolist Movement: Urban Utopias of Modern Japan.* Oxford: Routledge.
Mannheim, Karl, 1936. *Ideology and Utopia: An Introduction to the Sociology of Knowledge.* San Diego: A Harvest Book, Harcourt, Inc.
Nesbitt, Kate, 1996. *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory.* Princeton Architectural Press.
Rowe, Colin, 1976. '*The Architecture of Utopia*' (1959), in *The Mathematics of the Ideal Villa and Other Essays,* Cambridge: MIT Press.
Sant'Elia, Antonio, 1914. '*Futurist Architecture*' reprinted in Conrads, Ulrich, 1971. *Programs and Manifestoes on 20th-Century Architecture,* Cambridge, MA: MIT Press.
Tafuri, Manfredo, 1973. *Architecture and Utopia. Design and Capitalist Development.* Translated by La Penta, Barbara Luigia, 1976. Cambridge, MA: MIT Press.
Wright, Frank Lloyd, 1932. *The Disappearing City.* New York: W. F. Payson.

On Scene. Conditions For Understand The Space/Scenery Concept.

Jorge Lopera Gómez

The following text is based on research made in the Space\Scenery Design Academic Program of the Colegiatura Colombiana located in the city of Medellin. Such a program aims to study the space phenomenology in order to materialize spaces that could be inhabited in special conditions of usage. In this sense, the program distances itself from the traditional architectural exercise which comes from the modernist movement that took place in the early twentieth century, and looks into other forms of spatialities that normally occur during academic training in architecture, which are: ephemeral spaces, scenography, cultural spaces and commercial scenery. The concept of space/scenery reflect a conceptual construction which conceives space as a stage on which a variety of events occur, and in this sense, it becomes a "place" where experience plays a crucial role at the time of starting the process by which an idea related to design is undertaken.

This perspective was originated mainly from postmodernism, since after World War II, there arose within the architectural field and the human sciences a deep interest for everything human. It should be noted at this point that the Modernist project (as a result of the Age of Enlightenment, when it was conceived that by means of reason and the constitution of the concept of State/Nation, it would be possible for mankind to ensure its self-preservation through progress – a position raised by contractualist thinkers such as Thomas Hobbes, John Locke, Jacques Rousseau and Immanuel Kant), suffers failure on the front lines of World War I, this being the turning point for the disaster that occurred between 1938 and 1945. So the question about what is human arises again among the human sciences, leaving aside the scientific method as well as the enlightened reasoning and mechanical philosophy that governed the thinking of the XVIII and XIX centuries.

For this reason, while being a contemporary view of space, the discipline of Space/ Scenery Design requires us to introduce an overview at the epistemological level, meaning that the problem of space should be approached through different fields such as anthropology, sociology, history, political studies and philosophy as well as other human sciences, all these fundamental components that help us to understand the human being as an entity that inhabits and shapes spaces based on the understanding that he has made of the world.

Throughout this paper, four conditions, from which the concept of space/scenery can be approched, are proposed: co-existence, limits, the instant in time, and aesthetics. While these conditions are not unique, they propose an epistemological reflection on the contemporary space, understanding that the practice of design is based on

the human sciences as a starting point for the production of spaces in design and architecture.

1. Co-existence

To start, coexistence can be defined from the Larousse dictionary as the simultaneous existence of two or more entities. For the purposes of this paper, both entities are determined as body and space.

Both body and space gravitate around the idea of a relationship that requires contact and that affect each other. Whilst the space is shaped by individuals through language, the body receives information about situations that arise in this coexistence scenario, as if it were about a tennis game. Their relationship is of co-existence, that is, body and space are the same place in time with a link that is not only physical because there is contact between one surface with another, but also because of the assimilated information through language as an aesthetic experience of an individual.

To speak about co-existence and inhabiting produces, as a consequence, an acute study of everyday life, as it is the phenomenology of space that allows each individual to experience what happens in his or her environment, from simple and obvious things like raining or a vehicle passing by in the street, to the possibility of finding themselves at an event or ephemeral space in the public space, a place in which a great number of phenomena directly influence perception.

During those moments in which the near space affects us and we "are" *"in it"*, a relationship of coexistence is established. As Martin Heidegger said, that is the condition that makes us "being" in the world.

In everyday life it is possible to find the network, joints, breaks, strategies and other relationships that can occur when humans inhabit. But understanding space as a coexistence scenery requires going beyond the definition of space as a physical and motionless entity, as the quantity of significances that are immersed in it establish a relationship with the temporal flow of life, allowing a succession of events and actions that transport the notion of coexistence to another level.

The act of inhabiting, as defined by the Larousse dictionary, means *to usually live in or to occupy a place or a house;* it requires a spatial experience, a relationship with the contact surface. According to the dictionary definition, to inhabit is defined as habitual occupation, in other words ,what has been established by the repetition of an action. In this case there is nothing more habitual than the action itself of human existence, an action that has been repeated since we start our life in the womb as the first space that welcomes us and which provides for us a warm and comfortable interior.

However, there is a difference between being an individual in space and being *in - it.* When we talk about "being in a space" we talk more about the primary relationship

of co-existence that we develop. Nevertheless, to inhabit takes us closer to the notion of "being - in - the - space"; to the extent in which we interact with that other body that surrounds us, it is when we really appropriate places. These spaces are the result of human interaction with all the volumes that compose the physical space in which human interactions take place. They emerge as scenarios in which particular and specific uses are developed. The idea of "place" corresponds to specific uses that constitute a fabric of relationships accross the territory, which is also determined by spatial structures that say things, that have a language with their own use of codes. At this point it is inevitable to think about the universality of language proposed by Hans-Georg Gadamer in his hermeneutical project, as referring to a hermeneutics of facticity displacing language from its usual place - that of the spoken and written word, to understand that the habitable surface of the human being contains itself a semiotic burden where the sign becomes language.

Along these lines, places provide constant information which the body assimilates and processes, resulting in forms of appropriation of the space that surrounds us, the inhabited space.

Heidegger, in his speech, constantly states the idea of "being - there", "existence" or "dasein", and so it is a form of being in the world as human nature. It is impossible to speak of man separated from his use of space, as if it were something foreign, as both form a relationship that cannot be understood without the binary presence of man and space. Both are indispensable in order to understand the idea of inhabiting. The essence of what Heidegger called the *"dasein"* is precisely the relationship that binds us to space and allows us to mould us into it.

2. Limits

It can be said about limits that they separate, divide, establish relationships between two elements or specific points. They can be virtual or physical, they hold great symbolic content, they are an imaginary border, they have a tendency to something, they establish a concept in the space. The limit can be a single point, a line, a plane. There is no direct and specific definition of the concept of limit, although it is possible to establish its status within the space based on circumstances that are associated with the separation of two or more elements.

The limit, as is used in mathematics, describes a *tendency*, or in other words, it describes a change that occurs from a starting point to an end point. The limit makes possible a sequence of elements, and it is its condition in the world that allows the existence of a difference between two bodies. Both bodies have contact because of the limit, the tendency of approaching between one body and another speaks about a distance, about a space located *in between*, in which things can happen. For both bodies, this limit will then be an edge which establishes differences; that limit will be a *"between-spaces"*.

In this "between-spaces" changes happen: there are transformations and transitions, changes in shape, unions; the limit is the one that can unite and at the same time

divide, according to the meaning given within a particular context. The limit is then understood not only as a physical barrier, but also as a between-spaces that creates links between events and locations close to each other. Here, the notion of context becomes a transcendent dimension, since it constitutes scenarios in close proximity and determines circumstances not only related to space but are also historical, political, social, cultural, etc.

The shapes of the bodies that make up the everyday life inherently have that "something" that enables the establishment of differences from one material entity to another. The limit is so necessary that if it did not exist we could not distinguish one body from another. It is precisely this limit which allows the body surfaces to find an edge that determines the shape, area and volume, and to set an individuality, an entity to be in relation or co-existence within the space, as discussed above.

The limit appears in space complying with two reasons, one of which is physical and the other symbolic. While the physical reason complies with an innate condition of things that are from this world at the time when men establish a common language, the limit that was physical becomes symbolic. A clear example that has as a reference the political use of space in the city of Medellín is the one related to *invisible barriers*- limits set by illegal armed groups in several areas of the city. In this particular case the limit determines power over territory. On several occasions this limit can be a street, as a geographical and physical reference that creates delimitation in a specific context. Leaving aside the conflict situation in which the civilian population is involved, the inhabitants of these areas are identified and establish a symbolic influence over that public space. The limit, then, acquires ethical, aesthetic and political dimensions, transcending the formal and material fact to a horizon of new connotations.

The liit is then set as a geographical reference. There is an exercise of acknowledgment by the individual, as that demarcation geo-referentially determines the body position in space. Points of reference are established to build relationships between the inside and the outside, the interior and exterior, as aesthetic possibilities of space.

That is when the space itself can be seen as a limit, as it becomes a border that divides and separates other spaces that gravitate around. In this case, the close space where situations that are part of my personal experience happen, is between two or more places, places of reference that enable the establishment of my position in space.

Under this perspective, the limit is also a place were events occur. A place where one inhabits not only physically divides a space from another, but also makes a temporary division. Time is a limit that allows an action to happen after another one. Being present and moving from one event to another allows a succession of events determined by time. One would be moving while transgressing the limits of time and space. With regard to this idea, Gilles Deleuze states:

"We can then consider a second component of the event: the extensive series have intrinsic properties (for example height, intensity, tone of a sound, or tint, value, colour saturation),

which on their own have a new infinite series, merging these with limits and constituting the relationship between limits. The matter (or whatever is occupies the space), and time present characteristics that determine its texture, depending on the different materials that are part of it. They are not extensions anymore, but, as we have seen, intentions, intensities, degrees."

Here, Gilles Deleuze regards space and time as coordinates that delimit the event experience. The sequence (not necessarily linear) between the two is divided by the tendency to the limit that is separating them. This means that the fact of belonging to an event, limited in space and time, establishes a relationship with the next event from the idea of the limit as a separation between spaces and moments, as space and time are the conditions which an event obeys.

3. Moment

The word "moment" has its etymological root in *momentum*, which refers to movement, drive, influence or importance. *Momentum*, in turn, comes from *movimentum* which is equivalent to meaning duration of a movement.

It is in space and time where the confluence of events that are part of human life occurs. But if space is constantly being modified, would it be possible that spatial experience is solely driven by a specific moment? To answer this question, and based on the approach that was given to the idea of space, let us delve a little into the idea of time and instance.

Time is a dimension that complements space and allows diverse dynamics to exist in it. It is through time that movement exists in the universe, otherwise everything would be static and motion would be just an illusion, as it is stated by physicist and writer Julian Barbour.

Of course, if the instance or moment is set as a limit in which one lives, its extension is also determined in accordance with the range which will be used to consider time. The experience of a "moment" can last a millisecond or even several days. With regard to this, George Perec, in his text *Species of Spaces*, states that the parameters of time are not clear, as while a minute in a traffic accident may seem a lifetime and an everyday occurrence can happen unnoticed, blurring the time parameters.

Following this idea, Gaston Bachelard (1978) states:

"We have seen that there is no synchronism in the occurrence of things and the abstract flow of time, and it was necessary to study each of the temporal phenomena with an appropriate pace, from a particular point of view."

Thus, each situation responds to a duration, which in turn is established in accordance with the experience lived during that fraction of time in which body and space become involved. The duration of that moment is what determines the ephemeral nature of the event that happens in the endless flow of time. If we also consider that these situations or events occur simultaneously in places like the urban scene, what

you get is a space that serves as a coexistence scenario for different events taking place in that space.

This simultaneous succession of events occurring at different locations surrounding the subject's experience can be likened to music, which with its individual notes can build phrases when put together, and which in turn create together the total composition, achieving a balance and a harmonious continuity that includes cuts, changes, breaks, cadences, etc.. The space/scenery has in itself a changing dynamic, a kind of polyphony that configures that superficial limit which we inhabit.

The scenery, in other words, the things that happen, covers the space. This superficial body which we appropriate, changes at the time when movement paints the surface. At that particular instant, the space becomes scenery for events that belong to human existence. The idea of space as a scenery in which coexist constantly time - motion - space - individuals - change - bodies, is what establishes our relationship with the world.

4. Aesthetics

Culture, as a social set of individuals, shapes the language of space. The interpretation that the subject may have of space is what ultimately leads to the shaping of the scenery in daily life. Such interpretation is possible thanks to a series of cultural patterns that have been internalized by the individual and made common by a social group.

If we consider space as an object that interacts and coexists with an individual, their relationship is not only perceptual, but also constitutes an interaction to the extent that the individual is signing the space and determining for himself his own perceptual experience. In this case we are talking about a characteristic of space/ scenery, the one about emerging space.

Katya Mandoki states the following with regard to the aesthetic experience:

"There are two situations where the aesthetic experience is impossible. The first one is when there is a completely static world, where change does not happen and therefore the intuition of time would not have the possibility of being. The other one is when there is an absolutely chaotic world lacking any order or rhythm, of any cycle or sense. In this case it is the intuition of space that would be lost before an explosion of incomprehensible facts except at the level of sensations. Any aesthetic point of view of the world is shaped from a specific space-time location, and is a chronotopic look."

So, the aesthetic experience of space/scenery is determined by the coordinates of space and time. Based on what happens at the present moment is how the individual has an aesthetic experience of the world. This perception of the world is given prosaically, that is, in daily life. Here the aesthetic experience involves an exchange of codes between the subject and the object as a form of nonverbal communication established in the universe of language.

Language is defined as a system of signs, as codes that have been agreed to enable communication between individuals in a community. This is ultimately what creates culture, which is defined as the ability to give meaning to things within a specific community.

The aesthetic experience marks the perception of a kind of reality; in that horizon lies the subjective reality, built as a hermeneutical exercise about phenomenology of space. The fact of being to a greater or lesser degree sensitive to aesthetic perception is what determines the sense of wonder at the experience of space/scenery.

The physical environment determines the conditions of the use of space. The aesthetic experience is determined not only by the physical qualities of the environment, but also by what happens on the surface thickness, which is mentioned by the Colombian author Carlos Mesa in his text *contact surfaces (2010).* This means that situations occur, and that determined by the use of space, they paint movements that are also part of the aesthetic experience and practice. In the words of Fernando Torrijos (1988):

"*All space is manipulated around a series of rituals, sacred or profane, both long lasting or ephemeral, whose ultimate goal is social cohesion.*"

In this way, according to Torrijos, space becomes an object of aesthetic consumption, where cultural practices established by a group of people provide the environment with a new meaning, in accordance with aesthetically established practices by ways of thinking that have been jointly agreed.

5. About space/scenery

According to the conditions mentioned above, the idea of Space/Scenery is set within the design exercise as a viewpoint originating from the process of giving a new meaning to the built space based on the architectural intervention, to propose narratives in a specific context using strategies aimed at unifying the notions of co-existence, limits, time and aesthetics. In this sense, it is obvious that the globalized world requires spatial ideas that are increasingly richer in experiences within social and cultural contexts, with the understanding that the space, beyond materiality, is a perceived object.

For the design exercise, taking into account the specificity suggested by the concept Space/Scenery, it is essential to understand, from the point of view of phenomenology, the possibilities of interactions and potentialities in the inhabited space, where materiality, relationships and communication converge as differentiating and structuring elements of the space experience. Finally, the notion of Space/Scenery is conceived as an aesthetic surface that favours human interactions.

Bibliography

Bachelard, G., 1999. *La intuición del instante.* México: Ed. Fondo de Cultura Económica.
Baudrillard, J., 2007. *El sistema de los objetos.* México D.F: Siglo XXI editores.

Deleuze, G., 1983. *La imagen - movimiento, estudios sobre cine.* Barcelona: Ediciones Paidós.
DELEUZE, G., 1989. *El pliegue.* Barcelona: Paidós.
Delgado, M., 1999. *Ciudad líquida, ciudad interrumpida.* Medellín: Editorial Universidad de Antioquia.
Heidegger, Martin., 1951. Building, Dwelling, Thinking. Germany, Darmstadt
Johnson, S., 2003. *Sistemas Emergentes.* México D.F.: Ed. Fondo de Cultura Económica.
Mandoki, K., 1994. *Prosaica, Introducción a la estética de lo cotidiano.* México D.F: Ed. Grijalbo.
Mesa, C., 2010. *Superficies de contacto, adentro en el espacio.* Medellín: Mesa Editores.
Morales, J., 2004. *Diccionario Metápolis de arquitectura avanzada.* Barcelona: Ed. Actar.
Morris, D., 1975. *Comportamiento íntimo.* Barcelona: Ed. Plaza y Janés S.A.
Pardo, J. L., 1991. *Sobre los espacios pintar, escribir, pensar.* Barcelona: Ed. Serbal.
Pardo, J. L., 1996. *La intimidad.* Madrid: Ed. Pretextos.
Restany, P., 2003. *Hundertwasser. El pintor rey con sus cinco pieles.* Madrid: Taschen.
Restrepo, S., 2008. *El carácter débil de lo público.* Medellín: Editorial U.P.B.
Sloterdijk, P., 2005. *Esferas I.* Madrid: Ed. Siruela.
Fernández, J., 1988. *Arte efímero y espacio estético.* Barcelona: Anthropos.

Cultural Diversity and Self-reliance, Impetus for Design Creativity

Mehdi Sabet

Abstract

This essay explores personal experience of teaching of design in a none-Western cultural setting, a process of informal creative dialogue with students' own prodigy. In 'Power vs. Force: The Hidden Determinants of Human Behavior,' David Hawkins says that genius resides within all of us, that the processes of creativity and genius are inherent in human consciousness.

Although design students at College of Arts and Creative Enterprises (CACE) follow certain pre-set design criteria and scholastic requirements ensuing Western tradition, however, the discovery of creativity in each student remains a distinctive challenge. Design pedagogy urges and encourages students to pursue their own unique talent and self-learning/taught process that is formed and cultivated throughout their unique traditional settings. As history indicates, this phenomena of self-taught process refers not only to the isolated individuals of formal art but also to whole new generation of creators who are inspired by their distinctive upbringings shaped by cultural drives to discover their own unique design solutions.

The challenge of how can students use their inner creativity to improve his/her own confidence remains the forefront of our education. Having an enduring sense of self-confidence and faith in our own abilities makes achieving the things we want in our life, and overcoming the obstacles that appear before us, become so much easier and less intimidating. In the words of Dr. Hans Prinzhorn, 'Creativity is to be found not only in the realm of the cultured, experienced, or in the educated, but is an undeniable human trait, present within each of us from childhood onward. Moreover, creative drive is a process that is affected by various basic human tendencies, either individually or in combination. 'Human creativity is a basic urge, in certain individuals, it will inevitably surface and nothing can stop it' (Dr. Hans Prinzhorn, Raw Creation, Outsider Art and Beyond, Phaidon Press Limited, London, 1996, p 74).

Design teaching and learning, in recent years, have witnessed a renewed interest in socio-cultural influences, not as a basis for imitation but as the foundation for a broad understanding of the lines of development that have led to current ways of thinking about design. The evolutionary events and historical influences are paramount forces to the development of design and construction, and subsequently to the art and science of design formation. As history of civilization advanced forward from era to era, momentous social, political, and cultural events introduced innovative thinking, new challenges and opportunities, and technical resolutions in all fields of knowledge. Fertile ground for exploration in inventions and innovations of new

materials, advancement in technology, and economic prosperity give rise to fresh thinking and approach to design teaching and learning.

In the context of cultural sensitivity, design education could promote a conscious effort and reverence to the cultural values and relevance to practical, physical and emotional issues in order to serve particular social setting. Creativity and Cultural inventiveness casts fresh, anthropological eyes on the cultural sites of creativity that form part of our social matrix. It is critical for design educators and students to examine deeper cultural values in order to develop clear understanding of regional architecture role as 'mediator between cultures and incubator of cultural transition' (William Bechhoefer, Bamian Revisited: Sustainable Development and Echo-Tourism, Paper, (2003) p.1.).

Students at work - sabet_AUS 2011

Paper:

Sustainable Education: A Focus On Cultural and Contextual Influences

This paper attempts to present the process of symbiosis between design education and culture – the impact of culture on design thinking and visa versa. Although, the primary design education and its constituent principles remain as universal phenomena, however, this with emphasis on *culture* **as the mediator to augment students design experience and enrichment makes the challenge of teaching informative and motivating. I firmly believe that teaching of** *sustainable* **design remains as the principle stimuli behind a simply** *good* **and wholesome**

design-learning environment; it deepens student's personal development and global consciousness. With the current social and environmental crises in mind, design educators must ask, can design help humanity? Design must have a deeper and meaningful understanding of cultural values and relevance to its contextual imprint in order to serve its purpose.

At Zayed University, His Excellency Sheikh Nahayan Mabarak Al Nahayan Minister of Higher Education and Scientific Research of the U.A.E. reflected the following statement during the opening speech of the 15th annual Convocation in Abu Dhabi campus on October 4, 2012.

'These initiatives, once again, reiterate ***Zayed University's commitment to providing the nation's youth with the "best quality" of education*** *presented by top Faculty and coupled with advanced research and technology methods in order to ensure they are fully prepared for a plethora of employment opportunities in both public and private organizations upon graduation'.*

Ultimately, vital to the "*best quality*" in every aspect of our lives is to do little things correctly and exceptionally well, all the time, every time, so that each action produces a quality result. When every detail is faithfully attended to, and each step in the process is given absolute and undivided attention, the end result inevitably will be of the supreme quality experience. To know how to do something exceptionally well is to take emotional and intellectual pride in the endeavor at every moment.

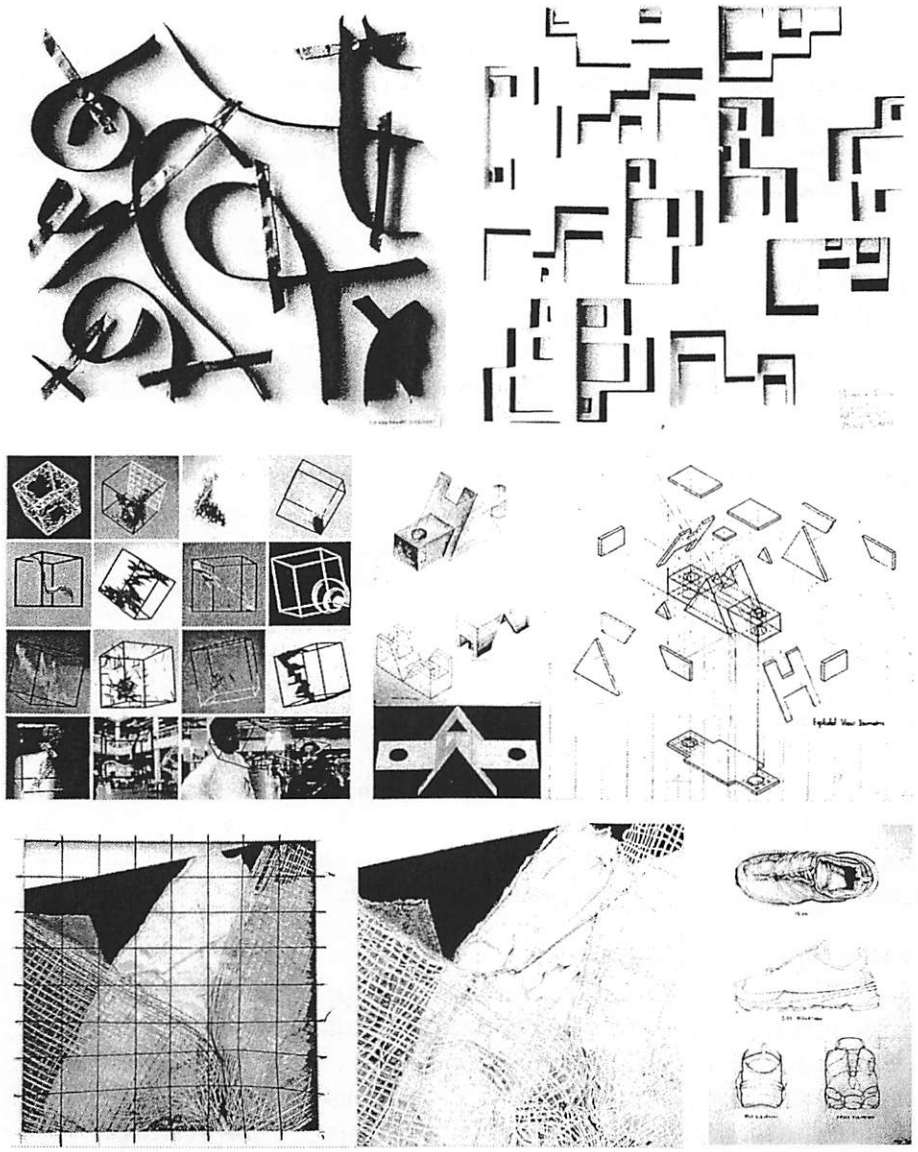
Contrast to design, which straddles between the fields of arts (subjectivity) and science (objectivity), art learning and creativity remains personal and as a reflective expression of our daily existence. Both are fundamental to the nurturing and sustainability of humanity. As a result, it becomes incumbent upon our institutions to cultivate our bright students through rigorous fostering and embracing of creativity. Though the sets of socio-cultural stimuli remains unique in shaping the creativity outcome, but the final outcome may largely depend on how the creativity is encouraged and nurtured through education, and the environment and physical resources which to sustain this education. There is no singular formula to define a perfect scenario to deliver the "best quality" education, but there are specific issues, which could ultimately guide the institution to the rights path of success. In teaching design principles, the foundations year become the most critical and challenging aspects of learning and teaching period in academia.

Design Foundations Education:

CACE (College of Art & Creative Enterprises) Foundations year is an autonomous one-year program that supports the common educational requirements for specified fields of design studies. Design teaching is supported by the inter-cultural diversity, cultural communication, cultural history, and information technology and media influence. The emphasis of Foundations design teaching is a broad-based education with primary focus on common design concerns and principles in order to

effectively prepares students for their chosen fields. To this end, the goal in successful Foundations design teaching is to develop not only individual talents but also National students with skills needed to become active and effective participants in the preservation and development of their respective communities. This education not only enable students the opportunity to express their productive talents, but also prepare them to perceive the world around them differently.

The Foundations year, general and wide-ranging in nature, utilizes four distinctive teaching format studio courses, history courses, science and social science courses,



Foundation Student Project – sabet_AUS&ZU 2013

and digital technology courses to provide a solid broad-based introduction to design study. The intention is to enable students to acquire key conceptual and practical skills through drawing (observational and analytical); painting; printmaking; video, photography; the use of computers; 2-dimensional and 3-dimensional design; graphic design. Building on this iterative method and self-discovery, students strengthen their competence in the fundamental skills and concepts of design analysis; and express their ideas by presentation and representation through studio-based exercises and projects. Students also develop familiarity with the historical and cultural implications and chronology of design conventions through in-class lectures and written assignments, and demonstrate basic proficiency in computer-aided design technology through exercises and project work in an information technology labs.

Foundations year is a period of self-exploration where ideas are critical and student's individual development is given high priority. An extensive and wide range of media is used to encourage student's sense of creativity, adventure, innovation, and discovery. In this introductory and diagnostic pre-degree program, personal development is encouraged through wide range of observation, enquiry and experiment. Provision of excellent workshop facilities promote research and the realization of ideas in a wide range of media and associated technology, including photography (still, cine and videotape), computer graphics, print, plastic, glass, ceramics and plaster, metals, woods, and hosts of other traditional materials. Aspects of the history of art and design are examined, as well as contemporary issues and application. Student design learning expectation and outcome assessment are monitored through:

- Satisfactory portfolio of artwork for entry to higher level courses in upper year,
- Use of series of sketchbooks and notebooks recording creative development,
- Ability to understand and use a range of technical skills and resources,
- Appreciation of theory and its relation to design practice,
- Understanding of the principles of presentation and display,
- Evidence of skills in time management and personal organization, and
- Continues students' assessment through formal MALO (Major Learning Outcomes).

Design teaching and learning methods are assessed continuously and modified as needed in order to offer the best academic grounding that ensures the nurturing and enrichment of students' unique talents in their own cultural setting. Additionally, there are professional development workshops, community and conference participations for the faculty to enhance their understanding of how to learn and teach through design. Students experience a wide range of teaching and learning methods including group learning, workshops and seminars, one-to-one tutorials, visits to museums, libraries, trade shows, galleries and studios, and participation in school trips and visit abroad. The program is further augmented by inviting a broad-based cross section of industry representatives, designers, educators and experts from the pool of national and international educational and cultural institutions, with a

wide range of experience, helping young students unlock the imaginative, visionary designing capability within them; and guide teachers through the fundamentals of design education and the design process.

Pedagogical Challenges In The Foundations Year

In the context of design teaching at ZU, especially at CACE (College of Arts and Creative Enterprises), this goal of "quality education" poses unique challenges and opportunities for the faculty, students, and administration as whole to ensure the delivery and learning of quality education in creativity. To individual faculty at CACE, this challenge becomes magnified and complex since we teach arts and design education to generation of National youth who may not have a formal understanding of the subject matter. The subjectivity of "art" pedagogy, in terms of production and perception, makes it challenging to teach in the traditional class setting. Art and design are studio-based education, and as such require unique set of pedagogical agenda, environmental constraints, and supporting resources to respond to the expected "quality" successfully. As such, faculty tirelessly stress;

A. Learning creativity through self reflection:

'As groundwater seeps to the surface and flows toward the stream in many rivulets, many expressive impulses run in many creative paths into the great stream of art. Neither historically nor according to psychological theory does there exist a beginning point; instead, there are many springs, which finally transcend all life[1].

Although students follow certain pre-set design criteria and academic requirements, the discovery of creativity in each student remains a distinctive challenge. The Foundations program urges and encourages students to pursue their own unique talent and self-learning/taught process in art and design. As history indicates, this phenomena of self-taught process refers not only to the isolated individuals of formal art but also to whole new generation of creators who are inspired by their distinctive upbringing and cultural background to uncover their own unique ways.

Art is increasingly being used by informal groups of societies to express their socio-cultural "urges"; it is becoming a more natural form of self or group expression, common outside the confine of museums and galleries. The urban graffiti covering trains and subways in New York and pictorial political messages on Berlin Wall are a few to mention. I believe, creativity is to be found not only in the realm of the cultured, experienced, or in the educated, but is an undeniable human trait, present within each of us from childhood onward. In the words of Dr. Hans Prinzhorn of the Heidelberg Psychiatric Clinic in his research paper: 'moreover, creative drive is a process that is affected by various basic human tendencies, either individually or in combination. Human creativity is a basic urge, in certain individuals, it will inevitably surface and nothing can stop it. Prinzhorn divided these tendencies or drive into six basic urges: expressive, playful or active, decorative or ornamental, ordering (rhythm and rule), copying and the need for symbols'.

1 Dr. Hans Prinzhorn, Raw Creation: Outsider Art and Beyond. Phaidon Press Limited, (London, 1996) p.74

B. Learning to design sensibly and sustainably:

Considerable research has shown that the attitude and values of design professionals are very different from those of the citizens and users they purport to serve. The difference between professional designer and user is more pronounced with unfamiliar user group and unfamiliar built environments. Our society has become more professionally specialized, more socially differentiated into ethnic, age-based, and spatial-interest groups. The professional training leads architects to see and think of the built environment in ways that are very different from the ways most other people do. It has become necessary to close the gap somewhat by including as integral part of students design knowledge about wide range of user groups, and about ways in which other less-highly trained people think about the environment. Most people are verbal thinkers, while designers are predominantly visual thinkers.

Education by design is a concept of education to prepare students for the design needs of diverse cultures we live in. It encourages the involvement of user and experts, especially people with disabilities, and older people, to help future designers learn how to design for people unlike one-self. An approach to design acknowledges the changes experienced by everyone during his or her lifetime. It considers children, old people, people who are tall or short, and those with various disabilities. It addresses the lifespan of a human being beyond the mythical average person. Educating by design brings a wealth of design education resources to help teachers make it a part of their curriculum, and as such it:

• Introduces students to the practice of sustainable design in the context of a range of existing professions like architecture, industrial design, management, engineering, planning and communications. They span many issues related to materials used in product manufacture and construction industries, product form, built environments, infrastructure (both material and informational), organization and spatial planning, inter-cultural design, cultural communication and media, business opportunities and managing change.

• Provides students with an in-depth historical and cultural understanding of the nature of the un-sustainability problems in the world we currently face.

• Equips students with a strong theoretical understanding of design and its relation to human conditions and habitation, environmental issues, and cultural concerns.

C Learning to become technological savvy:

Information technology roars ahead as the key economic driver of the early 21st century. It is surrounded by hype and infused with opportunism. Very few people are thinking in a relational way about the accumulative impacts of an IT dependent world — in terms of energy, greenhouse, toxic waste, electronic waste, to say nothing of long term health, social and cultural effects. Global issues in design thinking are communicated in an instant through various media, especially through Internet and email. This instant access to similar knowledge re-enforces the thesis

of commonality in design thinking. Primary design education and its constituent principles will more or less remain as universal phenomena; however, the emphasis on surrounding culture as the mediator must definitely augment students' design experience. I strongly believe, teaching sustainable design is the principle impetus behind a good and wholesome education and learning environment that in turns enriches student's personal development.

Technologies, organizational structures, products, images, modes of communication, ways of life— there is almost nothing today that has not been designed. Gaining a sophisticated understanding of the power of design is essential for sustainability, it is a central concern, and that will ensure students to:

• To develop contextual understandings to make judgments about the sustainable and the unsustainable.

• To learn how to adopt sustainable design thinking: built environments, product environments and service relations that can establish cultures and economies with the ability to sustain.

• To acquire in-depth understandings of the potentialities and limits of currently available methods such as environmental management planning; affect assessment and life cycle analysis.

• To discover how to look for design and business opportunities for sustainability even in conventional projects and how to present arguments for sustainability to clients and colleagues.

• To be able to critically evaluate and selectively use approaches such as design-for-environment, cleaner production, and energy efficient building components and technology. Furthermore, sustainability not only minimize the negative ecological impacts of a building on environment, but to turn a building into a source of positive ecological impacts, promoting more sustainable ways of living and working.

• To evaluate the impact of design and innovation on society and its ethical outcome. From industrial to architecture and construction, the communication field is diverse and all encompassing. Placing tools to illustrate the many design concepts into hands of students stimulates creative problem solving and multi-sensory communication. It not only allows them the opportunities to express the strength of their unique and creative thinking but also adapt into the world in which they live differently.

D. Learning cultural sensitivity to promote conscious design:

Last but not the least, design education must promote a deeper and wider understanding and reverence to cultural values and relevance to practical, physical and emotional issues in order to serve man's need. It is equally critical for architecture educators and students to examine and develop clear understanding of regional architecture role as "mediator between cultures and incubator of cultural

transition". The action of imposing new ideas and technology on the indigenous architecture and the reaction of indigenous culture to the imposition of new ideas must be investigated as matter of design pedagogy to prevent further weakening in the modern architecture. Point incase is illustrated in the article by Khalil K. Pirani, 'Speak Out Designing Abroad'[2].

As Vector V. Papnak, in his essay of *Design for Real world: Human Ecology and Social Change* argues that 'failure in socio-cultural thinking, environmental consciousness, design ethics have already led the architecture profession into a global crises'[3]. Explicit focus on environment-behavior relations has to become an important goal of architecture teaching. New, back to basics, and innovative thinking must be imbedded in the architectural education to deal with the long overdue social and physical ills of our society. Until recent changes in architectural education, the system of teaching was apprentice-like indoctrination in the modern style as if it were truth. Fortunately, in some institutions, architectural education is now much broader and deeper, and has begun to highlight the very depth of human suffering and needs. We have isolated ourselves from the real world of Tsunamis and hurricane Katharina's, barricaded ourselves from real human problems, and we have isolated very small parts of socio-behavioral-environmental problems to work on, being content to manipulate a few windows or courtyards when this does not to plumb the depth of human experience and human needs.

Challenges beyond the Foundations Year:

As Foundations students progress from Foundations year on to the upper design programs and beyond, teaching and search of creativity continues but transforms into more dynamic and encompassing social, political, technological, and financial realities in order to prepare graduating students for the real world of professional practice. The unfortunate event of September 11 (Trade Center) precipitated an examination into relevance of our lives as citizens and as designers - it begun to dissolve dichotomies between people, between tradition and modernity, and between East and West that are often more imagined or constructed than they are real.

Design students have to be educated globally in the context of world events and oriented on the issues of community outreach programs. Although, Lee D. Mitgang in his critical essay 'Saving the Souls of Architectural Education'[4] argues three important architectural education observations in the USA, but the references are as critical and applicable to the future of global architecture teaching, he notes that:

'An emotional, often-painful clash is taking place at architectural schools across the country amid growing doubts over whether the traditional educational environment is preparing students for rapidly changing world outside...The profession badly needs more flexible,

2 Khalil K. Pirani, Speak Out Designing Abroad: Architects Need to Design With Greater Sensitivity to Foreign Cultures, Architectural Record (05.1999), p. 36

3 V. Papnak, Design for Real world: Human Ecology and Social Change, (New York: Pantheon Books, 1971).

4 Lee D Mitgang, Saving the Soul of Architectural Education: Four Critical Changes Face Today's Architecture Schools, Architectural Record (05.1999), p. 121-128

worldly, sympathetic, and diverse graduates, too many schools remain wedded to shopworn traditions and curricula that glorify a single model of architect-as-designer, give short shrift to liberal studies, offer only brief nods to non-Western history and theory, neglect the rich potential of computer technology, and stress competition for more than teamwork.... Focus of the debate over architectural education has often been on the bitter divisions between schools and world of practice, the more alarming gap is the one dividing both schools and the profession from the needs of the public which architecture could so effectively address..... The time has come for educators and practicing architects to close ranks around addressing four of architecture education's toughest challenges, each essential to the goals of leading the professions to a future of greater relevance and responsibility'. **He further suggests that;**

1. *Use computer to connect students to a world of viewpoints.* What deserves even more attention is how computers, as tools of global communication and information-gathering, can open studios to many cultures and view points, and over time, even help transform the teachers-students relationship. Along with their impact on making design a more integrative process, computers, a tool of information, communication and analysis, can open studio as never before to the concerns and perspective of communities around the world.

2. *Make excellent teaching a top priority....* The focus for reviewing teaching should be on creating a more capacious academic and scholarly climate on campus that encourages professional faculty to have a better balance of background, including practical experience and PhD's. It is up to the administrators to establish a harmonious atmosphere in which diverse faculty can coexist and learn from each other's strengths and experiences, rather than becoming fictionalized....Furthermore, schools of architecture would benefit from sustained teacher training, exchange programs; matching the right teacher in appropriate studio level will be extremely important in instilling enthusiasm and helping students make the transition to young designers. Finally, it is imperative that teachers serve as models for connecting learning to larger purposes of the profession and communities. A program that encourages faculty to be community activists which to highlight architecture profession to deal with social and political issues.

3. *Connect learning to life.* The most essential challenge is to change the content and culture of studios to prepare graduates to practice competently, as well as to lead the profession to a broader definition of its ideals. Faculty to spearhead and lead students to perform meaningful community services to work teaching and hands-on experiences. This reality of how community-oriented design studios can transform the outlook of both future architects and client.

Conclusion

In the context of teaching and learning of design, the process involves creativity in parallel with rational sensitivity, a critical concern in design education which to amplify the creativity of the participants. Undergraduate design education is a process of teaching and learning which provides guidance in, and experience with,

methods for generating new ideas for a built environment that effectively take account of both functionality and aesthetics. The challenge and purpose of design is the creation of a representational dialogue between people and products, services and systems encountered in everyday human experience. This creation is grounded in a process, which encompasses a formal approach towards solving unique design conditions. These problems can relate to issues of complexity, or emotion, or visual aesthetics, and the solution is often manifested in a formal way. The core value of design education ought to be cultivating designers capable of producing meaningful ideas at any scale, whole or part. After all, the primary and the most important justification for design as a profession is to provide better environments for man, community, and society. Rapoport (1994) notes 'not only does knowing what is better require knowledge, but also knowledge is needed in knowing why it is better, better for what, and better for whom. Thus, design education should be regarded as the manifestation of the ability to conceptualize, coordinate and execute the idea of creation rooted in the tradition of humanism, again, at every scale.

Successful teaching and learning of design in architecture and interior design programs takes a holistic view and requires critical investigation of building and space, and components and systems. The following partial and interrelated guidelines may provide some base of dialogue for detailing building components.

Design Synthesis: It 'attempts to organize, manipulate, prune and filter gathered data into a cohesive structure for information building. This requires a number of tools and techniques, many of which are subjective. The Synthesis phase of the design process requires the ability of the designer to cross several increasingly difficult chasms, in the pursuit of understanding. This pursuit is both selfish and altruistic at once. The designer seeks to achieve a sense of knowledge acquisition in order to adequately begin the process of ideation'. [5]

Creativity and Invention: 'Creativity is to be found not only in the realm of the cultured, experienced, or in the educated, but is an undeniable human trait, present within each of us from childhood onward. Moreover, creative drive is a process that is affected by various basic human tendencies, either individually or in combination. Human creativity is a basic urge, in certain individuals, it will inevitably surface and nothing can stop it. Prinzhorn divided these tendencies or drive into six basic urges: expressive, playful or active, decorative or ornamental, ordering (rhythm and rule), copying and the need for symbols' [6].

Complexity and Clarity of Intention: Excellence in any endeavor is a production in which every little detail tells a story about one's intention, commitment, and character. A careless or cavalier approach to details is the kiss of death for progress. Providing clarity of intent can be particularly challenging when working on large-scale projects that involve a high level of technical complexity. Visualization of

5 Kolko, Jon - Thoughts on Interaction Design. Brown Bear, LLC (2007; p11)
6 Hans Prinzhorn - Raw Creation_Outsider Art and Beyond. Phaidon Press Limited, (London, 1996)

intention in the form of graphics, scale models of a detail enables clients to gain a much broader understanding of the wider implications of a project.

Research and Investigation: Learning from the past can advance our present knowledge to sustain our future. 'It is timely for architecture and design schools to have bigger ambitions. The design professions do, as indicated in their strategic plans for the future. They understand that the world is waiting. New city design, robotics, advanced health care, sustainable building design, green transportation, renewable energy, biotechnology, artificial intelligence, next generation ventures — all these zones of innovation will need architects, interior designers, landscape architects, and product designers to bring design entrepreneurship and positive change to this time of opportunity'[7].

Aesthetic and Functionality: Design is the creation of a representational dialogue between people and products, services and systems encountered in everyday human experience. This creation is grounded in a process; the process is a formal approach towards solving problems. As John Kolko argues that 'these problems can relate to issues of complexity, or emotion, or visual aesthetics, and the solution is often manifested in a formal way'.

Economy and Sustainability: Sustainability has become part of our collective worldview in recent years. As such, a new map is needed to navigate the dynamics of change in the making of cities, buildings, and products. The interconnectedness of human activity requires designers to investigate design intentions and decisions to minute details in order to conserve and sustain energy and consumables.

Order and Flexibility: Whether it is for a residence or a workspace, the job of the designer is to assist the client in defining his or her place to be. It requires sensitivity to the needs and desires of the people who use the space, as well as an understanding of the way the built environment works.

Materiality and Technology: The choice of materials and the way they are assembled are not arbitrary. The designer is required to exercise value judgments, identifying what is required in a given situation and weighing up the likely effects of different choices. Materials and surfaces characterize architecture and spatial quality. They are the jewels in the crown upon which it is judged. Material optical and haptic qualities regularly determine the success or failure of a project.

Environmental Influence: Design solution should be fully sustainable and adaptable to its physical and cultural context; and it must adhere to the site topographic conditions and the existing circulations. The project must explore indigenous building typology, material characteristics, and passive environmental control systems as well as self-sufficiency. The design should take a holistic approach in order to provide a healthy environment.

---

7 James p. Cramer, Hon AIA, Hon IIDA – Design Intelligence, Publisher and Founding Editor

Cultural and Contextual influences: Design is a creative response to a particular set of constraints, an expression of the values of the people that made it. We must question how significant a role context should play in architecture and its constituent part. We should debate amongst ourselves theoretically, but we can also examine real-world examples of architecture that are contextual and non-contextual, that is: structures that either give consideration to their surroundings, or disregard them. Creating places and spaces that enrich the lives of the people who use them is the foundation of Architects work. Every building can and should engage in a dialog with the history, beliefs and needs of a particular place and time.

Case Study: Fourth Year Studio Project – Social Architecture, "Kabul Cultural Center"

Today, the most part of Kabul city still remains shattered beyond one's imagination. It is difficult to envisage this land as it had been: A center of empires, a birthplace of art styles, a crossroads of culture and commerce. Once a thriving and dynamic city full of life, work, and pleasure, it has now transformed into polluted urban chaos - overcrowded by thousands of IDPs and returned refugees, business squatters and fortune seekers. Most of the city's physical assets lie in ruins; over half the housing stock has been damaged or destroyed. Mosques, schools, hospitals, heritage structures, factories and public buildings have not been spared from the destruction. Public utilities like transportation, water and sanitation are barely functioning and meeting only the needs of less than one fourth of the population.

Latest statistics reveal the horrific extent of the legacy of war, and advocate a clear and pressing need for immediate and effective bold planning of urban renewal. Since the fall of the Taleban regime, donor nations have attempted to invest vast sum of resources for the re-construction purpose. Unfortunately, a great sum of the aid is consumed by activities other than meaningful physical reconstruction of manageable neighborhoods at the grassroots level.

Kabul is an extreme case of being both traditional and modern, while retaining a material culture that is both alive and deceased, an ever-changing culture for centuries. This ancient city with its historic buildings and monuments, is a work built upon itself; it is a hybrid urban form resulting from the actions of several design intentions and building campaigns by the inhabitants through ages. The strengths of this city are its ability to hold a flourishing array of diversity and intensity. This diversity occurred as the city became the mixing grounds for distinct cultural and social entities, a place of discourse for the locals and foreigners.

Cultural identity and a sense of belonging are undeniably one of the pillars of cultural development. It should be emphasized that cultural identity contributes to the economic, political, and social maturity of a nation, hence, the safeguarding of cultural resources becomes imperative. Community-based Cultural Centers around the world highlight the importance of local people as generators and bearers of culture. Rooted in local initiative and volunteerism, the goal of these Centers is not

only preserving culture and revitalizing living traditions such as oral history, music and dance, but also laying the foundations for broad-based socio-economic change, using common heritage as a resource for development.

The preservation and revival of cultural identity are just as important as a fast connection to global economic and social developments, not to mention the accompanying demands on the old town as the representative image and service, and a tourist center of the city. Community Centers often act as a nexus for tourism and cultural production, especially for arts, architecture, and crafts. In some countries and regions, establishing such centers typically is a collective process of reflection, acquisition, identification, and valorization by the community for the community.

A Cultural Center should not be thought of just an interpreter of history, but rather as a place dedicated to instruction and knowledge distribution. Tourists and citizens must find and share a common ground in the dynamics of a heritage establishment. In this situation, neither tourists nor citizens are alone. Historical cases have proven that 'this successful coupling of tourism and heritage has resulted in a revitalized heritage conservation and promotion movement, economic development opportunities in traditionally depressed sectors and a heightened sense of cultural and community identity. Mac Patry notes that for the first time, tourists were able to have a traditional meal in a Maya village, see how the ancient art of Maya beekeeping was done, hear the music of campesinos who had never played for a foreign audience before and walk in a campesino's agro-forestry plot and ask him questions about his practices'[8]. Therefore, the trend to strengthen cultural identities beyond merely looking at static exhibition, the visitor is now invited to live the experience, to discover other areas of culture, gastronomy, and education; thus, the need to offer an integrated product and service, with a complete but varied destination, an all-encompassing and unique experience is desired.

The goal of establishing a new Kabul Cultural Center stresses a 'sense of place' that nurtures, safeguards and promotes Afghan living tradition, ancient culture, and heritage resources. Referencing Anna Soave of Aga Khan Trust for Culture, Serageldin and Shluger, stress the importance of the function of culture in the development of a 'sense of place'. 'The sense of place and feeling of roots are major components in building social cohesion, or social capital. The concept of roots introduces the physical dimensions of the location, the building, and the spaces that have special significance to people and that help define identity and sense of belonging'[9].

This proposed medium-sized Kabul Cultural Center is composed of three distinct yet interrelated components (Museum, Library, Residence) with shared public services and activities. Attention should be given to the special character of the Center, a quality by which it is in future to be distinguished in relation to its collections

8 Mac Patry, International Coordinator, Eastern Ontario Model Forest, Kemptville, Ontario Museums and Sustainable Communities, Canadian Perspectives- MUSEUMS: A Link between Living Cultural Heritage and the Tourism Industry

9 (Serageldin Ismail, Shluger Ephim and Martin-Brown Joan eds. (2001), The Historical Neighborhoods in Kabul: Planning Efforts and Negotiation Process, 10th Architecture & Behavior Colloquium, Monte Verità, Ascona, Ticino, Switzerland, (Op. cit; p. xii)- Anna Soave, Aga Khan Trust for Culture

and services. This may be of several kinds such artistic modes, cultural artifacts, archaeological findings, technical and scientific agendas, and, especially, response to various needs of cultural activities in the community.

Hence, the programmatic mission of the Kabul Cultural Center is to:

• Draw on memory and at the same time provide nurture for the future, a rich contribution to the fabric and spirit of the place and Afghans.

• Enable Afghans, especially those reside in Kabul, to become self-sufficient, productive participants in their community while preserving and enhancing Afghans cultural heritage and their sense of belonging to a community.

• Be an active place, an institution suitable for a number of cultural purposes (theatrical performances, lectures, exhibitions, concerts, meetings, courses of instruction, et.) where the community can engage in civil and intellectual activities and discourse.

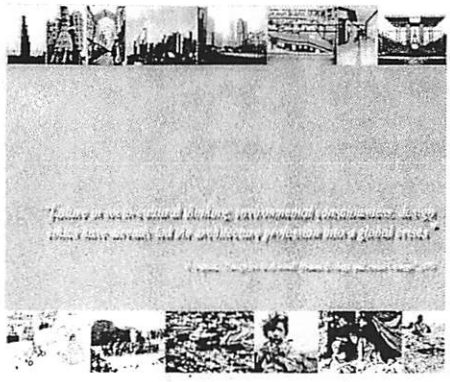
• Offer a variety of active educational and cultural programs range from lectures, workshops, and classes to art and artifact exhibitions, dance and musical performances, and cultural exchanges- all of which enable members of the Old City, the general public, and tourists alike to gain a deeper knowledge of historical as well as contemporary Afghan culture.

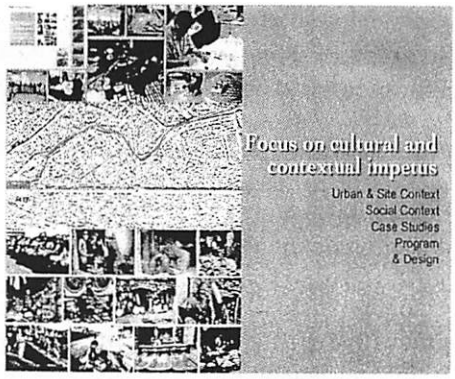
• Capture and make the Old City history vivid, offering varied ethnic traditions in demonstrative tangible ways; to exhibit publicly and affirm the value of life experiences passed down through generations, which had been hidden from the outside world in the confines of the home. The place can serve to create awareness about Afghans heritage, bringing its concerns into the open, creating new spaces for vital cultural activities and dialogues, and open a clear path to continue community traditions into the future.

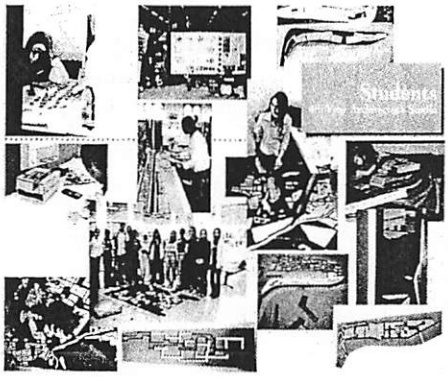
• Record and sustain the Afghan history and cultural heritage, offer community engagement and promote public interest in community building, and provide exhibits about indigenous inhabitants. Sponsor and promote certain events in conjunction with various cultural organizations and community groups in the city.

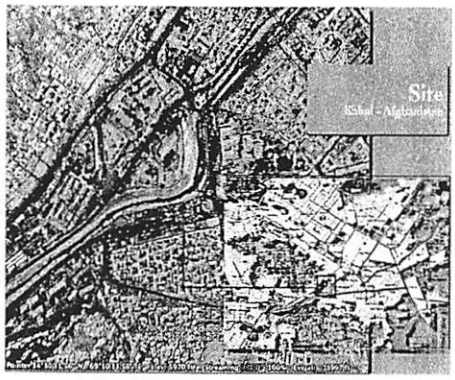
• Partner with the governmental and educational institutions to improve the mission and vision of the community's ideal and aspirations. Stimulate cooperation and expand resources and educational offerings among the many local interest groups to enhance perceptions of Afghan culture and history.

• Host organization for visiting specialists and scholars from local and international community such as film producers, artists, writers, architects, musicians, educators, and craftsmen. The place should provide venues to Afghans and foreign professionals are able to meet and to exchange ideas and experiences at conferences, seminars, and receptions.

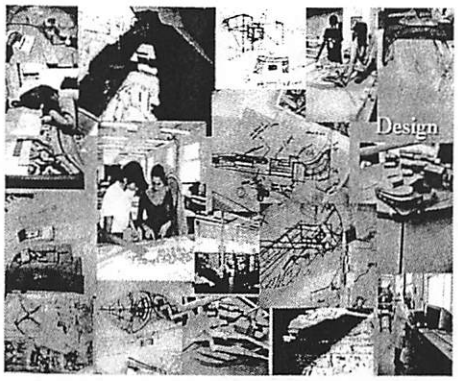


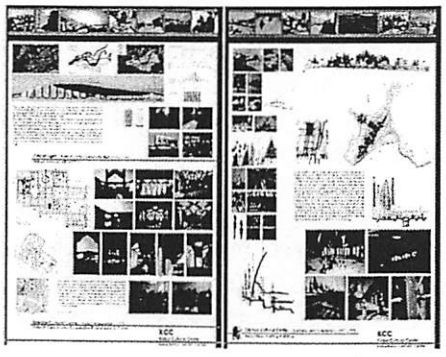

Focus on cultural and contextual impetus
Urban & Site Context
Social Context
Case Studies
Program
& Design

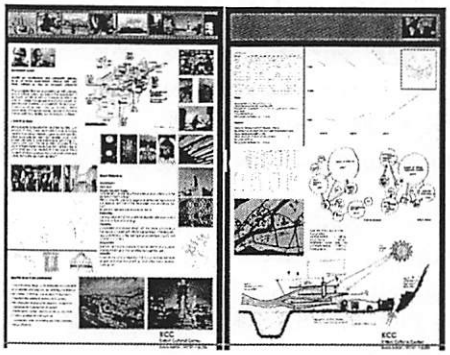

Students

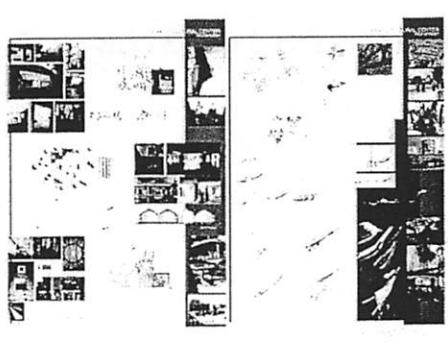

Site


Project

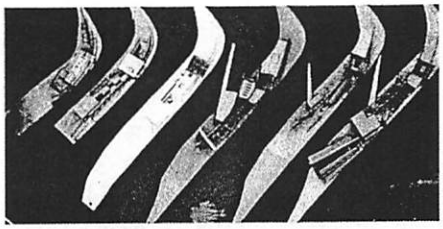

Design



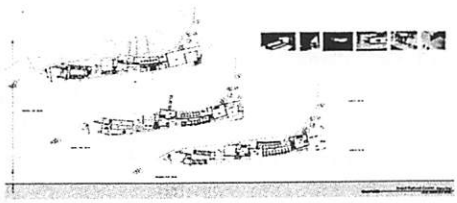




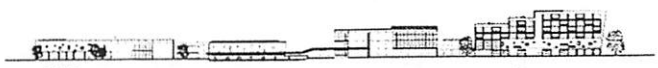
Analysis & Process

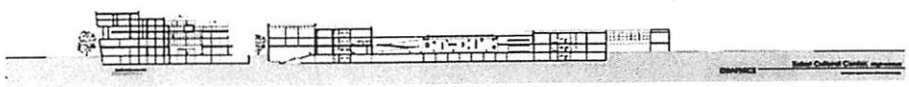


Study Models

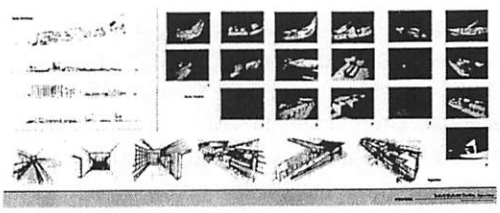


Final Design I

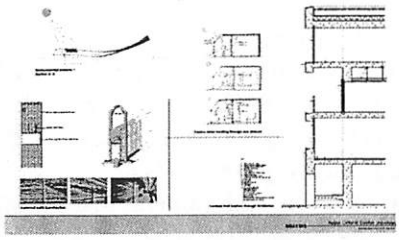




Final Design II



Final Design III



Final Design IV

4th Year "Social Architecture" Project – sabet_AUS 2011

Philosophical Foundations for Design Education

Thomas Cline
The University of Oklahoma

Introduction

While this paper has specific goals that I wish to achieve, it must be considered as only a small portion of a much larger project related to providing a foundational understanding of design education. Both an historical exploration of design education and practice coupled with a philosophical investigation of the conditions that distinguish design education should provide a more robust understanding of what it means when we talk about design. There has been much written on design teaching, on design learning, on design thinking, and even on design knowing (see Lawson, Cross, Gregory, Simon, and Schön among others), but little has been written on what grounds all of these variously related ideas in relation to design education. Providing a foundation for design education allows us to have critical conversations about teaching methodologies, learning strategies, and most importantly about the conditions that are necessary and sufficient to distinguish design education as essentially different from other forms of education. It is an awareness of and response to these essential differences that, perhaps, help us to more effectively provide students with the skills—technical and intellectual—to become competent designers and provide appropriate responses to the complex problems associated with creativity, autonomy, and function.

In attempting the abovementioned clarification of a foundation for design education, this paper will concentrate on explicating a more finely parsed kind of philosophical kind. I wish to distinguish design kinds as a subset—much like art kinds—of the broader category of artifact kinds. In refining this taxonomy, I hope to situate design kinds as providing both ontological and epistemological foundations for design objects and, as such, to act as the distinguishing characteristics that ground design education. I will argue that design kinds are objective kinds but are not kinds that are mind-independent (like natural kinds); this argument will employ the works of Amie Thomasson, Sally Haslanger, and Charles Mills in establishing the structure of design kinds. Further, I will argue that design objects, objects belonging to design kinds, are real. If I can show that design kinds are objective and that design objects are real then it becomes possible to have objective knowledge of these things. Objective knowledge, generally held to be the predominant form of knowledge that warrants any kind of truth value, allows a means of grounding design education.

While the primary goal of this paper is the establishment of design kinds, I believe that it remains necessary to situate the necessity of design kinds within the broader project stated above. To that end, I will argue several things. First, in common practice both knowledge and education have become polarized to a binary (and for

the most part irreconcilable) set of distinctions that limit both what it is to know and what it means to educate. The predominant model of this binary appears to be codified in C.P. Snow's lecture *The Two Cultures.* I will then explore the theoretical establishment of design as a 'third culture' as proposed by Nigel Cross and ultimately conclude that this third culture, while appealing, does not yet have the strength necessary to ground design education. I will then discuss the philosophical conditions necessary to count knowledge as valid and, likewise, the common perceptions—and misperceptions—of what counts as objective knowledge. This will employ the work of Thomas Kuhn to illustrate the falsely held belief that scientific objectivity, and thus scientific knowledge, is somehow pure and, therefore, can act as the standard for what counts as valid forms of knowledge.

I will then address the taxonomic nature of philosophical kinds, particularly natural kinds and socially constructed kinds. Natural kinds will be considered those kinds that are not dependent on human minds for their existence; socially constructed kinds will be those kinds that do not appear to exist without reference to human minds. In establishing these kinds, I will then explore the role of artifact kinds as a means to addressing objects in the world that appear to be both mind independent and, in some way, partly dependent upon human intentions. From artifact kinds, I will further differentiate design kinds as a means to explicating the reality of design objects. From this position, I will argue that the objectivity of design kinds and the reality of design objects provide an epistemic foundation for design knowledge.

Educational Cultures

In his 1959 Rede lecture at Cambridge, C.P. Snow proposed two existent cultures—one of literary intellectuals and one of natural scientists (Snow 2012, 4). This bifurcation of cultures epitomized an already existing and equally divided understanding of what counted as knowledge; they represented subjective knowledge created from within the literary tradition and objectivist knowledge produced through observation and exploration in the natural sciences. Snow's two cultures have, over time, come to represent a distinction in educational practices. This seems a reasonable—if not over-simplified—application of Snow's proposal as the point of intersection for these two knowledge cultures can be most readily understood within the realm of education. It was in the academy, especially in the years prior to and immediately after Snow's lecture, that educational practices became completely polarized and, resultantly, fully codified these two knowledge traditions as representational of two distinct educational cultures.

As a result of the two culture characterization of knowledge and its application to educational practices, education has been theorized as consisting of two distinct areas, two educational cultures with fundamentally different interests. These areas, broadly defined, are education in the sciences and education in the humanities. Areas of educational interest that fall outside this binary pair have, generally, been given very little philosophical consideration. There seemingly have been very few questions asked about the nature of other educational areas; it has been assumed that they—in some way—fall within a range that is established by the humanities/sciences binary and, as such, require no significant exploration or differentiation.

Design education has been one such philosophically marginalized area. It is my contention that a philosophical exploration of design education might help position that education within the broader academic landscape—as an area distinct from education in the humanities and education in the sciences—and, as such, will establish a more substantial foundation for knowledge in design, for design thinking, design teaching, and design learning. In establishing a philosophical foundation for design education—in showing that design falls within a philosophical taxonomy that counts design kinds and design objects as objective and real—knowledge about design can be seen as objective and real and can, therefore, be discussed critically, can be judged as to its effectiveness, and can be objectively amended as a result of this criticality.

Design Education as a Third Culture (one of many educational cultures)

Nigel Cross argues that the two culture educational binary has had significant influence upon 'our social, cultural, and educational systems' (Cross 2006, 01). Particularly, he argues that educational specialization in one or the other of these binaries limits the knowledge available to learners; broad educational models that tend to foster creative and critical thinking have been abandoned in favor of very narrow specialization that tends to be very narrowly self-perpetuating. As knowledge in the sciences holds a privileged cultural position, specialization has marginalized non-objectivist knowledge and, resultantly, may have limited the ability of many of those pursuing specialization to think in critical and creative ways. As a result of these limitations, Cross theorizes a third culture, education in design, that might act to validate what Bruce Archer noted as 'the collected experience of the material culture, and the collected body of experience, skill, and understanding embodied in the arts of planning, inventing, making and doing' (Cross 2006, 01).

Planning, inventing, making, and doing should be seen as acts of design and, additionally, equivalent to the critical and creative thinking necessary for innovation in the creation of design objects. This material culture of design is representative of technology, what Archer calls the 'synthesis of knowledge and skills from both the sciences and the humanities, in pursuit of practical tasks' (Cross 2006, 02). With the limitations imposed by specialization and the prioritization of scientific ways of knowing, technological knowledge as a synthetic project has been marginalized as a valid form of knowledge for the material culture, for design. Design knowledge, it appears, is in some ways dependent upon objectivity, materiality, locatedness, and specificity (not specialization) that is arrived at through ambiguity and idiosyncrasy, as well as practicality and appropriateness. Education in design, likewise, appears to be dependent upon an objectivist and materialist conception of design knowledge and design objects.

In response to a report issued by the Royal College of Art that suggests 'it would not do to accept design as a sort of ragbag of all the things that science and the humanities happen to leave out' (Cross 2006, 5-6), Cross proposes that design must have its own inner coherence if it is to be seen as comparable in both intellectual and educational terms. This implies that a synthetic designation for design—a synthesis of the

sciences and the humanities that form the boundaries of technology—is not strong enough to accomplish the goals of intellectual and educational parity; design as a discipline must stand on its own terms. While Cross goes on to discuss the various ways that one might differentiate design knowledge from knowledge in science and knowledge in the humanities, he never reaches a foundational bottom. His work appears to begin to define design knowledge in contrast to other forms of knowing without interrogating what it means to have knowledge or how that knowledge might overcome the marginalization caused by a knowledge model dependent on scientific objectivity. While these contrasts are useful, they do not place design knowing on its own terms but only in relation to other knowledge types.

Cross ultimately sets design knowledge apart from other forms by couching it in the poetic. He states that 'a significant branch of designerly ways of knowing, then, is the knowledge that resides in objects' (Cross 2006, 9)[1]. In this sense, he seems to equate design with the often heard notion that artists free their works from the material medium; Michelangelo took up chisel and mallet to free the David from a block of marble where it had always been waiting. Even earlier, and more poetically, Pygmalion freed Galatea from an ivory tusk and she eventually was brought to life through the intersession of Venus. While this mythology does a great deal, perhaps, to elevate the cultural status of designers, it does very little to even reach the goals established by Cross. It certainly cannot act as a foundation for knowledge. Cross indicates that 'teachers of design have a responsibility to be as articulate as they possibly can about what it is they are trying to teach, or else they can have no basis for choosing the content and methods of their teaching' (Cross 2006, 9). This responsibility obligates design teachers beyond the simplification of cultural status. Cross concludes his search for designerly ways of knowing by stating that we have just begun to 'make rough maps of the territory' (Cross 2006, 13); however, I would argue that without looking deeper we have no idea where the territory lies.

In order to formulate at least one possible foundation for understanding design education—a foundation that moves beyond a two-culture conception of education and begins to allow for a third culture whose existence is founded upon its own authority—it appears necessary to explore philosophical understandings of what design might be. In theorizing any independent third culture, it appears that it would be beneficial to explore a metaphysical distinction that differentiates design education from the binary categories of science education and humanities education. While this science/humanities binary is a culturally perceived one that I hold to be falsely inflated, it nonetheless must be addressed as it does express the common perception of academic practices. In response to this inflated binary, design education might best be viewed as an independent entity, an educational discipline that in some minor ways draws—synthetically—from both the humanities and the sciences without being fully subsumed by or metaphysically dependent on either.

---

1 A more generous reading of Cross might accept 'the knowledge that resides in objects' as a reference to material properties, however, even this generosity does not offer the strength of theory needed to differentiate design education; to ground design education in a way that it can be objectively critiqued.

Philosophical Considerations

As it is normally considered, practices in the sciences are structured around a realist understanding of the world coupled with objectivist methods of inquiry that, necessarily, produce universal truths—explanations of the natural world that are not dependent on human minds or beliefs for either their ontological or epistemic authority. In an age that defines itself relative to progress and capital accumulation, it is this objectivist view of knowledge in the sciences that has come to represent the predominant model of our cultural acceptance of any form of knowledge. In other words, our culture has accepted that the only knowledge worth knowing is universalizable knowledge that is produced through objectivist methods of inquiry associated with contemporary scientific practices. From this model, it follows that science education, in some way, maps onto the standard conception of scientific practice; i.e., it is both realist and objectivist. However, recent work in the history of science argues that this common-sense model of scientific practice—that it is fully objectivist—is a model based upon a cultural misunderstanding. In some ways the work of Thomas Kuhn might be seen as a response to the culturally perceived misunderstandings of scientific methods and processes and, thus, to the simplification of knowledge to include only objectivist knowledge types and to the effect of this misunderstanding on both science education and on the acceptance of the veracity of any other knowledge types.

In *The Structure of Scientific Revolutions*, Kuhn argues that our understanding of the actual processes of scientific practice is misguided. He notes that this misunderstanding is the result of a perception of science as the continued 'accumulation of individual discoveries and inventions' (Kuhn 2012, 2). Kuhn then argues that history does not bear this out; science becomes a series of revolutions that drastically undermine previous knowledge paradigms and slowly replace them with new forms of knowledge of the physical world. Further, Kuhn insists that context—individual and historical—plays a significant role in the processes of scientific progress. While objectivist practices do act to restrict what counts as science, Kuhn's claim for context holds that 'an apparently arbitrary element, compounded of personal and historical accident, is always a formative ingredient of the beliefs espoused by a given scientific community at a given time' (Kuhn 2012, 4). In this sense, science cannot be seen as fully objective; individual and historical context require that some form of subjectivism exists in all scientific endeavors. As such, it must be recognized that the currently accepted model of scientific objectivism as underpinning a sort of universal validity for all knowledge claims cannot be held as valid. Objective knowledge, however, can exist outside the model provided by the sciences. Scientific objectivism as construed in common perception is a misapprehension of knowledge that severely limits both our cultural and educational understandings of what it means to have knowledge.

In contrast to objectivist scientific models of knowledge construction and educational practices, knowledge in the humanities has been positioned such that it is not thought to have any meaningful value; the product of its knowledge outcomes are generally perceived as subjective, as local, as non-natural (and perhaps non-

real as a result), and as fully dependent on human minds and beliefs for both their ontological and epistemic authority. Humanities education, likewise, maps onto this standard understanding (at least in the literary tradition) of humanities practices—practices generally perceived as subjective and non-natural. Humanities education has become marginalized as a result of the marginalization of its particular forms of knowledge production. In some ways, this conception of humanities practices as non-natural/non-real has been called into question by the work of Sally Haslanger when she asserts that social kinds are natural kinds. In this way, she holds that social kinds are objective and, as such, can have facts associated with them. We can have objective knowledge of social kinds. I will explore this assertion, and its relation to design kinds, below. However, as a point, this equation of social kinds with natural kinds does seem to allow for an objectivist view of humanities practices and for a reconceptualization of what counts as knowledge in the humanities. Further, it allows for a reconceptualization of educational practices in the humanities. Likewise, I intend to suggest that this same allowance is appropriate for design kinds and, therefore, for design practices and education.

Education in design, as independently existing between the binaries of science education and humanities education, must address the ontological and epistemic authority that distinguishes it from the sciences/humanities educational binary and positions its everyday understanding of design knowledge and design objects as things that are objective, that are material, and that are real. Understanding design education as addressing these particular ontological and epistemic issues appears to require one to first differentiate design practices from science and humanities practices. It then requires an acceptance that educational methodologies in design map onto those design practices. It appears most productive to attempt to situate design and design education as some metaphysical kind positioned between an already existent practice and education in the sciences and an already existent practice and education in the humanities. I believe that this positioning can occur if we consider education in design to be a socially constructed kind that is located within a particular constructivist ontology.

Socially Constructed Kinds

In order to understand design education as a kind that possesses a metaphysical position, it is necessary to situate it within an accepted understanding of such kinds. Here I take metaphysics to be equivalent to ontology—an exploration of the kinds of things that exist. Ontology is generally understood as relating to the particular human need to provide a framework for understanding that which constitutes the structure of the world (Fetzer and Almeder 1993, 101)—for understanding the kinds of things that exist and how they exist in relation to other kinds. I will describe my metaphysical situating of design education and practice (as representational of design knowledge) as a process of sorting. My sorting criteria are derived from Charles Mills' taxonomy of the metaphysics of race. The initial sorting, albeit a course one, of ontological kinds is between those things that exist objectively and those that do not—anti-objective kinds. It is generally held that kinds all of whose inherent properties exist apart from any human minds (rocks, trees, other natural objects) are

natural kinds and, as such, are objectivist kinds; those that fully depend on human minds for their existence (laws, race, gender, maybe philosophical thoughts) are, therefore, not natural kinds and are then thought of as anti-objectivist kinds.[2]

This initial sorting, however, appears to exclude some kinds that we want to think of as objectively existing and some objects that we want to think of as real. It appears that there are some entities that share both mind-dependent and mind-independent qualities. These entities seem to be both non-natural and open to objective analysis. Some non-natural kinds appear to be only partly dependent on intentional human minds; additionally, they appear—in some way—to be dependent on the physical properties of natural kinds for their existence (*graphite* pencils, *wooden* spoons, *brick and mortar* architecture)—artifact kinds after Amie Thomasson. While artifact kinds don't seem to be social kinds in the same collective ways that laws are thought of as social kinds, it is 'part of the very idea of an artifact that it must be the *product* of human intentions' (Thomasson 2007, 1). As such, artifact kinds can be thought of as objectivist kinds per Mills' taxonomy.

It is these non-natural kinds that are in some way dependent on intentional human minds for their existence and additionally are dependent on some necessary physical, material, natural component (things that belong to natural kinds) that I want to call design kinds. Philosophically, anti-objectivist kinds, artifact kinds, and design kinds can be understood to be socially constructed kinds. Design kinds, as socially constructed kinds, depend on intentional human minds to supply at least some of the facts and beliefs concerning the things that are counted as members of the kind. Design kinds can be thought of as consisting of physical artifacts that are constituted by adaptive or creative physical actions on material objects—individual or serial—that are intimately related to intentional ideas produced in human minds. Design objects—the physical artifacts belonging to design kinds—can be produced to fulfill pragmatic needs (functional) or to stand in for other socially constructed, but non-physical kinds (symbolic).

As a result of Haslanger's theorizing social kinds as natural kinds Mills' taxonomy of metaphysical kinds, and Thomasson's artifact kinds, design kinds can be held as objectively knowable; can be capable of producing objective knowledge. The design objects that belong to design kinds are physical artifacts and can be counted as real. As a result of these positionings, there appear to be objective facts that can be explored in relation to design kinds and design objects. In this way, they are a little more finely sorted from—but included within—the broader category of objectivist kinds. In this sorting, natural kinds are realist objectivist kinds (real and fully mind independent) and design kinds are socially constructed objectivist kinds (real but also partly mind dependent). In this way, there appear to be at least four categorical variants for ontological sorting. There are those that 1) are realist and objectivist—natural kinds (rocks, trees, butterflies); 2) those that are fully socially constructed (but that are in some way objectivist per Haslanger's assertion that social kinds are

2 While this thought follows Mill's taxonomy, it should be noted that some wholly mind-dependent things like race, gender, and laws (socially constructed kinds) appear to be objective (see both Mills and Haslanger). They have associated facts of the matter that have real bearing on real people. As such, the idea that wholly mind-dependent things are anti-objectivist appears questionable and should be rejected.

natural kinds)—social kinds (race, gender, laws); 3) those that are dependent on the physical properties of natural kinds (and thus are in some way objectivist) and in some ways dependent on socially constructed kinds (again, employing Haslanger and Thomasson, these too are in some way objectivist)—art kinds and design kinds (paintings, spoons, buildings); and 4) those that are anti-objectivist kinds (my personal hairstyle, your favorite color, other personal opinions, things that we are mistaken about).

If we accept design kinds as socially constructed kinds that are—as noted above—objectivist kinds, then we can begin to understand them as having an ontological basis. Design kinds exist in the world in that they are socially constructed kinds; according to Haslanger, 'To say that some thing or feature is metaphysically objective is to say that it is real: the objective world just is the real world' (Haslanger 2012, 203). This assertion, of course, is dependent upon accepting Haslanger's argument that social kinds are objectivist kinds and, as such, can be nothing other than real. Here, realism and constructivism become collapsed and have no discernible differences; both become equivalent descriptors of objectivism. In the case of design kinds, there appear to be no negative consequences of accepting Haslanger's view; design kinds are objectivist kinds and as objectivist kinds they are real.

In accepting an ontological category of design kinds[3] (one not yet fully differentiated from art kinds) whose members—design objects—are physical artifacts that are the products of intentional human ideas and actions, one can begin to establish an ontological foundation of design education. As design practice and design education appear to have the same fundamental relationship as scientific practice and science education or humanities (at least literary) practice and humanities education, I believe that these practice/educational relationships can be collapsed in relation to ontological foundation. This conflation allows me to move beyond a roadblock consisting of 1) actual disciplinary practices and their relation to educational practices and 2) the possibility of mistaken knowledge types, i.e., that we can have false beliefs about the purity of objectivity associated with the sciences and the subjectivity associated with the humanities. In avoiding such a roadblock, I am able to propose the existence of design kinds—representing both design practices and design education and based upon the previously accepted existence of natural kinds and social kinds—as equivalent to the accepted practices of the sciences and science education (natural kinds based) and the humanities and humanities education (social kinds based).

Artifact Kinds to Design Kinds

Amie Thomasson, in response to John Searle's *The Construction of Social Reality*, argues that artifacts should be seen to exist in that they are not fully dependent upon mental

3 What fields might constitute design education has not really been touched on in this paper and certainly requires much more thought on my part. At first blush, I would include architecture, interior design, industrial design, furniture design, urban planning, and many (if not all) engineering fields. I think that all of these fields are dependent on both human intentions and the physical properties of natural kinds. They are certainly different from the sciences in that they (rather crudely stated) explore the manipulation of things (mostly toward human purposes) while science practices appear to be more interested in documenting how things are. Distinguishing design kinds from engineering kinds may not be necessary in light of this differentiation from the natural kinds encompassed within science practices.

states; that 'their existence and the way they are also partially depends on real acts e.g., of manipulating things in the environment, and many of the properties of concrete artifacts and institutional objects (weight, flammability, chemical properties...) may be determined directly by those of physical objects without regard for our beliefs about them' (Thomasson 2003, 605). In other words, while artifacts do not cohere to a strict realist model of mind independence, they do obtain objectivity in their dependence upon physical things. Since artifact kinds possess a physical ontological status they cannot be productively thought of as anti-realist or anti-objectivist. Artifact kinds are not subject to strong claims of subjectivity or any polarized form of relativism (polarized in the binary sense of the pairing relativism/universalism). While this position does not appear to preclude weaker forms of relativism, it appears to adequately address an allowance for artifact kinds to be seen as real.

The transition from Thomasson's artifact kinds to my proposal for a category of design kinds is necessary in establishing an ontology of design education; however, it is not without problems. The primary impetus in making this semantic change is in order to distinguish the ideas and actions that might be considered design acts—and thus relevant to design education—from those that might be considered acts that cohere to art kinds. It appears necessary to distinguish art kinds from design kinds as the reasons and means of production appear to be conceptually different.

In attempting to initiate a conversation about design kinds as a subset of artifact kinds, it appears necessary to distinguish design kinds as different than art kinds or any other artifact kinds. As Thomasson notes when discussing the metaphysical natures of artifact kinds, these natures are '*constituted* by the concepts and intentions of makers' (Thomasson 2007, 2). If we accept that a part of the intention of art makers is to make art—to participate in the long lineage of what has come to be called art—then design objects cannot be considered art kinds. Design kinds are, of course, still artifact kinds and that category may have an extensive number of subsets (art kinds, design kinds, tool kinds, etc.), so it is still necessary to distinguish design kinds from all of those other kinds. One simple way is to adopt the scheme provided by Thomasson and declare that design kinds are constituted by the concepts and intentions of makers and that design object makers (designers) intend that their products serve some practical purpose—that design objects have particular functions that are not the same functions that art (or any other) artifact kinds have.

From the perspective of design thinkers, there is another possible distinguishing characteristic of design kinds as different than art kinds or any other artifact kinds. Donald Schön, in theorizing 'designlike' practices, argues that design practices consist of problem solving in an experiential world. One central intention of the designer is to solve a problem that exists. Art objects may act to depict the existing (perceived) world, to define possible worlds, and/or to represent beliefs and customs regarding the social world, but they are generally not thought of as object-types that act to solve problems. In some ways, this problem solving, can be thought of as a pragmatic approach that distinguishes design objects from other artifact-types. Further, Schön distinguishes design know-how—the ability to solve problems—as the central form of knowledge transmitted by design education. Schön, as an

educational theorist, prioritizes this 'know-how' knowledge over the generally accepted model of scientific objectivism.

On Design Education

Since design kinds are objective and design objects are real, it is possible to have objective knowledge of these things. It is this objective knowledge—a knowing *what*, a knowing *that*, and a knowing *how*—that grounds design education. In establishing that design knowledge can be seen as objective and can be discussed critically, it appears necessary to determine particular methodologies that can inform educational practice. Donald Schön, in theorizing that all professional practices are 'designlike'—in that they cohere to problem solving models of practice based in the experiential world—'projected a new model for teaching and learning in the professions, and a new conception of the research university' (Waks 2001, 37). Schön's new model for teaching and learning constituted his theorizing a new epistemology of practice; an epistemology that made 'design know-how, as opposed to theoretical or applied scientific knowledge, the *core* knowledge transmitted in university-based education' (Waks 2001, 2). Such a new model for teaching and learning based upon an objectively accepted knowing *how*—especially in the design fields—might benefit from an educational/philosophical exploration of the foundational texts of design education. It is from one such text, *De Architectura*, that a foundation for Schön's 'design know-how' might be found.

In the first century BCE, Marcus Vitruvius Pollio composed *De Architectura*—On Architecture—a text that has influenced over two millennia of design education and practice (Tavernor 2009). Vitruvius, a military architect, engineer, and educational theorist devoted these practical volumes to Augustus and conceived of them as providing 'recommendations so that by examining them, you yourself may become familiar with the characteristics of buildings already constructed and of those which will be built; in these books I have laid out all the principles of the discipline' (On Architecture, Book I, Introduction, 3). As this treatise also contains detailed accounts of technologies and other machines, it can be assumed that the term architecture for Vitruvius included all design fields—those dealing with the practical and appropriate creation of the artifactual world. As such, *De architectura* can be positioned as the first text concerning the discipline of design; the first document that designates an epistemology of design practice and design education.

Vitruvius' assertion that all buildings—including all constructed technologies—'must be executed in such a way as to take account of durability, utility, and beauty' (On Architecture, Book I, Chapter III, 2) should be considered as the foundational conditions for an ethic of design practice. The Vitruvian virtues of durability, utility, and beauty begin to differentiate what an epistemology of design practice might be. These design conditionals position the discipline within a material world where the pragmatic awareness of the appropriateness of particular materials define the durability of things made, the function of those things—how they are used by humans—are conditions of their utility, and the particular aesthetic value we place on those items define their beauty. In Vitruvius' triad of design conditions—a material, practical, aesthetic, and located objectivism—can be found the structural basis for theorizing a design foundation for educational practice.

The material implications of Vitruvian durability, utility, and beauty, in some way, act to re-establish the one-to-one relationship between design practice and the natural world. Durability and utility can easily be recognized as pragmatic concerns related to the material properties of artifacts and to the engaged practices of construction. Likewise, beauty acts to emphasize our aesthetic relations—psychological, emotional, and physical—to the objects of our design. These virtues act to differentiate knowledge in design from knowledge in the sciences and knowledge in the humanities. They dismantle the binary established by C.P. Snow and, possibly, begin to destabilize the hierarchy apparent in common perceptions of knowledge. Likewise, the Vitruvian virtues act to populate the objectivist knowledge that acts as the core of design education; utility, durability, and beauty enact the knowing *what*, knowing *that*, and knowing *how* that grounds design education.

References

Nigel Cross, *Designerly Ways of Knowing* (Springer-Verlag: London, 2006).
James Fetzer and Robert Almeder, *Glossary of Epistemology/Philosophy of Science* (New York: Paragon House, 1993).
S.A. Gregory, *The Design Method* (Butterworth: London, 1966).
Sally Haslanger, "Ontology and Social Construction," *Philosophical Topics* Vol. 23, no. 2 (Fall 1995).
Thomas S. Khun, *The Structure of Scientific Revolutions*, 4th ed. (Chicago: University of Chicago Press, 2012).
Bryan Lawson, *How Designers Think* (Architectural Press: London, 1980).
Charles Mills, "But What Are You Relly? The Metaphysics of Race," *Blackness Visible: Essays on Philosophy and Race* (Ithaca: Cornell University Press, 1998).
Donald Schön, *The Reflective Practitioner* (Temple-Smith: London, 1983).
H. A. Simon, *The Sciences of the Artificial* (MIT Press: Cambridge, MA, 1969).
C.P. Snow, *The Two Cultures* (New York: Cambridge University Press, 2012).
Robert Tavernor, Introduction in Vitruvuis, *On Architecture.* (pp. xiii – xxxviii) (New York: Penguin, 2009).
Amie L. Thomasson, "Realism and Human Kinds," *Philosophy and Phenomenological Research* Vol. LXVII, no. 3 (2003).
Amie L. Thomasson, "Artifacts and Human Concepts," in *Creations of the Mind: Essays on Artifacts and their Representation,* ed. Stephen Laurence and Eric Margolis (Oxford: Oxford University Press, 2007).
Marcus Vitruvius Pollio, trans. R. Schofield, *On Architecture* (New York: Penguin, 2009).
Leonard Waks, ed., "Philosophy of Design, Design Education, and Educational Design," *International Journal of Technology and Design Education* 11, (2001).
Leonard Waks, "Philosophy of Design, Design Education, and Educational Design: Introduction to the Special Issue," in *International Journal of Technology and Design Education* 11 (2001): 1-4.
Leonard Waks, "Donald Schon's Philosophy of Design and Design Education," in *International Journal of Technology and Design Education* 11 (2001): 37-51.

Analysis of Architecture Curricula in Terms of Creativity

Armağan Seçil Melikoğlu Eke
Research Asistant, İstanbul Kültür Üniversitesi
Gülay USTA
Prof. Dr., İstanbul Kültür Üniversitesi

Introduction

A number of architecture schools have recently speeded up the efforts for determining and resolving the problems in architectural education. Naturally it is not possible to talk about an "ideal" solution for the ones who believe in that there is not any exact solution.

Efforts for creativity and the relation between creativity and education have a privileged place in all studies about architectural education. Relations are recently being established with other disciplines about how and with what techniques and processes the architecture skill can express itself in terms of creativity. Therefore, the student profile taught about the limited teaching techniques used in architectural education is under a constant change. The old student profile is being superseded by the new student profile expected to find the way to express itself on its own.

All opinions in such an environment of change support comprehensive researches about design studios that have always been considered as a focal point in the architectural education. Moreover, efforts are also ongoing in order to research about the basic design studios covering design principles, and issues such as creativity, perception and sensation. As stated by Schön (1984), the design education lectures are considered as the most important in the architecture curriculum and therefore, design lectures and activities supporting these lectures are considered as environments where students can express their creativity.

Despite all these positivist opinions, the students studying architectural design are required to design products for today's architecture practice and develop design education strategies for the perception of creative ideas in such designs. It is difficult to ignore the problem of determining whether the education institutions in Turkey are successful in this regard.

This study examines the place and scope of activities focusing on creativity in architectural design education curriculum. An analysis is made on creativity oriented design education process by taking into consideration the contents and hours of lectures on practice and theory. The analysis made to ensure that the study achieves its purpose includes an examination on design lectures. The design lectures

supported with creativity activities should be provided to the students with practices and theoretical infrastructure. Therefore, it is important to plan practices, lectures and activities that will contribute to the development of creativity in the curricula of several schools.

The study has a diversity aspect since the analyzed architecture schools have different visions and missions. This will draw attention to the design lectures that will contribute to creativity at different architecture schools in Turkey and the lecture hours.

Creativity in Design Education

Today any element from the designed products to lifestyles is seen as a part of creativity and the designed object, discourse or multiple ideas are evaluated in this context. Such a centralization regarding creativity requires the examination of the education institutions stating that they have concerns about creativity, the curricula of these institutions and the approaches and working methods supporting such curricula. The architectural education like any work that is created and includes concerns about creativity has a self-operating, creative mechanism. Therefore, any subject including design sociology, philosophy and education psychology is considered to be of great importance to define creativity in the criticisms regarding the creative design and the products created afterwards in the architectural education.

As is well known, the myth that creativity is innate is no longer accepted and the efforts have already been initiated in order to improve the creativity and design skills positively for the students (Teymur, 1998). Denel (1981) states that these skills are innate in students and it is a mistake to consider only thinking and such skills as sufficient for architectural design education, thus supporting the first opinion. According to Denel, the difference between the students in terms of creativity is defined as some students to have a more powerful and enriched knowledge or a more powerful perception compared to other students. Hadid (2000) defines this learning or creation process as a personal action that takes place in long period of time and has its own creation method.

However, it will be beneficial to take into consideration the following two problems when examining the creativity concept in terms of architectural design practice and education:

- First, design and creativity concepts are not problems required to be solved only in the context of generation of works but should also be considered as complementing each other in terms of design education and examined to determine how they will be used to increase the performances of the students.

- Second, opinions on architecture practice do not simultaneously have the same direction in Turkey and in other countries (even though this problem is minimized thanks to the opportunities provided by technology). Tanyeli (1997) defines the current period as living in "the best of all possible worlds" as stated by Leibniz.

According to this opinion, the world is not good or bad but is the only potential world and a person role is just to adapt itself to this world.

Goldschmidt (1994) observed that there are different stages and methods in creative thinking that develop individuals and are used to achieve results. Observations reveal that situations and environments such as intensive thinking, motivation, creating a number of sketches repeating each other are effective factors for people to find creative solutions (Kahvecioğlu, 2001). Besides, all efforts in architectural design education seem to be lined up on a "holy creativity line" created with the efforts of students to develop their creativity. Certainly there should be a goal required to be achieved at the end of the line and one should have the instruments used for this goal. According to Feigenberg (1991) as mentioned in the quote from Piaget, this goal is to raise individuals that

- have the skill to create new things that do not repeat what previous generations did;
- do not accept everything offered to them and think critically.

It is not possible to think the creativity and design actions in architectural education as independent things. If considered from this aspect, that the creativity concept is revealed with design studios in architectural design education in the chronological order is a powerful indicator that supports the duality of creativity-design activities. Uluoğlu (1990) states that the evaluation of the architectural education with systematic methods is possible with the unification of practice and theory in design studios.

The union of practices and theories in design studios has rendered many elements such as the studios where design is experienced, methods used, the communication between the consultee and consultant and student psychology inseparable. Design studios are defined as places where architecture students spend most of their time and learn the design methods by Shoshi and Oxman (2000).

In parallel with this, different methods were developed and are being developed from time to time based on the preferences of design lecturers. For instance, the part based approach where students are presented with a functional problem and try a design on the same and divide the problem into small parts and take into consideration each part separately is considered as an approach based on basic design education and supporting abstract works (Ertürk, Usta, Usta, 1999).

From this point of view, the association of practice-theory is of great significance for developing creativity in architectural design education. Therefore, it is clear that theoretical lectures and other activities supporting design as well as practical design lectures (design studios) have an important place in the curricula.

The skills of the students to practice theoretical information have to be improved. This can be achieved by trial of different approaches by the facilitators in design

studios. Since the lectures covered by the lesson plan may contribute to the design skill, the students should obtain theoretical and practical information.

In this context, the examination of the architectural education schools reveals similarities, differences and weight differences among curricula.

Lectures and Activities Improving Creativity at Design Schools

The examination of the curricula of the architecture schools reveals that the common purpose of these schools is to raise creative architectures. However, how the concept of creativity defined as presenting the unique-original design in a way satisfying the requirements of the society is used in the curricula should be examined.

Accordingly, the lesson plans should include long hours of theoretical and practical design lectures that aim to equip the students with design and creativity skills available under the curricula. Moreover, today efforts are made to enrich the curricula with different approaches and opinions and to implement the same with different methods. These approaches principally include the transfer of theoretical and practical information to the students without separating the same from each other and at levels suitable for the students.

Uluoğlu examines this approach as follows: "Design is a holistic process comprised of actions for determining and resolving problems that cannot be divided into steps or parts. The design action first starts with the representation of the object to be designed at a conceptual level in the mind, then continues with the establishment of relations between concepts based on the purposes and ends with learning rules upon using these relations to solve different problems."

Atalayer criticizes the practice-theory relation by saying that the education given for raising creative individuals has hardly any theoretical aspect to balance the practice aspect of the education and to direct the individuals to a specific way.

In the light of the above data, this study examines the architecture departments of 6 institutionalized universities which direct the architectural education and have completed its settlement in terms of architecture, selected among 82 architecture departments in Turkey including TRNC. These departments are listed below according to their date of foundation:

- Mimar Sinan Fine Arts University Department of Architecture - 1883
- İstanbul Technical University Department of Architecture - 1942
- Yıldız Technical University Department of Architecture - 1945
- Middle East Technical University Department of Architecture - 1956
- Karadeniz Technical University Department of Architecture - 1963
- Anadolu University Department of Architecture - 1984

First, the lesson plans of the examined universities for bachelor programs are obtained. The analysis made for achieving the purpose of the study is based on the

following information over the lesson plans:

- Total hours of required lectures: **R**
- Total hours of design lectures: **D**
- Hours of practical design lectures: **DP**
- Hours of theoretical design lectures: **DT**

The elective lectures in the lesson plans are not taken into consideration since students can select such lectures from different fields.

The architecture departments covered by this study are analyzed based on the ratios given below:

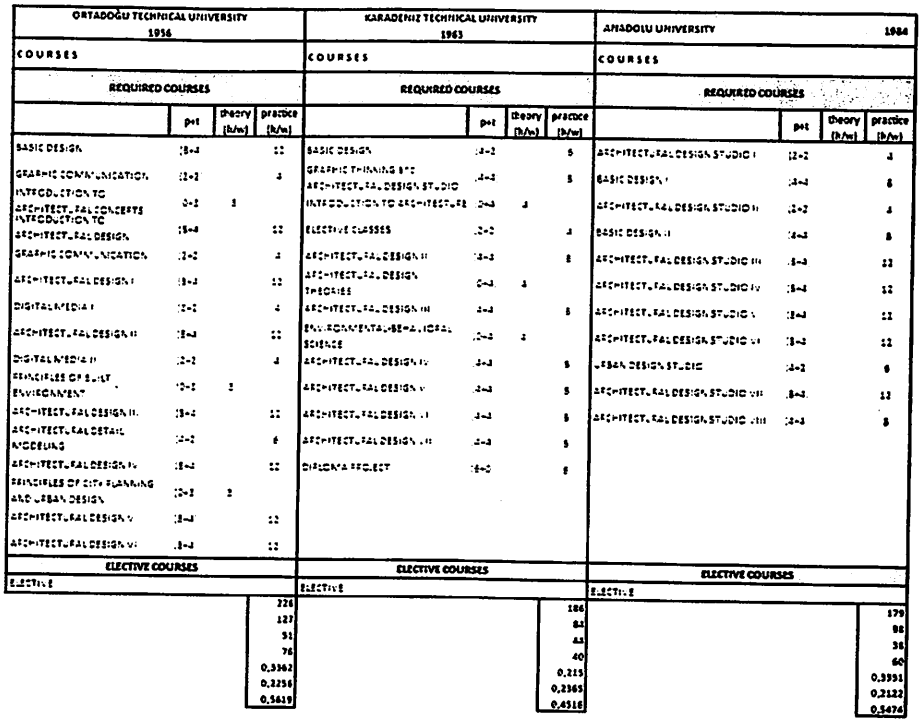
- Ratio of hours of practical design lectures to the total hours of required lectures **(DP/R)**
- Ratio of hours of theoretical design lectures to the total hours of required lectures **(DT/R)**
- Ratio of design lectures to the total hours of required lectures **(D/R)**

The analysis made on the lesson plans used in the architectural design education process in parallel with the criteria accepted in the scope of the research is given below in the following tables: The tables include explanations on the design lectures covered by the required curriculum, hours of theoretical and practical lectures and ratios regarding the purpose of the research.

MIMAR SINAN FINE ARTS UNIVERSITY 1883			
COURSES			
REQUIRED COURSES			
	p+t	theory (h/w)	practice (h/w)
BUILDING DESIGN THEORY AND METHODOLOGY-I	(2+2)		5
DESCRIPTIVE GEOMETRY	(2+2)		4
BASIC ART AND DESIGN EDUCATION	(4+2)		6
BUILDING DESIGN THEORY AND METHODOLOGY-II	(2+3)		5
BASIC DESIGN	(6+0)		6
BUILDING DESIGN THEORY AND METHODOLOGY-III	(2+3)		5
ARCHITECTURAL DESIGN STUDIO-I	(8+4)		12
INTERIOR SPATIAL ORGANIZATION AND DESIGN	(0+2)	2	
ARCHITECTURAL DESIGN STUDIO-II	(8+4)		12
INTERIOR SPATIAL ORGANIZATION AND DESIGN	(4+0)		4
ARCHITECTURAL DESIGN STUDIO-III	(8+4)		12
ARCHITECTURAL DESIGN STUDIO-IV	(8+4)		12
URBAN PLANNING DESIGN 1	(2+2)		4
URBAN PLANNING DESIGN 2	(2+2)		4
GRADUATION PROJECT	(8+4)		12
ELECTIVE COURSES			
ELECTIVE			
TOTAL HOURS OF REQUIRED LECTURES (R)			213
TOTAL HOURS OF DESIGN LECTURES (D)			105
HOURS OF THEORETICAL DESIGN LECTURES (DT)			39
HOURS OF PRACTICAL DESIGN LECTURES (DP)			66
DP/R			0,3098
DT/R			0,183
D/R			0,4929

ISTANBUL TECHNICAL UNIVERSITY 1942			
COURSES			
REQUIRED COURSES			
	p+t	theory (h/w)	practice (h/w)
ARCHITECTURAL DESIGN I and RENDERING TECHNIQUES	(10+2)		12
BASIC DESIGN and VISUAL ARTS	(0+2)		4
ARCHITECTURAL DESIGN II and ADVANCED RENDERING	(8+3)		12
ARCHITECTURAL DESIGN III	(6+2)		8
ARCHITECTURAL DESIGN IV	(6+2)		8
ARCHITECTURAL DESIGN V	(6+2)		8
ARCHITECTURAL DESIGN VI	(6+2)		8
ARCHITECTURAL DESIGN VII	(6+2)		8
GRADUATION PROJECT	(6+0)		6
ELECTIVE COURSES			
ELECTIVE			
			168
			74
			17
			57
			0,3392
			0,1011
			0,4404

YILDIZ TECHNICAL UNIVERSITY 1945			
COURSES			
REQUIRED COURSES			
	p+t	theory (h/w)	practice (h/w)
INTRODUCTION TO ARCHITECTURAL DESIGN	(4+2)		5
BASIC DESIGN	(2+1)		3
BUILD THEORY and DESIGN 1	(2+1)		3
DESCRIPTIVE GEOMETRY	(2+1)		3
ARCHITECTURAL DESIGN 1	(4+4)		8
BUILD THEORY and DESIGN 2	(2+1)		3
ARCHITECTURAL DESIGN 2	(4+4)		8
BUILD THEORY and DESIGN 3	(2+1)		3
ARCHITECTURAL DESIGN 3	(4+4)		8
BUILD THEORY and DESIGN 4	(2+1)		3
STRUCTURAL SYSTEM DESIGN 1	(2+2)		4
ARCHITECTURAL DESIGN 4	(4+4)		8
ARCHITECTURAL DESIGN 5	(4+4)		8
URBAN DESIGN	(2+1)		3
ARCHITECTURAL DESIGN 6	(4+4)		8
ARCHITECTURAL DESIGN 7	(4+4)		8
ELECTIVE COURSES			
ELECTIVE			
			203
			87
			39
			48
			0,2364
			0,1921
			0,4285



Tablo 1 The analysis of design lectures in the curricula of architectural design schools.

Evaluation and Result

The data obtained from the analysis made on the lesson plans of the architecture schools examined under this study entitled "Analysis of Architecture Curricula in Terms of Creativity" are given below:

Weight of hours of practical design lectures to the total hours of required lectures	Weight of hours of theoretical design lectures to the total hours of required lectures	Weight of hours of design lectures to the total hours of required lectures
(DP/R%)	**(DT/R%)**	**(D/R%)**
İTÜ **%33,9**	**KTÜ %23,6**	**ODTÜ %56,1**
ODTÜ %33,6	ODTÜ %22,5	AÜ %54,7
AÜ %33,5	AÜ %21,2	MSGSÜ %49,2
MSGSÜ %30,9	YTÜ %19,2	KTÜ %45,1
YTÜ %23,6	MSGSÜ %18,3	İTÜ %44
KTÜ %21,5	İTÜ **%10,1**	**YTÜ %42,8**

The results of the study can be presented as follows based on the above table:

• According to the recommended approach, the design lectures should not have only a single aspect and should include both theory and practice. The analysis

reveals that the schools covered by this analysis adopt this approach. Long hours of design lectures in addition to theoretical lectures such as construction, architecture history, restoration ensure that the students gain a different point of view and the theoretical knowledge is integrated into practice.

• The hours of design lectures are similar in the curricula of the schools covered by the study. It can be concluded from this observation that these lectures supporting the improvement of creativity form the basis of the architectural education.

• The purpose of this study is not to show the pros and of the curricula. It aims to show that well rooted schools adopt different approaches, these approaches can be improved and new curricula can be created to improve creativity under current conditions. For this purpose, it is important to integrate the computer aided lectures into the curricula in order to adapt to the developing conditions.

As can be understood from the results, the similar principles adopted by the well rooted schools covered by this study form a foundation for the architectural education in Turkey. Consideration of the curricula developed by these schools as an example by the new departments recently opened or to be opened in Turkey where there are 82 architecture departments as of 2013 will facilitate that new and creative steps are taken.

References

Cross, 1983. The Educational Background to The Bauhaus, Design Studies 4.
De Bono, E., 1993. Serious Creativity: Using the Power of Lateral Thinking to Create New Ideas, Harper Business, New York.
Denel, B., 1981. Temel Tasarım ve Yaratıcılık, ODTÜ Yayın, Ankara.
Deleuze,G.,Parnet,C., 1990. Diyaloglar, Çev: Ali Akay, Bağlam Yayınları, Ankara.
Ertürk, Z., Usta, G., Usta, A., 1999. Tasarım Eğitimine Başlamada Farklı Model Arayışları, Arkitekt.
Hadid, Z., 2000. Zaha Hadid: Hadid ile Konuşma, Ahmet Özgüner, Çağdaş Dünya Mimarlığı Dizisi, 9, Boyut yay., İstanbul.
Hasançebi, Ö., 2004. Mimarlık EğitimindeéTemel Tasarım - Mimari Tasarım İlişkisi Üzerine Bir İnceleme, Y. Lisans Tezi,K:T.Ü. Fen Bilimleri Enstitüsü,Trabzon.
İnceoğlu, N., 1994. Tasarım Stüdyolarının Dünü-Bugünü, Mimari Proje Dersinin Sorgulanması Semineri, Y.T.Ü., İstanbul.
Kahvecioğlu, N.P., 2001, Mimari Tasarım Eğitiminde Bilgi ve Yaratıcılık Etkileşimi, Doktora Tezi, İ.T.Ü, Fen Bilimleri Enstitüsü, İstanbul.
Schön, D. A., 1984. The Design Studio As An Example Of Education For Reflection in Action, Journal Of Architectural Education.
Shoshi, B., Oxman, R., 2000. The Architectural Design Studio: Current Trands And Future Directions, Design Studio: The Meeting Pot Of Architectural Education Conference.
Tanyeli, U., 1997. Öğrencideki Konformizmi Nasıl Gidermeli?, Y. Al ve N. Teymur (Der.), Mimarlık Eğitimi ve..., Ankara.

Teymur, N., 1998. Tasarlanacak Bir Dünya İçin Temel Tasarım Eğitimi: Temel Tasarım-Temel Eğitim, Der. Teymur, N., Aytaç-Dural,T., ODTÜ Yayınları. Ankara.
Teymur, N., 1997. Mimarlık Eğitimi Üzerine Çeşitlemeler, Mimarlık Eğitimi ve..., TMMOB Ankara Şubesi Yayınları, Ankara.
Uluoğlu, B., 1990. Mimari Tasarım Eğitimi, Tasarım Bilgisi Bağlamında Stüdyo Eleştirileri, Doktora Tezi, İ.T.Ü, Fen Bilimleri Enstitüsü, İstanbul.
Usta, G. K., ve diğ, 2000. Mimarlık Eğitiminde Temel Tasarımın Yeri, Mimarlık Dergisi, 293, 41-44.

Evolving Concepts, Revolving Doors

Siyaveş Azeri
Assistant Professor, Mardin Artuklu University
Department of Philosophy Mardin, Turkey

Payam Mirzadjani
Ryerson University, Department of Architecture Toronto, ON, Canada

Concepts

Human knowledge is, at its basis, a bodily activity not because it is 'physical' but because it is activity toward manipulating the environment and human psyche. Humans, thank to language, are not bound to the limits of their physical organs while acting and hence manipulating and knowing the world. The formation of human language, as Lev Vygotsky (1987) puts it, signifies a leap in human evolution; one that is comparable to the leap from inanimate to animate matter.

One fundamental element of language that engenders it with such a revolutionary capability is its conceptuality. Studies made by prominent figures of the Cultural-Historical Activity Theory, first and foremost by Vygotsky and his collaborators and disciples such as Alexander Luria and Alexei Leontiev, discloses the different genetic roots of thinking and speech: thinking, at its basis, is a response mechanism that intends solving the problems an organism faces in the course of its behaviour in the environment. So be the case, thinking, in the generic sense of the term, is a 'practical' activity independent of words. On the other hand, speech or word, in its root, is a vocal emotional response of the organism to certain external stimuli and is independent of thinking. For instance, the rudiment of such vocal response can be observed in the emotional reaction a member of a herd shows to the presence of a predator.

In human, however, thinking and speech form a unity, which amounts to the formation of the unit of human language and consciousness. Human language is thoughtful and human thinking is linguistic. The conjunction of thinking and speech, according to Vygotsky, forms the word-meaning, which is the kernel of the concept. Both human language and thinking, as the expression of the unity of thinking and speech, are conceptual. As Vygotsky and Luria state,

'[T]he great genetic moment of all intellectual development, from which grew the purely human forms of practical and gnostic intellect, is realized in the unification of these two previously completely independent lines of development'. (1994, p.108, authors' emphasis)

Being the synthesis of thinking and speech, of meaning and of word, word-meaning or the concept is the sublation of both thinking and speech. Meaning, as the outcome of the organism's response to the environment, is tool-mediated. Vygotsky states that meaning is transforming a mere object into a tool of activity. In this, meaning

–and abstraction as the essence of meaning—is a bodily activity: meaning formation is first and foremost practiced with the aid of external objects. With the formation of conceptual language meaning formation undergoes a qualitative change. Practical meaning-formation is to great extent a function of the available physical material. Conceptual language, on the other hand, emancipates meaning formation from such immediate physicality and thus from the determination of the immediate environment. Thinking, then, precedes practice, both logically and actually and hence follows the emergence of theoretical thinking and abstraction. Theoretical abstraction, thus, designates the priority of thinking to bodily behaviour. Animal's 'meaningful' behaviour is an immediate function of its response to external or internal stimuli. Human's 'meaningful' activity, is not only a response but also a question-posing activity within actual reality. This aspect is manifest in the planning function of external speech. Studying the ontogenesis of human conceptual language Vygotsky and Luria state,

'*[T]he child's speech, which previously accompanied its activity and reflected its chief vicissitudes* in a disrupted and chaotic form, *moves more and more to the turning and starting points of the process, beginning thus to precede action and throw light on the conceived of but as yet unrealized action*'. (1994, p.120, authors' emphasis)

The emergence of the planning function of speech, on the other hand, signifies the interiorization of speech by the child and thus the unification of thinking and speech that becomes manifest in the intra-psychological function of speech.

Concepts can be thought as new tools and organs of activity and therefore of sensing and knowing the world (Azeri, 2013). Concepts are introduced not only in face of new problems humans confront but are made, suggested, and put in use also for the task of changing, regulating, and re-forming the environment. In this, concepts, like tools of action, become a secondary order source of stimulation. Yet, the theoretical-abstract texture of concepts or what Evald Ilyenkov (1982) calls their 'ideality' should not be understood as their being imaginary entities in humans' heads, brains, or minds. Concepts, although sometimes ideally, have an objective reality. The reality of concepts consists in their objective actualization.

The revolving door is an exemplar showcase of how concepts are both theoretical and objective-actual entities. The history of the formation of the revolving door is an instantiation of the stages of the formation and development of concepts. Like a theoretical abstract concept, the revolving door was initially introduced in the face of actual architectural problems *and* on the basis of a formerly existing, historically-formed and present thought-material. The idea of the 'revolving door', obvious may it look, is based upon the notions of 'threshold,' 'entrance,' 'door,' and 'revolution'. A new concept always has roots in the exiting 'thought-material', as Fredrick Engels calls it.

A new concept is introduced in analogy with the existing thought-material as a Guiding Assumption (Brown, 2005) as Wilfrid Sellars puts in his 'Empiricism and

Philosophy of Mind', but also as an innovative tool of reformulating and regulating the question at hand. To put it roughly, the revolving door was first introduced in the face of the need to regulate the air flow in high-rises in order to control the change of temperature in the buildings and preventing the 'chimney effect'.

Having a foot in actual reality, the analogically formulated Guiding Assumption (GE) undergoes change and reformulations in the face of unseen difficulties and problems that could not be observed prior to its existence. In some cases, the GE is totally put aside: among the famous historical examples of such an abandoning are the notions of 'ether' and 'phlogiston'. On the other hand, if the GE is successful, it evolves toward becoming a full concept. So be the case, it provides us with new capabilities and alters our relation with the environment and with ourselves. In doing so, the newly formed concept will become a part of the hierarchy of conceptual systems that Vygotsky calls 'a system of generalizations' (1987, p.228). The revolving door, analogically speaking, not only resolved the type of questions that were the consequence of certain technical and architectural achievements, but also became an organic part of the new architectural approach to and understanding of the world. In this, beyond being a response to an immediate actual technical problem, it became an instrument of determining the space.

From the history of the revolving door

The revolving door was introduced and patented by Theophilius Van Kannel in 1888. The door claimed to be easy to operate, that it worked smoothly, and saved time (by facilitating easy flow of those going in and out of buildings). It was also introduced as controlling the air flow thus forming a practical barrier that would reduce the heat loss in the building: Van Kannel's door was 'always closed'.

Preventing the so-called 'chimney effect' that was caused by the rapid flow of the air through elevator shaft the revolving door also made the construction of high rises further feasible and technically possible.

'Insofar it was an important component of the complex machinery that, along with other inventions such as skeleton construction, fire protection and elevators, made this type of building at all technically feasible'. (Stalder, 2009, p.71)

This quality made the revolving door an indispensible element of modern architecture, a property that was also presented symbolically in the introduction of the revolving door as the sign of rapid, forward-thinking American city life-style. This symbolic expression of the participation of the revolving door in daily life is also manifest in Reiner Benham's imagery while depicting the technical advantages of the revolving door: it 'strangle[s] violent up-currents at birth' (1969, p.74, cited in Buzzard, 2001, p.563).

Technically, the revolving door can be conceived of as the instrument of the mechanization of the space and time. As a machine, the revolving door recapitulates

the history of the emergence of modern industrial capitalism from the stage of manufacture to the stage of mechanical-industrial production. The initial revolving door requires participation of the user for its operation. The person entering the door should push the door yet in agreement and harmony with the possible simultaneous incomer or the out-goer. Interestingly, the initially patented revolving door missed any element that would regulate the speed of the revolution of the door. This speed of the revolution of the revolving door was determined by the amount of the power the user exerted on the door; an aspect similar to regulation of the speed of production of, say, textile, with the use of weaving machines prior to the introduction of mill-run weaving machines. This aspect of the revolving door yields certain legal cases due to certain accidents followed form the 'improper' use of the door (for a number of interesting cases, see Buzard, 2001, pp.566-68). It was also addressed and handled comically by Charlie Chaplin in the movie *The Cure* (1917), thus soon the revolving door proved itself an integral part of daily life, a device in use both physically and symbolically.

The problem of speed control, which was never thought about at the initial stage of the revolving door and which amounted to a number of legal cases due to injuries during the use of the revolving door is an example of the conceptuality of the revolving door: such a problem and other particular implications of the revolving door would come to the ground only after it was introduced as a guiding assumption or as a candidate for conceptualizing the entrance, the threshold and thus the space. Eventually, in 1925 the speed control was introduced; in 1944 a fully automated revolving door was put in use (Stalder, 2009, p.71); this stage signifies the emergence of the revolving door in the form of the full concept. Even the sliding door and the air curtain that would be introduced about a decade later can be interpreted as the variations of the revolving door as they are the carriers of the same ideal, which was initially presented by the revolving door. Stalder identifies this evolutionary line from the revolving doors to slide doors and air curtains as the development of the same 'technical object' (2009, p.71); yet this apparent continuous development is the expression of the progression of an abstract essence: that is the concept the revolving door as well as the swing door and the sliding door signify; this concept fetishizes the space by reifying the threshold in form of a purgatory. This fetishizing effect is intensified as the revolving door relativizes the difference between the inside and the outside through absolutizing and universalizing the difference between theses spaces: the revolving door is always closed while always open. Even at its manual stage, the revolving door determines the behaviour of its users by imposing a need to harmonize their action, be 'courteous' to each other and 'choreographing' their movements (Buzard, 2001, p.568). With the introduction of automated revolving door, this regulatory function achieves its maturity: now the control of the flow of the individuals in and out of spaces is fully determined by the speed of the revolution of this fully mechanical device. The space becomes a function of time and thus acquires a fully abstract meaning so that it loses the last remnants of particular concreteness caused by its visual (allegedly physical) perception. The space, following time, becomes mechanized and functions as a universal law that governs the patterns

of the behaviour of subjects that have now turned into individuals as 'the only significant social category' (Bowlby, 1985, p.68, cited in Stalder, 2001, p.568).

As is with all mechanical devices and machines, the collaboration and choreography between isolated individual users of the revolving doors is a function of the working of the machine itself: even the type of the problems that causes injuries such as the problem of the speed of the flow and momentum of the revolving door are to be handled as 'technical' problems: not the users but the very device is evolving and 'prefects' the behaviour of the individuals using it. Moreover, this 'perfection' of the behaviour does not take place in form of an external aiding and thus facilitating of the behaviour: the revolving door, like every conceptual organ and tool, replaces the ordinary sense organs that form the basis –but only the basis—of human behaviour which includes an element of regulating the environment too. Just as the telescope does not simply help to improve the vision but becomes the very instrument/organ of visioning the space (Gal and Chen-Morris, 2010), the revolving door is not just an instrument that practically supports the human's concrete space-forming activity, but becomes the very instrument that determines the perception and regulation of the space and the mode of behaviour in the space; it becomes the mediation that simultaneously forms the medium of that mediating activity. Being so, it resembles Marx's 'abstract labour' category.

Relativizing and commodifying the space: space fetishism

The revolving door is conceptual: apparently, every human product trans-historically speaking, assumes an abstract-conceptual character because it is applicable to a set of situations beyond the immediate field of its production. With the emergence of capitalism, however, this conceptuality assumes a new, unique form: capitalist machines are not an amalgamation of simpler tools but are a revolutionary type of tools (Hessen, 2009, p.77). As Siegert also notices, 'Revolving doors and automated sliding doors are no longer tools. With them the door becomes a machine' (2012, p.19). Machines are revolutionary not because they revolutionized technical aspects and productivity (though, this is for sure an inevitable effect of the machines) but because machines produce commodities. Machines are abstract in two senses: they are abstract because they are tools; they are also abstract because they produce abstract products: commodities as the bearers of the value. In this, they assume the form of full concepts, which are allegedly late products of human history: Scientific conceptual systems, for instance, appear in large scale only under the capitalist mode of production (Ażeri, 2013, pp. 23-4). The relation between scientific conceptual systems and the study of mechanical machines reveals the integral relation between the material and theoretical tools of capitalist production.

The revolving door reconfigures the experience of the space and of the threshold (Buzard, 2001, p.560). The most important type of such a reconfiguration of the space is the systematization and reconceptualization of the threshold. A classical door, conceptually speaking, signifies a border line that clearly defines the interior and the exterior of a designated space. With the revolving door, the threshold

expands in space; the duration of experiencing the threshold increases in time. The revolving door turns the threshold into an experiential purgatory so that one may claim that the revolving door fetishizes the threshold and makes it into a 'thing'. The crossing of the threshold that is designated by the swing door is a concrete act and is actualisable beyond any doubt; however, the revolving door problematizes such a certainty through relativizing the borderline between spaces, say, the interior and the exterior. Such a relativization has been depicted, for instance, in numerous comic films where the person enters through the revolving door makes a full circle and finds oneself *in* the exterior again. This exterior is and is not the same exterior that had been experienced a moment ago by the person who attempted to enter through the revolving door. Both the exterior and the interior spaces, thus, turn into functions of the revolving door that signifies a symbolic purgatory.

Commodification of space has immediate commercial appearances; as J. T. Harker, manager of Thackray's Restaurant notes back in August of 1888, the revolving door makes all the space of the restaurant, even those places closest to the door available to use (cited in Buzard, 2001, p.560). However, the fetishizing effect of the revolving door on the space is not reducible to such an immediate commercialization. What is manifest even in such an immediate commercialization is the homogenizing effect the revolving door has on the space. On the one hand, the revolving door eliminates the differences between different sections of the space. On the other hand, enlarging the threshold, it dramatizes the difference between the interior and the exterior spaces. As Stalder puts it,

'Whilst doors represent a clear border between interior and exterior space, the differentiation of threshold architectures, which ensued from the use of devices and machines, led to their fragmentation, to a series of individual threshold elements, each with its own way of drawing borders. These various borders made explicit by various narratives thereby constitute spaces that are independent of one another, and confront the proverbial 'four walls' with a countless number of autonomous functional spheres that are at times barely distinguishable from one another'. (2001, p.75)

The expansion of the threshold and its alteration into a space rather than a symbolic line practically determines conceptualization of the space and its categorization: threshold as space yields the whole bunch of threshold spaces in different places with different functions: sanitation, security, quarantine, etc. One common aspect among these different spaces is that the relativization of the space that blurs the border between the exterior and the interior amounts into absolutization of the difference between the two in form of segregation of spaces. The revolving door has a mirror like effect that is similar to the symbolic effect of a series of paintings that include mirrors as a relativizing factor. Mirrors, in such paintings, 'enclose the space while redoubling it, and ... open the space towards new dimensions: ... [they] abolish the spatial limits between interior and exterior, or, rather, the symbolic frontiers between a profane place and a sacred space' (Teyssot, 2008, p.5). A revolving door has almost a similar effect, notwithstanding its mirror-like function while people flow in and out of it, facing each other.

The revolving door is a conceptual tool, a machine that regulates the flow in and out of spaces qualitatively different than regular swing door; it mechanizes the space. Commodification of space via regulating the speed of the flowing individuals in and out of a building, for instance, is one of the implications of the revolving door that might have lied beyond the scope of its inventors. The revolving door is conceptual because it facilitates altering humans to streams and then to isolated particles. The door also functions like a filter; one that Vygotsky speaks of when explaining the filtration process in categorizing the incoming stimuli, which amounts to the formation of behaviour: Behaviour is a system of victorious reactions; it is the expression of the catastrophic essence of the struggle between the person and the environment and other persons. Consciousness is formed as a regulating mechanism that integrates these reactions:

'The outside world "flows" into the wide opening of the funnel by thousands of irritants, attractions, and summons; a constant struggle and collision take place within the funnel; all excitations flow out of the narrow opening as responses of the organism in a greatly reduced quantity. What takes place in behaviour is only a negligible fraction of what is possible. At every moment the individual is full of unrealised possibilities. These unrealised possibilities of our behaviour, this difference between the wide and the narrow openings of the funnel, is a perfect reality; the same reality as the reality of victorious reactions, since all three aspects of a reaction are present in it'. (Vygotsky, 1997, pp.69-70)

As Stalder notes, the revolving door also functions as a device that would keep out those incapable of using it (the elderly, children, and people with disabilities).

'Thus, even the very first revolving doors, which enjoyed privileged status in anonymous metropolitan venues such as hotels, high-rise buildings or department stores, not only facilitated access but also served in the same measure to keep out the weak, as numerous accident reports confirm. Significantly, accident victims were frequently elderly people or children: those who deviated from the typical body foreseen for this machine — the typified body of modern man'. (2001, p.74)

The fetishizing effect of the revolving door, thus, is not limited to a symbolic atomization of the individuals that use the door by controlling the flow; it also physically chooses between commodifiable individuals and those that should be discarded, just as it is, say, in industrial chicken farming.

The revolving door commodifies the space by conceptualizing it: 1. Concepts as aspects of conceptual systems are parts of the machinery of conceptualization that makes the manipulation of the environment and phenomena possible with devices other than human manual labour. 2. Space and time have always been concepts, perhaps among the most fundamental ones, which made projection onto future possible; however, before the conceptual age, the space and time concepts have been determined by immediate environmental physical elements, for instance, by the movements of the sun and changes in the flow of rivers or alterations of environmental factors. At conceptual age or era, similar to all other concepts, time

and space assume a purely formal-symbolic form; this is clearly manifest in the idea of the absolute time that was theoretically expressed in the Newtonian physics and practically manifested itself in the form of equal segments that were universally measurable by the mechanical clocks. 3. Conceptualization of the space, of which the revolving door is a device, amounts to a contradiction within the essence of the space: the absolutization-relativization of the interior-exterior duality is thus the expression of this contradictory essence. 4. The revolving doors, as conceptual device, does not simply supersede and peacefully co-exist, say, with the swing door. Just as is with the case of higher mental functions that are conceptual in essence and change the function of lower functions (Vygotsky, 1987), the revolving door, through conceptualizing and reifying the space, alters qualitatively our relation to the threshold and other elements of architectural space so that every former type of doors or threshold devices starts to reproduce this conceptualized space; for instance, the swing door becomes a function and a representation of the revolving door: Duchamp's Door is an interesting practical example of such a metamorphosis (see Siegert, 2012, p.11-15). It can be claimed that the Duchamp's Door was made possible conceptually because the revolving door had already been in use; the revolving door had provided the conceptual, thought-material that made such an invention possible. This metamorphosis, however, is best visible in the falsification of the intuitive common-sense belief that doors are either always open or closed.

This relativizing-absolutizing effect finds its manifestation in arts too: Films such as *The Truman* or *The God Father* are among the examples that exploit such a contradictory essence of the revolving door. In both movies –as well as in the comic scenes from Chaplin's films such as *The Cure*—an aspect that comes forward is the fluidity and fuzziness that is caused by the revolving door. As was mentioned above, the revolving door absolutizes the distinction between the exterior and the interior by relativizing the threshold (purgatory). This aspect is manifest in Van Kennel's slogan 'always closed'. Yet, from the very outset, like a concept, the revolving door manifests a contradictory nature: the absolute differentiation between the inside and the outside happens to become relative and fuzzy: the flow of the people can be stopped at once, turning the ever-moving machine into a 'transparent coffin' (Buzard, 2001, p.564), one may enter through the door, but not entering the inside but the outside, as is with Chaplin and *the Truman*. What is advertised as a device that stops the intruding elements (germs, cold or hot air, etc.) to the effect of prolonging life activity turns against itself at once and turns into a device that traps the living. This dialectically contradictory structure of the revolving door then is formulated as 'always closed, always open'.

The revolving door locates a contradiction at the heart of the configuration and manipulation of the space. This contradictory essence is visible in the commercial slogan that Van Kennel eventually arrived at. At the initial stage of its introduction, Van Kennel's commercial campaign had endorsed the slogan 'always closed'. Van Kennel went so far as to suggesting that all swing doors, even ones at use at homes, should be replaced by the revolving doors, which allegedly provide full security

against alien elements and provide full control over the flow of the air, germs, and humans. However, the other side of the coin of 'always closed' was way more than obvious not be noticed soon after: the revolving door is also always open. Buzard, for one, argues that such openness made it impossible for the bourgeois family to adopt this symbol of modern life at its private space that is so dear to the bourgeois conceptualization of family and privacy (2001, p.562). However, we argue that it is the commodifying and fetishizing aspects of the revolving door that made such an adoption not impossible but *redundant.*

Van Kannel is way too concerned with the immediate implications, foremost technical, of the revolving doors. Contrary to that, critiques, such as Buzard, are at pains to provide an explanation of the purely symbolic effects of the revolving door on the conceptualization of the space with the hope of balancing such technical-physical emphasis. It is true that the relativization of the inside and the outside that is caused by the revolving door may have been the reason for the bourgeois family to withdraw from the idea of installing revolving door in the place of the swing door as this may amount to the relativization of the inside of the private sphere. Yet, this is too superficial an interpretation. The relativization of the space, as mentioned above, contradictorily amounted in the absolutization of the difference between the inside and the outside (an aspect that is also manifest in the technical 'superiority' of the revolving doors in controlling the flow of air, heat, and of people in and out of buildings). The core of the matter, however, lies in the conceptualization of the inside and the outside and thus fetishizing these designated spaces. As the revolving door fetishizes the space, the inside space acquires an absolute being leaves it redundant to change the classical swing doors with the Kannel's revolving doors: all former doors now are functions of the revolving door and are determined by this concept. Therefore, although the revolving door problematizes the privacy of the inside space of the bourgeois family, through fetishizing the inside and the outside, symbolically and conceptually, it absolutizes the sacredness of the private sphere: revolving doors are always open but they are also always closed.

The swing door determines the threshold as a concrete entity; thus, the inside and the outside are concretely separated; their absoluteness at this stage is a function of their particular concreteness; such locality signifies a pre-conceptual stage in the development of the idea of internal and external spaces alongside the public and the private spheres. The revolving door, however, blurs the local-particular concrete divide between the aforementioned spaces; yet, by abstracting and universalizing the difference between the two it turns both the interior and the exterior into abstract universals that are synthesized to form their full expressions as absolute contradictories in the concrete universality of the threshold that is now extended into a determined space, a purgatory, thanks to the revolving door.

References

Azeri, S., 2013. Conceptual Cognitive Organs: Toward an Historical Materialist Theory of Scientific Knowledge. *Philosophia: Philosophical Quarterly of Israel,* 2013, 10.1007/s11406-013-9460-3.

Buzard, J., 2001. Perpetual Revolution. *Modernism/modernity,* 8(4), pp. 559-81.
Brown, H. I., 2005. *Conceptual Systems.* London & New York: Routledge.
Gal, O. and Chen-Morris, R., 2010. Empiricism Without the Senses: How the Instrument Replaced the Eye. In C. T. Wolf and O. Gal, eds. 2010. *The Body as Object and Instrument of Knowledge: Embodied Empiricism in Early Modern Science.* London & New York: Springer. Ch.6.
Hessen, B., 2009. The Social and Economic Roots of Newton's *Principia.* Translated from Russian by P. Schimrat. In G. Freudenthal and P. McLaughlin, eds. 2009. *The Social and Economic Roots of the scientific Revolution: Texts by Boris Hessen and Henryk Grossmann.* Boston: Springer. Ch.2.
Ilyenkov, E., 1982, *The Dialectics of the Abstract and the Concrete in Marx's Capital.* Translated from Russian by S. Sirotkin. Moscow: Progress Publishers.
Siegert, B. 2012. Doors: On the Materiality of the Symbolic. Translated from German by J. D. Peters. *Grey Room,* 47. pp.6-23.
Stalder, L., 2009. Turning Architecture Inside Out: Revolving Doors and Other Threshold Devices. *Journal of Design History,* 22(1), pp.69-77.
Teyssot, G., 2008. Mapping the Threshold: A Theory of Design and Interface. *AA Files,* 57, pp.3-12.
Vygotsky, L. S., 1987. *Thinking and Speech.* Translated from Russian by N. Minick. In R. Rieber and A. Carton, eds. 1987. *The Collected Works of Lev* Vygotsky, Vol. 1. New York & London: Plenum Press, pp. 37-285.
Vygotsky, L. S., 1997. Consciousness as a Problem for Psychology of Behaviour. Translated from Russian by R. van der Veer. In R. Rieber and J. Wollock, eds. 1997. *The Collected Works of Lev Vygotsky,* Vol 3. New York and London: Plenum Press, pp. 63-79.
Vygotsky, L.S. and Luria, A., 1994. Tool and Symbol in Child Development. In R. van der Veer and J. Valsiner, eds. 1994. *The Vygotsky Reader.* Oxford, UK: Blackwell. Ch.7.

On the Way to Autonomous Wall: Cage Structure

Pınar Kutluay

1. Introduction

19th century became an important era thanks to the Industrial Revolution. In Europe, the whole society went through a certain transformation almost in every field. Also, life norms of people changed. Barry Bergdoll wrote that the increase in the political, social, and intellectual freedom and power of a growing bourgeoisie in Western Europe together with the results of the Enlightenment led changes in the architectural programmes as well. Architects became interested in much wider range of buildings together with new types and tasks. Museums, public theatres, public theatres, halls of legislative assembly, and later railway stations, department stores, and exhibition buildings including fairs all appeared in this period [1].

Furthermore, in America, there occurred a demand for higher buildings, leading to the appearance of skyscrapers. With this demand, the existing ways of construction began to be challenged. In the traditional load-bearing system, the whole building was carried by the load-bearing walls and the thickness of the base wall was proportioned to the height of the building. Therefore, as the building became taller, the base wall got thicker and this eventually became a serious problem for higher buildings. As a result, the system began to lose its practicality, being replaced by alternative strategies. Metal frame became common for the construction of large buildings in a short time in America [2]. Powered by the availability of new materials, iron and steel, metal frame would reach a significant level of advancement in Chicago, bringing the term "Chicago frame." In this system which is also called "skeleton frame," the frame carried all the load of building including walls, allowing them to be totally autonomous. Actually, along with Chicago, other places of America witnessed important changes in construction as well. For instance, approximately at the same time with the skeleton frame construction, there appeared another system in which the frame carried only the roof and floors whereas the walls supported themselves. This became popular especially in New York and was called as "cage structure." In cage structure, walls stood detached from frame by self-supporting itself and became autonomous. This paper seeks to examine how cage structure appeared and contributed to the autonomous character of wall before the skeleton structure in which wall is transformed into an autonomous surface, being carried by the frame. In order to fulfill this purpose, the appearance of frame and the changing role of wall with cage structure will be examined.

2. The Appearance of Frame and Skyscrapers

The appearance of frame can be considered a remarkable outcome of the Industrial

Revolution. "Framing" as an action, gives the impression of ordering via enclosure, isolation and omitting extra material, referring to the idea of economy and profit [3]. The idea of economy and profit gained more importance with the Industrial Revolution period. Economics became the main factor in the appearance of frame-type structures rather than engineering [4]. The extensive use of the new materials, which were iron and steel, and mass-production strategies also contributed to the appearance of frame. By 1850, iron was already a part of the daily life, including mass-produced decorative elements of apartments together with commercial and public buildings [5]. Steel, which was a mixture of iron and carbon, was invented after a certain period of time [6]. It came on the scene in the second half of the nineteenth century. The method of Henry Bessemer can be marked as a significant step in the production of steel, as Joseph Rykwert noted that the further advancement of metal construction became possible when he came up with the process of steel smelting [7]. In the following years, steel became more common in both Europe and United States, being used with iron interchangeably in frame construction.

The buildings with iron frame can be traced back to the English textile mill construction in the last decade of the eighteenth century [8]. Still, at early times, iron was also used in several components in the buildings rather than being the core material of the structure. For instance, cast iron was preferred for decorative purposes, after several operations to make it have a texture like stone. This became common for the cast-iron facades fabricated by James Bogardus, Daniel Bagder and others in the United States [9]. In the following years, wrought iron also was used in construction widely. However, it is possible to argue that iron-frame structure became most popular with the Crystal Palace (Image 1) [10]

The iron-frame structure seemed to offer very rational solutions for architecture. That could be the reason why the designer of the Crystal Palace, Joseph Paxton, was blamed for focusing only on calculations. In spite of the criticism he received, he declared that his inspiration was nature for coming up with a type of an iron-glass structure, in which the iron was capable to span long distances. He was considered to have ignored the other aspects of architecture. As a matter of fact, it is not surprising that he used knowledge related to nature; because he was not an architect, he was a gardener. His design proposal for the building of the Great Exhibition of 1851, which would be called as Crystal Palace, became a product of his creative solutions for the

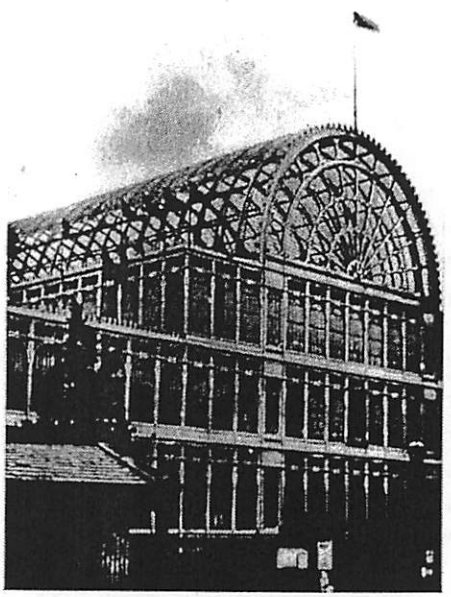


Image 1. The Crystal Palace

greenhouses he had designed before. His revolutionist architecture based on frame and infill had its roots in the one for the Duke of Devonshire's exotic water-lilies - the *Victoria Regia*, which had hollow ribs and thin leaf membranes [11]. In addition to these features, the Crystal Palace became a milestone in the use of frame structure. However, about frame structure, Colin Rowe argued that even though it had already been used in different places before, Chicago became the place to observe the precise results of its application most quickly [12], with the appearance of the term "Chicago frame." In the following times, "Chicago frame" would be the common equivalent for the "skeleton" construction, in which the system involves a framework and filling, which the framework carries [13].

With the Chicago frame, Chicago also played a key role in the appearance of skyscrapers. A skyscraper can be defined as a high-rise building which has elevator and a skeleton frame with a curtain wall around. According to this definition, the Home Insurance Building by William Le Baron Jenney can be regarded as the first skyscraper of America [14] (Image 2) [15]. As skeleton construction became common, the number of skyscrapers increased dramatically. Still, at the same time with skeleton frames; it was also possible to observe the use of almost complete iron or steel frames with self-supporting exterior walls. Both of these and load-bearing walls were all in use between 1880 and 1900. Using almost complete iron or steel frames with self-supporting exterior walls around became a phase from load-bearing walls to complete iron or steel frames of skeleton construction and was called as cage construction [16].

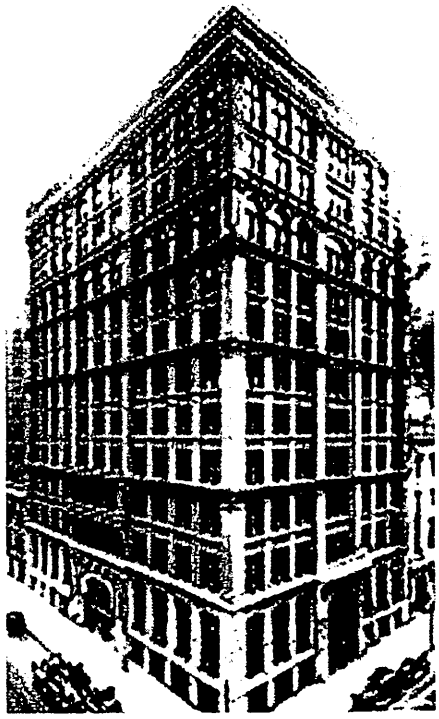


Image 2. The Home Insurance Building

3. Cage Structure and the Changing Role of Wall

Cage construction can basically be defined as using a frame and self-supporting walls around [17]. It basically consisted of an iron or a steel framework which carried the entire floor and roof loads, whereas the walls were supporting themselves. Cage construction was said to be particularly common among the architects of New York [18]. For instance, the Havemeyer Building designed by George B. Post and completed in 1892 stands out as a significant example of cage construction. There was the frame; however, the exterior walls were self-standing [19]. In the building, a wrought iron frame was used. The frame was similar to a frame which would be used in a skeleton

building; however, it did not support the masonry around [20] (Image 3) [21].

As it was seen with the Havemeyer Building, with cage structure, "wall" began to be independent from main structure of building. Being detached, it stood and supported by itself. However; as it had to support itself, it surrounded the building according to the load-bearing rules. In this case, it had to be thicker at the bottom in order to carry the entire load of the other parts. Still, wall in cage structure can be considered as "autonomous," since it had the chance to behave freely from main structure.

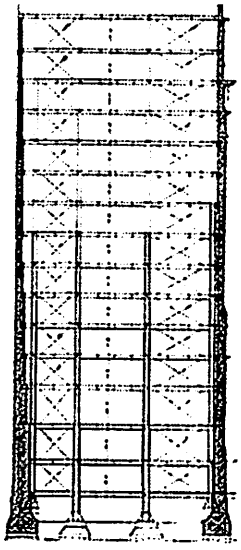


Image 3. Section of The Havemeyer Building

4.Conclusion

To conclude, with the appearance of frame, the role of wall in construction was able to shift from load-bearing to non-load-bearing. In this case, the use of cage structure became an important change, prior to skeleton construction. Before cage structure, since wall was load-bearing, it was impossible for it to be detached. As wall became independent from structure, it became autonomous. Yet, it still had to carry itself according to load-bearing rules. In the following times, it would be again autonomous in a different way and totally supported by frame of skeleton structure, bringing the term "free facade" with regard to the Chicago frame. With free facade, the load-bearing component, frame was separated from the non-load-bearing one, wall [22]. Furthermore, architects gained the opportunity of designing facade freely, independent from structure. All in all, being an intermediate phase between load-bearing and skeleton construction, cage structure contributed to shaping autonomous character of wall, by allowing it to stand by itself.

References

Bergdoll, B., 2000. *European Architecture 1750-1890.* New York: Oxford University Press.

Tunick, S., 2001. The Evolution of Terra Cotta: "Glazing New Trails." *APT Bulletin,* 32(4), pp. 3-8.

Fontein, L., 2000. Reading Structure through the Frame. *Perspecta* 31, pp. 50-59.

Friedman, D., 1995. *Historical Building Construction.* New York: Norton&Company.

Bergdoll, B., 2000. *European Architecture 1750-1890.* New York: Oxford University Press.

Elliot, Cecil D., 1992. *Technics and Architecture: The Development of Materials and Systems for Buildings.*

Rykwert, J., 2004. *The Seduction of Place: The History and the Future of the City.* New York: Oxford University Press.

Murray, S., 2009. *Contemporary Curtain Wall Architecture.* New York: Princeton Architectural Press.

Elliot, Cecil D., 1992. *Technics and Architecture: The Development of Materials and Systems for Buildings.*
[*The Crystal Palace*] n.d. [image online] Available at: <http://www.ric.edu/faculty/rpotter/Crys_Pal_Large_1851.jpg> [Accessed 30 September 2013].
Bergdoll, B., 2000. *European Architecture 1750-1890.* New York: Oxford University Press.
Rowe, C., 1987. *The Mathematics of the Ideal Villa and Other Essays.* Cambridge: The MIT Press.
Webster, Carson J., 1959.,The Skyscraper: Logical and Historical Considerations. *Journal of the Society of Architectural Historians* 18(4), pp. 126-139.
Friedman, D., 1995. *Historical Building Construction.* New York: Norton&Company.
[*The Home Insurance Building*] n.d. [image online] Available at: <http://www2.gsu.edu/~wwwher/courses/8690/home/2.jpg> [Accessed 30 September 2013].
Friedman, D., 1995. *Historical Building Construction.* New York: Norton&Company.
Friedman, D., 1995. *Historical Building Construction.* New York: Norton&Company.
Elliot, Cecil D., 1992. *Technics and Architecture: The Development of Materials and Systems for Buildings.*
Webster, Carson J., 1959.,The Skyscraper: Logical and Historical Considerations. *Journal of the Society of Architectural Historians* 18(4), pp. 126-139.
Friedman, D., 1995. *Historical Building Construction.* New York: Norton&Company.
Webster, Carson J., 1959., The Skyscraper: Logical and Historical Considerations. *Journal of the Society of Architectural Historians* 18(4), pp. 126-139.
Leatherbarrow D. and Mostafavi, M., 2002. *Surface Architecture.* Cambridge, MA.: The MIT Press.

The Double Life of Architecture

Karen Olesen
Aarhus School of Architecture, DK

In the academic year 2012 / 13, the studies at Studio Spatial Transformations at the Aarhus School of Architecture took place under the headline *habitation*. The teaching was based on an understanding architectural form as a phenomenon that is at the same time freed from and completely bound up with functionality, and the overall aim of the study programme was to engage the students in a discussion on the possible correlation between the autonomy and the habitability of architectural form. This paper describes the theoretical background of the studio work as well as the spring semester's project.

Autonomy and habitability are difficult terms. How can a practice as evidently contingent as architecture proclaim its autonomy? And how do we handle the concept of habitability, which can refer to almost anything between a legal doctrine for housing and a subjective feeling of homeliness?

That architecture 'depends' as Jeremy Till (2009) proclaims in his committed critique of the architect's wish for autonomy, is obvious. The fact that the practice of architecture is very much determined by all sorts of external circumstances, uncontrollable forces and interfering players does not mean, however, that the notion of autonomy is irrelevant in the architectural discourse. On the contrary, if we want to insist on architecture as being both a distinctive practice and a unique cultural phenomenon, some sort of autonomy must be maintained. This goes for the practice as well as the product - for the architect and for architecture itself.

For the professional community of architecture, a collective autonomy - or self-rule - is a prerequisite for securing architecture as a specific profession with its own protocols, standards and professional expertise. As such the concept is quite non-controversial; the professional self-rule defines a certain quality level and secures the architect his area of expertise in relations to other professionals and collaborators. If, instead, autonomy is assigned to the individual architect, it is another matter altogether. The idea of the architect's creative autonomy implies complete control of the design process; a room to manoeuvre independent from any outer restrictions. Whether such restrictions are the standards defined by the professional community itself or - more often - extra-architectural circumstances in the form of political, economical and social constraints, to the freedom-seeking architect, they will be seen as obstructions to creativity and originality. Such '*art-envy*' (Frampton, 1991 p. 20) in architecture has frequently been condemned as a starry-eyed fantasy that ignores the social and political realities of the practice; still, as its critics seem largely to outnumber its protagonists, the autonomous architect may in fact himself be a figment of our imagination.

If we turn our attention to architecture itself rather than its practitioners there is more to be gained. The quest for a formal autonomy of architecture reached a peak in the 1970's and -80's academic discourse when, inspired by linguistic theories, architecture was pronounced an autonomous *language*, a structural system with its own terminology, its own formal set of rules and its own internal meanings. In the more radical understanding, this language was considered a closed system: a sort of abstract formal lingo that evades any outer - that is any historical, social or programmatic - signification. Today, well after the pragmatic turn of the 1990's such ideas may seem obsolete and less relevant. But confronted with the neo-functionalism of parametric and evidence-based design that let us believe that architectural forms are nothing but the logical outcome of digital scripts or scientific information, there is good reason to reconsider the formal autonomy of architecture. Recently Patrik Schumacher (2011, 2013) has put forth the concept of *autopoiesis* (or self-making), re-introducing architecture as a distinct system of communication. And although Schumacher's sources of inspiration are biology and sociology and not linguistics, and although he is keen on defining architecture's place in society at large, his writings represent a renewed interest in the discussions on architecture as a unique mode of expression that is not fully determined by other societal systems and structures.

If we consider the language of architecture to be a self-determining system it will be possible to regard the individual work of architecture as autonomous; as an artefact with qualities that are independent of its historic and geographical context and of its cultural and functional content. Still, since architecture is usually produced under strong influence from such factors, this reading requires that we observe the work through a focused lens, blurring the context in which it was conceived and enhancing its formal features. Peter Eisenman (1979) has demonstrated how this can be done in his pertinacious reading of Maison Dom-ino. To Eisenman, Le Corbusier's prototypical living unit was neither a vision of mass housing nor an exploration of the possibilities of early 20th century technologies and means of mass production; rather, he insisted, it was a '*self-referential sign*' - an '*architecture on architecture*'. At a time when autonomy was debated zealously, K. Michael Hays (1984) recognized how such attempts at rescuing architecture from being a merely utilitarian instrument of culture may well have released a more sophisticated and precise vocabulary of architecture and a better understanding of the specifics of the discipline; still, he concluded: '*Reduced to pure form, architecture has disarmed itself from start, maintaining its purity by acceding to social and political inefficacy.*' (Hays, 1984 p. 17)

But is it necessarily so that insisting on architecture as pure form, stripped of information concerning its cultural, historical and social context, leaves us with what may be an interesting and aesthetically pleasing, but also a basically impotent, useless object? Or is it possible that such a naked architecture can still contain information concerning architecture's capacity as a framework for social life: information on the *habitability* of architecture?

In order to answer this question I will suggest a slightly different understanding of formal autonomy. Rather than indicating the introversion of the self-referential object, we may think of autonomy [*auto-* (self) *-nomous* (knowledgeable)] as architecture's self-reliance or knowledge-on-itself. Just as the individual architect is characterised by his expertise regarding the rules and conventions of his profession, the work of architecture can be said to possess - or rather demonstrate - a unique knowledge on architecture *per se*. And since architecture is per definition not only an aesthetic artefact but also - and precisely in virtue of its formal qualities - a habitable structure, the distinctive knowledge that lies embedded in the work of architecture combines the formal and the functional. This knowledge does not, however, present itself as typological examples for imitation and is therefore not to be understood as functionalistic recipes for the good dwelling, the good school, the good office et cetera... Rather, it is a knowledge that exists beyond the programmatic specificities of the work, and it is only when we consider the architectural form in itself - as an autonomous phenomenon - that its habitability really emerges. So when using the term habitability (and not, for instance, *functionality* or *use*) I want to stress that we have to do with a sort of virtual quality which - just like the formal characteristics of the work - exists independently from its actual programme and use. Only by cutting off the specific programme it becomes possible to study architecture's habitability as a formally specific yet programmatically open capacity.

We will find, then, in works of architecture, knowledge that escapes its own genesis. The programmatic particulars that initially triggered the design process are of course decisive factors in that same process. Still, the relation between architecture and the activities it houses is the subject of constant negotiations, letting the habitability of architecture manifest itself as a significant openness - an inviting cooperativeness, which will respond to and support a variety of uses. No matter what conditioned the work of the architect, what programmatic specifications and demands he had to consider and what specific wishes the client insisted on having fulfilled; once a work of architecture is brought into the world, it becomes available to us as an independent reservoir of information, ready for us to explore and exploit. And just as the use of architecture can be thought of as an ongoing rediscovery of the architectural form, we as architects can discover the social and functional capability of architecture through investigations into its formal features. Opposing formal autonomy and social relevance, then, is a false dichotomy: the autonomous form is bound to inform us on its habitability; otherwise the autonomy of architecture would paradoxically negate the very thing that distinguishes architecture from other art forms.

Habitability can be defined as a virtual capacity that appears in actual works of architecture, initially bound to, but not absolutely determined by their original purposes. The vagueness of pre-modern terms such as *commodity, convenience* and *character* seems to fit the indeterminacy of this capacity better than the pseudo-scientific expressions of functionalism. Habitability operates as a kind of dormant energy in the architectural form; as a potential that can be released and expanded in more ways than its authors intended.

It was this concept of habitability that we wanted to explore at Studio Spatial Transformations in the spring of 2013.

We asked the students to design a municipal school in a new urban district in Copenhagen. Usually, such an assignment would be organised as follows: first, a couple of weeks doing research on school architecture, on the relationship between pedagogical ideas and the spatial layout of school buildings; after that, another couple of weeks spent on a thorough analysis of the chosen site. With this information secured, the students would be ready to move on to the design proper. This well-known *modus operandi* reflects an understanding of architectural form as being developed from extra-disciplinary information: first and foremost from the programme. It defines the work of architects as problem solving: you give us a question and we will find the architectural response to that question through analysis and research.

In order to test the idea of habitability as a potential inherent in the architectural form, we chose a different approach. We let the students instigate their design work by establishing a purely architectural programme: that is a basic spatial and formal material that was not developed from the function or from the site, but could work as a critical counterbalance when struggling with exactly those issues. Derived from architecture within, this programme was meant to inform - even drive - the design process in a dialogue with the given parameters of the assignment.

We sent the students on the prey, as it were, offering them a piece of architecture to explore, delve into and subsequently rob. Inspired by T. S. Eliot's (1950, p. 125) famous statement: '*Immature poets imitate; mature poets steal; bad poets deface what they take, and good poets make it into something better, or at least something different*', the first weeks of the semester was spent stealing.

The loot was found in the archives of Fondation Le Corbusier. It consisted of the abandoned project for The Governor's Palace in Chandigarh, designed in the 1950's as part of Le Corbusier's proposal for the new capital of Punjab in India. The Governor's Palace was intended to crown the capitol complex, providing the governor of Punjab with ceremonial rooms as well as private apartments and guest accommodations. The project was, in the words of Le Corbusier, '*the result of the strict conditions of the problem.*' (Le Corbusier, 1957, p. 102) Maybe, though, the conditions had not been made absolutely clear, for in the end Prime Minister Jawaharlal Nehru found the setting and the project to be too monumental for the new democracy; consequently, the project was never built. If in this way it failed as a problem solving exercise, the project remains fascinating as a response to highly specific political and geographical circumstances. Alexander C. Gorlin (1980) has done a thorough analysis of the project as an intelligent cross-cultural mediation between Eastern philosophy and modernist civilisation, showing how the Governor's Palace is easily read as a cultural product, teeming with information on its historic circumstances and on the difficulties involved in establishing a proper correspondence between culture and form.

But if we cleanse the Governor's Palace of its geographical context, of its symbolic and functional content, of its troubled fate and even for a moment of its signature *LC*, we are still left with a material packed with information. Information on orchestrated spatial sequences, on scalar leaps and structural layers, on proportions and light - in short on architecture itself. Stripped of its own history, the project is ready to take on a different life, to be scrutinised for new programmatic potentials and possible contextual relations.

The palace has the appearance of an enigmatic sculptural object: a piling of smaller and smaller blocks, topped by a large crescent canopy (image1) Behind this intriguing exterior, the *plan libre* structure holds five main levels, each with its own distinctive layout and loosely joined by sixteen gigantic cruciform columns and a few stairwells. Together the structural elements constitute a veritable storage rack of spatial situations, laid out ready to be robbed.

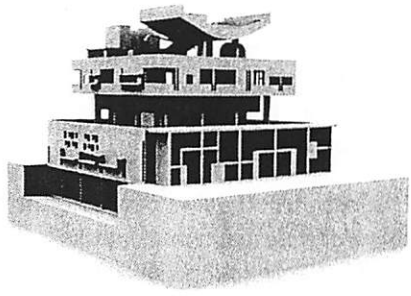


Image 1

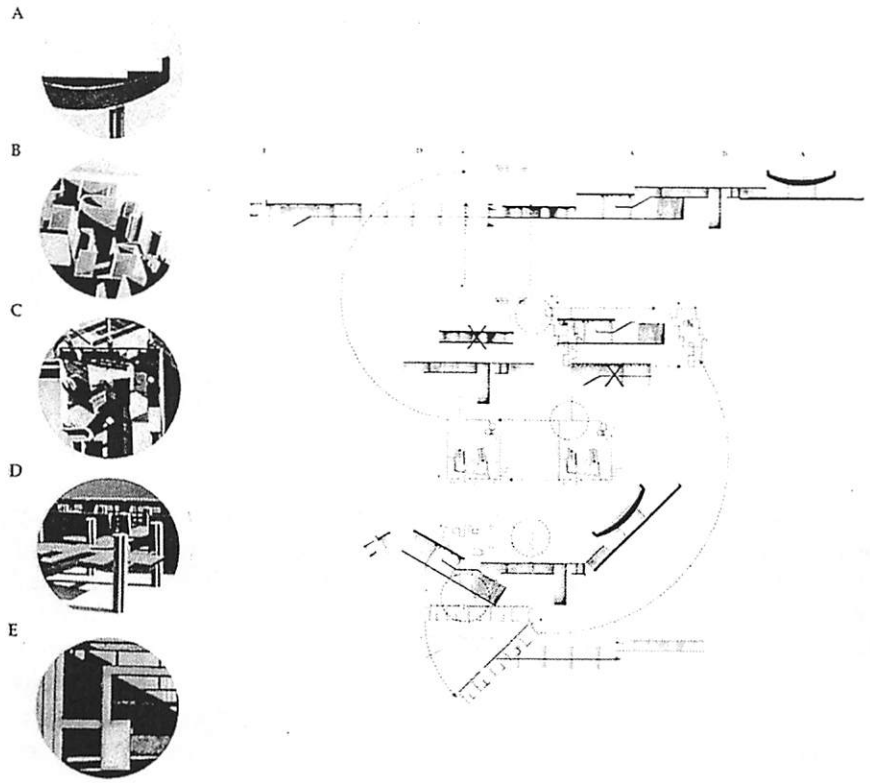


Image 2

So, in a somewhat avaricious mood, the students studied the goods, identified the most delicious pieces, cut, cropped and remixed - ending up with a material that formed the basis of their individual design projects (image2). They identified a number of spatial sequences through the palace; a series of virtual movements through some of its architectural traits: its deep loggias, its open halls, its shaft like staircases, its labyrinthine curves and its expressive roof terrace. Reinterpreted in a collection of drawings, models and model photographs (image3, image4) the readings emphasized the bodily experience of the spaces, indicating the coexistence of formal quality and potential for use. The play of massing and free plan, of actual and implied depth, of curvilinear and orthogonal composition and the divergence of visual and physical continuity became evident as characteristics of the palace. If at first hand these characteristics define the structure as an object of contemplation, the work of the students showed that when re-presented and gradually transformed in a series of physical models, the spatial situations began to invite re-interpretations as frameworks for human activities.

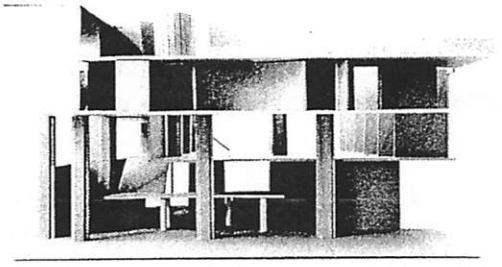


Image 3

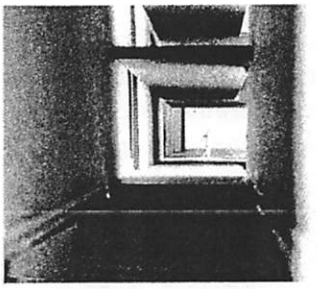


Image 4

This study was done with the school programme in mind: the investigation of the spatial and formal qualities of the palace took place in a continuous dialogue with specific programmatic intentions and resulted in a number of spatial translations: the wedge-like slits filtering light through the massive walls of the palace was turned into reading niches, providing privacy on the fringes of a common hall (image5); the enormous *brise soleil* that constitutes an entrance of the palace was recreated as semiprivate areas for group work or - when pierced through lengthwise and turned into a connecting backbone of a school building - served as a geometrically precise but spatially liquid in-between area of learning (image6). And in a third project the concave spaces of the governor's apartment was turned into large voids providing overhead light in a deep entrance space (image7).

Image 5

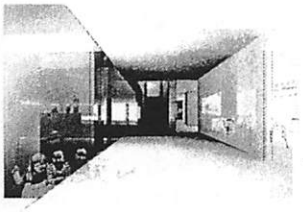


Image 6

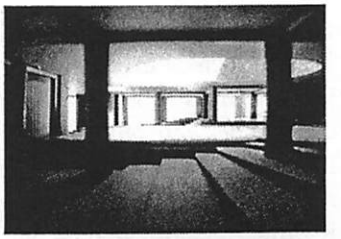


Image 7

This almost opportunistic treatment of an existing work and the indirect way of approaching a programme may seem shallow or even arbitrary compared to more traditional ways of working. But judged by the results, the backward procedure where formal decisions are put first in line in the design process did in no way lead to proposals that disregarded the social aspects of the assignment. And after all, this academic approach is maybe not that far from the reality of an architectural practice. Design is not so much about answering precise questions or dealing with absolute factors, but more often about continually constructing contexts out of information that is rarely consistent or concise. Formulated on a vague basis of economic and cultural circumstances and balancing the positions of different interested parties, a programme is far from being an absolute, conclusive specification requirement for a building. And in a way the architect's handling of a programme corresponds to the user's inhabitation of architecture: as a dialogical process in which, as Herman Hertzberger (1963) has it, *'form and programme evoke one another'*. And just as we keep reinterpreting existing buildings for changing or even new uses, constantly finding ways of interacting with what is already there, the recirculation of existing architectural matter can be a way of qualifying and refining a given programme. In a reciprocal process that is anything but introverted it depends on the dialogue between the purely architectural and the specific factors of a given job, insisting that both be open for interpretation.

This brings up the question of creativity. The reactivation of extant architecture secures a close connection between the study and the production of architecture, and we wanted to impart to the students the understanding and the experience that being creative is very much about being able to look hard, to select and to discover possibilities in what already exists. That the discipline of architecture provides us with a huge and inexhaustible reservoir of material, which - when brought into contact with new extra-architectural information - can open up unseen aspects of that information, qualifying a given task. In her quasi-anthropological study of the Office for Metropolitan Architecture, Albena Yaneva (2009, p. 103) concludes quite accurately:

'...design never starts from scratch. (...) - it does not require grand gestures of radical departure from the past, but small operations of recollecting existing bits of projects and concepts, reusing, recycling, reinterpreting, rethinking; the 're-' stands at the heart of design.'

The fact that the Governor's Palace was never built, existing solely in the form of architectural representations - drawings and models - helped us in our approach. The provisional quality of a project that never made it beyond the drawing board and has not been definitively fixed in physical matter maintains it in a state of sustained process, inviting us to handle it as a flexible, even transformable thing. And it turned out that we were not alone in recycling the project: sixty years after its rejection, the Palace stirs again. After it was decided to offer the governor of Punjab a more modest residence in the city of Chandigarh, Le Corbusier designed an alternative project in order to complete the now amputated capitol composition. (Le Corbusier, 1970)

His uncharacteristically clumsy proposal for a Museum of Knowledge, containing laboratories for four fields of knowledge: technology, economy, sociology and ethics - seemed a more suitable supplement to the governmental institutions. This project, however, was also abandoned - this time due to financial shortages. But in recent years, new plans for the still uncompleted capitol complex have emerged and discussions as to which of the projects should be revived has been going on for quite some time. At one point Union Territory officials announced the intention of merging the two aborted projects into a second version of the Museum of Knowledge: having the best of both worlds, the scheme lets the architecture of the Governor's Palace materialise as a new setting for the museum programme. (Waite, 2007) Whatever one may think of such re-use of architectural material, it reminds us of the fragile link between the architectural form and the activities it houses. It also serves to exemplify how a work of architecture leads a double life: on the one hand it is an artefact completely determined by social and cultural ideas, on the other it can function independently of those ideas as a medium for the ongoing reformulation of both culture and sociality.

Since we will search in vain for a definitive formula for the good life, we have to continuously evaluate architecture as both provocative and enabling environments, and it is through the close inspection of existing structures that we can find knowledge on potential forms of habitation - exemplified rather than explained. Human beings are adaptable creatures who can be reconciled to unfriendly climates and find ways to inhabit the most difficult spaces. While this ability in no way releases the architect from social responsibility, it should remind us that the convenience of architecture is not an absolute, final capacity but rather a product of constant negotiation. And that the autonomous architectural form can be a source of innumerable interpretations and variations: formal as well as social.

Reference List

Till, Jeremy, 2009. *Architecture Depends.* Cambridge, Mass.: MIT Press.

Frampton, Kenneth. Reflections on the Autonomy of Architecture: A Critique of Contemporary Production. In: D. Ghirardo, ed. 1991. *Out of Site: A social Criticism of Architecture.* Seattle: Bay Press. pp. 17-26.

Schumacher, Patrik, 2011 - 2012. *The Autopoiesis of Architecture* vol. I & II. Chichester: Wiley & Sons

Eisenman, Peter, 1979. Aspects of Modernism: Maison Dom-ino and the Self-Referential Sign. In: K. M. Hays, ed. 1998. *Oppositions reader: selected readings from A Journal for Ideas and Criticism in Architecture, 1973-1984.* New York: Princeton Architectural Press. pp. 188-198.

Hays, K. Michael, 1984. Critical Architecture: Between Culture and Form. *Perspecta,* 21. pp. 14-29.

Eliot, T.S, 1950. Philip Massinger. In *The Sacred Wood.* 7th. ed. London: Methuen. pp. 123-143

Le Corbusier. Le Palais du Gouverneur. In W. Boesiger, ed. 1957. *Le Corbusier et son atelier rue de Sèvres 35: Oeuvre Complète 1952-57.* Zürich: Verlag für Architektur (Artemis). pp. 102-107.

Gorlin, Alexander C., 1980. An Analysis of the Governor's Palace of Chandigarh. *Oppositions,* 19/20. pp. 160-183.

Hertzberger, Herman, 1963. The Reciprocity of Form and Programme. In H. Hertzberger (1991) *Lessons for Students in Architecture.* Rotterdam: 010 Publishers. p. 149

Yaneva, Albena, 2009. *Made by the Office for Metropolitan Architecture.* Rotterdam: 010 Publishers.

Le Corbusier. Le Musée de la Conaissance. In W. Boesiger, ed. 1970. *Le Corbusier: les dernières Oeuvres. Volume 8 des Oeuvres complétes.* Zürich: Verlag für Architektur (Artemis). pp. 68-73.

Waite, R., 2007. New twist for Le Corbusieris Chandigarh masterwork, *Architects Journal,* [online] Available at: ‹http://www.architectsjournal.co.uk/news/new-twist-for-le-corbusiers-chandigarh-masterwork/1076600.article› [Accessed 15 August 2013].

Informality: A Realm for The Autonomy of The User

Cristina Dreifuss - Serrano

Architecture has to be conceived with the people, materialised as much as possible by the people. [...] This does not mean that the architect has no role in the process. (Friedman, 2011, p. 15)

Traditional conceptions of our profession place the architect as a problem solver, and the user, in most cases, as the receiving end of a finished product. When the user can pay for it, and is willing to hire the services of an architect for the design and construction of something, it is expected for both architect and client to meet frequently, in order to discuss vastly about the work to be done. The dialogue between the user and the architect produces a 'tailored' work, in which the needs of the former are the leitmotif of the project and are met by it.

The great majority of the architectural works we now admire and study in schools have been produced following this schema. Those are, very often, landmarks, made by some famous architect; they are produced by a professional elite for a privileged group of consumers.

However, projects with speed and efficiency requirements, such as mass housing (Turner, 2009 [1976], p. 12), do not allow this interaction. The need to create houses for a large amount of unknown people forces the architect to plan for an anonymous, abstract client, as conceived by a marketing department. While these designs often take into account a number of possibilities and variables tested in time, and follows studies of preferences and tastes, when designing homes, it is often that the final user of the product – who never even got the chance to meet their architect or take part in the design process – would not be entirely satisfied with it.

Of course, inhabitants might have the opportunity to choose from a variety of dwellings the one they think is better suited for their needs. However, once confronted with the realities of everyday life, most users would admit that, even if they are happy with their lot, there are a few changes they would be willing to do.

Because dwellings are composite goods, most households trade off various dwelling characteristics and choose a dwelling meeting their most important needs and preferences within their budget and the choice set offered by the housing market. (van Ham, 2012, p. 48)

Informality

Informality is a term used to describe a situation in which the mechanisms put into practise deviate from the laws established. Human behaviour that ignores said rules

or tries to 'bend them' at some point could be, thus, considered informal. Sometimes some of these attitudes are accepted or even encouraged amongst small or not so small communities. However, when they reach a larger scale, they come to close to what is considered illegal and are, consequentially, prosecuted.

In countries where law enforcement is not very severe, mostly because of a lack of resources, informality develops as an alternative practice to most of the formal city activities. Moreover, in scenarios of poverty, such as those of dwelling countries or marginal communities, informality is also the response to people's needs that cannot or would not be met by the government or the official systems.

Peruvian economist Hernando de Soto points out that informality is

a 'surviving strategy' – 'a safety value for societal tensions.' He wrote that this was undertaken by the poor with 'ingenuity and entrepreneurial spirit'. [...] informality was a natural response to real market forces, and not to the rise of unemployment and the need for jobs. (Roy, et al., 2004, p. 13; De Soto, 1986)

As Sheiz proposes (Sheiz, 2008), informality is a natural phenomenon. It emerges, without having a clear image of what it will turn out to be, or even what the main scope is. It starts with ideas that try to materialise through scarce means and in despite of adverse conditions. *Therefore, any kind of informal practice is to be considered as an activation that brings informality from the realm of the possible to the realm of the actual.* (Sheiz, 2008)

When referring to the city, informality is a term closely linked to squatter settlements and the illegal occupation of the city by large groups of newcomers that have no access to proper housing, due to extremely difficult economic situations. The result is a part of the city made of temporary materials, which grows in time and changes according to its inhabitants' needs and economic possibilities.

Sometimes, especially in its early stages, the informal city offers a great contrast with the formal, established one. This contrast is not only in appearance, but also in uses and customs, and can lead to social and cultural frictions on those grey areas in the middle.

Rahul Mehrotra uses the terms static and kinetic city to refers to the formal and the informal city, respectively, and argues that

Architecture is clearly the spectacle of the static city. And while the static city depends on architecture for its representation, it is no longer the single image by which the city is read. On the other hand, the kinetic city is not perceived through architecture, but through spaces, which hold associative values and support lives. (Mehrotra, 2012 [2010], p. xi)

Informality, while hardly being an ideal solution, presents characteristics and resources that might even propose better relations between its inhabitants and a more solid social structure, based in cooperation and community ties.

As a mechanism for the construction of the city, it is not even a recent phenomenon. Through history, the design and construction of popular housing has rarely been a task for the architect or the engineer. Settlements, towns and cities have, in its vast majority, been established and constructed by the very same people that would later on dwell them. With the sole exception of important landmarks such as churches or palaces, most of the built environment was built by skilled people with no professional training.

It would not be until the industrial revolutions and the urbanisation processes triggered by them that professionals started taking care of city planning and popular housing, in order to put some order to the ever-growing populations in the outskirts of the cities. The establishment of housing, thus, ceased to be the people's problem. The governments were now responsible for providing dwellings, adequate both for the new inhabitants and for the expanding city. The design, planning, and sometimes fixing of urban nuclei became an important part of the architect's occupation.

However, the official response was often not prompt enough for the flow of people and their needs. Informal settlements continue to appear, now coexisting with a growingly formal urban structure. Now, as the urban population has surpassed the rural areas, the informal settlements and their conflicts with the formal structures have become a major concern for the development of the cities. This situation is not only true in developing countries, but also in traditional, formal cities, that have lately hosted migrant populations, occupying old, partly abandoned quarters inside the urban structure.

Informality became the dominant mode of city making in the twentieth century [...], when large demographic growth, high migration, an economic boom and misguided urban and housing policies formed a scenario in which housing provision and land appropriation could not take place through traditional means. This meant that over half of all urban housing stock had to be provided through non-traditional channels such as squats, illegal land subdivisions, land invasions and other schemes of appropriation. (Brillenbourg, 2006)

According to Brillenbourg (Brillenbourg, et al., 2005, p. 43), informality merely exists, not being entirely good or bad. It is impossible to maintain complete control over urban dynamics, and the interaction between the user and the built environmen can prove to be benefitial.

Properly construed, informality is an essential element of cohesion in cities, and the analusis of its urban properties and processes is an important endeavour for those of us who are, in the end, responsible for the city. (Brillenbourg, et al., 2005, p. 43)

Housing and informality

As previously stated, informal settlements are spontaneous developments within or in the outskirts of the city, and appear because there is a great need for housing, and a lack of a proper response from the government. In the beginning, there are precarious occupations, which over the years acquire a permanent status until they become part of the formal city.

The design and construction of both housing and facilities in these settlements is not supervised by an architect or engineer. Users are decision makers (Bonsiepe, 1985 [1982], p. 64) and often they built with their own hands not only the original house, but gradual changes and additions over the years. When special assistance is needed, it is often found that the dwellers seek advice from builders they know and trust, in a sort of informal, friendly consultation.

This way of building is slow (Friedman, 2006, p. 145), since it depends on the household economy, the priorities assigned to the house' development, the formalization of the settlement and the provision of services - electricity, water supply - by the state and the relationships between neighbours. However,

although most buildings have not been designed by an architect, or had the input of an engineer they are no less logical tan those which have been designed by professionals; they simply follow a different logic. (Lara, 2012, p. 24).

The appropriation of place through self-construction – through ephemeral structures, gardening, furniture, enclosures, etc. – has a shape of their own and follows specific rational processes, coming from own or others' previous experiences and craft knowledge. The result is a different, alternative way of occupying the city, of establishing a relationship with the territory, wherever and whenever there is a lack of formal, official solutions.

Informal settlements, being usually illegal occupations of a public or private territory, begin with a situation of uncertainty and the need of establishing something permanent from where the settlers would not be evicted. The first stages of this sort of dwelling are often built as quickly and as solidly as possible, with the scarce means of the families.

After security is granted, and the settlement starts to be considered as a proper neighbourhood, the inhabitants would continue building their houses, in a much slower process, and with a fairly accurate vision of their expected future. They start planning ahead future expansions of the house, the adjustment of the original structure to host a small family business, or the subdivision of the house to host family members in two or more smaller, private, housing units, among other situations. At the same time, they are aware of the changing nature of a growing family, and adjust their own plans to new situations that might occur.

One sees a certain consistency in the use of materials and application of methods in the common spaces and, to an extent, in each family's living area. But there is also considerable eclecticism, born of individual ability, impulse towards experimentation, taste, and financial resources. (Urban Think-Tank, 2013, p. 208)

Individual changes are a constant exercise of autonomy and authority on housing (Allen, 1978 [1972]). They embrace the premise that a building is not a finished object, but a moment in a constant evolution that goes along with family and social

dynamics; it is architecture of process (Friedman 2006, Klaufus 2012). *Management and maintenance are equally or even more significant factors in housing tan initial design, construction or even capital financing* (Turner, 2009 [1976], p. 140). The birth of children, their growth and marriage, household incorporation of new members, the addition of a shop or workshop are some of the reasons behind the changes. Through these, users adapt their space to needs that, at the time of the conception of the house, may have been difficult to predict. It is achieved, thus, a living architecture, hand in hand with the needs of the people.

The planned city can neither eliminate nor subsume the informal qualities and practices of its inhabitants. The informal persists; its inherent strengths resist and defeat efforts to impose order. The totally planned city is, therefore, a myth. (Brillenbourg, et al., 2005, p. 19).

The case of squatter settlements is the most known and widely studied when referring to informality in architecture and urban planning. However, informality is not only found in slums or peripheral urban areas. Housing units, design by an architect and built by the government or private enterprises are also subject to alterations by the users. Changing both major and minor features, as far as the structural and social conditions allow them, with time, inhabitants interact with their built environment, in order to bring it closer to their needs and/or tastes (Dreifuss-Serrano, 2012).

Dwelling usually implies slight or not so slight adjustments that one makes to their own environment. Sometimes it is something as simple as the arrangement of the furniture or the colours of the walls and curtains; things that are not regulated and that, ultimately, constitute the means by which the user personalises their habitat. The choices taken when occupying a house for the first time – colours, materials, furnishing, and decoration – are part of living. Inhabitants adapt their environment through interaction in order to rend it more comfortable. Through this process, they appropriate space and make it their own.

Sometimes, though, the users consider more drastic changes, concerning the very architectural design of the dwelling: the splitting of a large room in two smaller ones, the occupation of balconies or patios, or the joining together of two separate spaces.

As seen in informal developments, single family houses offer no great difficulty in these processes. With or without the help of professionals, the homeowner can expand, reduce or simply change it as deemed necessary.

Multifamily housing, however, embedded in buildings with a rigid and unchanging structure, present other challenges to its inhabitants. Customization and informal processes will be carried on, but within an environment that has many other limitations and, therefore, allows fewer and less intense responses. (Dreifuss-Serrano, 2012)

In this complexes of multifamily housing, with time, the use of the public spaces and housing units is equally or even more intense than at the moment of their construction and initial occupation. Over the decades, the various inhabitants of the

housing alter the environment in subtle or significant ways, and adapt the existing structures to individual and group needs, rarely consulting a professional in the process. Sometimes, these interventions are against the rules, or even illegal, and it is through communitarian processes and mutual accord that the same neighbours chose not to denounce one another. Informality, then, is not only a way to occupy the space, but also a way of internal organisation in the community.

A realm for autonomy

The design of house units, once considered an almost scientific science in which functional aspects had to prime over everything else, has lately taken a more holistic and humanistic approach. Dwellings *ought to be considered in terms of architectural, cultural, social and psychological variables.* (Lawrence, 2012, p. 233)

Solutions and adaptations do not occur simply because they are possible. Physical framework offers the possibilities amongst which decisions are made through taboos, customs and cultural traditional ways. [...] the form of a dwelling is not only the result of some physical forces, or a single causal factor, but the consequence of a series of socio-cultural factors, considered in the broadest terms. (Rapoport, 1972 [1969], p. 66)

The ideal design is participative. The architect acts as a translator of the user's needs and preferences and renders them real, through his or her own talent and possibilities. What to do, then, when the architect has to design for an abstract, unknown user?

A participative process, in that case, could be achieved, but not in a simultaneous way, in which ideas are produced by an exchange by user and architect at the same time. Proposing a flexible structure that gives room for the user to put into practise their own preferences and tastes creates a framework for autonomy. Users participate in the design of their own dwelling, adjusting it the same way an informal dweller would: through progressive interaction with the built environment.

Can we imagine a move away from the 'shrunken mansion' syndrome satisfying a perceived aspiration towards a dynamic flexibility which can deliver subsidised housing in which the unit becomes an asset leading to income generation? (Urhahn Urban Design, 2010)

We argue that, through informal processes, the user is brought closer to their habitat not only by creating situations that better meet their needs, but through the gradual growth of homes, more intense neighbourhood cohesion, and therefore, a greater sense of belonging. Growth over time proposes flexible solutions, which could even propose viable alternatives for sustainable environments (Urhahn Urban Design, 2010, p. 15).

Change of use is not an exclusive feature of the 20th or 21st centuries; variations in the social, economic and cultural spheres have always challenged architecture. Despite its apparent permanent character, it cannot claim to be an eternal creation, frozen, while still being able to survive over time without any alteration. The change of uses in historical buildings over decades and centuries proves it. It is not feasible

either, to ask from the users to move between buildings as required by changes in their personal or family lives, as was believed possible for some early modern dwelling solutions. Flexibility then arises as a viable solution.

Christopher Alexander puts it in more natural terms, linking the capacity of interaction with the surroundings as a way to create living structures, in concordance with people and nature. It creates, thus, a more natural and yet logical environment. (Alexander, 2002 [1980], p. xvi)

Should the architect learn from the informal processes in order to propose flexible architecture, with the ability to be changed by its inhabitants, to fit constantly evolving uses? Could we provide architecture where the users' autonomy to alter their environment is taken into account, in order to produce better building and urban solutions?

Bibliography

Alexander, C., 2002 [1980]. *The Nature of Order. An Essay on the Art of Building and the Nature of the Universe.* Berkeley: The Center for Environmental Structure.

Allen, E., 1978 [1972]. *La casa "otra". La autoconstrucción según el M.I.T..* Barcelona: Gustavo Gili.

Bonsiepe, G., 1985 [1982]. *El diseño de la Periferia.* Barcelona: Gustavo Gili.

Brillenbourg, A., Feireiss, K. & Klumpner, H., 2005. *Informal city. Caracas Case.* München: Prestel.

Brillenbourg, C., 2006. José Castillo. *BOMB 94.*

Clapham, D. F., Clarck, W. A. V. & Gibb, K., 2012. *The SAGE Handbook of Housing Studies.* 1 ed. London: Sage Publications.

De Soto, H., 1986. *El otro sendero.* Lima: El barranco.

Dreifuss-Serrano, C., 2012. *Adaptation processes in Middle-Class housing units.* Milano, Politecnico di Milano, School of Architecture and Society.

Forrest, R., 2012. Housing and Social Life. En: D. F. Clapham, W. A. V. Clark & K. Gibb, edits. *The SAGE Handbook of Housing Studies.* London: Sage Publications, pp. 313-326.

Friedman, Y., 2006. *Pro Domo.* Andalucía: Actar.

Friedman, Y., 2011. *Architecture with the People, by the People, for the People.* Barcelona: Actar.

Kvale, S., 2011. *Las entrevistas en Investigación Cualitativa.* Madrid: Ediciones Morata.

Lara, F. L., 2012. The Form of the Informal: Investigating Brazilian Self-Built Housing Solutions. En: *Rethinking the Informal City. Critical Perspectives from Latin America.* London: Berghan Books, pp. 23-38.

Lawrence, R., 2012. People-Environment Studies. En: D. F. Clapham, W. A. V. Clarck & K. Gibb, edits. *The SAGE Handbook of Housing Studies.* London: Sage Publications, pp. 230-243.

Mehrotra, R., 2012 [2010]. Foreword. En: F. Hernández, P. Kellett & L. K. Allen, edits. *Rethinking the Informal City. Critical Perspectives from Latin America.* Oxford: Berghahn Books, pp. xi-xiv.

Pérez de Arce Antoncic, R., 2012. *Domicilio urbano.* 2nd ed. Santiago: Ediciones ARQ.

Rapoport, A., 1972 [1969]. *Vivienda y cultura.* Barcelona: Gustavo Gili.

Roy, A., AlSayyad, N., Bayat, A. & Bromley, R., 2004. *Urban Informality: Transnational Perspectives from the Middle East, Latin America, and South Asia.* New York: Lexington Books.

Sheiz, H., 2008. *Emergence – Becoming (informality as a natural process).* [En línea] Available at: http://in-formality.blogspot.com [Último acceso: 07 March 2013].

Turner, J. F. C., 2009 [1976]. *Housing by People. Towards Autonomy in Building Environments.* London: Marion Boyars.

Urban Think-Tank, 2013. *Torre David. Informal vertical communities.* Zürich: Lars Müller Publishers.

Urhahn Urban Design, 2010. *The Spontaneous City.* BIS Publishers: Amsterdam.

Van Ham, M., 2012. Housing Behaviour. En: D. F. Clapham, W. A. V. Clarck & K. Gibb, edits. *The SAGE Handbook on Housing Studies.* London: SAGE Publications, pp. 47-65.

Digital Revolution in Current Architecture: Towards a New Architectural Expressivity

Alessia Riccobono, Giuseppe Pellitteri
Department of Architecture, University of Palermo, Italy

History of Architecture teaches us how tight is the relationship between innovation and changes in architectural expressivity and design through the centuries. These innovations may occur in the own territory of architecture, e.g. with the introduction of new materials or building technologies, or they may be classified within disciplines external to architectural subject, but which can have considerable repercussions on it.

This is very evident if we look at the changes occurred to architecture during the whole XX Century, until the explosion of digital revolution in 2000s which irremediably has changed designer's scenario. Gradual but significant changes have occurred in expressivity and in conception of architectural space and its organization since Post-War, derived by a combination of influences, from innovations in materials and technologies, to the social questions and reconstruction matters, that have produced new dynamics of urban transformation (Frampton, 2007).

However, in recent years main trend of contemporary architecture seems to take advantage of the innovations occurred in the field of science and technology in the broadest sense. About this, Ignasi de Solà-Morales (1997) says that *'having abandoned the discourse of style, the architecture of modern times is characterized by its capacity to take advantage of the specific achievements of that same modernity: the innovations offered it by present-day science and technology. The relationship between new technology and new architecture even comprises a fundamental datum of what are referred to as avant-garde architectures, so fundamental as to constitute a dominant albeit diffuse motif in the figuration of new architectures'.*

Indeed, the advent of computer in Architecture in the early '90s generated a new way to conceive design, that is consequently reflected on the aesthetics of last period architecture. But, by giving a look at buildings, it is evident that we are dealing not with a *style*, but rather with a multiple expressive trends present at the same time and in different places. It is not any doubt that we are inside a revolution of methods, processes, thinking (Pellitteri and Riccobono, 2012). Nowadays we can talk of *Post-Digital Age*, because the first effects of this revolution are strongly evident on global scale (Spiller, 2009).

Goals of this research were to understand the real influence of digital technology in architecture, what this influence has produced on the architectural language,

which are dominant trends of contemporary architecture and which is their cultural background. Hence, it seem fundamental beginning our treatise with a brief history of architectural computing.

Historical and cultural background: computer and architecture

Starting from the invention of the first electronic calculator, ENIAC (Electronic Numerical Integrator And Calculator) developed by John von Neumann in 1946, we owe to Ivan E. Sutherland the first application which can perform drawing functions (Sutherland, 1980). *Sketchpad*, a software that experimented new forms of interaction between operator and computer by using a light pen and a CRT monitor, was developed in 1963 and is considered the precursor of the CAD (Computer Aided Drafting) software (Fig. 1).

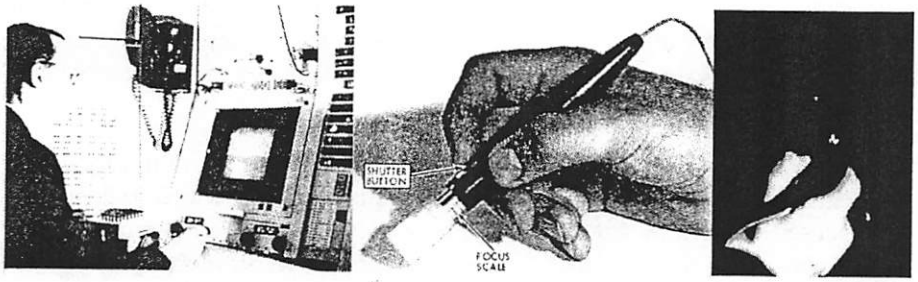
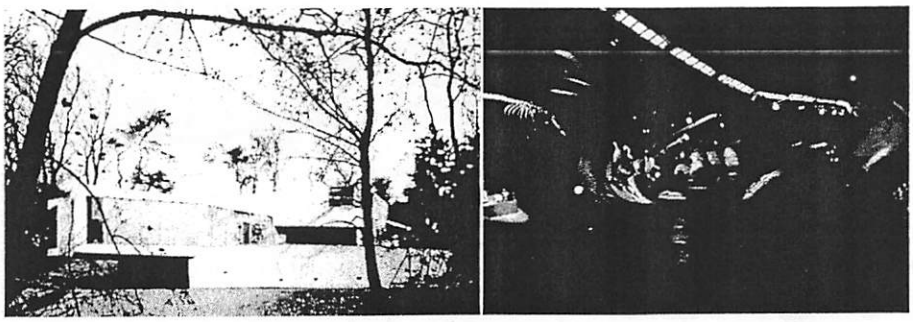


Figure 1. Sketchpad in use (credits: I. E. Sutherland)

A key date for architectural computing is the 1982, when John Walker, founder of Autodesk, released of the first commercial version of Autocad® and then the CAD software began to enter into the designer's practice. The main problem was linked to prohibitive costs, mainly of hardware and consequently of software. At first it was unclear which kind of real contribution could be given to profession by programs. We have to wait until the early 90is before the CAD software is partially used into the studios. Their contribution was only related to the potential of representation, making faster the drawing process and unnecessary the *old* set squares. The screen of computers were used as a paper sheet, designing and drawing in a traditional way, and later, creating three-dimensional images which undoubtedly augmented the designer's possibilities of space exploration.

This happened to profession, while at the same time academic research confronted itself with the great possibilities for architecture offered by computation. Indeed, exactly in this period there was the birth of the first CAAD associations, as eCAADe (Education and research in Computer Aided Architectural Design in Europe), ACADIA (Association for Computer Aided Design in Architecture), CAAD Futures, etc., with the main aim to organize annual conferences where to share knowledge about architectural software and experimentations with it. Even if the main contribution was given by academia, also practitioners and software developers participated to the congresses, mainly in order to take advantage of the most interesting studies which could become parts or add-on of programs.

The next step was to understand that the potential of the CAAD was not related only to the architectural representation, but also to the ability of control and management of the design. The use of these programs has undoubtedly expanded the representation possibilities of the architectural object. It has also triggered a revolution in design methodology linked to almost endless possible experimentations with the architectural space. Geometrical concepts and principles are foundation of the current and popular software for graphics, which allow a three-dimensional control of forms. From concept to modelling, or sometimes from modelling to concept, the step is increasingly short, because in real time the designer can have the perception of the whole process at the base of the construction of the architectural space. Hence, in the late '90s some avant-garde architects tried to bring computation inside design process with the goal to develop a new design methodology linked to a new way to intend the architectural space, which had to be more connected with other science, like Mathematics and Biology. Of course projects as the Moebius House by Un Studio or the HtwoO Pavilion by NOX (Fig. 2-3), both built in 1997, are expression of that intent and are pioneers of the *new* architecture. But their conception and then the construction were possible only thank to the new possibilities given by CAAD, so as geometrical control in the realization phases and CAD-CAM interface, which allowed the use of personalized shapes for envelope components, metal profiles, glasses or formworks.



Figures 2-3. The Moebius House by UNStudio in Het Gooi, Netherlands and the HtwoO Pavilion in Neeltije Jans, Netherlands by NOX.

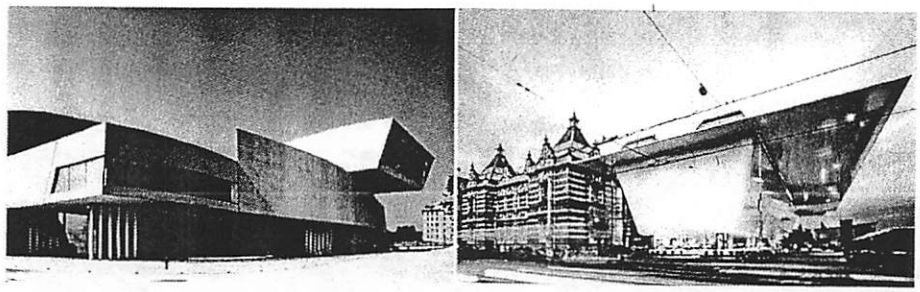
After these pioneer projects, the triumphal entry of computing in architectural design became evident; everyone is able to recognize that something is changed and that new expressivities are derived from software use. Despite various claims in academic publications, software publicity, manifestos and architectural criticism, it is unclear what these influences entail and what is their significance (Riccobono, Koutamanis and Pellitteri, 2013). It seems that the only way to recognize digital influences is what designers or some critics declare. Then, there is an absence of research on what direction architecture is taking under the influence of computation and on which trends are absolutely prevalent.

Research Methodology: case-studies inclusion criteria and analysis

To carry-out this research, we chose to avoid *opinions* (either from academia or from

practice) and focused instead on the actual *products* of architectural practice, by analysing sixty recent building clearly influenced by digital methods or techniques. The analyses were conducted in a uniform, objective manner and collected in a feature-based structured case base that allows a wide variety of queries on the identified features.

The case-studies were chosen from the high end of contemporary architectures. They are buildings well known in the academia and among practitioners and experts, realized in the last 15 years. Moreover, this difficult selection among projects published more or less everywhere on architectural magazines was carried out also taking in consideration the claim or publicity earned among not-experts and simple users. E.g. the construction of buildings like the maXXI Museum in Rome or Stedelijk Museum extension in Amsterdam (Fig. 4-5) had generated diffuse polemics on newspapers, critics from public, apologies from municipalities and institutions and so on.



Figures 4-5. maXXI (2010) by Zaha Hadid in Rome and Stedelijk Museum extension (2012) in Amsterdam by Benthem Crowel.

Furthermore we have chosen not to include projects that exist only on the paper because this does not permit analysis and evaluation of many aspects, e.g. tectonic issues. Buildings are from all over the world, since the effects of digitization on current architecture have been not dependent on urban and geographical contexts, and moreover they were not chosen on the basis of typological or functional criteria, but digital influences are evident e.g. both in a theatre and a house.

The database

Then, we chose to collect all the case-studies in a database, where each building is described by a number of predefined parameters. This decision is linked to the kind of analysis we wanted to carry-out, where each feature is correlated to the others. This gives us the possibility to apply a combinatorial approach and to analyse the existing relationships among several elements in a building's description, to visualize them and to interpret the results. Moreover, organizing information in a database forces us to think in a concrete way, less vague than textual discourses, according to a rigorous logical scheme, where several aspects and their interrelationships can be made explicit.

The data collection is split up in two parts. The first one is more descriptive, including categories such as. *Building Name* and *Designer(s)*, identified as primary keys, *Location (city)*, *Country*, *Date from* and *to*, *Client*, *Type* and *Context*. The description is completed with pictures and design drawings and by dimensional data. We can see the main database interface in Figure 6.

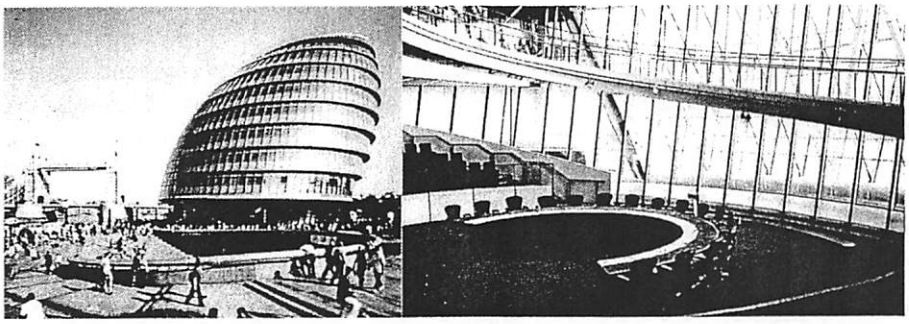


Figure 6. An example of a case-study sheet from the database.

The second part is analytical. We deal with the close examination of case-studies, studying projects both from the geometrical and compositional point of view. Firstly we have to study the taxonomy of each project, through the recognition of its *Geometry*, *Morphology* and *Geometric Primitives* used in a design. Then the analysis continues with the recognition of the *Compositional Concepts* (Arredi, 2006), that underlies the arrangement of primitives in a design and the recognition *of Compositional Operations* (Di Mari and Yoo, 2012), used to refine the first form and to compose the final configuration. At this point it should be spontaneous to ask which is the link with digital features.

Indeed, the database is articulated through a complex system of sub-tables, where we can add further information: about *Primitives*, we will clearly identify if they are digital-derived or not - i.e. NURBS Surfaces or free-form solids belong to computational domain; moreover we have mapped which kind of geometry is associated to each primitive. While at level of *geometry*, *morphology* and *composition concepts* we cannot introduce criteria related to *digitality* (Negroponte, 1995), because we are dealing with abstract concepts. At level of *Operations* we could previously define which were born in the computational domain (i.e. Folding, Boolean) and which not. In this way, we can absolutely link the morphological features of a project with its conceptual part and we are able to understand which was the contribution effectively given by digital media.

The last part of analysis is devoted to map the conceptual criteria on the basis of each design. Despite some projects could seem affine looking at their formal configuration, materials and overall style, their concepts could often start from very different point of view. We can recognize these conceptual strategies only by tightly studying what designers say in projects description and indentifying, e.g. which software were used to conceive design. Hence, we have defined a vocabulary of the

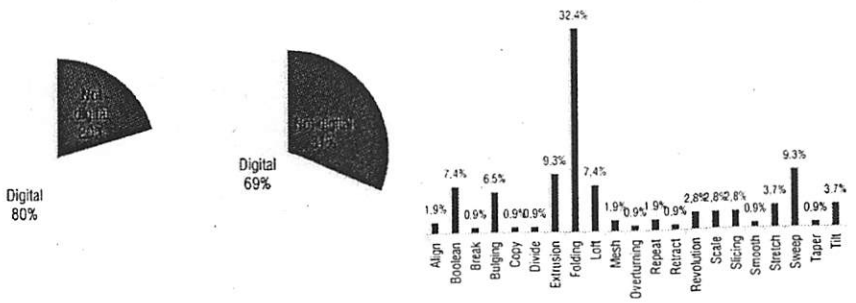
recurrent conceptual strategies derived by the use of digital technologies, describing and explaining each category in all specific aspects. Each architecture was classified according these several categories and also we have considered that some buildings might have more than one classification. Among the categories identified, we find *Blob*, term coined by Greg Lynn, which refers to digitally designed buildings that have an organic and bulged shape, as an amoeba, and *Grid*, traditionally a Cartesian structure that generates static and rational shapes, but that with computational deformations became instrument for designing forms and spaces unpredictable and changeable. Other categories, which here we limit to list, are: *Fluidity, Flows, Diagram, Pattern, Artistic Fact, Deconstruction, Folded Surfaces, Mathematical Derivation, Natural Derivation, Performance* (Pellitteri and Riccobono, 2012).

Results and interpretation

The results are derived from the setting out of several queries, through which questioning the software in order to quickly visualize the results and combinations in form of graphs, tables, reports, etc. Firstly we have queried the database to show the related prevalence for each category, setting up some simple queries. Referring to *Geometry*, we note the high prevalence of the *curvilinear* one (66%); moreover there is an high percentage of *geometrical morphologies* (70%). This shows a strongly trend towards designs with curvilinear configurations, but with a rigid geometrical control allowed by the almost endless possibilities of manipulation and deformation of the shape allowed in digital representation. On the other hand, concerning *Primitives*, which are distinguished in *prevalent* and *additional*. We found an high prevalence of digital primitives (61%) in the first order but not in the second order (only 30%).

This is an important result because it suggests that, by developing design concept, the starting point - expressed in terms of primitive - is in prevalence digital, while primitives in the second order, used to refine conceptual idea or to complete design composition, are conventional and not digital-derived. It also shows that with the introduction of architectural computing, during conceptual phase, designers have substituted the value of the *sketch*, which for centuries was the first sign to express an idea almost always unclear in the same designer's mind with the primitives currently available in each architectural software (Dorta et al., 2008). Now practitioners start with a parallelepiped or a sphere and then work on it by refining, deforming, cutting, etc.

After, we have analysed those *compositional operations* that we can easily recognize in the general design configuration. Even in this case, we have split up the category in first order, according to those operations that unequivocally were prevalent, both in dimensional and figurative terms, and second order, where we have recognized all instrumental actions that generally were used to refine the shape to reach the right consistency with design idea. Also here it is evident that a high percentage of designers have used operations totally digital. Digital operations are prevalent in both levels, primary, where generally *Folding* appears the one most used, and secondary (Graph 1).



Graph 1. Compositional operations, digital attitude and prevalence per parameter.

Formal concepts are abstract and pervasive criteria, all along existing in designer's scenario, like *alignment, symmetry, articulation,* and for this reason we cannot define any of them strictly *digital.* However, the popularity of concepts like *plasticity* (11,5%), *complexity* (11,2%) and *unity* (9,3%) suggests an emergent trend towards buildings with a unique envelope, which very often is treated as a complex surface with a curvilinear configuration that may refer to a sort of artistic plasticity. This seems a dominant motif in current architectural scenarios, evolution of organic and expressionist trends from the first half of the twentieth century – what could be termed *Digital Expressionism* (Riccobono, Koutamanis and Pellitteri, 2013).

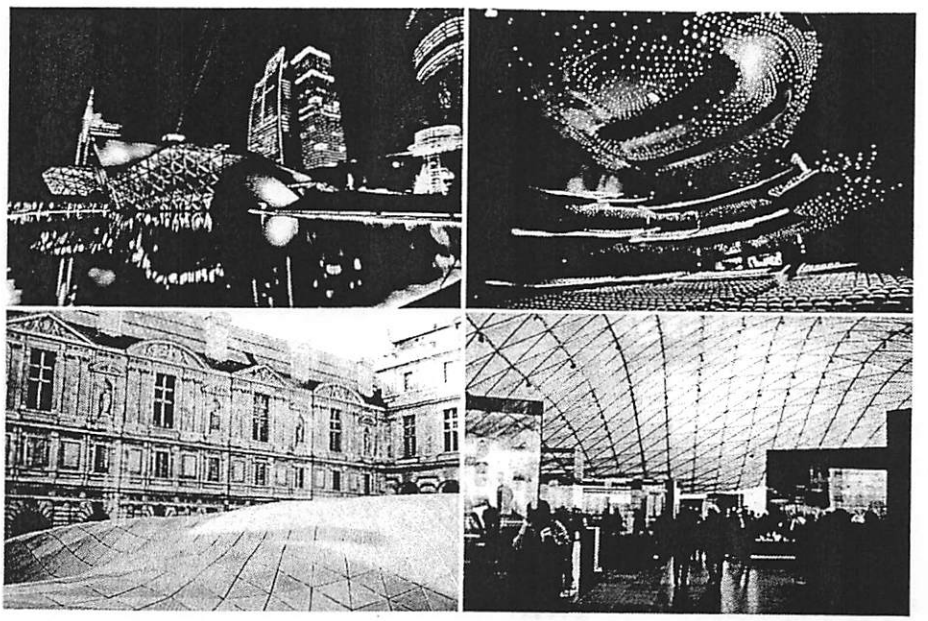
About conceptual strategies, we have observed the prevalence of *Blob,* accompanied by the important recurrence of *Artistic Fact, Diagram, Fluidity,* but there is no strong prevalence of any category, insomuch as make us able to assert that there is a substantial balance among the several trends.

New and old trends in the digital-influenced architecture

The results effectively confirms the strong influence that software has had on architecture, until the precious suggestion that the design is totally developed in the computational space, but also we have got results about morphology and conceptual strategies. Now it seems then interesting to conclude this treatise by interpreting information that we learned until now and by defining which trends are the most relevant and more represented in current architectural scenario.

- *Digital Expressionism.* As we asserted before, the main change caused by digitization of architecture is related to advances in representation field and its consequences. Indeed the easy three-dimensional control guaranteed by software has meant a change in the ways of exploration and conception of architectural space. Since the origins, prerogative of architectural design have always been the extensive use of visual methods and techniques in composition (Koutamanis, 2000) and each radical discovery in representation field had always constituted a revolution in the architectural design thinking. Nowadays it seems that morphological approach to architectural design takes over and the architectural design starts often from the curvilinear manipulation of shape, pushing to the limit the potential of software

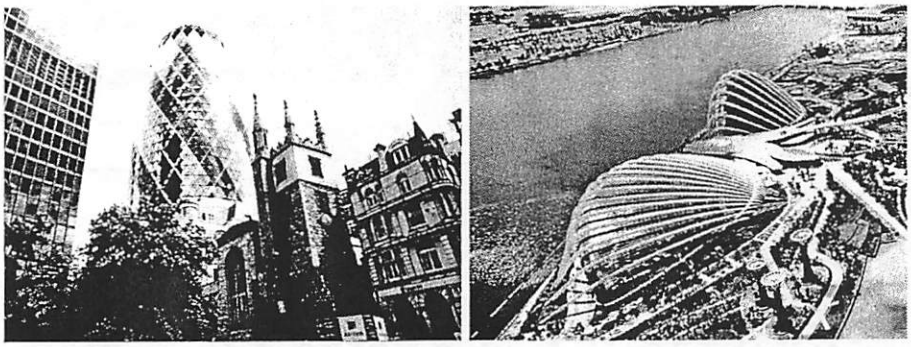
to search for often unusual spatial configurations. It does not mean that curvilinear geometries and complex surfaces were not used and not experimented in the past; rather this trend seems the right continuation of the expressive tendencies born in the Post War, with personalities as Eero Saarinen, Hans Scharoun, Felix Candela. The main difference with respect to the '60s is the extreme facility to conceive free forms, without minding about their geometry in the first stage, and to progressively refine the configuration according to aesthetical, structural, functional needs. This is undoubtedly a pro, but it is a contra at the same time: facility and speed can make designers loose the way, not considering aesthetical, contextual and tectonic factors (Fig. 7-10).



Figures 7-10. Above, the Guangzhou Opera House (2010) by Zaha Hadid and, under, the Louvre Islamic Arts Department by Mario Bellini Architects (2012).

▪ *Hi-Tech evolution.* When digital media appeared in professional practice, some architects with a strong technological approach had adapted their design methodology to new software. Starting from the optimization of one or more parameters to increase building *performance*, the new software for architecture allows the creation of autonomous forms, arising from the optimization of different parameters. You can choose to focus on the structural, the climate - environmental, but also the social and procedural aspects, and many others. On the contrary, the final shape can be achieved also due to the modification of a primitive by starting e.g. from a sphere, a cube, a parallelepiped and progressively modifying it, deforming it by following approximations, until it reaches the best possible configuration. This trend was called by some critics *Performative Architecture* (Kolarevic, 2005), even if it not properly a *new* attitude. In fact, looking at the protagonists of this kind

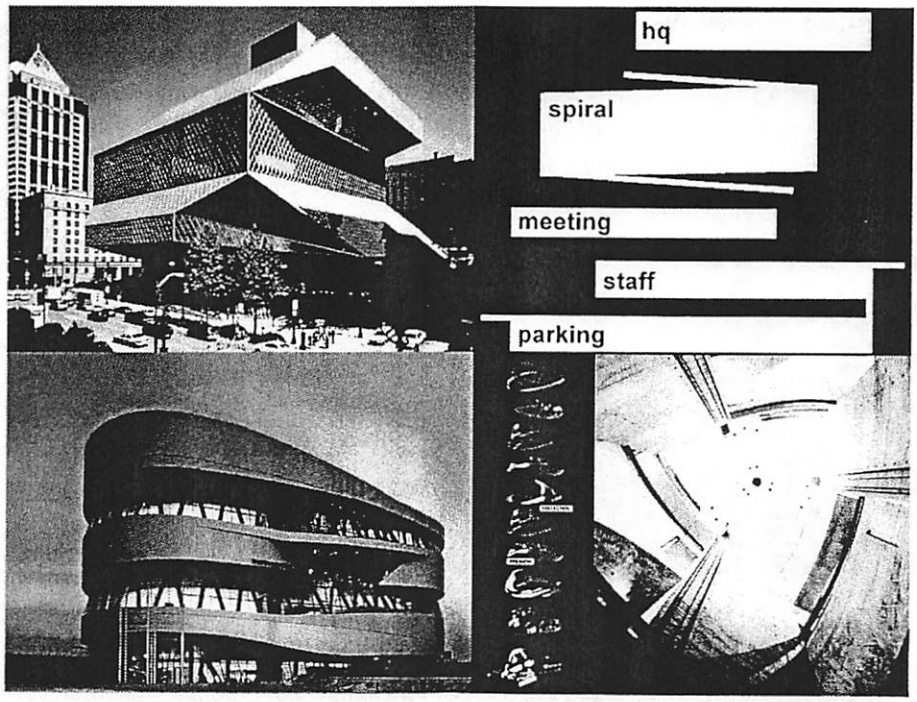
of methodology, we find Norman Foster, Nicholas Grimshaw, Renzo Piano, who were the same protagonist of the so-called *Hi-tech* trend in the '80s. Hence, it seems we are looking at a natural evolution of a trend, that through the possibilities of digital design has pushed until the limit the building technology, creating an old expressivity in terms of material - almost always steel structure with glass walls - but new regarding to the envelope's shapes (Fig. 11-12).



Figures 11-12. Swiss RE Headquarters (2004) in London by Norman Foster and the Singapore Gardens by Wilkinson Eyre (2012).

▪ *Diagram Architecture.* This trend is not born with digital technologies, but with their huge diffusion the sense and use of architectural diagrams was modified. Let's start from the term: *diagram* in architecture it is usually thought of as *graphic tool* (Bijlsma, 1998), that is the translation of a series of possible relationships between the parties in a drawing, but it can't be attributed either to the type, nor even to a sketch. The term derives from Greek *dià* (through) and *grámma* (something written). Although it is usually made up of points, lines and surfaces organized in two-dimensional or three-dimensional patterns, it may include data, legends, text, and then relate different aspects at the same time, crossing data, connecting functions and needs. Digital diagrams, often integrated in some software or add-on, have become an operational concept tools. Design tools as well as a means of reading. Indeed, it is often happened that what was initially mapped as diagram, e.g. for function or users movement, in the final phase of project become the base of formal configuration. This way to proceed is very common in designers like UN Studio and Rem Koolhaas (Fig. 13-16), but we have not to forget that the first to use digital diagrams, conceived as deformed grids, was Peter Eisenman, one of the most important architects of avant-garde and *deconstructivist.*

The analysis of our sample verifies the claims and assertions made by their designers and architectural critics: digital influences play an important role both in the overall form of the designs and in critical details, primarily with respect to visual impact and secondarily concerning performance and construction, or better the augmented capacity to manage building process, above all in presence of complex projects. It is clear that the influence of CAAD software on design was profound and also it modified other existing trends in pre-digital architecture, insomuch as we recognized



Figures 13-16. Above, the Seattle Public Library (2004) by Rem Koolhaas and, under, the Mercedes Benz Museum (2006) in Stuttgart by UNStudio.

that *new* digital trends have solid basis on what architecture produced *before*. The only factor that join all these tendencies is the evident return of *curvilinearity* in architecture, even if the conceptual starting point is often very different in each case.

To conclude, we think that a new frontier could be represented by younger architects who have had the benefit of early exposure to the computer and formal education in design computing (even if it is restricted to practical skills). Then it is unavoidable that digital influences on architectural design will keep increasing, but what is probably unpredictable is which kind of expressivity will be reached by them, who will have a complete comprehension about how obtaining and controlling forms, but with a lack of understanding about why, with which aims and mental concepts. And also this is the risk that current architecture is taking under the strong influence of digital technologies, which often overpower designer's minds.

References

Arredi, M. P. 2006. *Analitica dell'immaginazione per l'architettura*, Venezia, Marsilio.
Bijlsma, L. D., W.; Garritzmann, U. 1998. Digrams. *OASE*.
Di Mari, A. & Yoo, N. 2012. *Operative Design: A Catalogue of Spatial Verbs*, Amsterdam, BIS Publishers.
Dorta, T., Pérez, E. & Lesage, A. 2008. The ideation gap: hybrid tools, design flow and practice. *Design Studies*, 29, 121-141.

Frampton, K. 2007. *Modern Architecture: A Critical History,* London, Thames & Hudson, Limited.

Kolarevic, B. 2005. *Performative architecture beyond instrumentality,* London, Spon Press c/o Taylor & Francis.

Koutamanis, A. 2000. Digital architectural visualization. *Automation in Construction,* 9, 347-360.

Negroponte, N. 1995. *Being digital,* New York, Knopf.

Pellitteri, G. & Riccobono, A. 2012. Towards which expressive horizons? *SIGraDi 2012, XVI Congresso da Sociedade Iberoamericana de Gráfica Digital.* Fortaleza: Expressão Gráfica e Editor.

Riccobono, A., Koutamanis, A. & Pellitteri, G. 2013. Digital Expressionism: the architecture of complex shapes. Multi-case analysis, classification and interpretation. *In:* SCHNABEL, M. A. & TSOU, J.-Y. (eds.) *Cutting Edge in Architectural Science: Proceedings of the 47th International Conference of the Architectural Science Association 2013.* Hong Kong: (in press).

Solà-Morales Rubió, I. & Whiting, S. 1997. *Differences: Topographies of Contemporary Architecture,* MIT Press.

Spiller, N. 2009. Plectic architecture: towards a theory of the post-digital in architecture. *Technoetic Arts,* 7, 95-104.

Sutherland, I. E. 1980. *Sketchpad : a man-machine graphical communication system,* New York, Garland Pub.

A Theory of Unobtrusive Space Utilization Measurement

Eren Erdener
The University of Oklahoma College of Architecture
Norman, Oklahoma 73019

Abstract

Second only to human capitals, the most valuable assets of organizations are their facilities. Buildings house organizational operations, activities, enhance the user performance, and contribute to the desired image of the occupant organization through their aesthetic and utilitarian qualities. Commonly represented in general categories of the layout, indoor environmental quality, and the rate at which these buildings-spaces are utilized are those factors that affect the work efficiency. It behooves an architect to study the question of spatial layout that facilitates the type and sequence of tasks-activities of the occupant organization and the desired qualities of the indoor environment as part of the fundamental problems of architectural design. Rather being a dynamic factor of the occupancy period, the question of space utilization and its promise is yet to be fully understood. This research focuses on a theory and the methodological development of measuring the utilization of spaces and buildings. Considering the ever-increasing rate of long and short-term changes in occupant demands on facilities, it is only rational to measure the current utilization as a decision-making tool if the desired changes can be realized without costly building additions and alterations as part of planning.

The paper presents utilization metrics, such as time and occupancy related measures, followed by a new and combined umbrella of derived metrics, namely *space use intensity* (H), yielding a single index of utilization (E), which combines the two previous measures as a means for decision-making for normative (programming), and explanatory (evaluation) roles of utilizations of both existing and planned buildings. Throughout, concepts-variables of the theory-method, and their relationships are introduced and explained by means of practical and simplified examples.

Keywords: facilities, space utilization, space use intensity, space use efficiency index

Preamble - theory in the design sciences – architecture

As programs of architecture and other design-oriented disciplines, engineering, law, medicine, and business among others, are increasingly absorbed into the general culture of universities, aimed to educate the future professional at an intellectual level appropriate to this environment, academic respectability has been their fundamental aim. Historically beyond the realm of trade schools, one approach

has almost neglected training the design professional in the basic core skills (Simon, 1999, 129). Today, the twofold aim in any well-established professional curricula is to teach both design and natural sciences at a high intellectual level in a mutually supporting role; more accurately, consigning the sciences to the role of informing the design process, bringing about a set of tough norms of being intellectually demanding, analytical, formal, and teachable to groups and individuals both in simulative and actual modes that support learning by doing. In contrast to the explanatory theories of natural sciences, basic role of which is explanation of natural phenomena, a theory of design-architecture advances two types of propositions that deal with the existing design-architecture and *what and how ought to be the future designs?* Since the subject matter in both investigations is the designed-the artificial, we can affirm that they are fundamentally normative rat, despite the role of analysis is an inevitable in design. Along the above brief explanation, the following introduces a normative theory of unobtrusive space utilization measurement, within the umbrella of evaluation in architecture, which useful in both design and occupancy periods.

Why space utilization?

Together with human capital, money, and technology, space is the second most expensive resource of an organization; its people are the costliest (Becker and Steele, 1995, 7). Adequately endowed with essential comforts, workplaces are also the tools for attracting and retaining the right people that want to have built-in features in their work environment for easy team communication, physical opportunity for impromptu meetings to exchange creative ideas, and the technology to support all individual and group activities under shared vision and culture, led by informed executive leadership. A well planned, designed and managed space-workplace, similar to other resources, is a fundamental resource to be effectively *utilized* in order to fulfill its role in achieving goals and objectives of an organization; chief among them is to be competitive in the business world.

We present the place of space utilization, space use effectiveness as a method of measurement within the general framework of facility – space evaluations in the section below, followed by a detailed treatment of fundamental and derived metrics with numerical examples.

Theoretical framework

The study of space use-efficiency is called space utilization analysis theory (SUAT) and it is an integral part of a series of evaluation methods. Their umbrella title is post-occupancy evaluation or POE for short. Zimring and Reizenstein (1980, 429) broadly define POEs as "the examination of the effectiveness for human users of occupied, designed environments." Specifically, POEs are about:

1. Evaluating buildings for trouble shooting in the early periods of occupancy,
2. fine-tuning the building performance for immediate problem solving,

3. generalizing the POE information for updating and improving the state of the art building criteria, and
4. determining if spaces meet certain technical or functional criteria.

Concentrating on the technical and functional efficiency evaluations may be thought of as the realm of design professionals if such evaluations are based simply on the comparison of existing and prescribed levels of the specific performances of the system in question and solving the related problem. In this limited sense, building commissioning is such a process, which however takes place before occupancy, thus is not part of the post-occupancy evaluations. By definition, POEs and the subsequent solutions include not just performance comparisons, but also the user perceptions of the problem as part of the evaluation data, collected after a reasonable period of novelty. Space utilization analyses belong to the functional efficiency evaluation section of the focused inquiries group as Figure 1 illustrates below:

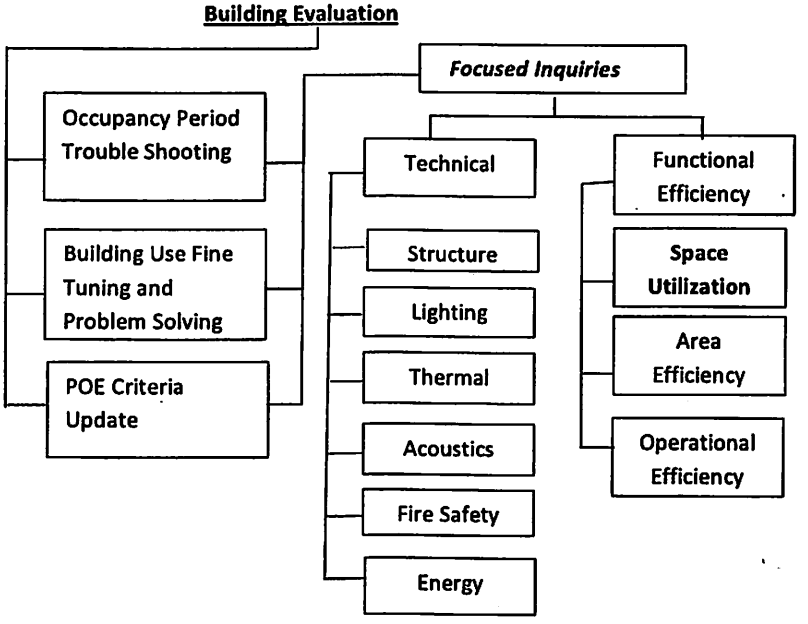


Figure 1 – Building Evaluation and Space Utilization

The method

Space Utilization Analysis Theory (SUAT) advances a relatively straightforward problem of measurement on normative terms. It is based on the comparison of agreed upon *desired-prescribed* and *actual-measured* performance levels of space utilizations. To make accurate comparisons possible, both levels need to be in the same measurement unit. As a result of this comparison, the facility manager or the architect in charge of facilities should be able to tell the level of efficiency once the analysis is completed. It is possible to summarize the numerically expressed levels of utilization in a three-level ranking scale for classification and easy understanding as

follows: excessive-over, efficient, and inefficient-under utilizations. Unused building-room (space) the existing capacity may be one of the reasons for under utilization; too few users for the available area whatever the reason. Failing to respond to changing spatial needs of its users, an inflexible building layout may be another reason for inefficient use. Results of the analysis are expected to identify specific problem areas, such as the sources and quantities of space deficiencies as well. The objectives of a space utilization analysis are:

1. To determine the quantities of space deficiencies (or excessive space allocations)
2. to identify the sources of such problems,
3. to measure the level of utilization, and
4. to inform the identification and selecting options for meeting the demand for space.

Figure 2 involves the distinct options for meeting this demand. Note that, while building and adding anew involve design and construction, leasing is another option, which may involve renovation, alteration with code upgrades and the related design and construction activities, following the evaluation of suitable facilities with respect to a previously prepared building program. The limiting use option is simply freezing the current level of use, presupposing the shortcomings of the spaces in question whatever are those reasons and possibly seeing no growth in the future. In the long run, it will lead to building anew and lease however, considering the inevitable need for new facilities. As opposed to the two options presented before, the dynamic *use-efficiency option* allows reassessment and adjustment of utilizations, in order to increase effective use of the physical inventories, and prevent unessential and untimely additions, while maintaining user comfort.

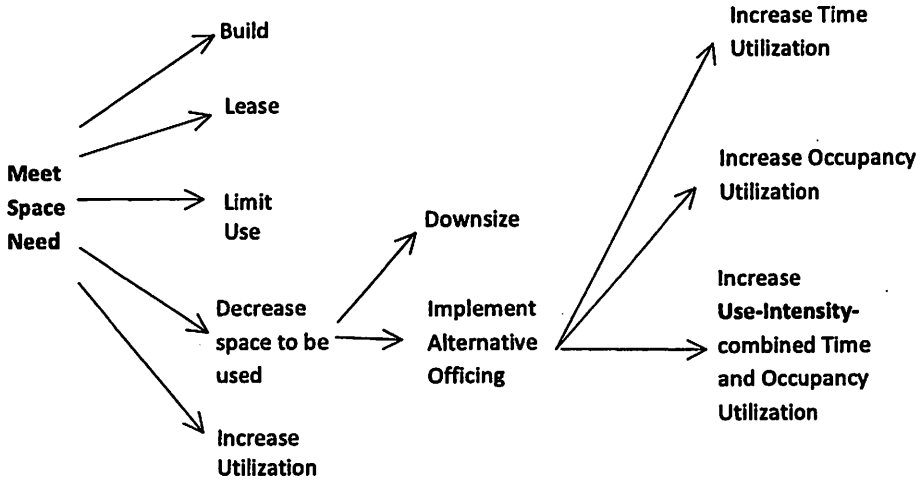


Figure 2 – Alternatives for Meeting Space Need

Provided the corporate culture allows, in the current modes of space use, it is likely to observe a low utilization of conventional workspaces. There is a multitude of reasons

behind low utilization: To begin with, some office workers perform their tasks either at the field or elsewhere away from their offices, where client and data are available at the same location most of the time. Secondly, developments in communication and information technologies, resulting in mobility, afford working almost anywhere, ranging from airports to cafes that are hardly conventional workspaces. Hence, either working at the clients' spaces or anywhere in between result in the reduction of office space demand, once this mode of operation is sanctioned and deemed appropriate for the organizational culture for the proven workers. In an effort to reduce space and increase its use technology-based alternative office use strategies are telling: Ranging from hoteling to telecommuting to benching, these new opportunities, tend to change fixed workspace allocations to flexible first-come-first served basis for those who perform certain individual tasks and touch base with others during an agreed upon time interval in the organization's offices. The goal is to use this resource - space- to its full potential. Considering the changes in the meaning of workspace, especially for those that house information processing related activities, from individual enclaves to collaborative environments; their spatial requirements tend to change to accommodate more frequent and direct communications in a small footprint. Wroblaski (2011, 24-26) suggests "reducing cube space and relying on a more open plan" as a "...way to enhance space utilization."

As a business strategy for increasing worth and efficiency, the term *downsizing* applies primarily to both organizational fixed assets, i.e., buildings-spaces and human resources because of their high financial impact on the budget. Facility-related overhead cost-cutting measures are among the first that consistently draw attention in this effort. In the late 1980's when organizational changes – globalization is among them- forced organizations do more with less. Efficiency being the primary concern, organizations have begun 'moving away from large offices,' that they believed to be an image of success, and "have been looking not only find better ways to use office space, but also to save money while doing it." (Bergman, 1995,). Decreasing the amount of space as a cost-cutting measure begins with a scrutiny of the workflow and the personnel actual office time as a prelude for assigning spaces on a first-come first-served basis only when the consultants and field workers are at the office; it is called hoteling. This and other alternative officing strategies, such as virtual office, telecommuting, or remote work centers can be effective ways of curbing the demand for space when each is carefully considered and selected with respect to individual habits, organizational culture, and the type of work. The remaining question is "how effectively are the spaces being used." The next step is to measure how effectively spaces are and should be utilized.

The method we present in this paper in its theory, utilization metrics, and computations are especially applicable to education, office, research, and other institutional facilities, spaces of which are subject to frequent changes of use. These sources of variations are various and also subject of research. Especially in higher educational institutions, the most common cause seems to be the fluctuating general enrollment as affected by the economy and the job market. Fueled by market

demands, these forces can be the causes behind gradual or sudden shifts in the general enrollment levels without causing noticeable overall changes. Similarly, graduate and continuing education enrollments are affected by the economy, ever changing professional competency requirements and the use of on-line education in addition to traditional seminar settings that demand widely different space requirements can result in highly complex scheduling and allocation problems. With the increasing demand on available general and specific purpose learning spaces, overcrowding and overuse become inevitable. Facility planners, managers, administrators, architects, and interior designers can use the method as a decision-making tool to pinpoint over and under utilized spaces in assessing overall space use efficiency.

From project programming-brief, design, and utilization-occupancy viewpoints, buildings consist of primary functional (assigned) and support spaces (unassigned). Each building type determines the type of assigned spaces it must contain to accommodate offer specific uses. Operation rooms in hospitals, classroom in schools are such examples. While unassigned spaces, such as circulation, mechanical spaces, and public toilets need to be provided in every building regardless of its type. This primary classification is a starting point for understanding for which type of space, one should consider applying the utilization analysis as follows:

1. Individuals and groups of different sizes use assigned spaces according to a specified workflow, that follows an annual, semester, quarter, or weekly schedule, and

2. There is no established schedule of use for unassigned spaces.

It is important to recognize on the other hand, the unpredictability of assignable space use in the form of impromptu and after hour uses. Such occurrences are usually not included in the utilization analysis, if reliable data are not available.

Evident in the works of some known architects, a general design attitude is to offer additional possibilities for creative, or unplanned uses especially in circulation spaces designed to accommodate resting, impromptu meetings, and informal gatherings. An excellent example is Koolhaas' programming-design approach, which reflects an objection to the modernist concept of "program," titled "cross programming." His designs hint suggested uses for "in-between" spaces that allow users to creatively participate in their interpretative use and the meaning of such spaces. It is an intellectual act of blurring the strict boundaries between space classifications and inviting the user to be the final player in the design. He has also proposed, albeit unsuccessfully, integrating "unexpected functions-uses" into widely accepted building types.

We introduce the space utilization metrics in the following section.

Space utilization metrics

This section introduces the *time, occupancy,* and *space-use intensity* utilization measures. We will explain each concept and its use to illustrate otherwise complicated calculations for entire space inventory, using a weekly use schedule data for a single room, given in Table 1 below:

Monday		Tuesday		Wednesday		Thursday		Friday	
Occupants O_{act}	Hours R_{act}	Occupants O_{act}	Hours R_{act}	Occupants O_{act}	Hours R_{act}	Occupants O_{act}	Hours R_{act}	Occupants O_{act}	Hours R_{act}
10	2	12	2	8	2	12	2	10	2
9	2.5	11	1	9	1.5	11	1	9	1.5
19	4.5	23	3.0	17	3.5	23	3.0	19	3.5
2		2		2		2		2	

Utilization Statistics:

1. Time Utilization

			criteria			
Room no	Ract	Rmax	Ul	Uh	Uact	
105	17.5	45	0.625	0.75	0.39	0.39<0.625 under-utilized

2. Occupancy Utilization

			Criteria			
Room no	C	O_{avg}	S_l	S_h	S_{act}	

Table 1- Weekly Room Use Schedule and Utilization Statistics

Room Type	Station Count (C)	Unit Area (ft2)	Occupancy Factor (S)	Utilization Factor (U)	Student Classroom hrs./week
Seminar Room	10-35	20	0.67	0.625 - 0.75	15
Classroom	35-75	16	0.67	0.625-0.75	15
Lecture Hall	100-199	14	0.67	0.625-0.75	15

Table 2 – Classroom Utilization Standards[1]

1 *Higher Education Facilities Planning and Management Manuals.*

1. Time Utilization Factor (U):

Arguably the most fundamental dimension to measure utilization, time-measured space utilization, attempts to answer the question "how much of the maximum available time do we use the space?"

Factors that influence time utilization are:

- Space use schedules
- Random, but scheduled work-related or habitual selection of daily or weekly space use,
- Graduate students usually preferring night classes in universities, resulting in intense use of certain learning spaces,
- Convenient location, and other spatial amenities, such as enriched electronic support, new furniture etc.
- Organizational policy for maximum allowed room utilization rate (R_{max})
- Random, but scheduled work-related or habitual selection of daily or weekly space use,
- Convenient location, and other spatial amenities, such as enriched electronic support, new furniture etc.

Usually, the basic unit of analysis for work planning and the subsequent room use schedules is a week and time is measured in hours in increments of fifteen minutes for this purpose. Whether it is an office, classroom, or a laboratory, the maximum available time (R_{max}) for a space is kept available for use is an organizational issue, laden with biological, psychological, safety and security considerations. R_{act} on the other hand, stands for the total *actual* amount of time the space is used per planning period (mostly a week).

$$\mathbf{U_{act} = R_{act} / R_{max}}, \qquad (1)$$

where, U_{act} = actual time utilization factor

R_{act} = actual room time utilization rate (hrs./week)

R_{max} = maximum room time utilization rate (hrs./week)

If, $R_{act} \circ R_{max}$ and $U_{act} < U_l$ (lower boundary value of U), inefficient use (1a)

If, $R_{act} \circ R_{max}$, then $U_l \circ U_{act} \circ U_h$ (upper boundary value of U) efficient use (1b)

If, $R_{act} > R_{max}$, then $U_{act} > U_h$ overuse (1c)

Using Table 1 data, we obtain U= 17.5 (hrs./week) / 45(hrs./week)= 0.39=39% of the maximum available space use time. It is clear from this general analysis that there needs to be a range of "recommended" utilization values for each space type that the facility personnel observes in day-to-day use, in planning programming, and design efforts for comparison. Obtained using the available data, the comparison for time-related utilization, is depicted in Figure 1. See also Table 1 utilization statistics extensions.

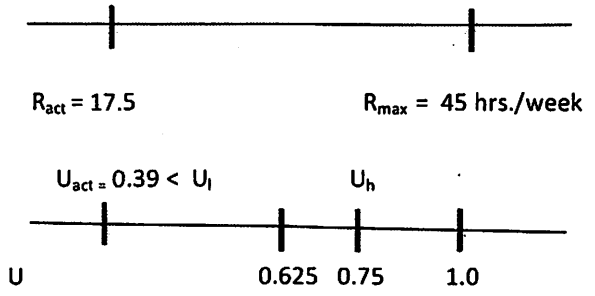


Figure 3 – Time-Related Utilization Values Comparison

2. Occupancy Utilization Factor (S): (or occupancy rate)

The occupancy-related space utilization considers only how much of the space's capacity (for example seating) is used. Time considerations apply only to organize the space use frequency data. Similar to time utilization, occupancy rate is the ratio of *occupancy* (number of occupants) to the *capacity* of the room as given in the following general expression:

$$S = O / C \qquad (2)$$

where O = number of occupants,
C = existing seating capacity.

It is clear by workplace experience that groups of different sizes use meeting or classrooms at different times of the day or a week. Thus, it becomes necessary to reduce the occupancy data (group sizes) using arithmetic mean before the ratio is calculated. Occupancy utilization for a single room, used by a number of different group sizes at different times (n_i), is given in (3) below:

$$S_i = O_{avg} / C \qquad (3)$$

where $O_{avg} = \Sigma O_i * n^{-1}$, subject to $1^{o}i^{o}n$

Performing the ratio for a number of similar spaces in the inventory we get:

$$S = O_{avg\,ij} / C_{ij} \qquad (4)$$

where $O_{avg\,ij}$ = arithmetic mean of the occupancy data
C_{ij} = capacity
$S_{act} = ((10+9+12+11+8+9+12+11+10+9)/10) / 20 = 0.505 = 50.5\%$

An offshoot of calculation (3) averages the room occupancy ratio data instead to obtain the overall occupancy ratio.

$$O_{avg} = \Sigma O_{ij} * N^{-1} \qquad (5)$$

$S_{act} = \Sigma (0.5+0.45+0.6+0.55+0.4+0.45+0.6+0.55+0.5+0.45) / 10 = 0.505 = 50.5\%$ that is to say; only 50.5% of the seating capacity of the room is used during a week.

Figure 4 illustrates the comparison of actual and recommended occupancy utilization factors:

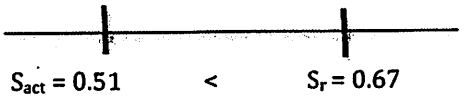


Figure 4 – Occupancy-Related Utilization Values Comparison

The comparison indicates an inefficient use of the occupancy capacity of the room.

In previous sections, we have explained the intrinsic limitations of both time and occupancy utilization measures. Time utilization does not consider the number of users, while the occupancy measure does not take how long the space is used into account. In the following section, we will present a new concept – *use intensity*- in order to unify these two measures and have a better understanding of space utilization.

3. Space Use Intensity (H):

This comprehensive measure on the other hand, combines time and occupancy utilizations and attempts to answer the question "what is the combined actual time and occupancy utilization for a room?" Equation (6) is the general formula for computing use intensity (H); it is calculated in two steps:

First, calculate *total occupant room hours* (W)

$$\mathbf{W = \Sigma(O * R)} \text{ (number of occupants} * \text{room utilization rate)} \quad (6)$$

Second, calculate the *use intensity factor* (H)

$$\mathbf{H = W * S} \quad (7)$$

where H = space use intensity (occupant room hours given the occupancy)
R = room time utilization
O= group size (number of occupants)
S= Occupancy Factor

Using Table 1 data again, 101 occupants use the room for 17.5 hours during a week, yielding a total of

$\mathbf{W_{act}}$= 17.5 (hrs./week) * 101 occupants= 1767.5 hrs./week occupant hours. Similarly,

the use-intensity factor is calculated using (7) as follows:

$\mathbf{H_{act}}$= **1767.5 (hrs./week)* 0.505= 892** occupant hrs./week, given the occupancy factor **(S)** of the room. This is the combined *actual* time and occupancy utilization of the space.

As previously discussed, we need the actual (measured) and the recommended-standard utilization levels in order to make a decision whether a space is under-used,

effectively, or over-used. Ranging from capacity, environmental characteristics, to location, many reasons exist that limit the use of spaces. In turn, multitude of other factors defines a range of desired-recommended values of time, and occupancy related utilizations. Consequently, these consensus-based facility standards affect the derived measure of use-intensity. The final objective of this research is to express time, occupancy, and space use intensity utilization measures in one utilization efficiency index (**E**). It is the ratio of, **recommended** to **actual** levels of space use intensities as given below in (8).

$$\mathbf{H_{r=}\, C * S_r * R_{max} * U_r * O_{avg}} \qquad (8)$$

where S_r= 0.67 (occupancy standard – see Table 2)

U_r= 0.69 (the arithmetic mean of upper and lower boundary values of recommended time-related utilization factors – see Table 2). The E index is thus expressed in (9)

$$\mathbf{E= H_{act} / H_r} \qquad (9)$$

$\mathbf{H_{r=}}$ 20 * 0.67 * 45 * 0.69 * 10= 4,160.7~ 4,161

recommended weekly occupant hours for full occupancy and allowed maximum hours of use for the average group size.

E= 1,767.5 / 4,160.7 = 0.42 is the *utilization efficiency index* representing the actual use, being only the **42%** of the recommended use intensity.

Having summarized and condensed, thus mathematically established the E index to represent all utilization data, we now turn our attention to the relationship between utilization statistics and area requirements.

3. USE-INTENSITY BASED UTILIZATION

room no	H_{act}	H_r	E
105	1,767	4,161	0.42

Table 3 – Use-Intensity Based Utilization and the E Index

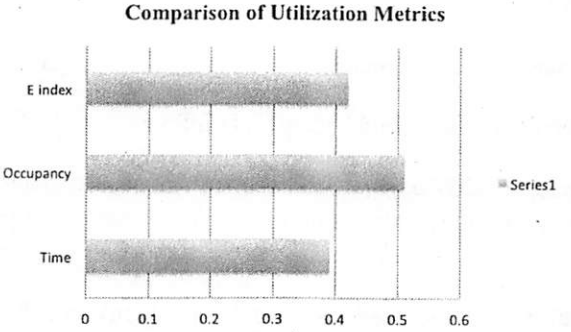


Figure 5- Comparison of Utilization Metrics

Utilization and programming - area requirements -

The discussion about an organization's use of its resources to advance its short and long-term goals emphasizes and explains the importance of effective management of its facilities. An interdisciplinary approach to a continuous monitoring and management of the built environment, designed to contribute to the overall organizational efficiency, by an interdisciplinary team of architects, facility managers and planners however, is mostly avoided by following conventional single discipline procedures. If nascent efforts of professional cooperation in design and construction are an indication, hopefully an expansion of services to cover the occupancy period for efficiently maintaining and operating facilities occurs even in the design phase. Primary among the occupancy phase objectives are the reduction of overhead and creation of environments for user collaboration. Creative use of spaces for opportunities to have even impromptu conversations, meetings, leading to collaboration, not just at offices and meeting rooms, but in lounges, cafeterias, to discuss new ideas, thus opens ways for innovation that will eventually increase the of organizational competitiveness. Needless to say that the measurement of how (a question of classification) and actual - desired (a question of measurement) levels of space utilizations are two types of inputs for supporting space utilization decisions measured at nominal and ratio levels and to be continuously updated in the light of changing technology, workflow patterns, and instructional methods. Finally, the utilization data are to be an integral part of a dynamic management and programming system and aid the facilities planning process, as a predictor of space needs.

We will demonstrate how space utilization is instrumental in predicting the space need in the example below, using the Table 2 data. The concept of area factor (Erdener, 1996) links the utilization to the physical area requirement and translates the efficiency measure to an assignable net unit area as given in (11). The result is a facility planning standard and eventually it needs to be tempered with the prevalent building code requirement for the given occupancy type during programming and design phases. Notice that only recommended ranges of R and S, are used.

$$\mathbf{F\ (Area\ Factor)} = \mathbf{C} / \mathbf{R}_{max} * \mathbf{S}_r \qquad (10)$$

Using the data in Table 1, F= 20 / 45*0.67= 0.66 ASF[2] Area Factor, and

$$\mathbf{F} * \mathbf{R}_r \text{ (recommended weekly occupant hours per occupant)} \qquad (11)$$

0.66 * 15= 9.9 net ASF / occupant, where

ASF=net Assigned f^2, or net Assigned m^2 - note that, this is a unit net area per occupant figure, into which additional area for circulation and support are to be factored in order to define a *gross* unit area standard). Also known generally as Usable Area, ASF is the area of a room assigned or assignable to a specific use (Pena and Parshall, 2001, 112). It is measured inside finish surface of the exterior building walls and categorically excludes circulation, public toilets, mechanical rooms, and the area covered by structure and partitions in its fundamental conception.

2 ASF or NASF is the area of a room assigned or assignable to a specific use. It is measured inside and categorically excludes circulation, public toilets, mechanical rooms, and the area covered by structure and partitions.

Armed with assignable area figures for every type of occupancy, a facility planner, manager, architect, and an interior designer can accurately estimate area performance requirements and occupant capacities. Once room capacities are added to the knowledge base, the programmer will be able to distribute the totals among the number of spaces as required by using the assignable area figures by carefully comparing the obtained figure with that of building code Occupant Load, such as International Building Code's Maximum Allowed Area requirements- for proper functioning of rooms and the subsequent approval of the design.

Conclusion

Throughout the introduction of a quantitative normative theory-method of space utilization analysis as a part of post occupancy evaluation inquiries with qualitative ramifications, has been the focus. Dependability, validity, and accuracy of the results rest entirely on the quality of available utilization data. Using proper data collection methods, scheduled updates to reflect space use trends are essential in facility use decisions that can deftly suggest a reasonable increase in higher space utilization without compromising physical comfort or simply adding new facilities in order to meet the demand for this valuable resource. It is clear by now that the entire process is based on a relational or linked worksheet analysis model.

The following points summarize the research results:

• The place of Space Utilization Analysis (SUA) among the post occupancy performance-based building evaluation methods.

• The inadequacy of these building evaluation methods in comparison with the unobtrusive space utilization analysis that uses dynamic measures in the continuum of organizational changes and demands on physical assets – spaces,

• The basic and the derived space utilization metrics are included with their formal definitions and explanations,

• The (E) index, which reduces all the measures into a single index of space utilization, is created and introduced as part of the research objective, and finally

• The relationship between SUA and facility space planning requirements is established.

All the basic computations for (U), (S), and (H) that include their actual, recommended (criteria), and maximum values are explained as well, using simplified space use data and established standards.

Facilities have dynamic space use patterns due to a variety, changing number of occupants/users and their complex activities. Establishing organizational space standards is an initial and integral part of space inventory-utilization-prediction process. Continuous, even at regular intervals statistical analysis of the space data is

necessary for reviewing and revising these standards. Closely monitoring the space utilization and making timely and appropriate adjustments can prevent expensive remodeling, alteration, or even the construction of new building.

References

Becker, Franklin and Steele Fritz (1995) *Workplace by Design*, Jossey Bass: San Fransisco, p. 7.

Bergman, Steve, 1995. "Alternative Officing: Pros and Cons of the Revolutionary New Corporate Concept," National Real Estate Investor (NREI), http://nreionline.com/print/mag/alternate-officing-pros-and-cons-revolutionary-new-corporate-concept; accessed 8/23/2013.

Council of Facility Planners, International, 1985. *Space Planning Guidelines for Institutions of Higher Education*, July.

Erdener, Eren, 1996. "A New Definition of Work Space Utilization," in *FM Journal*, November/December, 21-26, IFMA (International Facility Management Association).

Erdener, Eren, 1996. "A New Definition of Work Space Utilization and the Area Factor Method of Managing Area Requirements, *Research Papers in Facility Management*, 1767.5 Haworth/IFMA Foundation Research Grant, Vol. I, Section II, 1-14, IFMA Foundation / Haworth Discovery Institute.

Erdener, Eren, 1993. "Space Utilization Analysis In the Institutions of Higher Education: A Case for Post Occupancy Evaluation Focused Inquiries," *The International Journal of the Council of Educational Facility Planners*, 1, 32-37.

Erdener, Eren, 1989. *The College of Business Administration Space Utilization Study*, College of Architecture Design Research Center, the University of Oklahoma, College of Architecture, Norman, Oklahoma.

Erdener, Eren, 2010. *Template B – Space Utilization Analysis Modeling*, Facilities Management Course Lectures; The University of Oklahoma, College of Architecture, Norman, Oklahoma.

Fleming, Simon, et al., 2012. " Assessing Space Utilization Relative to Key Performance Indicators – How Well, Not How Much Space is Used," in *Journal of Higher Education Policy and Management*, 34, 5, 505-515.

Pena, W. M., and Parshall, S., 2001. *Problem Seeking: An Architectural Programming Primer*, Wiley, p. 112.

Sharma, R., 1991. "Space Planning and Utilization in Tertiary Education," in http://www.aair.org.au/app/webroot/media/pdf/AAIR%20Fora/Forum1991/Sharma.pdf Accessed 9/30/13 11:58 AM.

Simon, Herbert, 1998. *The Sciences of the Artificial*, MIT Press, p. 129, 2nd Printing.

Western Interstate Commission for Higher Education, 1971. *Higher Education Facilities Planning and Management Manuals*, Planning and Management Systems Division, Boulder, Colorado.

Wroblaski, Kylie, 2011. "Go with the Workflow, in *Buildings*, 7-1, 24-26, 28.

Zimring, Craig and Reizenstein, Janet, 1980. "Post Occupancy Evaluation," *Environment and Behavior*, 4(12), Sage Publishers, 429-450, p.429.

The Depth of Surface: An evolutionary Paradigm for Digital Architecture

Sophia Vyzoviti

Since the 1990's the notion of surface has evolved into a formal trait among the avant-garde architectural discourses. Conceptualized within the Deleuzian ontology of the fold it has become associated with diagrammatic techniques and digital morphogenesis, prolifically materializing in the projected and the built by continuity, curvature, smooth layering and manipulations of the ground. Liberating architects from typology and the order of the box, the focus on surface processes has diversified architectural research in exploring and making explicit form defining strategies that envision a redefinition of architectural performance. As a diagrammatic practice that appeals to morphogeneticists as well as urban conceptualists, the surface has acquired conceptual, operational and material depth.

What would then constitute the specificity of surface in digital architecture, those features that are unique to its nature which expose its operational range and the creative processes it pertains? The paper outlines mutations in surface conditions which respond and adapt to the evolution of digital design tools: smooth as surface emerges embedded within strategies for integrating heterogeneity in the new formal language of pliant architecture, striated by structural-ornamental components that enable its efficient fabrication and crumpled through the intertwining of material and digital layers that orchestrate bottom up emergence mechanisms to accentuate its responsiveness.

Surface as paradigm

Towards the end of the 90's the notion of surface obtained high conceptual connectivity in the semantic network of progressive architecture. Its ubiquitous presence in *The Metapolis Dictionary of Advanced Architecture* as a synonym of folding, topology, land strategy, dynamic trajectories, flexibility, obliquity, systems, devices, paradoxes, origami, bends, braids, coiling, contortionisms makes evident its experimental status as well as its operational potential. Stan Allen affirms the innovative capacity of the single surface, locating the concept at the origins of the landform building genealogy (Allen and McQuade, 2011). As declared at the *Landform Building* conference announcement *'green roofs, artificial mountains and geological forms; buildings you walk on or over; networks of ramps and warped surfaces; buildings that carve into the ground or landscapes lifted high into the air'* have been exacerbated by the single surface projects of the 90's and particularly *'by architects working with strategies of folding, surface manipulation and the creation of artificial terrains'* (Landform Building, 2010). Patrick Schumacher (2008) on the other hand considers *'the insistence of solving everything with a folding single surface'* as *'dogmatic obstinacy'* that is *'abundantly evident*

within the contemporary avant-garde' and which *'might be compared to the Newtonian insistence to explain everything from planets to bullets to atoms in terms of the same principles'.* More moderate assessments include Antoine Picon (2010) acknowledging the surface condition as an essential dimension of digital architecture and Michael Merendith (2010) charting surface architecture as a topological construct where the envelope, curvature and figuration are the primary modes of architectural expression.

The intense preoccupation with surface evident in architectural production today may be acknowledged more as a dominant trend rather than a concern of the architectural avant-garde. Over the course of the past decade a design culture has developed around the notion of surface. The set of ideas, strategies and tools initially shared by a subgroup of the architecture community located in design research clusters has gradually affected the discipline mainstream. The formal vocabulary of continuous plateaux, geometric pleats and expressive curves, of folded volumes and ornately textured envelopes has been well embedded into the practice. Given the fact it would not be inappropriate to employ Thomas Kuhn's definition of scientific paradigm to assess the relevance of surface in present day and particularly in digitally driven architecture. Kuhn (1996, p:10) considers as paradigms the *'accepted examples of actual scientific practice'* that integrate *'law, theory, application and instrumentation'* and which are capable to *'provide models from which spring particular coherent traditions of traditional of scientific research'.* The single surface has indeed defined the architectural research agenda in the late 90s and provided landmark projects that integrated innovative theory, design and construction techniques. Furthermore the single surface paradigm had been at the time *'sufficiently unprecedented'* and *'sufficiently open ended'* (Kuhn, 1996, p: 10) to attract a generation of practitioners worldwide to study and pursue.

Surface turned out to be a diversified architectural paradigm; its shared rules were not determined a priori but coincided with the experimental integration of computational tools in the architectural process. A set of general rules may be abstracted; explicit form generation processes, strategies for continuous differentiation, obliqueness, complex curvillinearity and texturing. The formal vocabulary of surface, its complex non Euclidean geometries required high- computational tasks. The employment of sophisticated modeling software as well as CAD/CAM fabrication technologies was necessary to instrumentalize the surface's 'design world' - *'the domain of possibilities that designers explore in responding to design problems or speculating about design ideas'* (Mitchell, 2003, p:76). As it relied primarily on digital media the surface paradigm in architecture has evolved, constantly responding and adapting to the accelerated advances of computational tools. Examining some definitive essays and projects of the past two decades, transformations in the formal and procedural representations of surface conditions will be further discussed.

Smooth

In the early 90s surface is primarily associated with the architectural interpretations of folding as a strategy for the *'intensive integration of difference within a heterogeneous yet*

continuous system' (Lynn, 1993). Combined with the adjective single, that emphasised its continuity and integrative character, surface provided an architectural strategy for complexity management, a model for formal and programmatic articulation of heterogeneity. In the seminal essay *Architectural curvilinearity-the folded, the pliant and the supple* Greg Lynn (1993) defines the modus operandi of *pliant architecture* through analogies with geology and culinary mixing techniques as smooth layering, its new instruments as viscosity and pliability, and curvilinearilty as its formal language: forms that are sticky and flexible, *'where things tend to adhere to'*. Lynn attends to geometries of multiple probable relations, that in contrast to exact geometries, cannot be reproduced identically, are irreducible to average points or dimensions though can be determined with precision and introduces the supple topological surface of Rene Thom's catastrophe graph as formal paradigm.

Furthermore, the single surface operates as an architectural strategy to achieve integration between program, structure and envelope into a seamless continuum. Smooth surface conditions aspire to the fluid curvilinear volumes of cars and aircraft but also to the experience of smoothness, fluid circulation within continuous interiors. There is a genealogy of projects and buildings that have initially neglected texture and volume formation, employing the single surface as an organizational diagram. In this genre of projects the emphasis lies on the creation of artificial ground, high spatial connectivity and fluid systems for the distribution of circulation flows that establish smooth transitions over traditional architectural boundaries. As exemplified in the definitive *Deux Bibliotheques at Jussieu* project by OMA, the single surface acts as a catalyst of social interaction; *'a social magic carpet'* in the form of *'a warped interior boulevard that exposes and relates all programmatic elements'* (Koolhaas, 1995, p:10311-13) and transforms the experience of the public building interior into that of an urban landscape.

The early representation technology of complex curvilinear surfaces employed digital tools that had scarcely been employed in architectural design, such as Catia 3D or entertainment software. In the origins of digital Avant-guard, surfaces are soft and flexible, constituted by smooth curves that resemble topographical landscape contours or vehicle, ship, and aircraft shells. The defining element in the early digital surface representations is the extensive use of the 'rubber-sheet geometry' of Non Uniform Rational B-Splines. Branco Kolarevic (2003, p:15) argues for the increasing appeal of NURBS curves and surfaces to designers as *'they enable complex surface models to be easily manipulated through control points, weights and knots'*. Benefiting from digital modeling programs that rely on NURBS as a computational method for constructing complex geometric forms, surface appears in a plethora of representations in a smooth condition. The late 90s abound in abstract, translucent supesmooth curvilinear forms, widely known as Blobs. Although small scale 3d prints are becoming popular, materialization of digitally generated large scale projects is a major architectural challenge in the mid 90s.

During the 90s form generation research in single surface transformations occurs both in digital and analogue media. Surface transformation studies in paper and

alternate sheet materials are developed becoming rigorous enough to couple and challenge the nascent at the time digital morphogenesis. Such studies revamp the preparatory workshops led by Joseph Albers and Moholy-Nagy at the Bauhaus during the 20's where form generation was directly done with material handling, intending to familiarize students with the abstract spaces deriving from surface transformations caused by the stress and strength of paper. In these experimental methodologies surface has the capacity to mediate between the physical and the digital integrating form-generation (the overall definition of form) and form-finding (the integration of the material form's structural potency). This symbiotic relationship between the digital and the physical that originates in the mid 90s form generation strategies primarilly related to surface transformations by folding continues into the 00s as a bottom up digital fabrication and material systems methodology. The surface as an architectural medium in this phase efficiently sifts between the digital and the physical, sustaining a dynamic equilibrium between processes and products.

Striated

In the range of projects that define the digital Avant-guard of the 00s, the notion of surface maintains its overall form generating function and gains rigor through the accelerated growth of digital fabrication techniques. Advances in architectural geometry, an interdisciplinary field currently emerging at the border of differential geometry, computational mathematics, architectural design and engineering provide solutions for the actual construction of architectural free-form surfaces, segmenting the overall surface into simpler parts, so-called panels. Surface segmentation into flat, single-curved or double curved panels, supported by grids of geodesic lines or meshes enables the materialization of a free form single surface into an architectural envelope maintaining its global smoothness. Lars Spuybroek (2004) affirms the importance of panelization in contemporary architecture as a hugely important issue. Software like Generative Components and Rhinoceros provide tessellation, panelling and subdivision tools that mediate between geometric rationalization and constructive organization.

During the '00s the surface is no longer smooth but striated. In the lineage of digitally generated installations experimenting with a variety of fabrication methods surface becomes an integrated aggregate or a *synathroisis* of non-standard components that facilitate overall architectural substance, each component requiring relatively simple fabrication procedures. The concept of surface as *synathroisis* (Adilenidou and Vyzoviti, 2008) pertains to an assemblage of monads that individually express the common logic of the group, explicitly articulated within a computational system. The design methods of such intelligent assemblages address the creation of self-supporting and material efficient patterns that populate the surface allowing parametric part-to whole interrelations. The fabrication procedures are usually hybrid combining hands on creativity, manual labor with digital craftsmanship. In this genre of projects the concern lies upon tectonic strategies of assembly as well as surface effects resulting from intricate patterning. The inventory of small scale d.i.y design-build experiments that define the state of the art in digital fabrication by Lisa

Iwamoto (2009) is organized under five major techniques; sectioning, tessellating, folding, contouring, and forming. It is noteworthy that folding appears here as a digital fabrication method -not as a formal, organizational or structural concept- but rather as a structure enhancing, component based material system. Fabrication by folding essentially entails the development of three dimensional components into two-dimensional patterns ready for cutting by lazer, water-jet or plasma cutters. While geometric development in two dimensions has been employed in pre-digital tectonics, arts, and crafts it is today largely facilitated by software. Generating an unfolded crease pattern of a three dimensional folded surface in analogue requires intensive geometric calculations. Today it can be easily achieved with current modeling software – by the unroll or smash commands in Rhinoceros- or employing applications like Pepacura Designer and Lamina Design.

The formal regime of surface in this genre of digitally generated and fabricated installations is intensive and excessive patterning. The focus has shifted from the form generative and organizational single surface to surface effects. Striated surface conditions manifest in shells in most cases porous explicitly devoid of content, in which the sole utilitarian mandate besides the demonstration of intricacy is the pursuit of perceptual effects. Machine intricate ornamentation is still pertinent to and rather contradictory within the current Avant-guard discourse. Marc Goulthorpe (2008, pp: 147) states that:

'Machined surfaces evidencing technical dexterity as forms of digital ornamentalism seem just as aesthetically fateful as their fin-de-siecle forbearers, unless, perhaps they stimulate a new speed of mind via alternative generative process'.

However this new kind of ornament -to use Farshid Moussavi's argument - is deemed necessary since it emerges from the material substratae, expresses the embedded forces through processes of construction, assembly and growth and produces affects and resonance (Moussavi and Kubo, 2006). A bleaker approach subverts the ends of digitally driven methodologies to the pursuit of the grotesque. As Hernan Diaz Alonso of Xefirotach (Adilenidou and Vyzoviti, 2008, pp:99) states *' what used to be about mastering the results of non-perfect processes is now about the production of monstrosity through mathematical perfection'.*

In my opinion this upgraded status of ornament –through its complexity, differentiation and deeply orchestrated computational logic- challenges the habitual perception of architectural artefacts and prolongues the aesthetic act of apprehension. It replenishes architectural performance with a task attributed to art – a function of defamiliarization that imparts the sensation of things as they are perceived and not as they are known, making objects unfamiliar (Shklovsky, 1917) and forms difficult to comprehend aiming at the process of perception as an aesthetic end in itself.

Crumpled

In the current research agenda for digital architecture surface is investigated as a responsive, adaptive, interactive, and flexible entity. What is currently defined as responsive architecture is *'a type of architecture that has the ability to alter its form in response to changing conditions'* (Sterk, 2003) and comprises a research field that combines interdisciplinary knowledge from architecture, robotics, artificial intelligence, and structural engineering. The term responsive is usually combined with the term adaptive, broadening the definition for architecture as a system which changes its structure, behavior or resources according to demand. A state of the art outlook in adaptive architecture reveals four thematic foci of research in progress: dynamic façade systems, transformable structures, bio-inspired materials, and intelligent actuation technology (Adaptive Architecture, 2011). In this context surface is investigated in a cross disciplinary field with an emphasis on engineering, highlighting the geometric and structural aspects of its kinematics.

The responsive surface is able to change shape –its overall form or its texture – and over different time-scales. Its dynamics are embedded within the design process in the extensive use of simulations and parametric modeling. Surface kinematics is enhanced by surface geometry, which is becoming increasingly smarter. Patterning enables surface kinematics; tessellations or components are actuated by systems of sensors, servo mechanisms, pistons, sliders, LEDs, gliders, etc. In these recent manifestations, surface is becoming increasingly dynamic and increasingly smarter, as its material constituents are interwoven with computational interfaces. The ornately segmented shell is becoming animated.

This new kind of surface calibration that accentuates its responsiveness focuses upon a microscopic rearticulating of its texture. Surface texturing towards kinetic behavior and interactivity has revamped the relation between the ancient craft of textile and architecture. A genre of kinetic surface prototypes is hybrid high-tech textiles that interweave computational and physical interfaces. This is evident in the case of robotic membranes (Ramsgard Thomsen, 2008) where steel threads and carbon-loaded fibers are integrated in the weave allowing the passing of data and exploiting the pliable nature of textiles to enable actuation. The intricacy of the responsive surface's animate texture captures the *'interactions, in which the parts exercise their capacities to affect and be affected, constitute the mechanism of emergence behind the properties of the whole'* (De Landa, 2011).

The quest for a responsive, adaptive, interactive, and flexible surface also revamps the kinematic potential of standard deployment mechanisms of translation and rotation with applications primarily in adaptive building envelope design. Folding becomes again relevant in the frame of transformable surface tessellations that often reuse and remix standard origami patterns. In most of these cases regular geometry is employed allowing the versatility of the overall surface to become informed and deformed through its kinematics. In addition there are a number of very recent building envelopes that adopt complex faceting in randomly folded configurations that resemble sheet crumpling morphology. Animate or static, state of the art surface

treatment manifests overwhelmingly complex formal vocabulary, employing computational power for formalistic approximations of randomness.

In these very recent investigations we register randomly folded surface conditions. I would argue that in terms of representation the formerly smooth and later striated surface is currently becoming crumpled. When a sheet is crumpled, its texture is augmented; a complex network of ridges displays the distribution of stress along its surface. The crease pattern -which has been created by brute force-, provides guides for interaction with the material and may determine kinetic behaviour. As an architectural metaphor crumpling consolidates the tendency for a microscopic rearticulating of the surface's texture that captures causal interactions among its component parts, facilitating the intertwining of material and digital layers into emergence mechanisms that accentuate the surface's responsive ability.

Conclusion

During the past two decades surface has evolved into a universally recognized operational concept that has provided model problems and solutions for the architectural community adapting to the expanding computational resources of design media. From landform to envelope, from structure to ornament, from aperture to kinematics, surface displays architectural omnipotence, wide instrumental range and scale of applicability. In the evolution of the surface paradigm in contemporary architecture a gradual shift from the macro to the micro scale is observed. The smooth (single) surface is primarily concerned with global form generation and spatial ordering. The striated surface asserts constructability through structural-ornamental components. The crumpled surface pursues an animate texture.

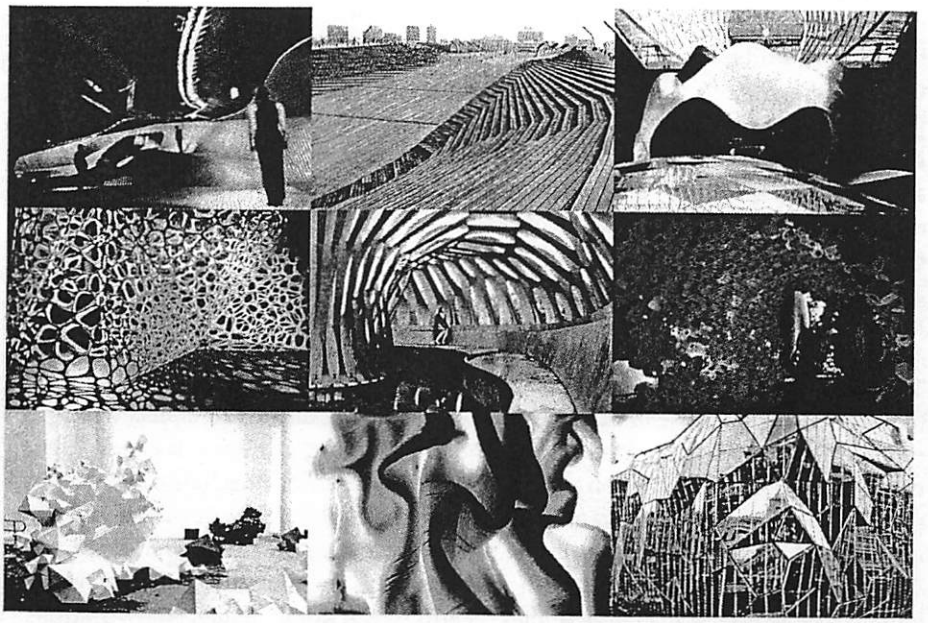


Image 1_see end of doc for caption

The paper explored the specificity of surface in digital architecture, identified and exposed some of its intrinsic properties. Perhaps it is impossible to discuss surface in the Modernist terms of medium specificity. Throughout its mutations and adaptations to the accelerated developments of digital design tools in architecture, surface has demonstrated the capacity to mediate between the physical and digital; to possess a liminal identity, a unique case of hybridization *'between the abstract and the ultra-material'*(Picon, 2010). Primarily abstract -based on computational geometry and code- the surface triggered innovative methods to become material – fostering the creation of new fabrication techniques and revamping old school craftsmanship. At the same time, embedded in digital design methodologies, surface has revitalized physical modeling in architecture and particularly with relation to material computing - *'the analogue form-finding processes complementing the new digital design tools that might in fact be described as quasi-physical form-finding processes'*(Schumacher, 2007). This palindrome function, from the digital to the physical and the physical to the digital, accentuated morphogenetic research and revealed counter intuitive pathways to fabrication. It is the surface's liminal identity that has during the past decade stimulated architectural creativity and enhanced innovation.

References

Adaptive Architecture, 2011. International Conference. [online] available at http://www.buildingcentre.co.uk/adaptivearchitecture/adaptive.html [accessed 1-11-2011]

Adilenidou, Y. and Vyzoviti, S., eds 2008. *synathroisis.* Athens: Papasotiriou publishers.

Allen, S. and McQuade, M. eds. 2011. *Landform Building: Architecture's new terrain.* Baden and Princeton: Lars Muller Publishers and Princeton University School of Architecture

Cross, S. ed.2003. *The Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age.* Barcelona: Actar

De Landa, M. 2011. Emergence, Causality and Realism. In L. Bryant, N. Srnicek and G. Harman, eds. *The Speculative Turn: Continental Materialism and Realism.* Melbourne: re-press. pp:381-392.

Goulthorpe, M., 2008. Hox aesthetics: The restrained profligacy of second-order generative processes. In B. Kolarevic, B. and K. Klinger, eds. 2008. *Manufacturing Material Effects, Rethinking Design and Making in Architecture.* London: Routledge. pp: 145-150

Landform Building -Architecture's New Terrain. 2009. [online] A working Conference at Princeton University School of Architecture. 18 April 2009. available at http://soa.princeton.edu/landform/ [accessed 28-1-2011]

Iwamoto, L. 2009. *Digital Fabrications, Architecture and Material techniques.* Princeton: Princeton Architectural Press

Kolarevic, B., ed. 2003. *Architecture in the Digital Age: Design and Manufacturing.* New York and London: Taylor and Francis

Kuhn, T. 1996.*The structure of scientific revolutions.* 3rd edition.Chicago and London: The University of Chicago Press

Koolhaas, R. 1995. S,M,L,XL.Rotterdam:010 Publishers

Lynn,G.1993. Architectural curvilinearity-the folded, the pliant and the supple in *Folding in Architecture. AD* Vol.63. London: Academy Editions

Meredith, M.2010. *Medium SpeciŞcity in Architecture* [online] available at http://www.chughes.net/index.php?/projects/wheels-of-heaven/ (accessed 28-1- 2011)

Mitchell,W.J., 2003, Design Worlds and Favrication machines. In Kolarevic, **B., ed.** 2003. *Architecture in the Digital Age: Design and Manufacturing.* New York and *London:* Taylor and Francis. *pp*:73-80

Moussavi, F. and Kubo, M., eds. 2006. *The Function of Ornament.* Barcelona: Actar

Picon, A., 2010. *Digital Culture in Architecture.* Basel: Birkhauser

Ramsgard -Thomsen, M. 2008. Robotic Membranes: Exploring a textile Architecture of behaviour. In *Protoarchitecture Analogue and Digital Hybrids.* AD Vol.78/4. London: Academy Editions

Schumacher, P. 2007. *Engineering Elegance.* [online] Available at http://www.patrikschumacher.com/Texts/Engineering%20Elegance.html [accessed 28-1-2011]

Schumacher, P. 2008. *Parametricism as Style - Parametricist Manifesto.* [online] Available at http://www.patrikschumacher.com/Texts/Parametricism%20as%20Style.htm [accessed 28-8-2013]

Shklovsky, V. 1917. *Art as Technique.* [online] Available at www.fas.harvard.edu/shklovsky1.pd [accessed 11-1-2012]

Spuybroek, L. 2004. *Machining Architecture.* London: Thames & Hudson.

Sterk, T. 2003. *Building Upon Negroponte: A Hybridized Model Of Control Suitable For Responsive Architecture.* [online] available at http://www.sciencedirect.com/science/article/pii/S0926580504000822 [accessed 28-1-2011]

Image 1. Transformations in surface conditions (From top left):

• smooth: Fresh Water Pavilion by NOX 1997, Yokohama Port Terminal by FOA 2002, DZ Bank by *Gehry* Partners 2001

• striated: C-Wall by Matsys 2006, ICD/ITKE Research Pavilion by Achim Menges 2010, Digital Origami by Chris Bosse 2007,

• crumpled: Modern Primitives by Aranda\Lasch 2010, Slow Furl by CITA 2008, Bilbao Health Department Building by Coll-Barreu Arquitectos 2008

The Economic Impact on The Users' Creativity / Role of The Architect in The Building Process

Andreja Benko

Introduction

Architects with their work represent special interface for a user, especially in the design of residential buildings. This paper focuses on work from economic point of view in the process of building single family houses and collaboration from aspect between architect and a user. In some cases, architects do not include enough attention to user and their creativity, although the user will be the dweller of the house. But until a house becomes a home to individual, architects should leave a bit of creativity to user although the architect is mostly the one that in building process looks over the expenses. A home is a place in which an individual or a family can live and store personal property (SSKJ, 2010). Especially interior of the building can reflect as an expression of the individual. With a little bit of people skills and psychological knowledge, architect can determinate the investor and his needs and get to know his personality. Home sometimes reveals a lot about the person, because this is intimate environment where one can relax and be itself. But a lot of times the relationship between the architect and the investor is like a peninsula surrounded with water and variety. Work under such conditions needs to include observation, detection and analyzing in the relationship, for both actors in process - such for the culture of dwelling and for the reception.

Responsible architect knows what user needs, and also knows his special needs, but on the other hand he also has the knowledge about the regulations of space, building codes for specific area or state and regulations in civil engineering. He also has to keep in mind a physical context of building in architectural landscape and the budget. Last but not least there is also a schedule of whole process.

Architect must be the one that will be able to make benefit of the small space and make it usable to user. In the time, where invested money is important and is some cities there is really big lack of free space for buildings this can be very important. This is why the investor should consider involving the architect in his building process as fast as possible. That can be also before the decision of the actual purchase of a plot (Benko, 2013).

Collaboration between the architect and a user

Collaboration in architecture is a creative process for both actors. Sometimes people may confuse collaboration with compromise. Collaboration for sure is a term in many ways different from compromise and more important for investor.

Collaboration means two or more actors work together to achieve a goal with no hidden intentions. Collaboration fundamentally requires an open and trustworthy relationship between all the actors involved in a particular process. Of course all information have to be properly expressed, discussed and understood to all in the shortest possible route, on the basis of learning, work and agreements to pleasing and satisfactory end for all. It should be noted that the agreement is given in terms of these "Win-win" situation for all actors involved.

Since architects prepare the drawings and sketches, they have a lot of influence, also on investor. To make the process collaborative, architects should present many alternative solutions to be evaluated including wishes of investor. Architect should be the one that implements their wishes and needs into drawing plan and also suggest investor for better solutions. This often reflects in modifications to the objectives. As the collaboration progresses, we gradually move to a building plan or idea that relates to the client's objectives. But for many architects that means a lot of unnecessary wasted work. That is why it is important for investor to rather "waste" some time for the architect that will devote himself to project.

Practice links plan, detail and totality. It thereby develops sociological views of the profession in the human environment. Theory confirms implementation in practice on the basis of a theoretical knowledge of mathematics, above all proportion, which connects technical implementation with aesthetics (Zupančič, Juvanec, 2013).

A first step in attempting to succeed in this endeavour is to find a way to collaborate effectively with the people who will ultimately inhabit the building. Buildings designed this way are better buildings (Gisolfi, 2011).

Time-optimized working process

We have to take into consideration also time schedule for project completion and optimization of working process, as time in is also more and more valuable. Optimisation of the work process of designing often provides a thorough preparation for the work process. The science which deals with process is called praxeology. One of the most representative figures is Tadeusz Kotarbinski, who also created a philosophical theory called "reism".

In the process of formation of a joint project, is often used a combination of several disciplines (psychology, sociology, communication etc), in the case of architectural design there are even more joined disciplines (geodesy, geology, construction etc.). Crucial in that process is relevant and non-confrontational cooperation between designers, developers and other actors in the process, since in this case the path to the common goal is faster. Designers' approach to user depends from person to person, but can generally be extrapolated from the three general models of relationships that occur most frequently. These are defined after Pocock & Hudson (1978):

- Architect as a leader
- Architect as a copycat
- Interaction architect – client/user.

Although in terms of complexity, the construction of individual residential houses is less-demanding project, it can be case study to display the planned schedule work process in the construction of the building and in the design phase.

Optimal process design is formed on the basis of expertise, appropriate structure and active cooperation of all actors involved, and adequate coordination of the profession, adhering to prescribed laws, regulations, procedures, available finances, investor and culture.

Monetary optimal construction of the building and the role of the architect in the process

The emphasis and importance of the responsible architect are shown throughout the whole process of construction of the facility (design + construction). Recently financial side of the planner investment is exceptional important. Users, who decide to build, primarily see just a short-term financial plan. We have to agree with the Stephen Bayley's sentence (www.theguardian.com): »Architecture and design, the practical arts, are much more closely related to the economy than music or novels. You don't need wealth to write a novel; history shows that poverty is a positive stimulus to literature. Yet the architecture and design of the last century can only be properly understood as the economy made visible.«

The architect's responsibility in this case is to present also a long-term investment value. The architects' decisions have also a significant impact on the economic side of the investment, which is often quite important to a user. It is thus possible to optimize a construction, with a planned reasonable design and collaboration with user from the beginning of the whole process. Here needs to be mentioned also investors - who are not limited with financial funds but that kind of investors are relatively rare.

For the most common investor, it makes sense that he does the outset to determine the investment budget. The importance of the budget defines not only the design but also makes possible to complete the whole building process. As a result of poorly estimated budget are not finished facilities. In this way, the architect and the user bundle trusting bond that is quite important.

But that does not mean that only money (economy) is important for the construction of proficient, sensible and recognizable architecture. There

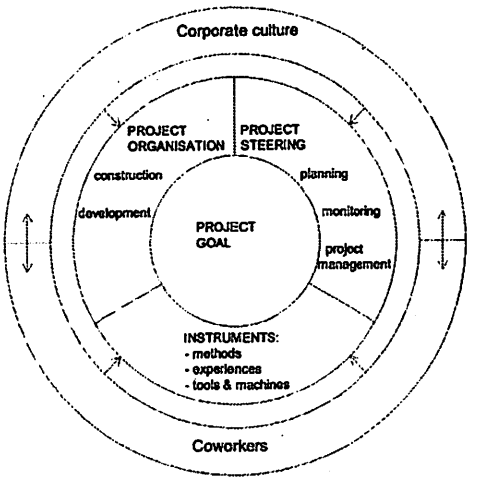


Image 1: The system of Project management (Litke, H.D.:22)

are many reasons why investors have to choose a trustworthy architect, who will help them with different decisions and with those lower investments. With some reasonable decisions, architect can lower the investment for almost 50% just by choosing a good material through specification not over the brand. Nowadays there are many construction materials that are similar in specifications, but the price varies because of the reputation and tradition of business. This does not mean that the recognizable brand is weaker, but they can afford higher price because they already have enough income over permanent and major customers. Smaller companies because of that have advantage by deals for small investors and also relationship to them is more individual.

Of course there is of great value also the decision for good contractors, which will work on the site. For small investment (what single family house for sure is) there are many small firms, which can handle the building site. These contractors can save money for investor – most of the time truly the whole building process takes a bit longer, but on the end investor saves money. And again there is more personal contact with people who make home from house.

Unfortunately common practice of Slovenian investors all too often shows saving a bit of funds by choosing the cheapest design offer. But as a rule, in the process of building a house, it always turns out to be the money twice lost. Often the result of such decision is problematic, as active collaboration with architect can provide quality work, thought through design and also economical completion of building. In view of the entire process of construction of a facility, the clients often do not realize that a well chosen architect will be the one, that will draw the plans for individual house, will also get them the permit to build the object, but at the same time he will economically optimize the construction and maintenance of the facility.

Recommended price of an architect is in Slovenia is about 10% of investment (www.zaps.si), but still the price depends mostly from the work and mediation that architect does for the investor. Still the cost of the design is only a small fraction of the total investment; only with quality design can be achieved savings in total investment and maintenance, which is so called long-term investment.

Project management

In the handling of construction projects, the terms project guidance, project management and project controlling are regularly used. When reporting negatively about the projects in the press, either the costs or the dates are in the focus of criticism (Kochendörfer, Liebchen and Viering, 2010).

Project management and project controlling differ with respect to the performance of content and therefore of the liability risks.

People in management have different approach. The purpose of methodological approaches is also raising the level of knowledge about the project management, and improvement in the practice.

Therefore is practical implementation of modern project management methodologies to organize all the opportunities to overcome the main reasons for failure of some projects. Most common are:

- Lack of coordination in the planning and using of resources,
- Lack of coordination in the planning and implementation of activities
- Lack of communication between the participants in the project
- Improper planning time, financial and other resources,
- Lack of control over the progress of the project,
- Lack of control over the quality of the products of the project,
- A lack of management support for the project (Borko, 2000).

In the process of designing and house building for individual client in most cases this role belongs to an architect. Just in some cases the project leader is the investor, as still the architect is the one that has more experiences in this field and as mentioned before, architect has to be fair and work towards the satisfaction and well being off customer as well as for chosen contractor. It is positive for him, that he also has some skills in mediation.

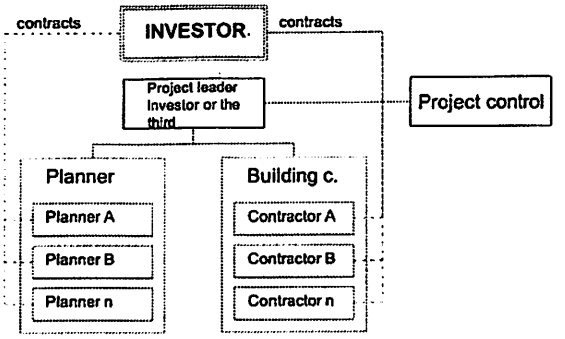


Image 2: Constellation of project: individual planners and individual contractors (Kochendörfer, Liebchen, Viering: 63)

Users' creativity in single family house

Inclusive design is an attempt to a design which respects the diversity of users, without considering their age, gender, earnings, power, obedience to rules and orders. For creating inclusive design, architects must consider the expirence of others from space in their designs and look for inclusive solutions that include all the needs of diverse users (Morrow, 2000).

Collaboration, which central idea is participation of users in the process of designing, make it possible for the architect to comply the advice of users involved in order to respond to their needs and desires. With collaboration and relationship between makers and users, the process of making becomes more important and can be reflected in aesthetic and formal decisions (Hill, 2003).

Mostly the users are not passive – they are active and they are creative. Eventually they will transform the designed house into their home and their space according to their uses. That is why experienced architect has to involve them as fast as he can into the designing process – of course to a certain limit. Not everything can be foreseen.

Architecture design will not be finished by work of an architect and will be continued to the time of use and user. So if we consider user as creative, then we should construct situation that allows him to decide how to occupy and use the building (Ashayeri, 2012).

Conclusion

Of all the traditional arts, architecture is the one remaining practical art. But it remains clear that architects are not solitary artists. Architects build for people, in a specific setting and we build for a practical purpose. There is no need for a conflict between satisfying those who use the building and satisfying some higher artistic purpose. The art – the architecture – is derived from understanding the objectives and collaborating in a way that transforms a vision into architectural ideas. True collaboration is a symbiosis between the architect's design ideas, a project's setting, and the intentions of its users (Gisolfi, 2011).

The architects' aim of this process is indisputably large, as he helps the user to make his future home useful. But he – the architect, should also be aware, that he will not be the user of a designed architecture. The customers' wishes have to be included in a facility, where he primarily has to allow his own expression of creativity, autonomy, but as an expert he has to ensure the functionality of the building and involvement of the building to the traditional architectural landscape. Architect therefore should be familiar with fields of psychology, a sociology, communication, organization, economy and in particular, a consultant, who follows the specific of the chosen environment and satisfies the needs of future user of the facility.

This is important for new construction, such as for the renovation of the building - the architect must actively participate and interact with future users of the facility. A responsible architect with a sense of architecture understands and knows what the identity of the landscape is and has integrated approach to the design. Any interference in the landscape is public and with inappropriate intervention in space can affect many people. This is also the point, where the profession should get better position and be more appreciated. For conclusion we can say, that it is important, that architects interfere more in the outer coat of the object (as this one is part of the public space) and leave more creativity, autonomy to the user inside of the house.

References

Ashayeri M. *(2012): Considering user as a creative force to transform architecture. House and home from a theoretical perspective, volume 1, p 147-151, Dakam, Istanbul.*

Benko, A. *(2013): The Architects' Identity determines the Identity of the Architectural Landscape. ISG Magazine, p. 9-12, Graz.*

Benko, A. *(2012): Adjustment of individual spaces to a user of 21st century. House and home from a theoretical perspective, volume 1, p 8-16. Dakam, Istanbul.*

Benko, A. *(2013): Optimal design process - On the example of the single-family houses design. In print.*

Borko, M. *(2000): Vodenje projektov. Raziskave, projekti, svetovanje in storitve na podro ju celovitega upravljanja kakovosti, Ljubljana.*

Hill, J. *(1998): Occupying Architecture: Between the Architect and the user. Routledge, London and New York.*

Kochendörfer B., Liebchen J. H., Viering M. G. *(2010): Bau-Projekt-Managment. Vieweg+Teubner Verlag, Wiesbaden.*

Krebs, J. *(2007): Design and living. Birkhäuser-Publishers for architecture, Berlin.*

Litke, H. D. *(2007): Projekt-management. Methoden, Techniken, Verhaltensweisen, Evolutionäres Projektmanagement. Carl Hanser Verlag, München.*

Novak Lukanovič, S: *(2009): Percepcija kulturne in jezikovne raznolikosti v obmejnih območjih. Stališče in znanje jezika soseda v obmejnih podro jih. V: Signal Winter/zima 2008/2009 Jahresschrift des Pavelhauses, Graz, Österreich.*

Pocock, Hudson, D. *(1978): Images of the Urban Environment. Columbia University Press.*

Poli, M. *(2007): Okoljska psihologija. Filozofska fakulteta, oddelek za psihologijo, Ljubljana.*

Zupan i, D., Juvanec B. *(2013): Material in oblika. Univerza v Ljubljani, Fakulteta za arhitekturo, Ljubljana.*

http://www.thecadstore.com/pdf/ac14_bro8p_hq.pdf ‹August, 2013›

Peter Gisolfi: http://www.archnewsnow.com/features/Feature359.htm ‹August, 2013›

Stephen Bayley: http://www.theguardian.com/artanddesign/2009/jan/11/restaurant-design-princi-bob-ricard ‹August, 2013›

Letting Oneself Be Given

Mads Tholstrup

Our time cries out for creativity. The classic monotheistic metaphysics claimed that God created *ex nihilo*, in the romantic era they were inspired by the idea of the artist as a solitary genius, and today we in the western world are threatened with losing the competition to Asia, if we do not become more creative. There can be no doubt that creativity and the ability to produce knowledge is a crucial factor in the on-going global struggle for prosperity. Knowledge-based society is interested in the whole human being with all its quirks and passions while, at the same time, we are able to do less and less with our hands, oddly enough.

The theme of this conference - creativity in the field of tension between autonomy and functional determination is concerned with this issue. If it is true that by applying such a view of creativity we present an unfortunate image of what today's challenge is, for e.g. architects, our task is to formulate a different view of creativity. A view which does not think in terms of the alternative either unattractive automatable routine work or an interesting and original process of creation.

The line of thinking is a follows, if the architect has to come to terms with the demand for creativity, creativity has to be re-envisioned as something else than the ability to come up with interesting ideas. The work of the architect is understood as being more concerned with developing a special receptivity to the world than coming up with interesting ideas. Our time is cries out for innovation, perhaps it ought also cry out for something else.

Goal orientation

When things do not proceed as intended, improvisation may be necessary and creative efforts are then appreciated. It requires creativity to have success as an improvisational musician, for in this case the musical progression has not been pre-determined while it also makes sense to say that a musician is playing out of tune. Creativity manifests itself in situations where the right thing to do is not something you can work out through calculations.

However, it is a widespread view that creativity is associated with 'the ability to create something new and original and to realise this', as some dictionaries state. Has this view become dominant because it matches a particular idea of what it means to contribute something valuable? In a culture which is totally shaped by inventions that have resulted from the natural sciences, it is natural to understand creativity as something which presents a parallel to scientific research. Just as research is about obtaining new knowledge, it is, in the context of creative production in other fields, also a question of performing something new. Where the researcher makes discoveries, the creative person creates something original - be it inventions or works of art.

It is remarkable that, in this case, the type of creativity that is most close to us and also omnipresent is displaced, i.e. linguistic creativity, which each of us manifests when we use our native language. On the basis of only a limited set of rules and a limited meeting with a language, a competent language user will be able to understand and even produce an infinite number of never before formulated sentences. Use of language is an expression of human creativity par excellence.

But what is even more remarkable is the fact that the slanting of creativity towards being understood as the creation of the new, is the expression of an unconsidered opinion on what behaving reasonably means. To be creative is, of course, not, to behave irrationally - even if you are producing something which cannot be discovered through calculations. The focus on the new means that, as a parallel to the researcher who makes an observation and discovers its cause, the person who creates is understood as having the ability to find inspiration to come up with an idea and as having the ability to realise this idea as a result. In this case creativity is understood in the light of the notion that an action can only be considered as being reasonable when it is based on an objective for an operation, an operation that can be formulated.

Why is it that the notion of creativity as something which is oriented towards the extraordinary has become dominant? Perhaps this is connected with the emergence of a particular way of thinking about the relationship between the creator and the reality in which creation takes place. A way of thinking which implies that one imagines the relationship to be observable from the outside. Seen from the outside it is a question of creating something, of the person who creates causing a change in the state of things. Unless the activity is completely pointless, the activity of the person is based on certain rules. These rules can be either rules formulated by someone else, in which case following them will result in 'restricted' creation, like the kind of creation we are familiar with from cooking when you follow a recipe in a book, or the rules may have been formulated by the very person who creates. The latter case is an example of 'free' creation. To both the 'restricted' and the 'free' creation applies that a certain degree of creativity may be necessary, if the rules have not completely eliminated the need to make certain choices on how you best achieve your goal, that is. It is, however, only 'free' creation which is referred to as being creative - for it is only in this case that creation is a realisation which could not, in principle, have been created by others at an earlier stage. If creation is, in other words, perceived as being either caused by certain rules formulated by others having been followed or by the creator having formulated the rules on which creation is based, it is evident that creativity is perceived as something which is concerned with the new, with something original.

The change in the way we understand creativity has not appeared out of the blue. When it seems we have to choose between understanding creation either as 'restricted' by rules or as being 'free', it has to do with the fact that creating something is seen as an activity, which, if it is rational, can be explained as the realisation of a

goal. Implicit in this understanding is the idea that the one who creates first has to imagine what is to be created and then subsequently sets out to realise this idea. Such an understanding of an activity sees it as rational with regard to its objective, and implies that the activity should be understood as being 'determined' by the objective, by what must be done to be able to say that now nothing more will be needed to realise the objective. This, however, presupposes that the objective can be formulated and understood regardless whether you are involved in the process of creation itself or not; and that, consequently, another person might, in principle, be able to realize the idea. In this case the person who creates is understood as being in an 'external' relationship with the act of creation.

Technologism

This change in the way we view creativity is the result of fundamental changes in our culture; a culture which has developed from being restricted by customs, a static way of life, to being shaped by technology. What is technology? Human beings have always manufactured and used tools in the 'metabolism' we share with nature, and we cannot imagine human beings without them. But our use of tools goes beyond the objectives which the tools were a means of achieving. The total use of tools as well as the related knowledge, which belong to a certain period in time, we may refer to as its technology; a technology which may be said to define the period. It does so by providing a reflection of its users. This effect has never been planned and is most often not visible. Technology is consequently not a neutral link between humans and their environment. Human beings have always reflected themselves itself in that which they have created, from the fireplace over the mechanical clock to the computer. These tools provide a pattern for our efforts to understand the way we think and our relationship to reality.

More specifically, what is the image that technology has seduced us to draw of ourselves? It is not a new image. Its basis goes far back in history. That man should think about knowledge as the type of knowledge which it is possible to capture in writing, most likely, harks all the way back to the emergence of the first cultures to use writing. According to this view, we only know something if we can express it as statements which can be either true or false; and he who makes a claim using such a statement must be able to justify this claim. This connection between knowledge, statements, truths and reasoning goes way back in history.

This way of presenting a person who knows something, makes it natural to also imagine a person who creates something in a specific way. Knowledge in writing is, in principle, knowledge which is equally available to everyone; and, consequently, the nature of what this knowledge is concerned with must be something which exists independently of the person who claims to be in possession of that knowledge. The means by which our ideas and knowledge are thought to unfold must correspond to the object of these ideas and this knowledge - and vice versa. Reality understood as something which can be dealt with in writing must therefore be available in a way which, in principle, makes it possible to describe and explain it exhaustively using

statements that indicate what is the case, and which are true or false depending on what is actually the case.

For it not to grope irrationally in the dark, the process of creation must include the following: first, the person who creates must provide an idea of the intended result; secondly, these ideas must be based on knowledge which can be formulated in declarative statements and which can be *applied* to the process of creation; and thirdly, that the person who creates must have the necessary skills to *apply* this knowledge. This conception of what creating something means - i.e. understanding it as the implementation of a linear process: objective; knowledge gathering, if the person who creates does not already possess the necessary knowledge, that is; using this knowledge to regulate the exercise of specific skills; and, finally, completing the realized objective – is what I call technologism.

Technologism is not a philosophy that has been formulated and discussed in the tradition. Like its relative, scientism, it is a 'folk philosophy', more a result of things not having been thought through than of somebody reasoning their way to a position. Scientism can be formulated as a non-justified extrapolation of the way of thinking we associate with the positive sciences to count as the only legitimate way of thinking. It is a philosophical interpretation of the positive sciences which is not a result of the way they function; and people involved in positive sciences are by no means necessarily scientists. Similarly, technologism is more a prejudice than a comprehended position on one's own practice. One way of recognizing this prejudice is to recall the two main directions of recent philosophy: the philosophical direction, which was based on self-evident insights of reflection, rationalism, and the direction which, as an extension of the positive sciences, was based on observable circumstances, empiricism. Both maintained, through their break with the world view of the church, the idea of knowledge as something that is present in the form of a statement, and consequently takes a static, object-like form. 'Even though the answer to questions about reality, according to these new views, was not to be found in the authorized scriptures of the church but in sensuous, empirical reality or in the rational reflections of the free intellect, knowledge was still monopolised as explicit knowledge. 'The list of facts' based on which you were to determine the truth value of your statements about reality had just been changed.' (Wackerhausen, p. 88)

If we look at what specifically happens when knowledge and skills are brought into play, a trait which is not compatible with technologism emerges. It would seem that the knowledgeable professional is able to do something which the novice is not; something which it is often difficult to state as knowledge captured in declarative sentences. There is much to suggest that the more experienced a person is in a given field, the less adequate the description of this person will be, in terms of explicit knowledge and skills for applying this knowledge. But, you might object, has the person not simply internalised his knowledge and automated his rule-based skills to such an extent that the whole process takes place without the person concerned being aware of it? With regard to the ability of a person to solve a task there appears

to be more at play than technologism is able to perceive. What is lacking is stating something which precisely cannot be included in an account formulated in terms of explicit knowledge and its representation in declarative sentences. Think about the knowledge which is manifested by a person's ability to recognise a face, ride a bike and speak a language, make a diagnosis and carry out complex medical operations. Knowledge is involved in all of these skills, but, most likely, not all of it can be formulated as declarative sentences.

What is the nature of what we know, if what we know is more than what we are able to express? Technologism would claim that in this case it is not a question of real knowledge, but only of a more or less developed ability to *apply* knowledge which can be made explicit. An alternative to technologism would be to claim that the learning which is necessary for developing skills occurs within a specific practice. A practice is, in this context, a culturally developed community of people who perform work for which participation involves the novice's acquisition of that which competent practitioners claim to be knowledgeable about. In this case learning is not about being informed about the truthfulness of certain statements, but about being presented with examples from the reality *revealed* by the practice in question. That there *is* a difference is reflected by the fact that a person who is cut off from experiencing something in the world sensorily will be able to obtain all the knowledge imaginable about this something; but by experiencing e.g. what an oboe sounds like, the person acquires new knowledge, which is different from the kind of 'bookish' knowledge which he possessed to begin with. There are conditions in the world which we can only gain access to by experiencing them, and which cannot be replaced by the kind of knowledge we find in textbooks.

It is not easy to express what that 'extra something' is that we know but cannot express. Perhaps we can find the answer by identifying what this 'extra something' is *not*. It is not just the fact that in many contexts we use knowledge without focusing our attention on this process. For instance, writing this sentence is connected with knowledge which can be made explicit and which I do not think about while I write, but which could be expressed. It is the type of knowledge which, for instance, an expert in determining the sex of chickens has and which he could not explain through general statements. Tacit knowledge, in principle, cannot be communicated in such a way.

This means that the view of knowledge which seems to be undermined by tacit knowledge implies that all knowledge can be fully expressed in context-independent terms. The question is whether this implies that it is knowledge which is completely impossible to express, or whether knowledge exists which may well be impossible to express in context-independent term, but which can, however, be expressed in context-dependent terms or otherwise exemplified. For it to be knowledge and not just guesswork, or something similar, the tacit knowledge must imply that it is actually a question of understanding the state of things independently from the impression the knowledgeable person has of the situation. In this instance it occurs

in the shape of an action which requires skills. Personal knowledge is knowledge about how something should be done and how it should be assessed. It *is* a type of action, not the result of an action. This might be misconstrued as claiming that personal knowledge is an expression of the subjectivity of the actor - and that this explains why there are things we cannot express. This claim that there exists something subjective, something which cannot be shared with others, something private which cannot be captured in a language where the meaning of words must be accessible to all means, however, that it does not make any real sense to talk about tacit *knowledge.*

Another option is to deny that because it is not possible to articulate all knowledge in context-independent terms, this knowledge must be impossible to articulate. Just because a particular knowledge cannot be articulated in context-independent terms it may still be possible to articulate it in other terms or by other means. As knowledge which is carried by a specific person, but is not in principle private, this knowledge may be valid independently of the position of the individual subject. But it is invariably a specific person who "performs" a skill in a given situation. Part of having the skills necessary to deal with a situation is to be receptive to what the situation requires. The fact that a machine can perform a task does not prevent someone with the appropriate silent knowledge from doing it by applying his skills. For that person the knowledge in question is tacit.

Making

I have tried to demonstrate, first, that creativity understood as something which is concerned with the new, which is concerned with breaking with that which has been handed down to someone is a result of technologism. Secondly, that the technologist concept of knowledge as something which can, in principle, be expressed through statements such as those we find in textbooks is in conflict with our experience that a tacit, personal knowledge exists. The question is whether this can be put into play in the context of a different view of what making something means. If it is true that the view of the person who makes something, a view which correspond to technologism, involves understanding that person as someone who employs means in order to achieve a goal, the task at hand is then to attempt to formulate an alternative notion of the process of making.

The means-goal understanding of the making process implies that an act of making can be assessed with regard to whether it has been completed or not, based on whether the objective has been achieved. This only makes sense if it is possible to have an understanding of the making process which is independent from the objective you aim to achieve. At first this sounds likely. How else could you determine when a making process was completed? You can only claim to have succeeded in producing a chair if it was in fact a chair you had set out to produce?

But if you ask a painter what he aims to achieve through his act of making it is a different matter. For if he knew this in advance there would be no artistic reason

to paint the painting. For a painter the point of producing a painting is finding out how it should be done by means of the process. Artistic work is, to a large extent, characterised by being a discovery of what the person who produces a work feels constitutes a satisfactory answer.

This does not mean that the painter gropes blindly in the dark. An artist, in contrast to a novice, has a notion of what constitutes an acceptable result. That the activity has a goal does not mean that it is oriented towards this goal. The artist's account of why a work is progressing as it does does not state a goal which the process is intended to realise. The artist is preoccupied with producing a painting, not with something which is considered as a means to achieve a goal. This can be seen from the fact that what the painter is working on is not just appraised based on its physical characteristics, but also according to the way it 'functions' in the whole which is slowly beginning to take shape. As the work progresses the painter's attention to his painting develops; a development initiated by the previous choices made by the painter. The choices which come later in the process will be limited and qualified by choices the painter has made earlier. The artist may find that regardless how much he or she would like to use a specific colour or form, it will not work in combination with the rest. In this way, the creative process will result in an increasing restriction of the artist's options. Conversely, the situation may develop in such a way that the whole and the way it has developed necessitates that previous choices have to be re-made - a painful experience, which is referred to as 'having to kill one's darlings'. You might say that for the painter the creative process is over when there is no more room left to manoeuver.

"How do you know what to cut away?", Michelangelo was once asked. He replied: "It's simple. I just remove everything that doesn't look like it belongs." This snappy reply has usually been interpreted as stating that Michelangelo first set a goal and then worked towards achieving this goal. This goes well with the way Michelangelo presented himself as a genius; yet, he also said: "Every block of stone has a statue inside it and it is the task of the sculptor to *discover* it." How can it make sense to talk about an artist discovering something if it is basically a question of realizing something that you are already in possession of, inside your head? It is an observation which has often been made that the artist only towards the end of his work realises what he or she had was occupied with all the time. This is precisely experienced as having made a discovery.

If it is true that making is necessary for the artist to 'discover' what he or she really had in the 'mind', the attention the artist shows what she or he is working on must be of a special nature. When something that has been produced is seen *as* matching or not matching what the artist has formerly produced, the artist has consequently been attentive not only towards something which exists but also towards this as an expression of his or her previous positions and decisions. Such an attention to the past affects future decisions. For in so far as we are the result of the decisions we have made, you might say that the making of something becomes an arena for

self-development. Decisions we later have to make through the continued making process will become a source of knowledge about what we were previously occupied with. Over time the process of making consequently becomes a process of self-discovery.

To work with yourself in this way can only be a type of *discovery* if it is conducted in a manner which makes it meaningful to say that there is a difference between what he who performs a work feels emerges about himself and what actually emerges. A private act of making cannot be a discovery of something real. Why? If that which the person who makes sees, can, in principle, only be seen by that person, then this something is indistinguishable from something which that person might only imagine seeing. This is not a case of a positivistic rejection of anything which cannot be tested empirically. It is not because what the person who makes sees cannot be verified by others that the idea of a private relationship to your work of this kind is meaningless. This notion is meaningless because it is based on the idea that we can understand what it means to be in a relationship with our work based on a notion of how one individual makes in isolation. Using what you produce to see the choices you made at an earlier stage is invariably already a use which occurs within the framework of a possible community. Why? Because it is in inherent in our understanding of something which has been made with a purpose in mind that it can be used either correctly or incorrectly. And this difference cannot be given meaning if the starting point is an isolated user, who is left to be his own controller. Using what has been created as source of *knowledge* about something is necessarily an application which occurs within a potential community. Such communities may be what is being referred to when, in the context of artistic works, someone talks about this discipline as having its traditions and genres.

It would seem that, in the context of the arts, making is geared towards something completely different from the creation of the new and the original.

Place and receptivity

Let us assume that creativity has developed a receptivity to the way in which a practice or a way of life is performed at a given time. What would this mean in an architectural context? Architectural receptivity should be aimed at something which is 'given' to someone who is working with architecture and which is revealed through this practice. Just as receptivity to music, or musicality, implies developing a receptivity to sounds - or to what these, being a cultural practice, are heard *as* - a succession of notes interspersed not with silence, but with pauses. In the context of architecture what is 'given' in the same way as a series of notes is? Experience has shown that working with architecture is based on an interest in either something material and constructive, as is the case with much Victorian architecture, in presenting a certain way of living as we know it from the residential experiments of the 1970s, or in the place, as is the case with the last many years of efforts to safeguard the meaningfulness of architecture in spite of increasing global uniformity.

If the site has provided a basis for the making of architecture and, by not being the beginning of a linear development, but rather by being one aspect of a circular process which has to be integrated with other aspects – materiality and programmed action – for it to result in a whole architecture, we may wonder why place has attracted so much attention. The place must surely, since time immemorial, have been part of the world of mental images and conceptions which contributed to shaping our surroundings.

The great interest in an architecture, which was believed to cultivate a sense of belonging with the place in which it was built, emerged as a response to the repetitious constructions where no one felt at home of the post-war period. Many people felt that something was about to be lost and that it was important to make an effort to restore this sense of belonging. The result of this loss of the place was 'alienation, vandalism and violence rather than respect and care for the world', according to Chr. Norberg-Schulz , who was one of the main forces behind the attempt to provide a knowledge which would enable architects to do something about this loss. The question is now to find out whether the understanding of a place, that Norberg-Schulz pins down, is the same as the above-mentioned openness towards aspects other than the architects own impulses in regards to the place. Is the ability to employ Norberg-Schulz's theory of place in the detection of the identity of a place an instance of the openness implied by the notion of creatitivity as receptivity?

What is a place? We will find the beginning of an answer when we recall the expression 'that something takes place'. It is a characteristic of our lives that it is connected with places. We would not be able to understand the life we live, without understanding it as occurring at specific places. No cultures exist which have not refined this in the form of specially designed surroundings which are connected with events that are perceived to be important. The place is consequently not only a quantitative aspect but something that has meaning in the sense that it is seen as a part of who we are. That is why, through the ages, human beings have assigned places with special powers, and identified them with creatures or spirits. How was such a spirit of place given to us? According to Norberg-Schulz we can receive it when we assume the natural, pre-scientific attitude to things which is mentioned in phenomenology - an attitude which implies that we should live with things rather than assume a distanced stance towards them. An attitude which does not take as its starting point the opposition between the subjective and the objective.

The understanding of place as it is manifested in much traditional ways of building is by Norberg-Schulz referred to as applied phenomenology. In this case what has been made should be seen not as a result of an architect having an idea, but should, on the contrary, be understood as something that makes such an idea-based behaviour possible in the first place. The point is consequently not to come up with new ideas, but to be able to discover by 'listening' the order manifested by what is given by nature and by what has already been made. Such an order was seen as forces which were inherent in the place. But ever more frequent changes in the way our lives are

given concrete form resulted in the inadequacy of such an 'art of listening'. For this reason Norberg-Schulz believes that the implicitness and naturalness which applies to the understanding of the place in societies bound by tradition today has to be replaced by an explicit 'art of the place'.

The purpose of such an 'art of the place' is to put us in a position to establish contact with an order which has been made invisible in the confusion resulting from all the opportunities made possible by science. Norberg-Schulz is of the opinion that the way humans establish contacts with their surroundings is to use certain basic patterns. These patterns organise the impressions we receive as wholes consisting of centres or locations, directions or paths, or areas or enclosures. A place is consequently an expression of a basic way of bringing a unity or order to the impressions we receive. The function of the 'art of the place' is to restore the power of a place in order to create unity. Even if, according to Norberg-Schulz, the place as such a whole cannot be perceived conceptually or be forced into being, it can, as his photographs are meant to demonstrate, by exemplified. The visual thinking which is thus postulated, Norberg-Schulz sees as a way of establishing a rapport with a reality which exists independently of human making because it is alleged to be a precondition of this process of making. Architecture is seen as a visual concretization of a non-visual unity.

Place as event

The visual thinking which Norberg-Schulz believes must save us now that tradition is no longer of any use, he understand as perfectly parallel to the kind of thinking we know from science. Consequently, places are also here understood as something we need to discover, and not as something we contribute to make. According to the critics of Norberg-Schulz, this has resulted in his thoughts on the *genius loci* giving rise to a 'tyranny of the place', to a 'geographical determinism', which is deemed to constitute a counter-productive approach to our existing surroundings as if they were an indisputably guideline for how to deal with the not yet made.

The alternative to this is percieved to be to emphasise the place as something more than something purely visual. It is seen as more opportune to understand a place as a result of the actions that have taken place over time at this particular location. Isn't this the same as understanding the place as a result of specific social conditions? Instead of understanding a place, based on a distanced point of view of the 'reader', as something static, completed and representationally fixed, as was previously the case, the alternative sees the task now as understanding the place as a result of new and unfinished interventions being made, as understanding that incompatible elements are present simultaneously, and that a place is, in general, an on-going process.

Even if such a 'dynamic' approach to the place is seen more as a participant in the continued development of the place, and even if the new cultural geographers have moved from their ivory towers to where the place is being planned, I believe this approach to be sharing an assumption with its opposite: the place essentialism.

Where the latter understands the place as something which exists 'out there', which we in the modern world can only arrive at a cognition of through a theoretical effort, the new geography perceives the task as being that of realizing that the place is all a matter of our own constructions. Whereas Norberg-Schulz' thinking about the place maintains *dogmatically* that we enter into a special 'seeing' relation to the place, the new geography *sceptically* claims that there is nothing to know and that we are free to construct the place as we please. Like Norberg-Schulz the new geographers turn understanding of place into a consequence of possessing the kind of knowledge which, in principle, can be formulated as declarative sentences, the kind of knowledge we find in text books. This knowledge of the place may then be one that is concerned with the *genius loci*, that is with formal relationships which are internal to architecture, or be one which are related to conditions as conceived by the social sciences, and which are accordingly external to architecture.

The new geographers and Norberg-Schulz have very different views on the task of an architect. Where they regard the task as one of contributing to the transformation of the place into an either more economically attractive or a socially more fruitful one, he saw the task as being concerned with taking care of the place and letting what was added to it emerge as a way of expressing the place itself. It is precisely the fact that the place is constantly expressed through actions which causes the place to undergo continual development even if it remains exactly the same. Respecting the *genius loci* is consequently not a question of mechanically repeating the already existing, but rather of finding, on the basis of this, how it can be expressed under new conditions. Preserving the *genius* of a place is a ceaseless process of interpretation and concretisation. To understand the point of view of Norberg-Schulz as a resistance to any kind of change is to make a caricature of it.

What, then, brings Norberg-Schulz to talk of the *genius loci* as given us as something 'already existing'? His descriptions, which are virtually always made at a distance from what he describes, appear to be descriptions of something that are determined independently of us 'from the outside'. We are thought of meeting a place in the same way a scientist is faced with his subject. The consequence is a focusing on the visual – understood as something a third-party who approaches what is described from the 'outside' – would be able to ascertain, or perhaps even better, would be able to formulate by the use of declarative sentences. The way of thinking which Norberg-Schulz seeks in connection with the place would appear to have to live up to an ideal we have previously mentioned in the context of technologism; an ideal based on the unformulated premise that knowledge is explicit knowledge – that it can be made explicit through declarative sentences or in the form of the photographs which, in the work of Norberg-Schulz, shows how an underlying spatial order, which does not lend itself to visualisation, can be made concrete and visual in the architectural space. Knowledge of the *genius loci* is here thought to be of the same sort as the impersonal, explicit knowledge that we encounter in textbooks.

Norberg-Schulz's starting point was that the place matters and that a special receptivity needs to be developed as tradition will no longer hold. This receptivity

he understood as making the receptive person form certain 'images' of the whole that the place is. The understanding of these 'images' as something we have the same relationship to as we have to sentences expressing explicit knowledge, results in him being cut-off from understanding the making of architecture as an event through which a person who makes at the same time makes himself and his world, by 'actualizing' the place, by showing how the place is to be meet *now*. The visualisation of the *genius loci*, which Norberg-Schulz's theory of place was intended to make possible, may not result from the application of a theory but from the activation of tacit, personal knowledge. If the latter is the case, it will provide an answer to the criticism that the appeal to the *genius loci* in the end results in trivial "taste arbitration" – for it is always possible to emphasize those traits of an architectural project that demonstrate its respect for the place and possible to do the opposite. The crux of the matter is to mobilise 'images' of a place-specific and architecture-specific nature which can initiate a qualified attempt to 'use' the place. Once again it may be useful to think about our relationship to music. Musicality is the ability to produce a special emotional, personal attitude to what one hears; it is not a matter of bringing knowledge of a theory of music into play.

'Nothing is understood that has not already been loved', Norberg-Schulz quotes St Augustine for saying. To understand something is to have a relationship to this something like the one we have to something we claim to be *able to do*. Such as, for instance, the way we understand our native language. To be able to do something is not necessarily the same as being able to formulate true statements about the nature of it. An understanding of place is not necessarily the same as possessing a theory of place. Neither Norberg-Schulz nor the new geographers make this comprehensible. But if it is not a theory which keeps us on track, then it must be possible to manifest the understanding of a place in a way which is accessible to others in the being *with* the place. The place is something together with which we can *do* something. It is together with the place that we show a particular attention towards the world. The place should, furthermore, not just be something we happen to use for this purpose; it must be part of the nature of a place thart this can happen. A place is where a particular attention is developed or made. And those who take part in the place *meet* it – they become someone as a result of this meeting. They develop a character, a second nature as a result of it. For that is what one get as the result of the development of ones gift for *attention*.

Bibliography

Harrison, A. 1978. *Making and thinking*. London: Hackett.
Hvattum, M. 2010. Stedets tyranni. *Arkitekten*, 112(2), pp. 33-49.
Norberg-Schulz, C. 1986. *Et sted at være*. Oslo: Gyldendal
Wackerhausen, S. 1991. Teknologi, kompetencer og vidensformer. *Philosophia*, 20(3-4), pp. 81-117.

Blind Spot House

Sabine Storp
Patrick Weber

Abstract

This paper describes an experiment. A house designed and built to reconnect it's occupants back to the environment of their surrounding site context (where *space*=surroundings and *time*=seasons) through a spatial narrative of structured views leading towards the horizon. This project is part of a wider design research around the themes and ideas behind *houses* and *homes*, with particular interest in how an occupant builds up a personal relationship with a space and its context. A house can be more than just the space we inhabit, a place to keep our belongings and a way to keep ourselves warm and dry. Looking at various references drawn from the 'framing' and narrative explorations of Modern Art and the spatial observations of Phenomenology we are interested in exploring the ways in which *horizons* can be reached (visually) and (re)-discovered, and how a house can make use of deliberate blind spots and controlled views.

Introduction

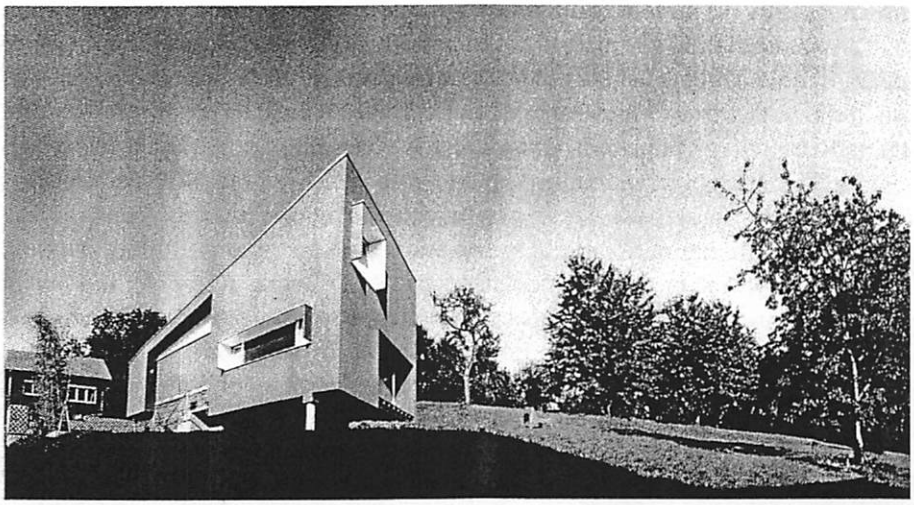


Figure 1: Storp_Weber_Architecture, Blind Spot House, Achern, 2011

Ever since I was a little boy the concept of the *horizon* fascinated me tremendously. Maybe this is due to the fact that the house I grew up in was the first one in our village that was build on a hill, hence being blessed with a view over the first rolling hills of the Black Forest into the Rhine valley going as far as France and the Cathedral of Strasbourg. For me as a child it was fascinating that our kitchen window had

a view into another country. On the other side of the house the hills of the Black Forest rose further and for me as a child it was always a mystery what lied beyond the line of the mountain range, what lied at the horizon. Since then the trees have grown, the area has become more and more built up and the views were lost.

In this paper we will explore different understandings of the idea of the Blind Spot, we will look into the ideas of 'the horizons' and the seasons and how our understanding of this has changed over the last 150 years. From there we will continue by exploring different ideas behind the 'window' as the aperture through which a connection to the landscape is made before presenting the design and the methodologies behind the Blind Spot House. Using the wider context of the site (horizon) and time (seasons) offered an opportunity to explore the process of design from a different perspective, the idea of a spatial narrative was used as a starting point for the design of the house and its placement within the context of the site. This lead us inquire; to what extent can we look at the house as a *mediator* between the occupant and the surrounding? If there is a *dialogue* (between occupant and surrounding) does the house become a *dialectic*? From the perspectives of time and narrative, can we understand inhabitation as an on-going process, of (re-) discovering familiar surroundings? Can we measure the house as an embodiment of how we see? Or is the house a simply a reflection of our presence in the world?

The blind spots

Figure 2: Photo of the site prior in 2006, demarcation of the selected blind spots.

A Blind Spot is commonly described as an area, where the vision is partially or completely obscured and can't be directly observed. The visual blind spot in the retina is the area where the optical nerve passes through the retina. The lack of light receptor cells in this location results in no visual information being perceived and sent to the brain. The brain usually interpolates and reconstructs the missing information by replacing it with false information to avoid a blank spot or a 'hole' in the perception in the visual field. In vehicles like cars or especially trucks the blind spots are generally behind the pillars holding up the roof of the vehicle or behind the headrests, passengers or cargo.

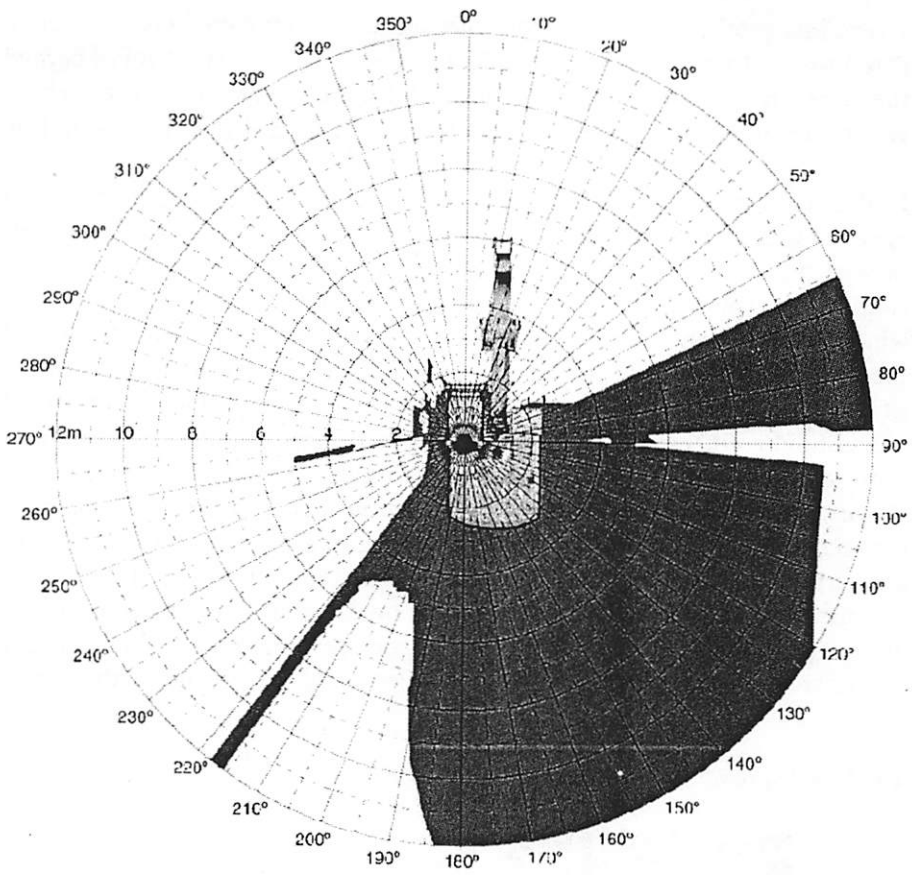


Figure 3: Blind Spots of a Caterpillar Hydraulic Excavator 320C www.cdc.gov/niosh/topics/hihwayworkzones/BAD/pdfs

Figure 4: Something Between Almost Right and Not Quite (With Orange), John Baldessari, 2004

All throughout his work the American artist John Baldessari used a method of masking out areas of photos to strategically hide aspects of information from the imagery. In 2004 he was commissioned by the Deutsche Guggenheim Berlin for a series of 13 paintings called *Something Between Almost Right and Not Quite (With Orange).* Continuing from his works with different coloured dots, he started to conceal certain carefully chosen parts of B-movie stills with orange coloured fields, erasing information and eliminating the third dimension by flattening the image. In what he called 'Zwischenräume", the between-ness, he is deliberately withholding information from the viewer.

But this withholding of the information opens up a series of interesting questions: How does the brain compensate for the missing information? Which part of our vision is actually 'real' and which part is a figment of our brain's imagination? Looking at John Baldessari's work the blocking suddenly highlights the un-obscured areas and elevates these details to a different level.

Merleau-Ponty describes in 'The Visible and the Invisible' the idea of the invisible as 'it is "behind" the visible.' (1) This "behind-ness" as being invisible doesn't mean it is not perceivable. It suggests there is another world that is beyond our direct perception. We might imagine get clues, hints, or sometimes fragments of what is hidden. Sometimes the clues appear to make sense and a possible world is suggested. There is a problem with experiencing three dimensional objects and spaces. We are actually unable to take in and to sense the entirety of an object or a space at once. In order to see all of a space we have to move around it or we at least have to move our head to see the parts hidden within the blind spot created by the limitation of our own visual field. This is what Edmund Husserl describes as 'Abschattungen', as a set of partial views, selected fragments of a whole (X). Vision and movement have to be interlinked to gain a 'broader' experience of an object or a site context. The only place the object or a space wholly exists is finally in our mind. Some of these fragmented experiences or perspectives are not sensed (here mainly through 'seeing') in a sequence, they can be taken in at different times and from different angles.

Of lost horizons (Space)

During a concert on the 19th of April 2009 Britney Spears shouts out to an unimpressed crowd: *'Welcome Sacramento'*, completely unaware of the fact that the concert that day wasn't in Sacramento, that day the concert was in San Jose.

In 'Vom Verschwinden der Ferne' *(Of the disappearance of the distant)* Peter Weibel describes how we have increasingly lost an understanding of our environment, of the context we inhabit. The acceleration of movement, production, and communication resulted in an inability to comprehend the present and how we are part of it, here and now. First the introduction of mechanical movement removed us from the active participation of the journey. We have become the (inactive) passenger; often staring at a book or a newspaper not realising we missed our stop on the train. We regularly transcend the limits of space and time. In a quite ironic twist, this leads to an increase of people suffering from *agoraphobia*, the fear of open spaces and there is a suggested link of agoraphobia to the difficulties of spatial orientation. The concept of seeing the horizon is alienating and frightening to us.

The horizon is usually defined as the apparent intersecting line between the *earth* and the *sky* (as seen by an observer). This line is called the *true horizon* but many places this line is obscured to the viewer by obstacles: These can be natural features of the landscape like hills or trees, or in cities we come across man-made limitations of the views like buildings. This results in a very different line called the *visible horizon*. This might be as far as the neighbouring buildings or in fact as close as the surround of the window aperture, being within actual physical reach of the viewer.

On a perfectly flat landscape the distance to the horizon can be calculated using the formula: $D = \sqrt{2HR}$ with D=distance to the horizon and H=the height of the observer's eyes above ground level and R being the radius of the Earth (approx. 6400km). For the average person (assuming the eye height is approx. 170cm) the view can only reach approximately 4.65km towards the disappearing horizon line. (These calculations are ignoring any atmospheric refractions and the fact that the earth is not a perfect globe.) Suddenly the notion of the horizon has become a quite tangible idea, placing it within reach, only a short one-hour walk away. (The maximum any person could see theoretically is 335.8km when standing on top of Mount Everest looking towards a theoretical plain sea level.) (XI) By standing on a 35m hill, the approx. height of the site of the Blind Spot House above the level of the surrounding plain landscape of the Rhine Valley, the view can reach as far as 21.12km towards the horizon.

Within the last fifty years the way we occupy the world has dramatically changed. With the introduction of the de Havilland Comet jetliner in the year 1952 the concept of travel had dramatically changed the way in which we inhabit the world and intercontinental non-stop travel between the Americas and Europe became a mass movement. Victor Hugo remarked in a letter dated 22.08.1837 that the introduction of train travel reduced the details of our surroundings. Flowers are no longer flowers, they are merely streaks of red and white and to grain fields turn into shocks of yellow hair. (XII) Air travel completely removed the viewer from the experience of movement. Completely detached and seen from above, space is seen in an abstracted map-view and one could argue that the departure and arrival airport are part of the same building – although sited in a different parts of the world. Further advances in information technology and the explosion of the information on the Internet make it increasingly difficult to comprehend your own wider surroundings. What Paul Virilio in his book 'The Vision Machine' called a *visual dyslexia* (XIII) is developing into a *spatial dyslexia*, a place where the one is no longer aware of his/her own location.

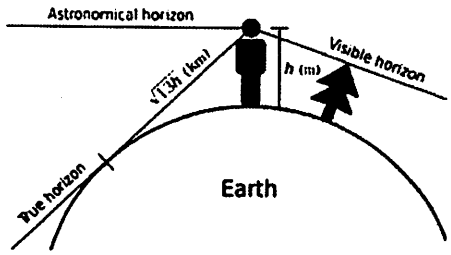


Figure 5: Illustration of the visible and the true Horizon, Andrew T Young. Distance to the Horizon. http://mintaka.sdsu.edu/GF/explain/atmos_refr/horizon.html

'Everything I see is in principle within my reach, at least within reach of my sight, marked on a map of "**I can**". '(2) We *can* and we *do* see much more (and falsely think we have a real experience with the events we watch happening on a screen right in front of us) but most of these experiences are not really ours, they are actually completely out of our reach, we are actually not physically part of the them and they are no longer tangible, impossible to put into context of our own space and our own time. (XIV)

Figure 6: Blind Spot House: Panoramic photo collage of the site prior to building works 2006. 360-degree view towards the true and the visible horizons.

This is resulting in what Paul Virilio describes as a *topographical amnesia* (XV). The inability to orientate oneself in the space you are occupying. It seems it is necessary to re-establish a connection between the viewer and the context - the space one occupies to set up a new framework enabling the viewer to *locate* and to *anchor* his/herself.

Of different seasons (time)

From spring 1890 until the following spring of 1891 Claude Monet painted a series of haystacks in the fields surrounding his home in Giverny, France. The series, consisting of 25 paintings are all depicting the same subject, typical stacks of hay situated just outside his doorstep in the rural area of Giverny. Monet undertook this study to describe the same subject under different *atmospheric conditions, times of the day, different weather* and *different seasons.* Using this mundane scenery and the repetition of the series the main focus of the studies was to address the more ephemeral qualities of the moment. Only through direct comparison did the subtle nuances in the depicting of the subject become apparent. The haystack itself is not the subject of the painting. Here it is merely the medium

that reflects the light, Monet then interpreted the light in order to work on the painting.

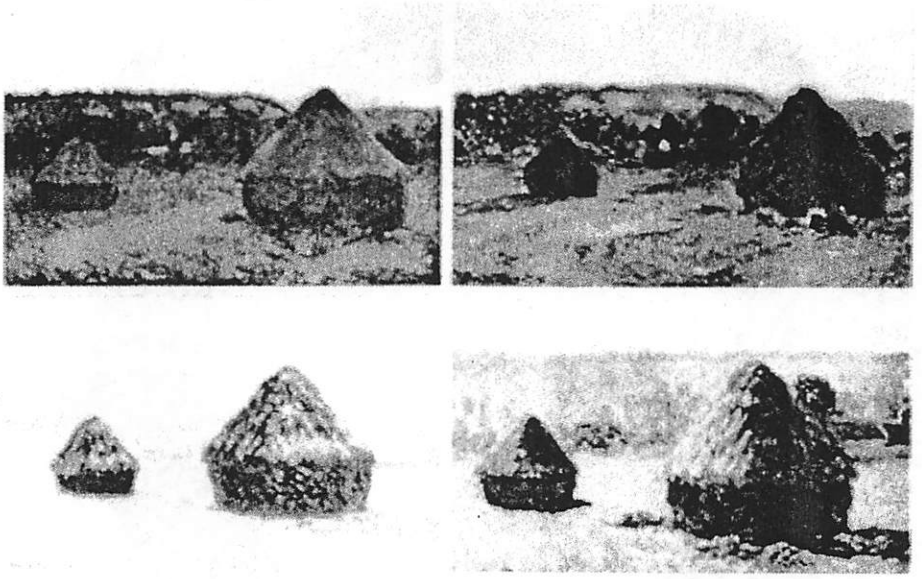


Figure 7: Claude Monet, Haystacks 1890-1891

Where the Havilland Comet jetliner introduced us to the concept of transatlantic air travel and a loss of the understanding of *space*, a mere 24 years later the introduction of the supersonic Concorde questioned the concept of *time*. Travelling on Concorde from 1976 onwards meant that due to the journey time from London to New York of 3 hours and the timezone difference of 5 hours, you arrived before it left as the plane was faster than the rotation of the earth. The concept of time became relative and more confusing.

In the same way Husserl uses the concept of "Abschattungen" to describe how an object is only understood although only perceived through fragmented views and Merleau-Ponty refers to the notion of how things are only partially in our view, seen only from a certain perspective, this concept can be transferred as well to the idea of the different views perceived during different times, weather conditions or seasons (XVI). In this respect a 'viewer' can only understand a 'place' after observing it under different conditions or at different times. Like Monet's Haystacks the different times of the day, the changes in the levels of the light, subtle changes in the cloud covers, or just a completely different season does affect the way he saw and painted the haystacks.

A survey by the U.S. Environmental Protection Agency in 1989 revealed that Americans spend on average about 87% of their time indoors, with 69% of that being at home and 18% being in different indoor environments like work, shopping centres, transport etc. (XVII). The main issue is that through the lack of actual physical and real visual interactions, the way most experiences are now made through technology results in a loss of the third and fourth dimension – an actual spatial (but still

fragmented) understanding of a space/object and a reduced grasp of the concept of time. Being indoors distances us from a tactile experience of the passing of time-nature perhaps, where travelling separates us from a tactile experience of distance and space.

Staying indoors removes us from the actual experience of the environment and the seasonal changes throughout the year. Peter Weibel's 'Vom Verschwinden der Ferne' (*Of the disappearance of the distant*) is echoed in *a disappearance of the time.*

Of Windows

Buildings are perforated by different types of openings, whereby doors are thresholds we cross physically, the window can (usually) only be penetrated visually (XVIII). Offering us a certain perspective of the view it allows us to leave the building through our thoughts therefore allowing us to imagine further into the observed spaces. (XIX) In a house a window can take on different functions. Historically it is the source of light and allows us to ventilate the spaces. For thousands of years it was merely a solution for a domestic problem: *Light and Air.* But at the same time it allows the occupant to make a visual connection to the surroundings of the interior spaces. Since the Renaissance it was subject to a further demand, it had to be part of a composition. It had to be there no matter what kind of room it was serving. Its location and size was no longer dictated by the necessities of the interior. Suddenly the only constraints were limitations dictated by the construction methods applied by at the time. And the problem of evenly lighting a large room meant you needed extremely high openings.

In the year 1923 the French Architect Auguste Perret gave an interview in the French magazine 'Salon d'Automne'. Here he attacked directly the way Le Corbusier and Jeanneret used windows in their designs. He accused them for the sake of originality to give up on all the traditional reasons for the placement, sizing and detailing of windows in architecture, even blamed them for leaving rooms completely in darkness. Le Corbusier's responses were equally sharp in effect disproving the arguments Perret used in his attack. (XX) But maybe we have to leave the controversy aside, it is possible that the question was not a question of a different culture, or even of different social ideas. It could be suggested that new building techniques, the introduction of reinforced concrete and metal windows liberated the traditional window and finally allowed the architect to use them as a device to simply frame a view.

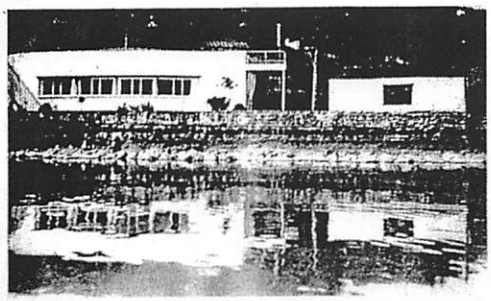


Figure 8: Le Corbusier and Pierre Jeanneret, Le Petit Maison, Vevey, Switzerland, 1923.

This is most evident in the house he built for his parents on the banks of Lake Geneva. The 'Petit Maison' was actually designed before a site was found. The design

was used as a framework to find the desired view across the lake. There were very little amendments done to the design after an appropriate site was found. The only one seems to be the addition of a small window in a natural stonewall in the garden. Whereas Le Corbusier describes the eleven meter long window of the house as the 'main protagonist of the house' offering an uninterrupted 180 degree view towards the Alps, the small window in the garden had to serve a very different function. Le Corbusier describes how the 'ever-present and overpowering scenery on all sides has a tiring effect in the long run.' He continues with: 'Have you ever noticed that under such conditions one no longer "sees"? To lend significance to the scenery one has to restrict it and give it proportion: the view must be blocked by walls and only pierced at certain strategic points and there permit an unhindered view.' (3)

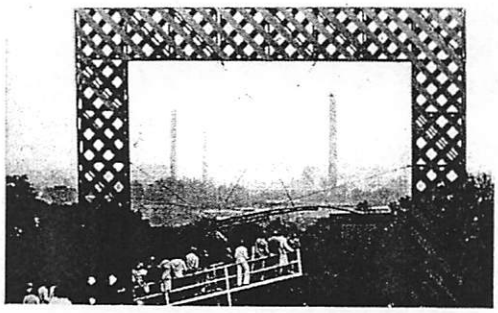


Figure 9: Haus Rucker, 'Rahmenbau', Documenta 6, Kassel, 1977.

In Haus Rucker's '*Rahmenbau*' or 'Auefenster' as it is known in Kassel commissioned for the Documenta 6 in Kassel 1977, a carefully selected section of the view towards the Orangery is framed. Although visible without the aid of the installation, its placing changes the way the viewer perceives the view. Removing the 'window' or rather the 'Rahmenbau' (build frame) from the context of the wall and the house, placing it on its own in the urban context of Kassel, by using it as a device to frame a view and draw the attention to a pre-existing vista the mundane suddenly becomes extraordinary. In the installation the viewer is taken on a journey towards the reveal. But the journey isn't direct – one starts towards the side of the frame, is then taken away from it, lifted above the ground to find a second frame suspended in mid air. Here and only here the view is revealed. Due to the narrowness of the path only one person at a time can discover it. The connection between the viewer and the view is a very personal experience that can only be shared afterwards as an oral (or written) account.

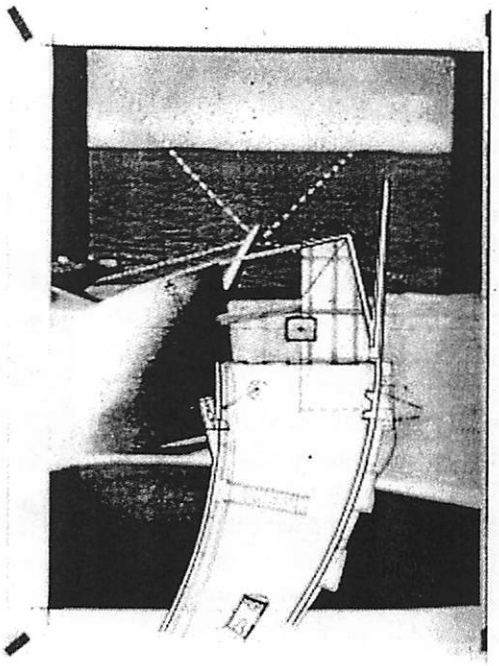


Figure 10: Diller+Scofidio, Liz Diller and Ricardo Scofidio, Slow House, drawing, Long Island, 1989

The function of the window is reduced to a framing tool, a camera that carefully selects a fragment of the view, highlighting it and at the same time blocking out everything else.

In Liz Diller and Ricardo Scofidio's 'Slow House', where the whole house is described as 'simply a door that leads to a window: a physical entry to an optical departure' (4). In contrast to this the windows in the Blind Spot House are placed and used in a very different way. Here they are not just the apertures to frame a specific view into the surrounding landscape. They cut out a carefully selected part of the surrounding views towards the horizon. No individual window is more important than the others. They have to be read together along a path. Dermot Moran describes in his "Introduction to Phenomenology" how both Husserl and Merleau-Ponty are assuming that objects and spaces can be grasped 'beyond the perspectives through which it approaches our perception.' He continues by saying 'Our concept of a house more or less compresses our different perceptual *Abschattungen* into a single conceptual grasp, the house seen from nowhere, an invisible house.' (5) The horizon line reconstructed from within the Blind Spot House is not the real continuous horizon, it is imaginary, a mental image.

The blind spot house: a spatial narrative (to connect the views)

A narrative is an account that presents itself through a sequence of connected events. It constructs a time line to bind and unfold a story. This usually follows a character or a plot to allow the reader to connect the different events and people involved. The story line doesn't have to be continuous; it can have breaks, disjunctions, turns, twists, and dead ends. It can transcend the boundaries of time by travelling forwards and backwards.

The Blind Spot House is designed and built as an intertwined internal promenade, along which you come across a series of carefully selected views into the surrounding landscape of the Rhine Valley and up towards the Black Forest. The journey is not toward the main view it is rather a path along which you might discover series of fragments, which can only be reconnected in the viewers memory. This reconstructed horizon exists only in the viewers mind. It isn't continuous, it isn't uninterrupted, it even doesn't always reach towards the true (visual) horizon. The importance lies in the engagement of the 'inhabitant' or the '*flâneur*' with the surrounding.

Maurice Merleau-Ponty describes that 'we must go back to the ... actual body – not the body as a chunk of space or a bundle of functions but that the body is an intertwining of vision and movement.' (6) The movement enables the body to experience the space, it enables the eye as the "perceiver" to travel in order to reach and to take in the different perspectives.

Le Corbusier's Cabanon is in essence a house in one room. All the necessary spaces are carefully placed along the four walls of the cabin. What connects them is the way the space is inhabited. What connects them to the outside is a series of 8 openings (5

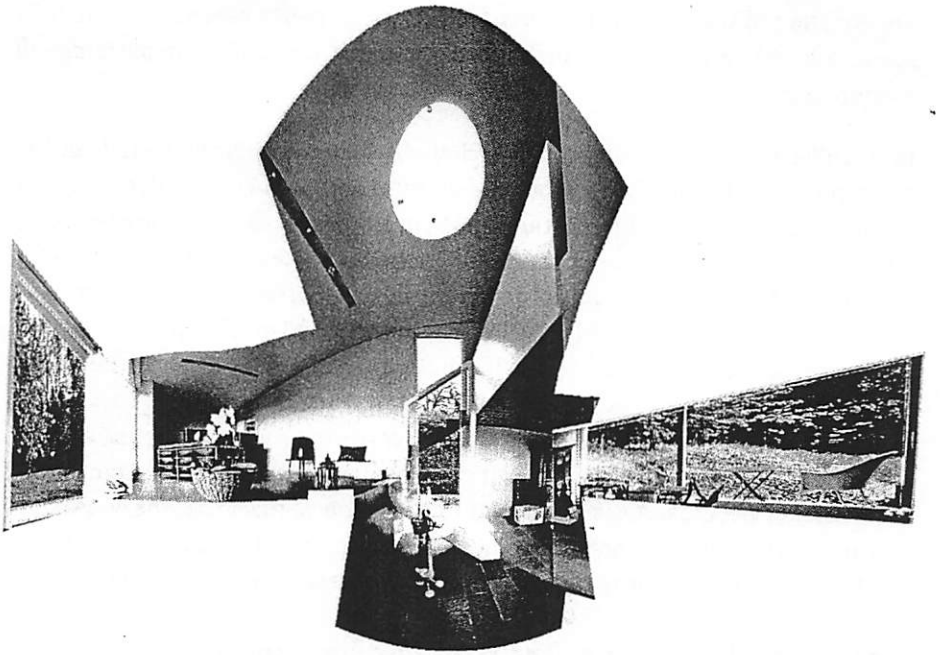


Figure 11: Storp_Weber_Architecture, Blind Spot House, Internal Space with two views, Achern, 2011

windows, two door). Being a space to live and study, the connections to the outside are deliberately reduced and carefully placed to avoid, what Le Corbusier called, a *distraction from the work.*

The internal layout of the Blind Spot House is in essence a one-room-house. The clients did not want a series of rooms divided up by doors. The only doors in the main living accommodation are to the main- and the guest bathroom. To structure the space and give it a different character and definition, a spatial narrative acts as a *promenade* connecting the different views of the surrounding landscape while hiding elements of the nearby context in deliberate blind spots. The promenade follows a the way an occupant inhabits the space starting from the entrance, flowing though the main eating and living spaces, past the work area to the more private zones of the bedroom and finally the master bathroom.

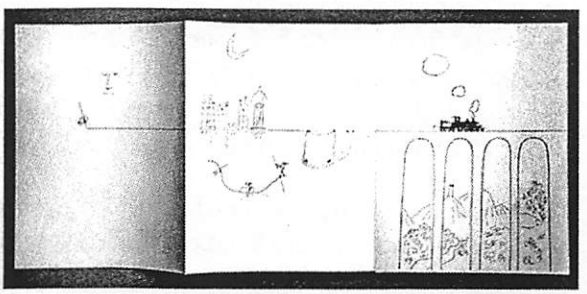


Figure 12: Saul Steinberg, The Line, drawing, 2011, Nieves Books.

Taking inspiration from Saul Steinberg's drawing 'The Line', this connecting narrative line is connecting different events, spaces and outlooks. 'The Line' was originally conceived as a 10-meter-long wall covering a labyrinth for the 10th Triennial of Milan

in 1954. The line starts with the hand drawing it and then continues over 29 folded panels. It is connecting different events, changing its orientation from horizon to washing line to a pool to the edge of a table. The folding into the publication echoes the original set up on the walls and the corners of the spatial labyrinth. The viewer has to interact with the piece, move through it, change direction. In the Blind Spot House the viewer has to be active to experience the space and this interaction with the space (life) on one hand and the visible horizon (context) on the other hand to overcome the disjunction between the inside space and the outside space. The horizon line stitches these experiences together, to provide a continuous datum.

On site – the grafted views

The site for the house is located right next to the house I grew up in. Planning restrictions made it necessary to build in close proximity to three neighbouring houses, leaving the client and us as architects with the paradox of having amazing views on one hand while being just a stones throw away from the adjacent buildings. The proximity to the context made it necessary to create an imaginary web of ***controlled views*** into the Rhine valley and towards the Black Forest, and ***deliberate blind spots*** to hide the buildings right next to it.

Set up as an internal promenade the occupant inhabits the house along a path connecting a series of views into the surrounding landscape. Each view has a very defined function, playing with the aperture, the depth of the field of vision, the orientation. Being conceived for a couple living in the house made it unnecessary to divide the space into a series of individual cellular rooms. Spanning over three main levels of the living accommodation the space is imagined as just one big volume.

The selected views correspond to the different parts of the house and the way they are inhabited at different parts of the day:

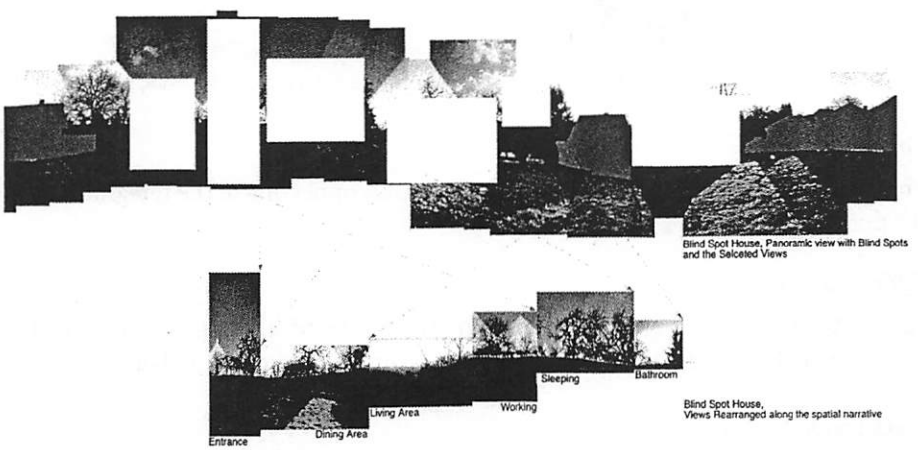


Figure 13: Storp_Weber_Architecture, Blind Spot House, New Grafted Horizon Line, 2012

First view:

Starting with a view opposite the main entrance door. This view towards the East is a narrow slice connecting the foreground of the surrounding green meadow to the sky leaving out the middle ground.

Second view:

Turning right the main Eating area is connected to the outside through a wide-open floor to ceiling and wall to wall window facing south. This level is raised leading the view to a middle ground towards a steep bank falling down the hill. This acts like a 'Ha-ha' concealing the edge of the site and at the same hiding one whole part of the village.

Third view:

Going up one level one reaches the main Living area. Here the view is reaching west towards the horizon.

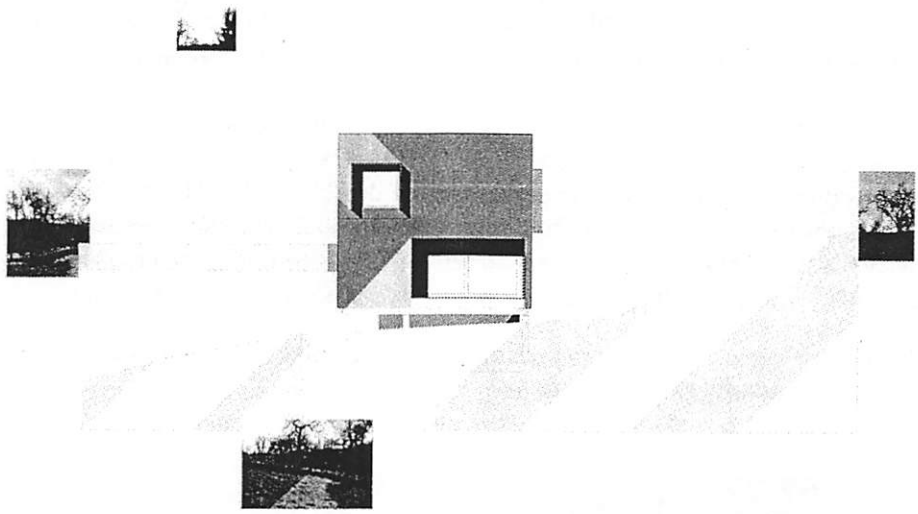


Fig. 14: Storp_Weber_Architecture, Blind Spot House, South elevation with selected views, 2012

Fourth view:

The opening in the Working area is facing east and connecting to the foreground to the middle ground.

Fifth view:

Passing the window you see when entering the house but this time from a much more elevated level. Here seen from above the ground is almost in a plan elevation.

Sixth view:

The Bedroom has a view into the yearly fruit trees and, through the branches towards the rising hills of the Black Forest. Facing east the morning sun floods the space with light.

Seventh view:

The most private room, the Master Bathroom has the furthest view reaching far South into the Rhine valley towards France at the horizon. No foreground, no middle ground, a true horizon is visible.

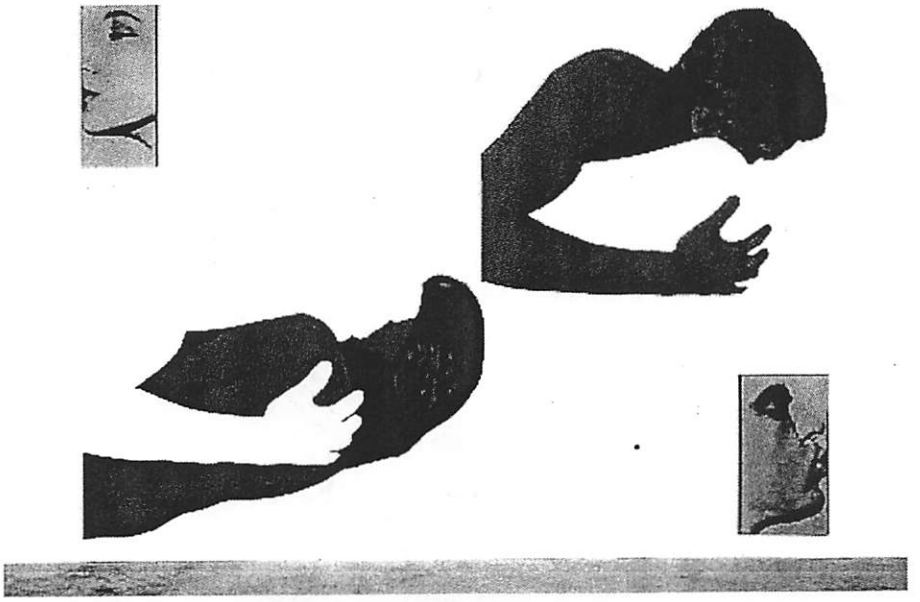


Figure 15: John Baldessari, Green Kiss / Red Embrace (Disjunctive), 1988

This sequence of views plays with different depths of the visual field. 'Closeness' is followed by 'farness'; there is an inter-play between the viewer and the view. Some of the window openings have fixed blinkers installed to focus the view even more onto the selected part of the vista.

The fragments of the disjunctive views are grafted together by the narrative; they are constructing a new reality, a new imaginary horizon. A series of new constructed relationships are created. This time between the inhabitant and the surrounding landscape. The deliberate disjunction evident in John Baldessari's work is applied as a tool to control the fragmented views of the surrounding landscape. The aperture of the window openings, the enhanced depth of the walls they sit in, the placement of the occupant/viewer in the house along the intertwined route/promenade are the ingredients for the interplay between the in- and the outside, between the fragments one sees and the context concealed by the blind spots.

The house places the occupant in the surrounding, anchoring the viewer to the view. The view depicts the changes in the weather and the seasons. The view allows the occupant to make a connection with the surrounding landscape. But at the same time through the careful crafting of the views, the withholding of some of the context it removes the viewer from the place and drops them in a highly constructed imaginary landscape.

Mieke Bal remarked that 'The act of looking is profoundly impure...' (7). What we see is not what is actually there and the act of *seeing* is in no way objective. It is affected and sometimes even corrupted by our moods, all our other senses, all the experiences we have made before etc. In the same way, within the house the constructed view doesn't exist in the real world. It is an assemblage, a mental image (XXI) grafted from different moments in space (selected views through carefully chosen apertures – the windows) and through memory from different times (of day/of week/of seasons). A construct of our imagination the view can be described as '...an internal object which is nowhere, which is *ideality*, and apart from which there exists the world itself.' (8)

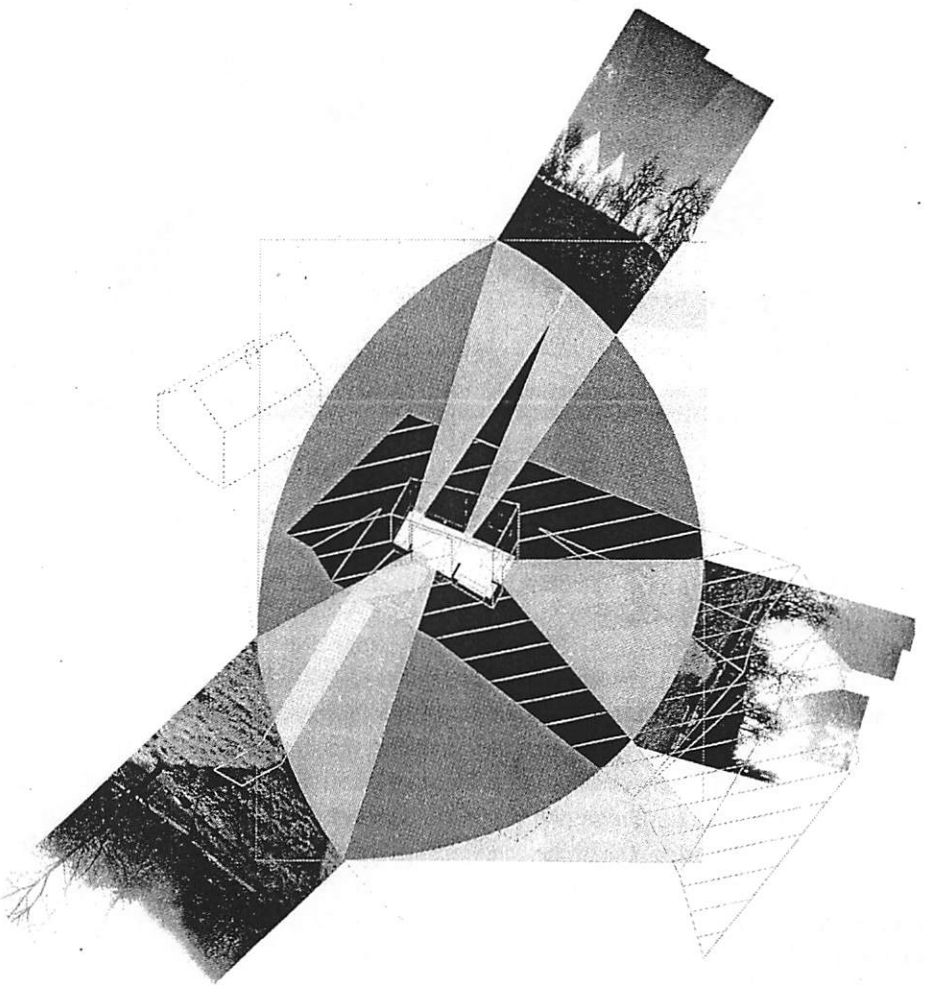


Figure 16: 1a_Blind Spot House, Germany, Viewing corridors out of the building towards the horizon, drawing, 2011

Life with the house

The house should not just be seen as a facilitator of views, the narrative not just as a way to construct the imaginary horizon line. Living in- or rather with the house is an on-going process of discovery, a means to foster a deeper understanding of oneself

as part of the surrounding one inhabits, a subject of the same horizon one observes. Throughout the process of design, the discussions about the placing of the views, the composition of deliberate blind spots were all of equal importance to the physicality and tectonics of the building. We were able to reinterpret the familiarity with the site, known to us and the clients for all our lives. Then through further explorations, and experimentation, it took on a whole new perspective. The house could perhaps be described as a means to *experience* the context, a place to *reflect* on life, and a way to (re)learn how to *see*. Perhaps this process of 'seeing', of looking at the world is in no way fixed, the house is not setting these experiences in stone - they are more fluid, affected by life itself and therefore constantly shifting. The viewer is constantly asked to position him/herself in a dynamic visual field of fragmented views.

The house is an attempt to constantly question ones *being-in-the-world.*

Notes

(X) Edmund Husserl is using the notion of 'Abschattungen". This term can be translated as an *adumbration*, a *silhouette*, or a certain *aspect*. Husserl, E. 1970. *Logical Interventions Volume II.* London: Routledge. p 578-579 (XI) Young, A. T. *Distance to the Horizon.*

http://mintaka.sdsu.edu/GF/explain/atmos_refr/horizon.html. Accessed 12.12.2012 (XII) Schwartz and Przyblyski quote Victor Hugo: "The flowers by the side of the road are no longer flowers but flecks, or rather streaks, of red or white; there are no longer any points, everything becomes a streak; the grainfields are great shocks of yellow hair, fields of alfalfa, long green tresses; the towns, steeples, and the trees perform a crazy mingling dance on the horizon, from time to time, a shadow, a shape, a spectre appears and disappears with lightning speed behind the window: it's a railway guard." Schwartz, V. R. Pryblyski, J. M. 2004. *19th Century Visual Culture Reader.* New York: Routledge. p. 94.

(XIII) 'Returning to Galileo's simile of deciphering the book of the real, it is not so much a question here what Benjamin called *image-illiteracy* of the photographers incapable of reading their own photographs. It is a question of *visual dyslexia.* Teachers have been saying for a long time now that the last few generations have great difficulty understanding what they read because they are incapable of *re-presenting* it to themselves.'

Virilio, P. 1994. *The Vision Machine.* London: British Film Institute. p. 8.

(XIV) Paul Virilio is questioning if Merleau-Ponty's map of "I can" is actually still representing an area that can be reached. 'And even if it lies within reach of our sight, it is no longer necessarily inscribed on the map of the "I can." Virilio, P. 1994. *The Vision Machine.* London: British Film Institute. p. 7.

(XV) Referring to the telescope as a tool to bring the 'world beyond our reach' to us Paul Virilio remarks that '... a telescoping of near and far, a *phenomenon of acceleration* obliterating our experience of distances and dimensions.' Virilio, P. 1994. *The Vision Machine.* London: British Film Institute. p. 4.

(XVI) Moran describes the critique Maurice Merleau-Ponty on Husserl's logic. He continues by quoting Merleau-Ponty saying that to perceive something, you have to live it.

Moran, D. 2000. *Introduction to Phenomenology.* London: Routledge. p. 421.

(XVII) U.S. Environmental Protection Agency. 1989. Report to Congress on indoor air quality: Volume 2. EPA/400/1-89/001C. Washington, DC.

(XVIII) 'When we cross the threshold (here door), we cross it physically. But we go back and forth from the window - without leaving our position - only in terms of thoughts, feelings, imagination, expectation.' Stromberg, K. 1984. The Window in the Picture- the Picture in the Window. in *Daidalos 13. Between Inside and Outside.* p. 54.

(XIX) The word "perspective" is derived from the Latin "perspicere" meaning "to penetrate with the eyes".

Deuchler, F. 1984. Open Doors. *DAIDALOS 13. Between inside and outside.* p. 82.
(XX) Reichlin describes in great length the conflict of Le Corbusier and Auguste Perret. Reichlin, B. 1984. The Perret - Le Corbusier Controversy. *DAIDALOS 13. Between inside and outside.* p. 65-67.

(XXI) In his book 'Lost Dimension' Paul Virilio refers to Stephen Kosslyn: 'Mental images appear in a sort of three-dimensional space. This in no way means that images occur in a real three-dimensional space., but rather in an environment that possesses certain functional properties in common with that type of space.' (Kosslyn, S. 1980. Les images mentales. La Recherche #108.) Kosslyn and Pinker already established that 'We are interested in the notion that images embody three dimensional spatial relations, and that people are able to mentally "move" a part of an image in such a way that the relevant spatial relations simply emerge as a consequence of the adjustment.'Kosslyn, S. Pinker, S. 1978. The Representation and Manipulation of Three-Dimensional Space in Mental Images. *Journal of Mental Imagery.* (2). p. 79.

References

Merleau-Ponty, M. 1964. *The Visible and the Invisible.* Evanston: Northwestern Univ. Press. p. 228.
Merleau-Ponty, M. 1964. Eye and Mind trans. by Carleton Dallery. *The Primacy of Perception.* Illinois: Northwestern Univ. Press. p. 162.
Le Corbusier. 1954. *Une Petite Maison.* Zurich: Ed. Girsberger. p. 4 of appendix.
Diller, L. Scofidio, R. 1994. *Flesh.* New York: Princeton Architectural Press. p. 225.
Moran, D. 2000. *Introduction to Phenomenology.* London: Routledge. p. 421.
Merleau-Ponty, M. 1964. Eye and Mind. trans. by Carleton Dallery. *The Primacy of Perception.* Illinois: Northwestern Univ. Press. p. 162.
Bal, M. 2003. Visual Essentialism and the Object of Visual Culture. *Journal of Visual Culture.* (2). p. 9.
Merleau-Ponty, M. 1964. *The Visible and the Invisible.* Evanston: Northwestern Univ. Press. p. 253.

Creating With Genius and Reason: The Vitruvian Lesson From Dinocrates and Alexander

Susana Abreu

The anecdote about the Macedonian architect Dinocrates and Alexander the Great is one of the most famous passages of the treatise *De Architectura libri decem* (27-23B.C.) by Vitruvius. In the text (II, *Preamble*, 1-4), Dinocrates is depicted as a daring, handsome young man who, presenting himself at court attired in the guise of Hercules, offered to Alexander a grandiose plan to carve Mount Athos into the gigantic figure of a man. In the left hand of the colossus he would raise a magnificent new city worthy of Alexander's name; in the right, he would gather into a bowl all the streams flowing down the mountain. Vitruvius tells us that, delighted with the idea, Alexander asked him how the city would be supplied with grain. Having learned that it would have to be imported by sea, the Emperor rejected the project, considering it unwise. Even so, he decided to keep the young Macedonian by his side at his service, later requesting him to lay out the plan for the city of Alexandria in Egypt.

The vignette I paraphrased here has been widely commented on since the fifteenth century with more or less detail by architectural theorists, artists and humanists, who brought forward as many interpretations as there were commentators. Nonetheless, Dinocrates was usually taken as an example either to illustrate the deontological practice of architects and the quality of their art (as did Filarete, Francesco di Giorgio and Daniele Barbaro, striving to include Architecture among the Liberal Arts) or to comment on absurd design projects following an arguable *moralitas* elicited from the vignette (notably by Leon Battista Alberti, Buonaccorso Ghilberti, André Félibien and Giovanni Battista Doni, who took the anecdote as a negative *exemplum*).This double perspective led to a positive and a negative judgement on Dinocrates, be it about his skills, his relationship with his patron Alexander, or the quality of his design project – in the positive case – and the monstrosity or impracticability of his ideas – in the negative one (Lotz, 1940; Kemp, 1977; Oechslin, 1982).[1] Within the general curiosity about Antiquity, and in particular classical architecture that awoke in the Renaissance, these two different judgements also appear to come from two distinct motivations. The positive, I would say, was usually based on an approach to the architectural theory that Vitruvius interwove with the anecdote. The negative was typically motivated by an ethical compromise to chasten architecture, eliminating from it the tantalizing excesses that, in the Early Modern era, menaced the ideal of balance, harmony and practicability proper to classical aesthetics. The first approach could be said to have been purely theoretical, at least for a significant part; the second, to have been of a more circumstantial nature, for it was based on criteria that evolved with time and changed with the cultural context.

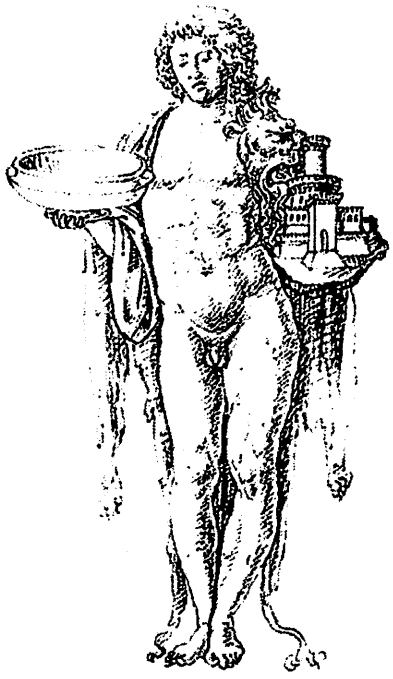
Contemporary scholars have also examined the vignette, usually choosing one of the two most obvious methods for their analysis – the theoretical or the historical approach –, which in some ways reinforced the double tradition in interpreting it. The latter trend has been noticeable in recent years for framing the anecdote within Roman, and especially Augustan, thinking and culture. It usually ponders upon the political discourse of the entire Vitruvian text as expressed in the first proemium, where Vitruvius addresses his dedicatee, Emperor Augustus, highlighting the role of architecture in Rome's mission of civilizing conquest. Particularly, it unveils a variety of symbolic – and thus rhetorically driven – interpretations of Dinocrates's project (Kanerva, 1998; Mc Ewen, 2003, 2011; Della Dora, 2005, 2008). Despite having a smaller number of followers in recent times, the first trend has also made a significant contribution to the broader comprehension of the anecdote. Vitruvius declares in the same proemium that a theoretical body of knowledge on Architecture is the main intellectual accomplishment of the ten books. Rightfully expecting the story of Dinocrates and Alexander to add to what Vitruvius expounds in the main sections of the text, theoretical approaches to the vignette have, indeed, disclosed some aspects of the architectural theory which it conveys (Kemp, 1977; Payne, 1999). No doubt, all these old and recent contributions complement each other, as the treatise *De Architectura* is ruled at once, from the first lines to the end of the entire text, by the two main aims suggested in the dedication to Augustus: to prove that *Architectura* is *scientia* and, at the same time, a powerful intersemiotic instrument to express political power.

Inspired by all these predecessors, my analysis is particularly devoted to a hermeneutic of the text. It considers the vignette simultaneously set to adjust, complete or clarify some aspects of the Vitruvian theory as well as to fulfil the ambitions of the Empire. In this sense, it considers that the broad use of images, metaphors, parabolae and other literary devices of great rhetorical impact in the economy of the text work as purposive connections between the two main messages of the ten Vitruvian books. In this way, I hope to reveal some aspects of the vignette that have not been recognized so far and, therefore, to give a balanced view of it, reassessing its role both as part of a written body of knowledge on Architecture and a rhetorical device that highlights the rhetorical effect of architecture istelf. I believe that this approach may cast some light over issues related to the creative power that Vitruvius assigns to the architect, regardless of the contributions stemming from other research areas besides Architectural Theory, such as Art History, Philosophy or Cultural Studies.

1. Dinocrates, the perfect architect

Despite the varied literary tradition, a close reading of the vignette rejects the idea that Vitruvius might have had a negative critique in mind when he noted down the story of Dinocrates and Alexander. Objectively speaking, Vitruvius neither criticises the unusual colossus carved into a human shape for being absurd or inept, nor derides the young Macedonian when describing his strange outfit to catch the Emperor's eye. On the contrary, Vitruvius explicitly says that Alexander was '*delighted with the idea*' presented by the Macedonian, having even declared himself to '*appreciate the*

ingenuity of this plan' and to be '*charmed by it*'. And despite becoming dissatisfied with some details he asked about, he declared the idea '*to be commended*'.[2] In the same way, Vitruvius's words do not have a negative overtone when describing Dinocrates's bold move to get engaged in conversation with Alexander.[3] The portrayal of his attire is thorough, but plain in the words chosen. Of course, the description has a second hidden intention, as the reader should easily recognize in it an evocation of the mythical Hercules in the fashion he was usually rendered in Roman art – club in hand and lion skin over the shoulder –, although Vitruvius never mentions the hero's name in the excerpt. Scholars point out that Dinocrates's description and ploy, both set up in the text to attract the attention of Augustus, allude to the blood lineage of the Roman Emperors, as the Greek Alexander was reputed to descend from Hercules himself. Reading between the lines, both the narrative and Vitruvius's strategy to address his patron superimpose characters, author and reader; the mythological hero, architect Dinocrates, Emperor Alexander, and therefore also Vitruvius and Augustus, seem to fuse into one single, meaningful, both fictive and real personage (McEwen, 2003, pp.98, 100, 102, 127-129; Della Dora, 2005, p. 498). Needless to say, with this strategy Vitruvius reinforces his credit as a distinguished architect in insinuating the proximity between architecture and political power – a theme that would prove to be fairly important later on in the Renaissance, explaining the interest of some authors for the story in the field of ethics.



It seems to have passed unnoticed so far that this anecdote also sums up the idea of *architectus* on which Vitruvius had written extensively in Book I, now illustrating the confusing concept with a powerful image. In fact, Vitruvius depicts Dinocrates with so many good qualities that the vignette allows to identify him as the very incarnation of the theoretical paradigm of *architectus*. These qualities can be found in the text. The excerpt starts off with the mentioning of Dinocrates being '*full of confidence in his ideas* [cogitationibus] *and his cleverness* [sollertia]', possibly meaning that, besides having a sharp mind (which Vitruvius considered to be a prerequisite for becoming an architect (I, 1, 18)), the Macedonian also had a complete education in the liberal arts (as the word *cogitationibus* suggests (I, 1, 11)). Moreover, Vitruvius informs us that the Macedonian had previously joined the army when he presented himself to Alexander – not as a soldier but as an architect, as may be inferred from the text. He thus insinuates that Dinocrates had already been employed to build *moenia*, ditches, palisades and every sort of machinery used in warfare, as was usual

for this kind of technician.[4] In a few words, thus, Vitruvius lets the reader know that Dinocrates possessed the entire intellectual and practical training that the exercise of his profession demanded. He therefore not only declares that Dinocrates was learned in the *ratiocinatio* – or the theoretical concepts that Architecture shares with all the other disciplines of knowledge through the *cogitatio* – and trained in the *fabrica* – or the feasible, material part of Architecture, usually associated with the quality of *sollertia* (this Latin word meaning skill, cleverness, resourcefulness and ingenuity).[5] Also, pointing to the professional practice of the architect in the army, Vituvius states that he was an expert in all the branches of *Architectura*: *edificatio*; *gnomonics*; and *machinatio* (I, 1, 3).

The text becomes even more illustrative about the perfect architect in other details. Vitruvius says that Dinocrates had with him '*letters of recomendation from neighbours and friends*', which he carried '*from home*'. In this way, the writer offers to his readers a sign that Dinocrates was a high-born man, which is a quality that must recommend an architect to a powerful patron (as stated further ahead in Book VI, *Preamble*, 6). The description of Dinocrates's physical attributes can be justified on the same grounds. The Latin notes that he was '*a very tall man, handsome*'. Stressing this bodily perfection, Vitruvius highlights Dinocrates's naturally noble and harmonious character. One thing implied the other in ancient Greece (Blondell, 2002, p.58-59), as we also learn through the basis of this widespread belief that Vitruvius presents in Book VI, 1. Indeed, it is mainly this virtuous character which stands out in the depiction of Dinocrates's physical features: '*with a fine face with immense dignity*', Vitruvius adds. And of course, the strange outfit that equates the young Macedonian to Hercules emphasizes some other psychological qualities like integrity, well-directed ambition, magnanimity, entrepreneurial spirit and the ability to communicate ideas to others, as the flow of the narrative reveals.[6] These are desirable gifts in an architect according to Vitruvius (I, 1, 7; VIII, *Preamble*, 4-6), all of them proper to a noteworthy professional.

I would therefore say that, in the meaningful structure of the vignette, Dinocrates is a character that helps the author to illustrate, in the most intelligent and concise way, the inborn qualities of the architect-to-be, his early education in the liberal arts and practical training as described in Book I, including the issue of his ethical behaviour that dot some other parts of the text. For that reason, the possible *moralitas* of the anecdote does not address the deontological code of the architect as it may seem at first sight; and even less can be regarded as a specific critique of Dinocrates's lack of knowledge or experience. The answer to the intriguing, centuries-old question must reside elsewhere.

2. Dissecting the text (part one): the project for Mount Athos and Alexander's criticism

It is through the words of Alexander, I suggest, that the *moralitas* of the anecdote might be found. After having learned from Dinocrates that, because of the shortage of grain locally produced, the new city to be established on Mount Athos would have

to import victuals by sea, the Emperor refused the plan and judiciously replied: '(...) *if someone were to found a colony there, his judgement would be found waiting. Just as a newborn baby cannot be nourished and grow without a nursemaid's milk, so neither can a city grow without farmlands and the flow of their produce within its walls.*' (II, *Proemium*, 3). No doubt, Alexander overtly criticises the project on practical grounds. His motifs are clear: '*Without abundant food, no city can maintain a large population nor, without resources, safeguard its people.*' Then he concludes: '*As much, therefore, as I think that the design is to be commended, the choice of the site is to be condemned.*' (II, *Proemium*, 3).

It seems important to focus on this last sentence to better discuss what the main argument of the narrative might be about. The sentence expresses a double judgement implying the consideration of a binomium: the design project should be praised (*formationem puto probandam*); the site chosen for it should be condemned (*locum inprobandum*). The first term seems to consist of an idea, a particular one, which is the object of appreciation and of criticism in the dialogue between the architect and his Emperor. '*Cogitationes et formas*' – or '*ideas and plans*' – is what Dinocrates promises to present to him. Indeed, the moment that the idea for Mount Athos is mentioned for the very first time in the text, we learn, through Vitruvius's careful choice of the verbal forms '*formavi*' ('*projected*'), '*designavi*' ('*represented*') and the substantive '*figuram*' ('*image*') that Dinocrates had already found a precise visual form for it, most probably having translated it into a drawing. The expressions that Alexander verbalizes work in the same way: '*ratione formae*', '*formae compositionem*' and '*formationem*' are terms usually translated as '*idea*', '*plan*' and '*design*' respectively, and all together presuppose the visual expression of an idea. It can thus be said that Vitruvius intended his readers to witness a dialogue about a main subject (not very clear to us at the moment), the first of whose lesser terms is some sort of an accomplished pictorial representation. This term can be identified, I suggest, with the *dispositio*, or '*design*' – called *ideai* in Greek, as Vitruvius declares –, which is described in Book I as '*the apt placement of things, and the elegant effect obtained by their arrangement according to the nature of the work*' (I,2,2). Alexandre praised what he saw before his eyes, no doubt, which means that the *dispositio* of Dinocrates's idea merited his approval. But what was Alexander really seeing and approving?

In rough lines, Vitruvius tells his readers what this particular *dispositio* would represent, for Dinocrates's main idea was, I recall, '*to carve all Mount Athos into the image of a man*' (II, 2, 2). Renaissance humanists attempted to identify this image as a colossal statue of Emperor Alexander himself, particularly because other ancient authors like Plutarch mention the fact.[7] However, Vitruvius never declares that the figure to be carved would resemble a particular man. '*Statuae virilis figuram*' is all he says, an expression that broadly indicates a universal representation of a man – any, and every man. Through a complex web of ideas mostly drawn from ancient Greek and Roman culture, this ommission has been interpreted as deliberate to work in the text as a rhetorical strategy to flatter Emperor Augustus. It would allow Vitruvius to, once again, perform the game of superimposing characters, this time by superimposing on Mount Athos the effigy of Alexander – and, therefore, also the

head of Augustus (Mc Ewen, 2003, p.128-129). However true this might be, the fact is that the above mentioned allusion to the plan, although brief, suffices to make the reader understand why it merited the praise of Alexander. The '*statuae virilis figuram*' would represent the so-called *Vitruvian man* in its purest and highest form, a universal figuration of all the conceivable proportional relationships between macrocosm and microcosm, body and inanimate matter, which could be found embedded in other cosmological symbols in Antiquity. Some of these are conspicuously set in the Vitruvian vignette, such as the human body, the city and the mountain itself. Indeed, body-city-mountain evoke such an intrincate semiotic interplay, I suggest, that the short passage can be easily considered as an allusion to the godly – and thus perfect (not only in the bodily sense...) – nature of the Emperor and, at the same time, be seen as an expression of his harmonious domain over all the nations of the Empire referring to an aspect characteristic of the *pax augustana*. In any case, the powerful image of a mountain carved into the figure of a man evokes the perfection of a mathematical rule governing the cosmos, which is a very useful idea to legitimate political power as some studies have shown (Della Dora, 2005; 2008).

Significant notes may be added to this, I believe, particularly if bearing in mind that one of the two guidelines of the Vitruvian text refers to architectural theory. The fact that Dinocrates considered his project worthy of Alexander's renown, and that the Emperor didn't contradict him on this point, is highly significant in the train of thought started above. With this information, Vitruvius allows us to consider that the rhetorical effect of Dinocrates's design expressed appropriately the greatness of Alexander whilst illustrating his physical and ethical (even political) qualities. I note that it is possible to find here a clue pointing to the operative principle of *decor* in the Vitruvian architectural theory as also explained in Book I. I would even say that the impressive design for Mount Athos is presented by Vitruvius as adequately fit to stand for the Emperor according to *statio* – thus suggesting that the sculpted Mount Athos would be adequate to work as his resting-place or residence. Or, in other words, that Dinocrates's design would be suitable to host an Empire capital city headed by the mighty Alexander.[8]

It is quite hard to deny, however, that it would be easier for Vitruvius to mention Alexander as the model for the statue if this rhetorical game, in which the principle of *decor* can be included within a political scope, was intended to be the only goal of the small passage. Conversely, sustaining the idea of a second guideline to the text, it is easy to believe that Vitruvius had, indeed, another twin-purpose when he omitted the name of Alexander in the passage. I recall the importance of the visual rendering of the *Vitruvian man* – a male with his arms and legs apart and simultaneously inscribed in a circle and square – as it epitomizes both Vitruvius's architectural theory and Classical aesthetics. Their main postulate resides in the application of a measuring modular system that interrelates, geometrically, all the parts to the entire built work, leading to perfection in art. By means of an imitative procedure, this modular system must reproduce the natural harmonies existing between the limbs of the perfect human body with respect to its entirety, which,

in turn, as a microcosmos, shapes the mathematical perfection of the Universe. Vitruvius describes the *Vitruvian man* in Book III (1, 2-3), referring to it as the main source of information for proportional systems among the Classical orders of architecture (1, 4-9). In his theory, the operative principle assuring this kind of mathematical perfection is called *symmetria* (I, 2, 4) and Vitruvius often says that it must be respected in all and every architectural object. The city is, therefore, one of them. In this light, the representation of a human body to host a city, moreover devised as a colossus encompassing an entire mountain – another cosmological symbol –, certainly implied the domain of *symmetria* over the design project. Like a succession of fractals, the design by Dinocrates would respect the same harmonies that, also according to Vitruvius, rule the human body, the sublunar world and the entire Cosmos, and thus reveal the application, to the highest degree, of the main postulate of Classical aesthetics concerning the imitation of Nature.[9] In such a plan, it may also be deduced that the principle of *eurythmia* (described in I, 2, 3) would not be lacking as well, as the Vitruvian analogy body-city-mountain suggests the perfect application of the harmonic ratios to the *locus* as well as to the architectural design. In this regard, I would say that, by omitting the name of Alexander when presenting Dinocrates's project in the text, Vitruvius accomplishes a desired double effect: he states that neither the drawing could suit more Alexander as *Imperator mundi* for its *decor*, nor could it better illustrate the perfection of the architectural design considering the principles of *symmetria* and *eurythmia*.

Vitruvius's other details on the project are also significant. '*In his left hand*', Dinocrates declares before Augustus, '*I have represented the walls of a spacious city; in his right, a libation bowl where the waters of all the rivers that run on that mountain will gather together and plunge into the sea.*' However strange the visual representation of this idea may seem, it translates the care of the Macedonian in organizing the elements of the project: the natural landscape, the surrounding territory of the city, the natural resources, the city itself, allocating a place to each of them within the larger plan. It is the putting in order that stands out here, the ordering meant by the Greek word *taxis* that Vitruvius considers to be a suitable translation for the Latin term *ordinatio* – another operative principle of *Architectura* explained in Book I. Vitruvius describes this principle as the '*proportion to scale of the work's individual components taken separately, as well as their correspondence to an overall proportional scheme of symmetry*' (I, 2, 2). The *ordinatio* in Mount Athos is, thus, a symbolic one: interpreting the colossus carved as a meaningful representation of a body as a whole, Dinocrates distributed the most important elements of the project for the right and left arms of the figure, perhaps signalling with this bizarre arrangement their equal share of importance – if not of area.[10]

Illustrating the dry concepts presented in Book I, Dinocrates not only incarnates the perfect architect in the Vitruvian sense, as we have discussed above. Also, his design for Mount Athos embodies, with utmost perfection, the operative principles that Vitruvius prescribes for the production of architectural objects: *ordinatio, dispositio, symmetria, eurythima* and *decor*. I note, however, that this design embodies not the

entire set of six principles presented in Book I, but only five of them. The principle of *distributio* is clearly missing among the qualities that have been ascribed to the design – a fact that points to a fault in the architect's procedure and, therefore, that should be questioned. It is possible to grasp this absent principle if one concentrates on the text, as *distributio* is (certainly not by chance...) the only one that can be related to Alexander's reproach addressed to the young architect.

Refusing the plan whose design pleased him so much, Alexander criticizes the choice of the site for the city on practical reasons, it has been said. The arguments he presents are not about function, however. His answer to Dinocrates condemning the fact that, because of the shortage of farmland, victuals would have to be imported by sea admits that, at least in theory, he believed that a small city could survive in Mount Athos above a threshold of resources. In a different way, his arguments are of an economic kind: '*Without abundant food, no city can maintain a large population*', he says – *i.e.* to thrive on the number of inhabitants – '*nor, without resources,*' – economic resources, I interpret – '*safeguard its people*'. In other words, Dinocrates's project was regarded as ill-conceived in terms of the best policy for distribution, administration and organization of the city's goods considering its relation to a larger region; that is to say, because it was contrary to the principles of *oikonomia*. This Greek word *oikonomia*, meaning both the administration of a household or estate, is used by Vitruvius in his treatise precisely to present the principle of *distributio*, the one that he assigns to '*the efficient management of resources and site*', in one hand, and '*the frugal, principled supervision of working expenses*', in the other (I, 2, 2). The etymology of *oikonomia*, usually assuming or implying good or prudent handling of riches, suggests that it is precisely this virtue lacking in Dinocrates's design that the Latin writer intends to highlight as the *moralitas* of the vignette. The two lesser terms of the enigma we posed before may thus be identified: Vitruvius presents a dialogue whose participants disagree about the *distributio* of a particular plan in the face of a specific *dispositio*, or project design.

The bigger question, however, remains: what might be the precise issue, or theme, of such discussion? The two terms of the passage we identified imply that Vitruvius considers there is a close relationship between them. It must be in this relationship, I therefore suggest, that the lesson hidden in the passage resides. This relationship is not overtly set in the anecdote, though. However, in the same way that Book I illuminates some aspects of the drama informing the main character Dinocrates, we may find some responses to the issue if we move forward to the next chapter (II, I). In this passage, written as a kind of second preamble to Book II, I believe that we can find the key that opens the deeper meaning of the vignette.

3. Dissecting the text (part two): the discourse on the origins of Architecture as a method[11]

In the last lines of Book I, right after closing the anecdote of Dinocrates and Alexander, Vitruvius announces the following chapter with these words:

'(...) *I shall begin with the principles of construction* [aedificorum rationibus]: *where they had their beginnings* [initia] *and how these discoveries* [inventiones] *have grown up* [creverint], *and I shall follow the initial steps* [ingressus antiquitais] *of ancient science* [rerum naturae] *and of those who have made researches into the beginnings of humanity* [initia humanitatis] *and its discoveries* [inventiones], *setting these down in writing. I shall, then, explain as these writings have taught me.*' (II, *Preamble*, 5).

His project is clear: Vitruvius intends to provide a state-of-the-art assessment on the '*principles*' – method is the word I prefer to translate '*rationibus*' here[12] – that assist the making of architectural objects, analysing them since the earliest beginnings of Humanity. In other words, he is about to review the literature on the method that made the discipline of Architecture evolve through time. I note that one word stands out in this announcement – '*inventiones*' –, giving the reader a clue as to which is the ignition factor that makes the wheel of progress spin.

Indeed, it is possible to identify in Book II (1, 2-3) a sequence of actions that, according to Vitruvius, caused the art of building to be born and gradually improve by the hand of primitive men. These actions, repeated at times, at some point gave rise to the discipline of knowledge and their objects that Vitruvius calls *Architectura*, as he concludes further ahead in the text. By focusing on on the first part of this history of origins, we may identify the thorough observation of Nature aiming at the rational use of her elements as the first of these actions. Vitruvius says that this was achieved both by the intelligent employment of raw materials that Nature provides for the making of things, and by following the suggestions she offers as to their use at a technical level:

'(...) *Some [men] in the group began to make coverings of leaves, others to dig caves under the mountains. Many imitated the nest building of swallows and created places of mud and twigs where they might take cover.*'

And the text proceeds: '*Then, observing* [*observantes*] *each other's homes and adding new ideas to their own* [*suis cogitationibus res novas*], *they created better types of houses as the days went by.*' (II, I, 2).

Imitation is, therefore, the second of the actions that steadily improved the art of building. It started with the careful observation of animals' shelters and their adaptation to human dwelling and proceeded, then, with the study of the disposition and techniques achieved in the dwellings made by other men in imitating Nature. Imitation, thus, was born from the active observation of the phenomena, implying the use of reason to learn from them the necessary lessons to reproduce Nature in the art of building, both in her forms and methods. With this small passage, Vitruvius declares that it is by observing and imitating Nature that man invents – from the Latin *inventio*, meaning the finding of a solution to a particular problem. Of course, this statement implies that Nature and man-made constructions must be considered one and the same thing, as the latter derive from the former through an unbroken chain of successive observations and imitations.[13] This endless process, I note, is also

the method by which man gradually discovers the theoretical laws of art, the '*suis cogitationibus res novas*' (or set of new principles). That is to say, it is the method that leads the continuous perfectioning of Architecture.

In the lower base, it is important to acknowledge that Nature is the provider of materials for building, or, if we prefer, to materialize the inventions conceived in the mind. Nature thus imposes limits to invention, which are of two kinds to Vitruvius: the availability of raw materials in the natural environment; and the qualities proper to each kind of material. The skillful management of these conditions requires the careful examination of the site and of the factors on which its quality depends, such as the climate, the soil, the presence of water, vegetation, and so forth. Vitruvius provides several illustrative examples to sustain this idea, showing how knowledge about the nature of the site and the properties of the materials existing there is crucial for finding new solutions to old and new architectural problems:

'*First they* [men] *erected forked uprights, and weaving twigs in between they covered the whole with mud. Others, letting clods of mud go dry, began to construct walls of them together with wood, and to avoid rains and heat they covered them over with reeds and leafy branches. Later, when these coverings proved unable to endure through the storms of winter, they made eaves with molded clay, and set in rainspouts on inclined roofs.*' (II, I, 3).

Vitruvius explores this idea at length with an excursus on the vernacular buildings that could be seen around the Roman Empire (II, 1, 4-5). The varied dwellings he describes, made with the resources at hand, are presented as fit solutions to different kinds of environment. All of them can be taken as lessons on the optimal use of Nature in the process of inventing, as they show that their forms and building techniques were attained in harmony with the nature of the site. Also, Vitruvius tells how they were accomplished empirically by an active, iterative observation and imitation of Nature, continually exceeding the previous achievements. It is trough these examples that Vitruvius sustains that it is by the observation and imitation of Nature that man arrives, by his own reasoning, at the '*suis cogitationibus res novas*' and '*inventionibus*'. Again, observation and imitation establish a strong solidarity in the finding of specific solutions to particular design problems; that is to say, in the invention.[14]

At this point it is important to note that Vitruvius defines the concept of *inventio* for the first time, not in Book II, but already in Book I, when establishing the six operative principles that rule architecture. It happens exactly when he explains the concept of *dispositio* (design), or, rather, the method he recommends to make it. The three species of design he mentions ('*Ichnography* (plan), *orthography* (elevation), *and scenography*') are '*produced by analysis and invention* [*Hae nascuntur ex cogitatione et inventione*]' (I, 2, 2), he says. '*Analysis*', Vitruvius specifies, is '*devoted concern and vigilant attention to the pleasing execution of a design*'. It refers, as is recognized, to the relationship between all the parts and the entire design based on the choice for a particular modular system to render the image beautiful. Throughout the treatise,

Vitruvius insists on the major importance of the operative principle called *symmetria* to guarantee the perfection both in architectural forms and the technical part of the design. In turn, Vitruvius describes '*invention*' as the '*unravelling of obscure problems [quaestionum obscurarum explicatio], arriving, through energetic flexibility, at a new set of principles.*' In other words, *inventio* is the sorting out of new solutions by looking at all the terms of an equation through different, new lenses. However rational the process of invention may be to Vitruvius, he admits that there is something almost divine in it. He defines *inventio* as the instant of a powerful insight, as the '*Eurêka!*' that he puts in Archimedes' mouth when he writes about the achievements of great inventors in the preamble to Book IX. This spark of genius was attributed to the guidance of the Muses in Antiquity, as Vitruvius lets the reader know by saying that this was the reason why Pythagoras offered them sacrifices after having found – invented – the famous theorem. According to Book I, the invention of new things is, then, a spark of genius that enters the architect's mind after he meditates profoundly and intensely on all the terms of a problem. The small history on the origins in Book II adds new details to this idea: it shows that these terms must forcibly include Nature in all her inspiring and limiting aspects. Her observation and subsequent imitation must be done within the limits or potentialities of the site and materials at hand, always respecting her forms and processes, or methods.

4. Disclosing the allegory

Delving into the vignette, we have discussed how Dinocrates personifies all the theoretical qualities of the *architectus*. Also, we have considered his design for Mount Athos to embody the entire set of operative principles that rule the making of architecture in the Vitruvian theory, except for one – *distributio*. Assessing, then, the overall message of the narrative, we concluded that two main architectural principles, already described by Vitruvius in Book I, stand out from the discussion between Dinocrates and Alexander: the *dispositio*, or an idea expressed through visual means (*ideai*); and the wise management of natural resources implied on it, or *distributio*. In the light of the narrative on the origins in Book II, 1, we have also specified what invention consists of for Vitruvius and thereby explained the role he ascribes to it in the *distributio*. In this way, we could better understand Alexander's criticism of Dinocrates's *distributio* regarding his project for Mount Athos. What, then, might be the message that Vitruvius really intends to convey with this appealing narrative? What is the purpose of the two attractive characters involved in this dramatic conversation?

The main issue of the dialogue between Dinocrates and Alexander is, as expected, architectural invention.[15] We may therefore appreciate this vignette as a consistent allegory on the subject, which presents to the reader some highly complex abstract ideas. Dinocrates's proposal for Mount Athos, conceived to express the immense power of Emperor Alexander while respecting the rules of good architecture, must be regarded as a brilliant invention that unveils a truly creative, almost divine mind – the mind of the Vitruvian *architectus*. Dinocrates is thus presented as Hercules, a hero and a demigod able to attain the great inventions that make Architecture

evolve over time, giving it new impetus whenever a wonderful solution comes to mind. Vitruvius describes him as young and bold, so he incarnates the '*energetic flexibility* [vigore mobili]' that, in the process of invention, leads to '*a new set of principles* [novae rei]' (I, 2,2). His particular force, however, is the raw intuitive power that Pythagoras attributed to the action of Muses, not yet the mature, perfect balance between intuition and reason required for the invention of outstanding architectural solutions.

In turn, Alexander is presented as the conqueror of people and land, the experienced Emperor governing all the human affairs and material resources of a vast empire with an accurate knowledge of its potentialities and limitations, who, not surprisingly, came to epitomize Western rationality (Della Dora,2005, p.496). Through his wise criticism to Dinocrates's project, we realize that he represents the empirical knowledge gathered from the thorough observation of Nature that must always go along with invention in Architecture. He typifies judgement in weighing what is appropriate and what is not – the reason, I think, why the action of the anecdote symbolically takes place at court. Or, rather, Alexander personifies reason in the decision-making process before all the possible alternative scenarios that the architect must consider: '*I recognize that if someone were to found a colony there, his judgement would be found wanting*', he says.

Having already discussed here how *inventio* is attained by the imitation of forms and processes in Nature (including the achievements by other men) and how this encompasses the good management of natural resources, we may therefore think that Alexander is the vehicle for such lesson. He is reason itself speaking about the limits that *oikonomia* (or *distributio*) imposes upon the materialization of inventions. He speaks like the *divina mens*, as Nature itself, which proportionately – reasonably – distributes everything that exists to its right place according to the universal harmonies, the ones that the intuitive architect has to consider as data in the complex equations to solve. In face of the relationship between Dinocrates and Alexander, to create and invent are thus very similar processes, if not one and the same thing to Vitruvius – as long as reason is assisted by a spark of genius. Indeed, some Reaissance thinkers like Luca Pacioli, Leonardo, Marsilio Ficino and many others, were tempted to believe that it is through the imitation of Nature's methods that man identifies himself with the *divine mind* in devising – finding, inventing, creating – architectural objects. How to create with genius and reason, therefore, is the lesson that Dinocrates and Alexander offer to the modern readers of Vitruvius.[16]

I note that this is not the only purpose of the Vitruvian anecdote. Bearing in mind that Vitruvius devoted his Book I to explaining what *Architectura* is (and, therefore, also to explaining the concept of *architectus*), and that in Book II, 1 he expounded how Architecture was born and continues to develop, we may thus consider that Vitruvius approached the concept of *inventio* both when he wrote about the object and the method of the discipline. This means, I suggest, that invention has a double, fundamental importance to Vitruvius's architectural theory. On one side, it is the

apex of the architect's activity leading to the final project design – or *dispositio*. On the other side, it represents the keypoint in the method presiding over the evolution of Architecture as a discipline of knowledge. *Inventio*, we learned through Book II, repeats itself now and again, every time a particular problem challenges the architect, and results in two different, alternative and complementary things: in the discovery of new sets of principles; and in splendid solutions for particular architectural problems that keep the wheel of evolution spinning. The commentaries of Vitruvius on the story of the origins explain how each kind of invention leads to the other in a continuous, reciprocal way. Likewise, the pivotal point of the object and the method of *Architectura* resides in invention. In this light, the insertion of the vignette of Dinocrates and Alexander in the flow of the ten Vitruvian books is most significant: placed between Books I and II, the vignette indeed works like a hinge in the topography of the text, linking the theoretical approaches to the object and the method of the discipline.[17] Vitruvius could not have found a more suitable place to write about invention, I would say, as he remarkably does here in the most appealing terms.

'*From then on*', Vitruvius says, '*Dinocrates never parted from the king*' (II, *Preamble*, 4). In other words: never again did Dinocrates devalue the lesson taught about the importance of considering the *distributio* in the *dispositio*. Or, to put in another way: invention is to be attained with genius and reason, as the spark of genius flowing from the creative mind must always consider Nature in her rational forms and methods. Finally: the evolution of Architecture occurs whenever a gifted architect, reasoning about a particular architectural problem, arrives at a new, excellent solution. It is significant that Vitruvius concludes this story telling that, later on, when Dinocrates and Alexander were travelling together, and when the latter '*noticed a naturally secured port, a thriving market-place, wheatfields all around Egypt, and the great usefulness of the immense river Nile*' (II, *Preamble*, 4), he ordered Dinocrates to lay out there a city in his name. Alexander, representing the wise principle of *oikonomia*, or *distributio* in the *inventio*, chose the best site for the new city to thrive. Dinocrates, or the intuitive part of *inventio* contributing to design or *dispositio*, harmonizing his brilliant insights with the rational criteria of *distributio* and all the other architectural principles, outlined and laid the foundations for the new city. Thereby, Dinocrates and Alexander together gave rise to the city of Alexandria, an invention that, combining genius and reason in creating something never seen before, became famous all over the ancient world and inspired generations of architects down to Vitruvius's day.

5. Reference list

Abreu, S., 2011. *Teoria e Crítica na raiz do Arquitecto de matriz vitruviana em Portugal (1521-1557). A questão das Origens entre o Desígnio e a Matéria.* PhD. Universidade do Porto.

Blondell, R., 2002. *The Play of Character in Plato's Dialogues.* Cambridge, Mss:: Cambridge University Press.

Della Dora, V., 2005. Alexander the Great's Mountain. *Geographical Review*, 95(4), pp. 489-516.

Della Dora, V., 2008. Mythological Landscape and Landscape of Myth: Circulating Visions of Pre-Christian Athos. In: G. Backhaus and J. Murungi, eds. 2008. *Symbolic Landscapes.* S.l.: Springer. Ch.4.

Kanerva, L., 1998. *Defining the architect in fifteenth-century Italy: Exemplary architects in L.B. Alberti's* De Re aedificatoria. Helsinki: Suomamalainen Tiedeakatemia.

Kemp, M., 1977. From "mimesis" to "fantasia": The quattrocento vocabulary of creation, inspiration and genius in the visual arts. *Viator: Medieval and Renaissance Studies,* 8, pp.347-398.

Lotz, W., 1940. Eine Deinokratesdarstellung des Francesco di Giorgio. *Mitteilungen des Kunsthistorischen Instituts in Florenz,* VII, pp.428-433.

McEwen, I., 2003. *Vitruvius. Writing The Body Of Architecture.* Cambridge, Mss.; London: Mit Press.

McEwen, I., 2011. Virtù-vious: Roman Architecture, Renaissance Virtue. *Cahiers des études anciennes,* XLVIII, pp.255-282.

Oechslin, W., 1982. Dinocrates and the Myth of the Megalomaniacal Institution of Architecture. *Daidalos,* 4, pp. 7-26.

Payne, A., 1999. *The Architectural Treatise in the Italian Renaissance: Architectural Invention, Ornament, and Literary Culture.* Cambridge; New York: Cambridge University Press.

Rykwert, J., 1972. *On Adam's house in Paradise: The Idea fo the Primitive Hut in the Architectural History.* New York: The Museum of Modern Art.

Vitruvius [27-23B.C.], 1990. *De Architectura.* Translated from Latin by Luciano Mignotto; Latin text edited by Curt Fensterbusch (*Zehn Bücher über Architetur.* Darmstadt: Wissenschaftliche Buchgesellschat, 1976.) Pordenone: Edizioni Studio Tese.

Vitruvius [27-23B.C.], 2007. *Ten Books on Architecture.* Translated from Latin by Ingrid D. Rowland; commentary and illustrations by Thomas Noble Howe. 9th ed. New York: Cambridge University Press.

6. Caption

Francesco di Giorgio, c. 1476. Anthropomorphic rendering of the Vitruvian story of Dinocrates and Alexander.[drawing](Codice Magliabechiano II.I.14, fol. 27v. tav. 210 (detail), Firenze, Biblioteca Nazionale Centrale). Source: Martini [c. 1476] , F., 1967. *Trattati di Architettura Ingegneria e Arte Militare,* II. Ed. Corrado Maltese. Milano: Il Polifilo.) Superimposing the several personages of the story (Hercules; Alexander; Dinocrates) this representation was considered by Francesco di Giorgio as a symbol of the architect and of his work.

Endnotes

1 (I thank Prof. Werner Oechslin for giving me access to his inspiring paper.) Other brief synopses on the issue can also be found in the studies of Liisa Kanerva (1998, pp.40-46) and Veronica della Dora (2005, 497-498; 2008, p.117).

2 All my quotes from the *De Architectura* are from the translation made by Rowland (Vitruvius, 2007). The Latin words I use in the text were gleaned from the *Zehn Bücher*

über Architetur edited by Curt Fensterbusch (1976), through the anastatic copy that integrates the Italian version of the text by Luciano Mignotto (Vitruvius, 1990).

3 This does not prevent us from recognizing Vitruvius's sour words when he addresses Augustus comparing his own aged, unattractive body and face with the handsome young Dinocrates (II, *Preamble*, 4).

4 Being himself an ex-*apparitores* of the *scribae armamentarii* type in Augustus' army, Vitruvius likens himself to Dinocrates at this point.

5 Despite considering that Dinocrates was '*confident in* sollertia *and* cogitationes – *in the skill and power of thought that are cognates, respectively, of the* fabrica *and* ratiocinatio *that together bring* architectura *into being*', McEwen (2003, p.97) does not explore the idea within the larger framework of the anecdote. I recall that this same idea was sketched for the first time in 1566 by Daniele Barbaro (Oechslin, 1982, p.15 nt.12), who, nevertheless, also did not explore it in the way I attempt to do here.

6 Recalling that Hercules was considered a paradigm of *uirtus* in Antiquity (2003, p.101; 2011, pp. 5-6), MacEwen underlines that the term *uirtus* translates the Greek word *arête*, which encompasses '*innate excellence in general, including ethical integrity*' (2011, p. 6). MacEwen also suggests that Vitruvius's choice for the particular spelling 'Dinocrates' (also mentioned in ancient literature as Dinochares, Cheirocrates, Hermocrates, Hippocrates, Stasicrates,...) is signiŞcant, as *kratos* (meaning '*power or might self*') and *dinos* (meaning '*the rotation of the heavens*'), or *deinos* ('*fearful, terrible, clever, skilful-boldly*'), might have been deliberately associated with the Macedonian adding to his virtues (2003, pp.96-97).

7 Besides Vitruvius and Plutarch, Dinocrates is mentioned in a number of other texts from ancient authors such as: Valerius Maximus; Pliny the Elder; Strabo; Ammianus Marcellinus; and Julius Valerius. About the historical Dinocrates (of Rhodes, and not of Macedonia as Vitruvius states), see the brief resume by McEwen (2003, pp.95-96) pointing to specific bibliography.

8 Vitruvius defines *decor* as '*the refined appearance of a project that has been composed of proven elements and with authority*', '*achieved with respect to function* [statione], *which is called* thematismos *in Greek, or tradition* [consuetudine], *or nature* [natura].' (I, II, 5). In the context of my approach to the text, I find particularly useful the enlightening explanation about the three categories of *decor* by Payne (1999, 36-41).

9 Francesco di Giorgio, a Renaissance architect and theorist, interpreted the Vitruvian anecdote in this way (Kemp, 1977, pp. 353).

10 In the Vitruvian theory, *ordinatio* '*is achieved through quantity*' by the '*establishment of modules taken from the elements of the work itself and the agreeable execution of the work as a whole on the basis of the elements' individual parts*' (I, 2, 2).

11 I approached the issue of this section in my PhD thesis (Abreu, 2011), which is part of a book in preparation.

12 As an alternative to Rowland's translation, I suggest the Latin '*ediŞcorum rationibus*' to be read as 'methods of building',for I consider that the subject approached in the text to which Vitruvius is referring (II, 1) suggests that it is in the sense of a methodology for the evolution of the discipline of *Architectura* (more than of mere construction principles) that he intends to write. The synopsis provided at the end of the second preamble supports this interpretation: '*This book* [Book II] *will not declare where architecture originated* [*nascatur*], *but only where the origins of construction had their beginning* [*unde origines aediŞciorum sunt institutae*], *and by what principles* [*rationibus*] *they were nurtured* [*enutritae*] *and how they progressed* [*progressae*] *step by step to this state of reŞnement.*' (II, 1, 8).

13 I believe that the conclusion drawn here may elucidate the debate launched by Payne (1999) about the imitation of Nature *vs.* Antiquity in her approach to *licentia* (loosely, invention) in the Renaissance theory of ornament.

14 Kemp also points to I, 2, 2 as a source for the notion of invention (1977, p.350).

15 Payne also states that '*the story of Dinocrates also attends to the issue of artistic invention*' (1999, p.51), adding that the vignette '*looks back to* decor, *this time to the category of* natura' and explaining that '*as a story on artistic behaviour it reinforces the notion that a good invention derives from imitation: Dinocrates does not fail in his* formatio *(planning), but in his* iudicum locus *(siting)* since *decor* fails in *natura*'. Of course, this revealing corollary only focuses on the aspects related to the principle of *decor*, and not all the six Vitruvian principles that I believe are represented in the story.

16 The clues that Vitruvius gives about invention and its place in the design process are scarce, as is recognized, and don't allow going much farther with the conclusions than the ones I attempt to draw here. However, other passages (like the narratives on the origins of the orders; the story of the Persians and the Caryatids; the vignette about Aristophanes of Byzantium; and so on) stimulate us to think about it, as Payne also considered (1999, p.51).

17 I suggest also that it was to stress the manifold aspects of invention that Vitruvius preceded his long, dull dissertation about the qualities of the raw materials (including the right techniques to employ them in construction) by the anecdote of Dinocrates and the following narrative on the origins. These two small passages articulate the condensed theory presented in Book and the unfolding varied information that Vitruvius provides next, strengthening the idea of correlation between *fabrica* and *ratiocinatio* in the process of architectural invention.

On Meaning-Image: Coop Himmelb(l)au Architecture

C. Sanem Ersine
MArch-PhD student, Istanbul Technical University

Abstract

The aim of this paper is to discuss the emergent form of deconstructionist architecture, by which -thought in a linguistic way- the extensity from the intensity of materials comes into being throughout sub-references. The answers to the questions are researched: How does the design process evolve in relations to the designer's intended representations and aesthetic experience; and how does the *signifier* relates to the *signified,* and accordingly how do they communicate with their users and environment?

In this context, the study concentrates on deconstructionist notion in architecture in the context of design process and product. Primarily, the concepts of post-modern avant-garde approaches in architecture are briefly enrolled, leading to the deconstructionist approach to arise. Afterwards, the works of architectural firm Coop Himmelb(l)au is addressed as the focal point of successful deconstructionist designs in contemporary practice. The architects' general approach to building design in around forty years is handled generally to trace down the searched references. As the case study, Busan Cinema Center in South Korea is analyzed through the data of the designers' statements about the project. To conclude, the literature review is examined, and Coop Himmelb(l)au's avant-gardism in the context of architecture as a language is interpreted.

Keywords: meaning-form, deconstructionist architecture, Coop Himmelb(l)au, Busan Cinema Center.

1. Introduction

From the beginning of the postmodern era until our days, architectural form has been more than just an external impression for the designers who are influenced from philosophies on deconstructivism and the being of materials, and are themselves are both practicians and theorists. For them, the created form is more than just a symbolic image –the *signifier* has inner relations with the *signified.* Along with this, in any production of a spatial organization, it is commonly accepted in the discipline that by this attempt aesthetic experience should be harmonized with functional and social aims. One of the world famous contemporary architects Decq (2004) emphasizes that designers challenge the complexity and profoundness of desire and pleasure more than ever. Constantly improved technology allows contemporary architecture world to be more creative than ever. The aim of researching the Coop

Himmelb(l)au's professional life span and one of their latest works Busan Cinema Center is to detect how their theory of deconstructivism embodies, where it is positioned today, and if it has been wandered off from its essence after more than 40 years.

Primer to investigate how Coop Himmelb(l)au's unique postmodern philosophy, in other words criticism of Modern, reflects on their architectural language, it is indicated to go through the transition from Modernism to Postmodernism briefly. Later in the second chapter of the paper, this new-avant-garde era is described in relations to architecture with the assistance of Coop Himmelb(l)au's manifests and the approach of Deleuze and Guattari to the genesis of form.

After reviewing different approaches in postmodern era and then focusing on deconstructivism, the study will concentrate on Coop Himmelb(l)au's work. In this third chapter, before reaching the point of analyzing the meaning, generating process and eventually architectural configuration of Busan Cinema Center; the project designers' theory in relations with their practice is opened up more , along with the interpretations made by relevant critics. *Form as signifier* and the *meaning as signified*, i.e. the message to the spectator and the city are investigated throughout the project. The researcher is able to interpret the case study project by means of drawings, photographs and videos. These images and the position of the architects give way to create a personal cognitive image about the building. There is no user-based research involved.

The paper is terminated with personal interpretations on the group and their works.

2. New Avant-garde Architecture Theories And Their Effects On Contemporary Design

2.1. Approaches In Postmodern Era

The radical changes in any creative discipline's way of production are around the turning points of the global order. Embracing many disciplines and being in close relations with science and philosophy, architecture has always been in search for the unknown and new. Modernism is one of the most important turning points in world history, finding new ways of using technology, refusing the traditions completely, thereby creating new manifests -with its long-termed and global effect, maybe the most important one. But first the critical situation of being anti-social and elitist, and then turning into a mass production, creating soullessness and placelessness, alienated the movement from its first ideals.

At the beginning of 1960's, the reactions against Modernism intensified. The most radical one was Archigram established in Architectural Association, seeking a futurist but anti-heroic reality. Their works offered a seductive vision of a high-tech machine age; however, social and environmental issues were left unaddressed, so the works remained experimental and never been realized (Sadler, 2005). In 1977, American architectural theorist and designer Charles Jencks affected the architectural

discourse deeply with his book *The Language of Postmodern Architecture.* Thence the beginning of the *postmodern* era can be described avant-garde in this context. But the movement's prominence architects like Venturi, Graves, Johnson etc. insisted so heavily to situate themselves in the opposite of Modernism's principles, that they barely created a new vision; they mostly produced historicist and arbitrary masses. At the same time, the post-structuralists, who established their theories on linguistic architecture in the trail of Saussure, but criticize structuralists, stood against the system of single meaning and static sign. Winters (2007) explains this approach as refusing an absolutist interpretation, searching for radical relativism. Meanings are always shifting and supported by other meanings. One of the architects pursuing the post-structuralist way of thinking was Viennese Coop Himmelb(l)au cooperation, who began their work officially in 1968. They argued that we have to shake off the design and production efforts anchored to strict criticisms. To be genuinely creative, they purified themselves from these concerns and made an assertive egression with the manifest '*Architecture is dead*'.

'*...We are tired of seeing Palladio and other historical masks. Because with architecture, we don't want to exclude everything that is disquieting. We want architecture that has more to offer. Architecture that bleeds, exhausts, that turns and even breaks, as far as I am concerned. Architecture that lights up, stings, rips, and tears under stress. Architecture has to be cavernous, fiery, smooth, hard, angular, brutal, round, delicate, colorful, obscene, lustful, dreamy, attracting, repelling, wet, dry, and throbbing. Alive or dead. If cold, then cold as a block of ice. If hot, then hot as a blazing wing. Architecture must blaze.*' (Coop Himmelb(l)au, 1980)

This is an architecture made of materialization of every contradiction; situated far from the eclectic postmodern approach, in fact, at the opposite of it. Because the latter is a storage of forms from the past, contradicting each other and struggled for their beings. Postmodern architecture should represent a wide range of forms which can be consumed simultaneously (Coop Himmelb(l)au, 1980).

Postmodern philosophy's post-structuralist theory is concerned with genesis, the emergence of potentials and the relations between the structures and the body. It is understood from Coop Himmelb(l)au's statements that the theory flows into the practice as not a style, but as an idea, a desire of communicating through *affect.* Colebrook (2005), examines Deleuze and Guattari's *A Thousand Plateaus-Capitalism and Schizophrenia,* throughout asking the questions: How is any field, differences system or plane of knowable terms generated, and how does one term explain and close out the genesis of any structure? For Deleuze and Guattari, a structure is a set of external relations; a way regarding how life is viewed or generated from some point. One side of a stratification is the *structure;* the other side is that which is *structured* (Deleuze and Guattari, 1987: 242). Colebrook adds from Deleuze's subsequent work *Difference and Repetition* (1994) that this means *'considering the process of differentiation –the dynamic unfolding of difference.'* (Deleuze, 1994: 206-7)

2.2. Deconstructionist Approach In The Context Of Architecture

The pioneer of deconstructionist philosophy Jacques Derrida, refers to the *structure* and *structured* similarly as the *signifier* and the *signified.* He aims to end fiction, to destroy the illusion chain that we are woven around; not that he thinks that there is anything other than fictions, possibilities, changeable organizations of regard codes (Caputo, 1984). Derrida suggest that we have to face up to the threats of living in a *sham.* According to him, the fake comfort of the illusion, what seems to be established and unchangeable, should give its place to honesty. So, he thinks that we need to be liberated, and calls his freeing technique *deconstruction* (Mugerauer, 1988). Our relationship with the physical and social environment -that is basically nature, buildings and culture, should be deconstructed, in order to go deep into our historical beings and relationships. Mugerauer (1988) explains that for Derrida, nothing exists freely, and the whole world is a text. He quotes; *'...the world is a texture of traces which exist autonomously as 'things' only as they refer to or relate to each other. They are therefore 'signs' in that, like signs, their 'being' always lies elsewhere (because a sign is always the sign of something else; it cannot refer to something other...No entity...has a unique being...apart from the web of relations and forces in which it is situated. The thing itself always escapes.'* (Derrida, 1973: 104)

The fundamental position on Derrida's theory is that the *signifier* and the *signified* never coincide, and never presented together. Difference and delay never stop. *Difference* as Derrida uses it, has two senses. It means differ and defer. To *differ* means to be spatially separate (nothing, not even the present or consciousness, is self-present or identical; there is no original identity). To *defer* means to temporally separate (nothing ever is wholly present; even the present is always delayed). In short, the signifiers go in an endless chain.

To sum up according to this approach, it can be claimed that the -architectural-text originates from many sub-references. This reference system includes many meanings, which are variable and ambiguous, according to their places in this differences system. The signifier is a diverse form of the signified. Mugerauer adds that Derrida's interpretation is not a useless theory but more likely an activity, because he examines former interpretations, contexts and traces. By this way, the forced acknowledgments and secrecy can be retrieved and the differences can come up (Mugerauer, 1988).

The adaptation of Derrida's philosophy to architectural theory has been formalized through the exhibition *Deconstructivist Architecture* of New York MOMA (Museum of Modern Art) in 1988. This foundation and a group of critics engaged Coop Himmelb(l) au, Peter Eisenman, Frank Gehry, Zaha Hadid, Rem Koolhaas, Daniel Libeskind and Bernard Tschumi to each other. Unlike the early postmodern style, which began as an American movement then later some years was engaged to the developments in Europe; deconstructionist style became rapidly international owing to Architectural Association in London and former Institute for Architecture and Urban Studies in New York. These designers don't have a common cultural heritage or a common

architectural background. But the style is considered as a common movement from different geographies –a common language with different idioms.

Under these circumstances, this limited classification may constitute some problems. McLeod (1989), in her paper on the transition from Postmodernism to Deconstructivism, claims that it is misleading to connect the formal source of Deconstructivism only to early Russian constructivism. For example Coop Himmelb(l)au's works back then were futuristic, but inspired by German Expressionism. Furthermore, studying the relations of Deconstructivism with former 20th century movements, Mcleod adds that it shares particular visions with modernism. Preferring abstract forms, refusing continuity and tradition, be charmed by technological imageries, taking orthodox academism lightly, apocalyptical and controversial statements -all these remind of the early modernism era. Nevertheless Deconstructivism shares Postmodernism's many motive forces at its emergence. Both refuse Modernism's essential ideologies, which are functionalism and structural rationalism, and lay emphasize on architecture's formal qualifications.

2.3. Analyzing The Design In Deconstructivism

Towards the deconstructionist movement, understanding the language of architecture as a design object, and the form of the design including specific meanings, analyzing the design processes and product, in other words in order to examine the *signifiers meaning-form* concept, it is necessary to explain the relationships between the designer (aim), the spectator/ user (image 1), the signifier (form) and the signified (meaning).

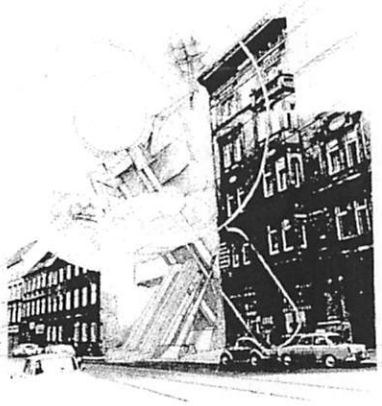


Image 1

Symbolism is the essential component for both Postmodernism and Deconstructivism –the first being a tool for symbolic messages and the latter being a metaphor for non-architectural concepts. For that reason the underlying philosophical and scientific ideas in most examples of deconstructionist architecture are not comprehended right, so that the products of this movement are seen only as artistic forms (Van der Voordt and Van Wegen, 2005).

In this case, it is necessary to handle the genesis of final form; why it is not arbitrary and how it is related to the external and internal forces. Eisenman's statements have been that Deconstructivism should be judged by ideological aspects, not by stylish ones. Tschumi always emphasizes that the events occurring in a space are as important as the space itself. As for Coop Himmelb(l)au, form doesn't follow function and function doesn't follow form, they interact. According to Norman (2008), any industrial product should support the development of design-representations, both

in the designer's and the user's interest. A designer is able to pre-design the possibilities the product may allow, that means predicting the future situations and activities according to the developments through successful interaction between the spectator the signifier. Even a structure not capable of physical change can communicate with most spectators, probably in different ways, in the circumstance of presenting the design process' meanings and values. As well as the communication related to aesthetic perception, every interaction, affirmative or not, will add the signifier a communication value. In short, the design, i.e. the signifier is the communication tool of the signified.

Minai (1989), in his work on formal rationality being deconstructed, explains the aims, necessities and desires of this new-postmodern era.

'Tomorrow's architecture will find its roots, on one hand in subjectivity, conscious and subconscious rationality and foresight, which means in the harmony between anthropology and cybernetics; on the other hand in improvement and technology. Eventually this architecture will search the structure of human activity pattern's random behavior; that is to say, to search the information and technology to form such a dynamic structure complexity, thus formulate the related spatial organization.' (Minai, 1989: 52)

Expression of the differences in the signifier's structure and the structures occupation with difference and complexity, i.e. the deconstructionist form finding process can be extended with Deleuze and Guattari's (1987) *hylomorphic schema* suggestion as a paradigm of the genesis of form. To clarify, h*ylomorphism* consists of two principles; material that is only the potential, and form that makes the object a reality. According to Deleuze (1994), homogeneous materials cannot see the whole repertory of the self-organizing capabilities of matter and energy. But if the material is far from equilibrium, heterogeneous and complex (that is to say, the differences in its intensity are not allowed to be cancelled or the differences among its components are not cancelled through homogenization), the full set of singularities and affects will be revealed. With this explanation he tries to emphasize not the emergence of form but the potential in it. The potential is best expressed when materials behave complex and variable (Delanda, 2004).

'We may now be in a position to think about the origin of form and structure, not as something imposed from the outside on an inert matter, not as a hierarchical command from above as in an assembly line, but as something that may come from within the materials, a form that we tease out of those materials as we allow them to have their say in the structures we create.' (Delanda, 2004)

3. The Architecture Of Coop Himmelb(l)au

3.1 The Architects' Theory And Practice

Many award-winning, world famous architectural cooperation Coop Himmelb(l) au is founded by Wolf Prix and Helmut Swiczinsky in 1968, when post-1960 avant-garde re-discussions peaked because of the search for freedom and reform. Betsky

(1990: 114) asserts that the architects' early works can be juxtaposed with Archigram. (Image1) Their pursuit of building *heavenly* (*Himmelblau* means in German heaven-/sky-blue. If the letter l is in brackets, *Himmelbau* means *sky-building*) is still actual. Until the year 2012, the group actualized sixty designs, which are just ten percent of the total designs. From the beginning, they never lost the desire to destruct tradition with radical alternatives. Their vision of dynamic design is creative yet it has never changed. They treasure the theoretical process of design so much, that they exhibit these philosophical works also, when a project is presented for a study or in a gallery.

Mugerauer (1988) expresses that this architectural group's working discipline maps Derrida's thesis of language's generating power. The design itself is a highly complex superposition of many elevations and sections. Through this superposition, multi-formed ambiguities of sketch design are realized now as structural components; as complex, alternative flow-paths for possible spectators and users. (Image 2)

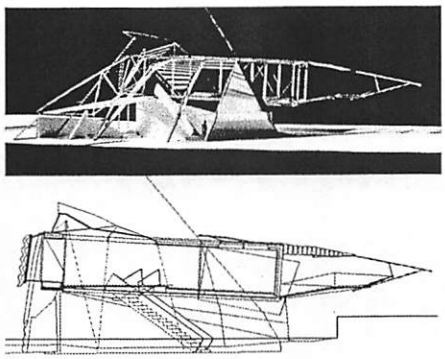


Image 2

After *'Architecture must blaze!'*, the group declared the manifest *'The tougher the times the tougher the architecture'* as an attitude against the *pop* postmodern; as a *new wave* lust for destruction. One of Coop Himmelb(l)au's (1997) later manifests *'The future of splendid desolation'*; is created as an opposition to autocrats, whose guideline is economy, benefit and efficiency. They refuse all notions of a *'safe and sound architecture'*. They desired the loss of archaic forms and bodily connections with creating expressionist and futurist images. *'The solitude of squares, the desolation of streets, the devastation of the buildings'* characterize today's city and it will do so future's city. *'The mission of contemporary architects is to follow the way of solitude, and strengthen the differences until they become schizophrenic.'* The group claims that, contemporary architecture can only be honest and real, when the devastations of the city evolves into *'fascinating landmarks'*; so when the open spaces, structures and substructures reflect the reality of the city's image.

Mönninger (2012) interprets Coop Himmelb(l)au's architecture as an emotional one; it is appropriate for the instability of the current state of the world, whose unpredictable crashes and catastrophes are mirrored in volatile geometries. He adds that Prix's natural morphologies could also be expressions of the paradigm change from the hard, nuclear physics of the militant-nationalistic twentieth century to the soft, cell-fusion genetics of a global world order. He summarizes design concepts of Coop's spatial configurations as *'floor plan equals outline equals outline equals cross section equals perspective equals detail. That means that the horizontal arrangement of a building is measured in its verticals, and almost like a Rubik's cube, reveals similarly cohesive structures from above, below and the side.'*(Mönninger, 2012)

Prix (2003) points out that if the city retreats as a background the figures obtain to come forward, be distinct. The aggregation of these figures creates force fields of tension and dynamic urban spaces. This process is much more complex than filling up the squares of a grid system with architecture one by one. '*Space is no longer predetermined but rather develops through the tensions and interrelationships between figures. This is the basis for a vigorous new model of urbanism.*'

UFA Cinema Center (1993-8) in Dresden, Germany, is the first realization of their early experiments with pneumatic volume changes through air as building material (Mönninger,2012). The mass is not like flying, but it has an image of glass crystals fallen from the sky. The structure is visually highly differentiable from the surrounding open space; namely it is a landmark. Yet they are perceived simultaneously as a public building area. (Image3) According to Prix, it is his first attempt to create

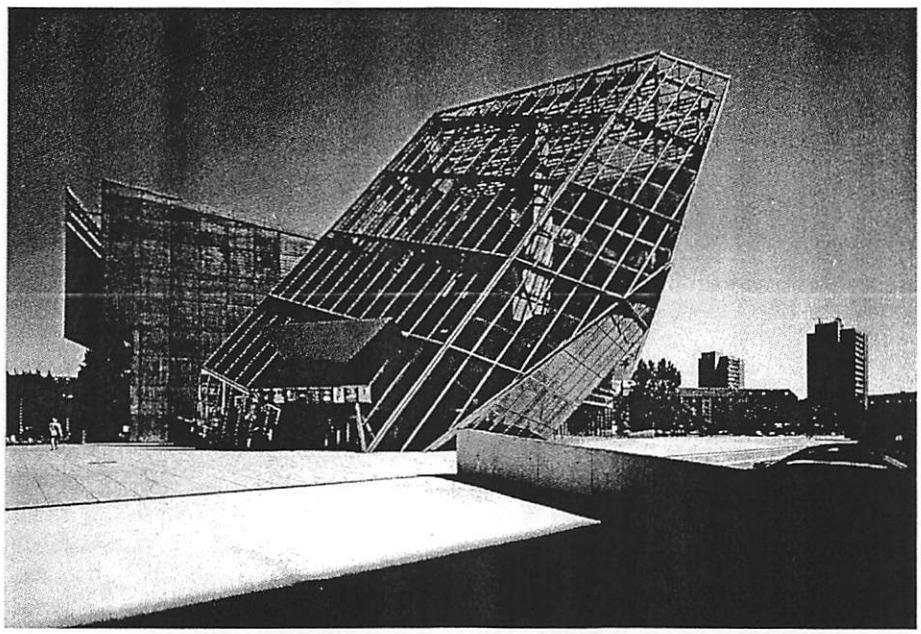


Image 3

public space through architecture, too. The building is no more an object; it is now an '*urban transistor*' –an architecture that is capable of strengthening the urban spaces through juxtaposing these with its own *transistor-like* spatial organizations. The UFA building offers a new paradigm that is based on two interconnected ideas which are; the free configuration of three-dimensional figures, and an overarching cover to unite them (Prix, 2003). This paradigm is developed through further projects, especially when generating spaces including social-cultural-leisure-buildings. The designers aim to break the traditional open public spaces or modern giant plazas, which are delimitated with the surrounding vertical facades or isolated from the vivid parts of the city. Instead, they create urban plazas, which are able to reach into the surroundings and drag the surroundings in themselves, vice versa. The plazas are covered by a *roof cloud* (in Akron Art Museum) or a sculptural *flying roof* (in BMW

Welt and Busan Cinema Center). This idea is observed to be the starting points of this project typology, as we see from another motto of the group on public space:

'The notions of center, axis, and spatial sequence will have to be replaced by tangents, vectors, and sequences of images. We shouldn't lament the loss of public space, but reinterpret it as a fluctuating, networked media event: one that is more like a semi-conductor than a sequence of spaces.' (Coop Himmelb(l)au, 1995)

3.2. Case Study: Busan Cinema Center

The essential assertion of Busan Cinema Center (2005-12) is that open and closed spaces, public and semi-public areas superpose. The area is projected for the international film festival *BIFF* of the city Busan in South Korea. For the designers, it represents a new culture, leisure, technology and architecture combining with the public and the city. 58.000 m2 total space has a capacity of up to 6.800 visitors. The building has also a Guinness World Record for the world's longest cantilever roof.

With the zones *Urban Valley, Red Carpet Zone, Walk of Fame, Memorial Court* and *BIFF Canal Park*, a city center full of diversity and vividness is planned. (Image 4)

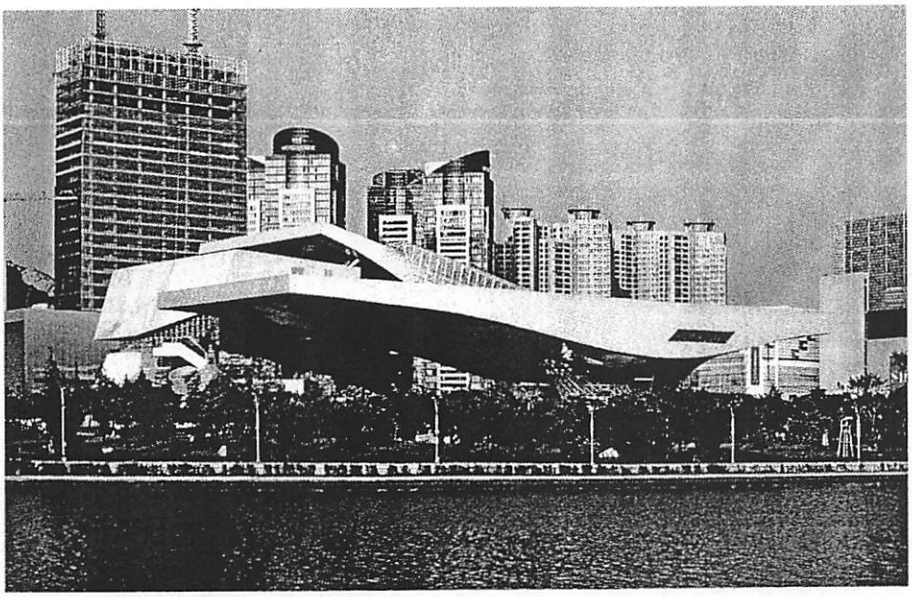


Image 4

The building houses theatres, cinemas, a conference center, offices, studios and restaurants, whose spatial boundaries flow into one other in a mixture of protected interior and outdoor spaces. The outdoor cinema with a capacity of 4000 seats works as an open city center, which is framed by the plaza's opaque functional areas. (Image 5) The other cinemas are located in the mountain-like building. The Memorial Court is covered by two giant roofs covered with computer-controlled LED projectors. 85 meters of the larger roof, with a surface of 60 meters to 120, is cantilevered. A multifunctional events center in the form of a double cone serves as a symbolic

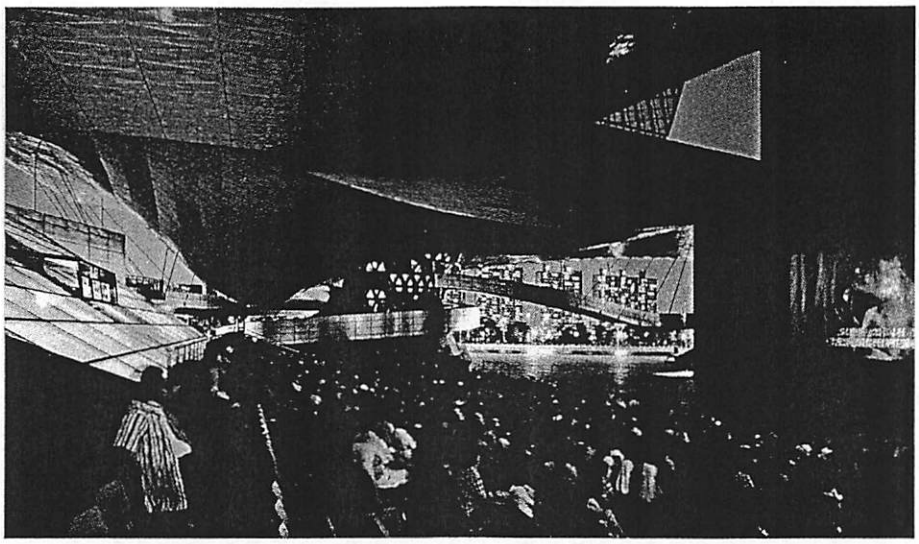


Image 5

structure for the entrance. Designed as a steel-lattice shell sitting on spanned concrete slabs, it represents the only vertical supporting structure for the large projecting

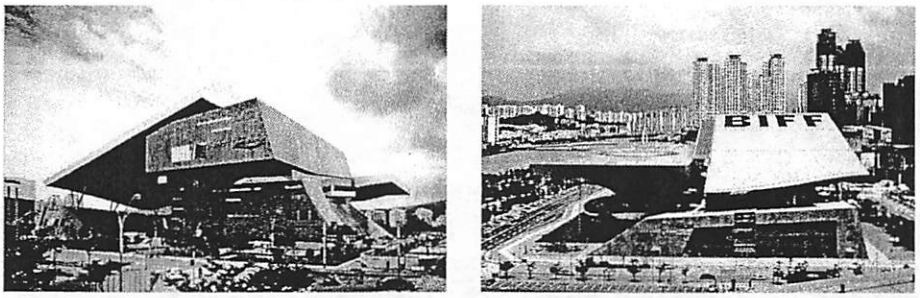


Image 6, 7

roof. The reception inside the double cone is reached by a ramp named Red Carpet Zone is connecting some other interior zones of the building, flowing horizontally (Url-1). (Images 6, 7, 8) Media, technology, entertainment and leisure are merged in an open-architecture of changeable and tailored event experiences. Artistic lighting programs tailored to events of the BIFF or the Municipality of Busan can be created by visual artists and displayed across the ceiling in full motion graphics, creating a lively urban situation at night, but also

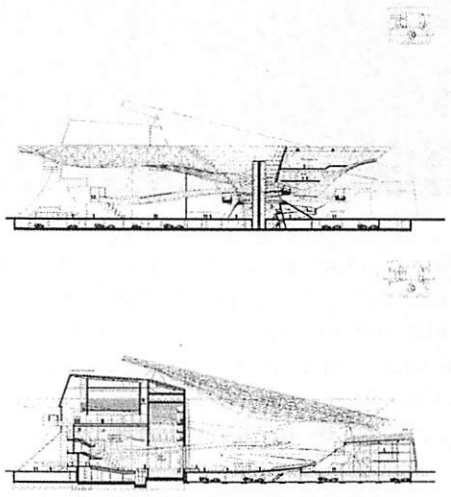


Image 8

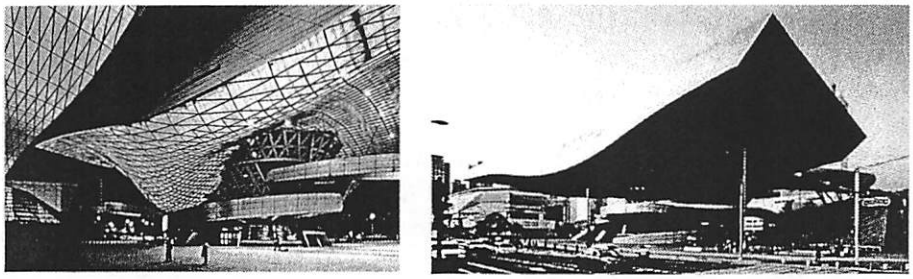


Image 9, 10

visible during the day. (Images 9, 10)The design of the indoor and outdoor public spaces supports flexible, hybrid functionality that can be used both during the annual festival period and day-to-day use without interruption. (Images 11, 12) An additional outdoor event, bowl is proposed surrounded by canals that can provide public and private boat access to the project site. Space for a future extension of the project is proposed as an island among the canals, further integrating the cultural functions of the Busan Cinema Center with the surrounding public space and landscape environment (Url-2).

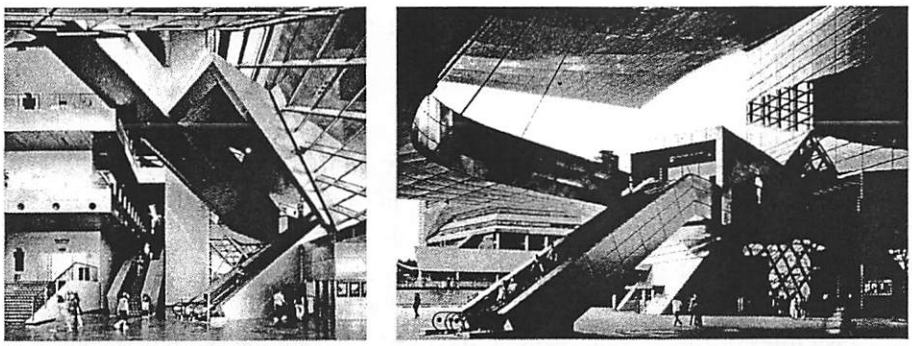


Image 11, 12

Coop Himmelb(l)au's idea of an urban landscape rather than an isolated structure, can be read from the genesis and the evolvement of the fragmented structured building's blurred boundaries. According to these project development strategies, it can be said that when it comes to work as an *urban transistor* on different levels, vividness with the flows of physical movements through them and also with the *affects* of flows is highly expected. (Image 13)

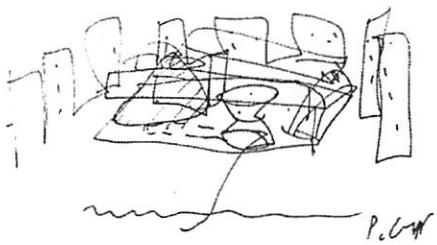


Image 13

The *flying roof* of Busan Project is considered as a further differentiated idea from BMW Welt's similar appeared roof. The latter has *two* wave-like formed roofs with three-dimensionally articulated materials. In addition to signifying the harmonized event-zones of the building; these roofs also refer to the landscape of the city in the

building's background, and simultaneously reflect the *flows* in the sub-levels. The reference to the *sky-building* in the signifier is conceived here. The dynamically illuminated roof, which allows for unique visual spectacles, serves as the center's platform of communication with the spectators and the city. Even without the illuminations, the form of the roofs, that which are the image of the building, differentiates on every move of spectators. As it is, the perception of openness, dynamism and variability desires to expand to the whole building.

The gross with its untraditional geometric order is not just the image and the meaning explained above, but the gathering of different events; i.e. juxtaposed activity patterns. At this point, it is useful to confer with Prix's explanation of deconstruction: The 'de' in the term means that something is expelled; disrupted; and 'con' means that some things are gathered, concentrated (Esin, 1996: 49). In this context, all these articulated structures refer to a gross. The structural fragments and the temporal ones lived through them, find meaning as a sign system with many sub-references. Here, on the theory of *the structure* and *the structured*-or quoted from Derrida *the signifier* and *the signified*-, we can again refer to Deleuze and Guattari's *hylomorphic schema* and also Deleuze's *dynamic unfolding of difference*; and argue that Busan Cinema Center practice internalized the theories accurately.

4. Epilogue

Design, with its process and product, signifies not just an object or a title but a whole idea. This signifier should be a representation of the designer's foresights on contemplations and necessities about the life programmed for the emergent space and *Dasein.* This approach internalizes that form as signifier, which is the final ground of architectural process, references the signified, the whole scope of tangible and intangible components. The spectator/ observer or user, who perceives these meanings of the signifier, will be the one to sustain the place in a constant movement. Wittgenstein raises a question on the content of our experience of forms as an interpretation. *'Do I really see something different each time or do I only interpret what I see in a different way? I am inclined to say the former. But why? To interpret is to think, to do something; seeing is a state.'* (in Winters, 2007:91) In this context, an explanation for generation of place perceptions according to Deleuze's *'superfold'* definition is legitimate:

'... Each located observer is the opening of a fold, a world folded around its contemplations and rhythms. There are as many spaces as there are styles of perception. If a fold is the way perceptions curve around or are oriented according to an acting body, then the thought of these curves produces a life that can think not just its own human world – the space of man- but the sense of space as such.' (Deleuze, 1988: 131)

The sense of space in Coop Himmelb(l)au projects come into being from the intensity of the materials. In most of their structures, the form does not generate the urban context but the activity patterns do. Nonetheless in Busan project, the skyline-

mixed-water wave form of the roofs point out the topographical features of the cityscape. Fulfilling Minai's (above quoted) expectations for post-80's architecture, these contemporary designs search for the creative, dynamic unfolding of space configurations.

In the context of deconstructionist philosophy, the architects question the former design systems according to Derrida's idea of the requirement for movement of differences. They aim to split a text and superpose another text into. The patterns this second text has, will differ from the origin; and then the other superposed ones will the former. The way opened up to diverse new texts will lengthen. The signified concentrated in this texts lead the designers to create the system for figure patterns. *The signifiers go in an endless chain.* In order to the movement notion in deconstructivist theory, which is not necessarily actual bodily movement but the idea of movement, the architectural stereotypical codes are included in the new ones in these buildings. According to Tschumi (1996: 148), layerings, juxtaposition and superposition of images purposefully blurred the conventional relationship between graphic conventions and their meaning in the built realm. Busan Cinema Center and similar urban projects of Coop Himmelb(l)au are signifiers of, as put in Tschumi's words, *"a complex architectural reality and drawings (art works) in their own right, with their own frame of reference, deliberately set apart from the conventions of architectural plans and sections"* in such a manner.

Avant-garde contains notions like innovation, symbol, montage, contradiction, shock, autonomy, reconstruction, timelessness and disharmony (Papadakis, 1990). This content of avant-garde is legible in Coop Himmelb(l)au architecture, questioning its own structural elements' relations. The architects design walls, roofs and all other surfaces, extracting their relationships with ground, sky and gravity from the traditional one; with their words, from the *safe and sound* one. Blending the tensions of our day's cities and lives in design process, the architects aim to create exciting moments for the spectators and users through allowing them to see the life in and around the building from different perspectives. The structures are realized with cutting-edge technologies, even can be called futuristic. Thus, they are innovative and symbolic, and absolutely shocking slices in the urban pattern either if the unusual forms are pleasant or not for the spectator.

Nonetheless, deconstructivist architectural style has always been confronted to the criticisms that it is not more than a formal renewal. Focusing on Coop Himmelb(l) au's work, it is considered that the users of the structures and the structures itself can be liberated through the complexity of the forms geometrical configuration, the sense of openness and timelessness -or being beyond time. But the assertion on disobeying authority is exaggerated. The idea of building a design of an urban artifact, which is refined from politics and ethics, is unrealistic. However, Coop Himmelb(l)au's, right for its time, avant-garde structures made radical changes in the architecture and urban design field; and continues to do so.

References

Betsky, A. (1990) *Violated Perfection: Architecture and the Fragmentation of the Modern*, New York: Rizzoli.

Caputo, J.D. (1984) 'From the Deconstruction of Hermeneutics to the Hermeneutics of Deconstruction', *Proceedings*, 18th Heidegger Conference, University of Wisconsin, Stevens Point.

Colebrook, C. (2005) 'The Space of Man: On the Specificity of Affect in Deleuze and Guattari', in Buchanan, I. and Lambert, G. (ed.) *Deleuze and Space*, Edinburgh: Edinburgh University Press.

Coop Himmelb(l)au (1980) *Architectur Muss Brennen*, Institut für Gebäudelehre und Entwerfen, Vienna: TU Wien. Available at http://www.coop-himmelblau.at/architecture/philosophy/architecture-must-blaze

Coop Himmelb(l)au (1995) *The Architecture of Clouds.* Available at http://www.coop-himmelblau.at/architecture/philosophy/architecture-of-clouds/

Coop Himmelblau (1997) 'The Future of Splendid Desolation', in Jencks, C. and Kropf, K. (ed.) *Theories and Manifestoes of Contemporary Architecture*, Chicester: Academy Editions.

Decq, O. (2004) 'Architecture and Pleasure', in Tschumi, B. and Cheng, I. (ed.) *The State of Architecture at the Beginning of the 21st Century*, New York: The Monacelli Press, pp.54-55.

Delanda, M. (2004) 'Material Complexity', in Leach, N., Turnbull, D. and Williams, C. (ed.) *Digital Tectonics*, Chicester: John Wiley and Sons.

Deleuze, G. and Guattari, F. (1987) *A Thousand Plateaus-Capitalism and Schizophrenia*, Minneapolis: University of Minnesota Press.

Deleuze, G. (1988) *Foucault*, London: Athlone.

Deleuze, G. (1994) *Difference and Repetition*, New York: Columbia University Press.

Derrida, J. (1973) *Speech and Phenomena*, Evanston: Northwestern University Press.

Esin, N. (1996) 'Mimariye Değişik Bir Bakış: Dekonstrüktivist Mimari', in Tunataş, O. (ed.) *Mimari Akımlar II*, İstanbul: Yem.

McLeod, M. (1989) 'Architecture and Politics in the Reagan Era: From Postmodernism to Deconstructivism', in Hays, M. (ed.) *Architecture Theory Since 1968*, Cambridge: MIT Press.

Minai, A.T. (1989) *Design As Aesthetic Communication*, New York: Peter Lang.

Mönninger, M. (2012)'Still Crazy After All These Years', in *Say Himmelb(l)au*, Berlin: Gallery Aedes.

Mugerauer, R. (1988) 'Derrida and Beyond', *Center*, vol.4, pp.66-75.

Norman, D. (2008) 'Signifiers Not Affordances', *Interactions Journal*, vol.15/6, pp.18-19.

Papadakis, A. (ed.) (1990) *The New Modern Aesthetic*, London: Academy.

Prix, W. (2003) 'b5 2 c6: Public Space', in Tschumi, B. and Cheng, I. (ed.) *The State of Architecture at the Beginning of the 21st Century*, New York: The Monacelli Press.

Sadler, S. (2005) *Archigram: Architecture Without Architecture*, Cambridge: MIT Press.

Strowy, B. (2007) 'Two Visions of Architecture and the Problem of Representation', *Contemporary Philosophy Journal*, vol. 9, pp.187-215.

Tschumi, B. (1996) *Architecture and Disjunction*, Cambridge: MIT Press.
Van der Voordt T. and T. Van Wegen, H. (2005) *Architecture in Use*, Oxford: Architectural Press.
Winters, E. (2007) *Aesthetics and Architecture*, London/ New York: Continuum Publishing.
Url-1 http://www.coop-himmelblau.at [20.06.2013].
Url-2 http://www.archdaily.com/347512 [20.08.2013].

Photos, sketch and drawings courtesy Coop Himmelb(l)au.

The Possibilities of Architectural Space as a Tool For Criticism – The Totaltheater Project by Walter Gropius and Erwin Piscator

Efe Duyan

Das Totaltheater Project, designed by Walter Gropius and Erwin Piscator in 1927 shows a serious opposition to the given ways of performing plays and stage design. Although never realized, the project contains a revolving stage which can be converted to an arena-stage, amphi-stage and proscenium-stage during the play in addition to the utilization of recent technological developments, which allows innovative drama and mainly epic theatre to be performed instead of classical drama.

The main purpose of this project is to express this very opposition spatially and thus it is an example where the concept of the critical architectural space crystallizes. As a result of this approach, das Totaltheater emerges as a critical manifestation, beyond being a previously-given architectural program's three dimensional expression. This feature of Totaltheater Project, in the sense of modern architecture, brings it to a different position in terms of the possibility of the project's conveying a meaning instead of being a three-dimensional aesthetic object.

In this paper, the critical content towards the routine of drama and theatre design of the 1920's that is expressed by the spatial qualities of Totaltheater will be outlined. The possibility of being a tool for criticism and triggering a critical action in one's mind as an architectural object are going to be the main discussion points.

The architectural Thought in the Cinema of Peter Greenaway in Light of Gilles Deleuze's Philosophy

Mika Väisänen

Abstract

The fabulous media of cinema provides breath taking visual stimulation experiences. Regardless of this the British cinema director Peter Greenaway claims that cinema is dead. (Gras and Gras, 2000) Concurrent a similar kind of phenomena overtakes the media of architecture. The Dutch architect Rem Koolhaas claims that architecture is too slow. (Koolhaas, Brown and Link, 2004)

Greenaway's argumentations of the cinema destroying itself from within are what he calls the four tyrannies: '1. Cinema is a text based medium, the notion of text has to be get rid of. 2. Cinema works for the frame that is totally artificial and needs to be exploded. 3. The position of actors in cinema need to be changed. 4. The camera can only reproduce what is put in front of it and therefore cannot be very creative'. (Greenaway, RT television interview, 2012) Greenaway's list of four tyrannies can be read as attempts to deconstruct the system of the medium of his cinema. These attempts can be interpreted to approach the media of architecture. Greenaway has stated: 'If I ever believed in reincarnation and I wanted to come down again, I would very much like to be an architect, for very obvious reasons.' (Greenaway, ARCH'IT interview, 2003)

At his writings the French poststructuralist philosopher Gilles Deleuze has presented some narrowed down cinematic concepts that aim to describe the composition of images, signs and time. Deleuze claims that cinema can take place in any-place-whatevers and: 'What is in the present in cinema is what it 'represents', but not the image itself, which, in cinema as in painting, is never to be confused with what it represents.' (Deleuze, Cinema 2, Preface xii)

As a part of a larger study on theory of cinema and architectural though, this paper aims to explore the attempts of Greenaway to deconstruct the tyrannies of his cinema through analyzing three of his key works in light of Gilles Deleuze's philosophy. The hypothesis is to narrow down the cinematic concepts from Greenaway's cinema from an architectural point of view and analyze how close to architecture Greenaway can reach.

Keywords: cinematic concepts, architectural thought, Gilles Deleuze, Peter Greenaway, presence, metaphor, imaginary.

Works cited

Deleuze, Gilles. Cinéma 2, l'Image-Temps. Paris: Minuit, 1985. Cinema 2, The Time-Image. Translated from French by Hugh Tomlinson and Barbara Habberjam. Great Britain: The Athlone Press, 1989.

Gras, Vernon and Gras, Marguerite. Peter Greenaway Interviews. USA: University Press of Mississippi, 2000.

Greenaway, Peter, 2012. Interview with Peter Greeanway. RT television Spotlight (Moscow Russia, 11 August 2012.

Greenaway, Peter, 2003. Interview with Peter Greenaway. Interviewed by Krentz, Ania. ARCH'IT web article., 23 April 2003.

Koolhaas, Rem; Brown, Simon and Link Jon. OMA / Rem Koolhaas / &&& / Content. Taschen, 2004.

The Warehouse Artistically Considered: Caruso St John's Nottingham Contemporary And The Art Of Dressing a Building Appropriately

Pedro Engel

Abstract

In "The Tall Office Building Artistically Considered", where the expression "form ever follows function" was coined, Louis Sullivan argues that the external appearance of a building architecture should be coherent with its disposition, emphasizing the nature of its structure and expressing its purpose. In Sullivan's own skyscrapers the artistic energy was mostly concentrated within the narrow breadth of the buildings façade by means of careful composition and intricate ornamentation, accomplishing to both accentuate the tall nature of this newly developed building type and to express its prominent status in the flourishing industrial city. By avoiding the potential contradictions between demands of functional and constructive rationality on one side, and the achievement of beauty and eloquent expression on the other, Sullivan reminds us that artistic vigor and sensibility not only can find a place in pragmatically oriented architecture, but may be considered decisive in the task of articulating its representational role within the urban environment. With such lesson in mind, this paper proposed a critical examination of Caruso St John's design for Nottingham Contemporary art centre and its ornamented façade – a declared homage to Sullivan's use of textile-like cladding – and argues for the persistent role of artistic and visual sensibility in order to provide meaningful, expressive and appropriate contextual responses within the contemporary city. To sustain this argument, the connection to Sullivan's use of ornamentation is stretched further to the lineage in theory propelled by Gottfried Semper's theories about the textile origins of architecture, in which the dressing of walls and structure with ornamented coverings is accounted as prominent means of achieving meaningful expression in architecture, yet intimately bound to its material and technical constitution. Also, the use of ornamentation by Caruso St John is described in terms of decorum and character, long present in architectural theory in reference to the representational function of buildings in society, not without considering the problematic nature of such task in face of the absence of a stable and commonly shared system of signs in contemporary architectural culture. In the critical analysis of the building, the warehouse analogy is employed to illustrate the autonomous and yet coherent relationship between its external shell and its

bloated spatial disposition. Inside, the loose-fit nature of its exhibition rooms and the nearly absence of dedicated circulation spaces, along with the neutrality of most wall surfaces, respond to transitory character expected of an art centre. Outside, the dressing of its continuous façade – interrupted by few but large and carefully placed openings – is understood as the principal operator of the building's representational nature and of its visual articulation with the adjacencies. The cladding system, reminder of the universe of pre-cast concrete industrial architecture, is ornamented with a local lace pattern, a clearly identified reference to the local discontinued lace manufacturing industry of the nineteenth century. At once, it manages to articulate the communal significance expected from a public building, the distinctiveness required for an urban monument, the deferential character owed to the neighboring historical buildings and the visual consonance to the adjacent ordinary industrial warehouses. It is argued that such achievements in terms of character and decorum are only partially answered by the symbolical nature of the ornament motif employed. Based on interpretations of the architects' discourses and on the examination of images of the models used in different steps of the creative process – all of which are covered in colored paper representing the intended final appearance – it is maintained that the design efforts are oriented mainly towards the visual impressions, hence handled through subjective aesthetic evaluation of its visual configuration.

Keywords: Decorum, ornament, Caruso St John, dressing

Palimpsest, Not Tabula Rasa: Thinking a Nonlinear History of Architecture

Erdem Ceylan

Abstract

"[...] What we call the beginning is often the end
And to make an end is to make a beginning. [...]"
Thomas Stearns Eliot [1888-1965],
Little Gidding, no.4 of "Four Quartets", 1944

In the modern architectural historiography, the persona of the architect is located on two extremes that refer to two absolute positions of transcendence. While one of them is the autonomy that defines itself as the generator of the almost divine creativity of the architect, the other one is the dependence that reduces the architect to an enslaved 'problem-solving engineer' surrendering his/her production to the domination of the social determination and/or scientific functionalism. Both transcendencies require the notion of "the end of anything", the typical before-after distinction of the Western linear, teleological historiography that legitimate the insult of the past. The plane, on which the creativity of the architect will be employed by the autonomy and the architect will be removed from his/her subjective motivations, historical and cultural contexts by the dependence, is a tabula rasa, on which the production processes of hierarchical, stable structures will be built and the history will be re-started.

Since Hegel, who pointed out that "art remains for us a thing of the past, thereby has lost for us genuine truth and life and has been transferred into our ideas instead of maintaining its earlier necessity in reality", and Nietzsche, who argued that the religion has ended manifesting "the death of God", the constituent notion of "the end of anything" of the Western historiography is located especially in the last quarter of 20.th century into the center of a series of thesis about "ending" produced in sciences, humanities and history of art. This development is parallel to a series of event like the declines of modernism, ideology, utopia, teleology and the ideal model of subject in Western philosophy collectively implied in Fukuyama's thesis of "the end of history". According to the philosophy of Deleuze and Guattari, the new subject of this advanced capitalist world, that has lost its genuineness, is a deterritorialized, schizophrenic 'nomad' with multi-identities who has lost his/her fixed identity.

In despite of the nihilistic argument of the manifestation of "the end of everything" about "the absence of anything to end", a methodological approach is born in historiography that does not operate with endings and beginnings, opposes against

the paradigm of progressive linear history, and reads the history of physical, biological and social-cultural worlds via the continuity and the alteration of substance-energy flows. Pioneering an understanding of a new-materialism founded on the philosophy of Deleuze and the historiography of Braudel, the Mexican philosopher Manuel De Landa asserted in his interdisciplinary study A Thousand Years of Nonlinear History [1997] that geological, biological and linguistic formations are in fact a single, timeless and formless substance-energy flow which take different forms transforming itself into instant and semi-stable accumulations or strata while it is passing through different phases, and the history should be read as the record of the togetherness and interactions of these forms in plurality. According to De Landa, no successive stratum is an enclosure, on the contrary, it is a node in the network which is the generator of nonlinear dynamics that enable the production of new, semi-stable structures and processes.

It is obvious that the persona of the architect, which has suspended between the divine creativity and the domination of function during the history of modernism, has to recede recently from these positions of transcendence while it is transforming into the one of the schizophrenic 'nomad'. Thus, the plane which is going to produce the new persona of the architect cannot be a tabula rasa that make historical interruptions transcendental and displays the history as a sum of endings and beginnings, but has to be a palimpsest that is immanent in the continuum of substance-energy flows and will be ceaselessly drawn, scraped and re-drawn. In this context, the paper is an attempt to determine the codes to be used in reading the history of architecture as if it is a palimpsest, as the history of acceleration and deceleration processes of substance-energy flows with "new eyes", through De Landa's methodology.

"The voyage of discovery is not a search
for new landscapes, but to possess new eyes."
Marcel Proust [1871-1922]

Keywords: Autonomy, nonlinearity, history of architecture, Manuel De Landa, Gilles Deleuze

Vibrant Urban Places: What Makes Them Attractive to People?

Maria Elena Ducci

Abstract

Vibrant urban places: what makes them attractive to people?
Three case studies in Santiago of Chile

This paper explores the theme of the vitality of urban spaces, discovering the architectonic elements of space as well as the management aspects that are fundamentals to make them attractive to people. The vitality of a place has to do with the amount of audience that attends it, together with the specific qualities that people perceive from this space. It is therefore important to understand the role places play in people's lives, through the identification of the reasons why these spaces –of great vitality - are included in their journeys across the city and are a relevant scenario for their daily activities.

Vitality also relates to what is "relevant to life", so it is necessary to examine, both the functional meaning these spaces have for people, as its symbolic significance, as the affective relationship that people develop with certain spaces. In other words, a vital place is one that eases peoples life in a practical sense and on the other hand, is the place with which an emotional bond is established, as it is the space where relevant moments of life take place.

This work is part of a research focused in three vital public spaces in the city of Santiago of Chile: the central market of fresh produce, one of the most popular malls in the city and a traditional commercial center from the sixties. The main objective of this research is to understand the elements that define the attraction these spaces provoke on the population. The theoretical inquiry examines concepts like social functions of space, how people perceive a space, and the physical and symbolic elements of the space that define its character. The creativity the managers of these areas display has emerged as a central theme in the definition of the appeal of some urban spaces, for example, the malls. Likewise, the role of architecture stands out as fundamental to define the social functions of these spaces, which can be quite diverse, including entertaining, consume, education, socialization, as well as work. The progress so far allow us to contrast the theoretical elements gathered together with some clues discovered through the detailed study of the physical spaces (charts), the in-depth interviews done to some of the managers and significant personages and a systematic field observation conducted in these three places.

Keywords: Urban places, urban vitality, perception of spaces, role of architecture and management of urban spaces

Embodied Creativity: Teaching Pedagogy in Architecture Design Studio

Ryadi Adityavarman

Abstract

Following one of the main themes of the conference on creativity, the proposed abstract will investigate the significant role of embodiment in creative process with its application in teaching pedagogy for design studio. The intention of this preliminary study is to gain better conceptual understanding on the importance of the body and emotion, together with the main focus of the mind, in the context of creative design learning.

The study will analyze the concept of embodiment from predominantly phenomenological stance. Influential contemporary architectural thinkers such as Juhani Pallasmaa and Peter Zumthor apply phenomenological theory in proposing their views on the importance of bodily engagement-based on sensation, perception, and cognition-for subjective appreciation and personal understanding towards architectural form and space. Recent philosophy and educational theories development also show increase recognition for embodied knowledge and inseparable holistic connection between mind, body, and emotion in genuine knowledge acquisition process. The informal and personal dimension of student are getting stronger consideration beyond typical teaching pedagogy with its over emphasis on the rationality of the mind toward abstract, objective and formal knowledge. Moreover, the study will also apply embodiment principles from Eastern philosophical perspective. The notion of continuous awareness and immediate bodily engagement are fundamentals in Zen Buddhism that will be useful to gain better understanding on the aesthetic development in creative process.

Accordingly the subsequent studio teaching pedagogy, as reflection of embodied knowledge, is developed to cultivate refined aesthetic creativity for beginning design students through combination of teaching strategies of notilia for genuine attention, mindfulness for total engagement, awareness for holistic understanding, and lalita for fluent interplay with the given situation as proper in creative process.

Keywords: Creativity, phenomenology, embodiment, teaching pedagogy

Aalto and the Modernist Manniera: A Critical Reading of the Modernism and Aalto as a Baroque Machine.

Emine Gorgul

Abstract

The glistening immense luminosity penetrating through the glazed ends of the walls from the elevated and dis-attached ceiling, is further magniŞed with the white and reşecting surfaces thatare all bounded up with a huge, but an elegantly designed thin cross standing as the genuine welcomer of the holly room, just on the opposite wall of the doorway. From the glittered touch of the light, through the sublime tranquility of the modest existence of the crossed altar, just before feeling the eternal serenity of the interior space, with all its unevenness there emerges an enliven folded plane. Doubtlessly this animated surface, scratching out from the continuously şowing planes not only states its uniqueness and minor existence within the spatial unity that also it begets, but also whispers both the transŞguring perception of the design thought, and the architect's manner of its time.

Being one of the most attributed Finnish architects, Alvar Aalto both his design ideology and his works have been long discussed in various ways either from the Modernist point of view through the Regionalist critics; or from the formal apprehension of organicism through Baroque. Indisputably the works of Aalto also exhibited the possibility of diverse ways of practicing modernist approaches in architecture, while transforming the agenda of Modern Architecture, being as a threshold at the same time.

This paper aims to unfold the works of the Aalto and his design manner, in a more critical approach by discussing them as the matured phase of the Modernism. It intends to position the argument of its discussion on a meta-level, and interacts with diverse notions of post-structuralist philosophy that are also appraised to be relevant in constituting the discussions on design philosophy.

The paper organized in four sections; where as the discussion commences with brief authorial narrations of the spatial experiences of particular cases: the Church of the Cross in Lahti, where the surface behind the speech corner is animated; and the courtyard stairs of the Säynätsalo Town Hall building, where the steps become liqueŞed and şow into the landscape. The following section focuses on depicting and discussing the differences between the regionalism tag and the manniera, on behalf of the latter, while stressing the matured tone of the modernist practice, in opposition to the merely accepted geographical and socio-cultural diversities. The third section reveals the design manner of the Finnish architect by assigning it as a

baroque machine and discuss its hypothesis by briefly interacting with the Baroque spirit and the Deleuzian apprehension of minor, molecular, event and lines of flight in opposition to Giedionian psychoanalytical interpretations of Aalto's organicism in relation with Wölfflin or Focillon. The paper would be concluded by wrapping up the discussion with a final stress on the individuality yet the inarbitrariness of the spatial becomings of the Aalto as a baroque machine.

Keywords: Alvar Aalto and his works, modern architecture, maniera, baroque machine

Para-Desires: Digital Infrastructures and Para-Functionality

Mihye An

Abstract

As the relationship between information technology and architecture is getting more intimate, a conceptual shift is occurring from the infrastructural level. A digital infrastructure of a space - the complex network of networks, such as ubiquitous computing environment, wireless sensor network, or the Internet of Things - does not have specific functioning proper to things any more. Digital infrastructures are no longer neutral technical layer in an architectural space in the sense that: (1) the functionality of an infrastructure is not universally defined (pre-specific), (2) the boundary of application is blurry (urban public versus domestic), and (3) the functionality of an infrastructure can be actively hacked, transgressed, and created (para-functionality; in contrast with single-functionality, multi-functionality or anti-functionality). Such a shift engenders various kinds of individual use, space and situations. Therefore, digital infrastructures essentially differ from traditional positioning of an infrastructure driven by universal functionality - which anonymizes human desire. For example, order, structure, and hierarchy of distribution and access have been the main intent in conceptualization of an infrastructure.

However, the heterotopian landscape of digital infrastructures shares rather universal protocols than having idiosyncratic configuration to each condition. Then we can ask: Where lies the critical point of differentiated functionality, out of the same technological layer? How do the universal protocols of ubiquitous digital infrastructure transform, embody, and incorporate complex human desires? To answer the question, specifically, my paper will address the proactive positioning of the user - human beings - in the complex artificial environment, as the source and the genuine activator of para-functionalities: 'para-desires'. Thus, I am suggesting that the emergent functionalities of digital infrastructures come from our 'para-desire(s)'.

Such specific functionalities in close relation to para-desires can be put into three categories: (1) 'infra-natural', where potential morphology of desire and functionality mainly negotiates with local configuration of natural data (such as air, temperature, light, sound, and so on), (2) 'infra-ordinary', where potential morphology of desire and functionality is embodied in ordinary objects (such as the Internet of Things, frequently foregrounding shoes, laundry machine, bike, and etc.), and (3) 'infra-speculative', where potential morphology of desire and functionality is based on abstract instantiations of things.

At stake is the inversion of the perspective and positioning: Infrastructures could be defined not from what it is 'meant' to function, but from what kind of degree

of potential it has for transforming given functionality. In conclusion, this paper, by closely examining contemporary architectural spaces, sheds new light on the oftentimes functionally and bureaucratically approached issue of digital infrastructure.

Keywords: Digital infrastructure, functionality, function, desire

Abdolmonam Al-Fageeh
Agnieszka Rumiez
Aimi Ramizah Roslan
Akram Mahdaviparsa
Alessia Riccobono
Andreja Benko
Apurva Singh
Arief Setiawan
Armağan Seçil Melikoğlu Eke
Catharina Depari
Cristina Dreifuss-Serrano
Domen Zupancic
Efe Duyan
Emine Gorgul
Erdem Ceylan
Eren Erdener
Fatma Elzahraa Hussein
Giuseppe Pellitteri
Gregorius Setyonugroho
Gülay Usta
Jorge Lopera Gómez
Karen Olesen
Keiko Nagata
Larisa Brojan
Li Han
Luis Villarreal
Macarena De La Vega de León
Mads Tholstrup
Marcella Bellistri
Margarida Brito Alves
Maria Elena Ducci
Mehdi Damaliamiri
Mehdi Sabet
Mihye An
Mika Väisänen
Nancy Al Assaf
Patrick Weber and Sabine Storp
Payam Mirzadjani
Pedro Engel
Pinar Kutluay
Prof. Dr. Roslan Zainal Abidin
Ross Jenner
Ryadi Adityavarman
Saleem M. Dahabreh
Sanem Ersine
Shahira Sharaf Eldin
Siyaves Azeri
Sophia Vyzoviti
Susana Abreu
Süleyman Alp Sunalp
Thomas Cline
Tuomo Hirvonen

CREATIVITY, AUTONOMY, FUNCTION

9 789756 264973
ISBN 978-975-6264-97-3