DESIGN PROCESS TOWARDS SUSTAINABILITY

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Abstract

There are many design process floating in the architecture discipline today. This paper intends to briefly enlist and analyze couple design processes. Each one is paradoxical in nature. Each one claims to be complete in itself; whilst still they are all a process; and still in process. All have similarity and differences; many come from the same roots, they have varied nomenclature for same meaning; there is a multi-layered paradox within and between them. Most of the stages enlisted in the processes have missing interconnects; for examples from the point of identifying concept to defining a design. The "inter-connect" is needed to be researched on; rather than exploring another new paradoxical design process. This paper proposes one possible interconnect between concept and design, through experiments conducted in design studios. The "inter-connect" is a paradigm in itself as it will set basis for many more such "inter-connects" to be developed. It is also a paradox in itself because it is a sub-process to the main design process.

Key Words: Design Process, Architecture Design, Concept evolution, Mind Mapping.

1
Introduction

Design process has been studied and contemplated on; from the beginning of architecture schools. It can be discussed from the Vitruvian treatise on how architecture design, to the Bauhaus model to balance the Art and Structure into architecture, to the Venturi argument of Complexity and Contradiction, to Eisenman's elaboration of process through cubes models, to Correa's explanation through contextualization of design, to the Rem Koolhass model of OMA idea Machine. Each has its own flavour of process that is paradoxical in nature to the other yet each one is a paradigm in itself for setting up at least one variant within its process. Some of these will be touched up on in this paper before addressing the main "inter-connect" scheme. In case of all the above mentioned schools of thoughts; there are a number of design methods that are adopted. Whatever may be their main technique regardless they fit into the standard steps.

In these entire design processes one comes across the 'concept identification' stage and 'concept interpretation' stage (pre-design). Yet it is not very clear of how does one take the concept and convert it into a pre-design. The concept may range from an object to a philosophy to a person to a form of art etc. one has to be able to interpret any form of the given concept into a design; this is where the paper provides an "inter-connect" in the form of a Mind-Map that is again a process in itself.

2
Architecture Design – Schools Of Thought

Schools of thoughts in the timeline of Architecture have developed some theories; evolved guidelines for architects, proposed diagrammatic formats for designing, or have set limits and boundaries within which a design is to be developed. Regardless any architect who is part of these processes will have to follow the standard steps of design process; within which their own guidelines may be adopted. *Diagram 1 depicts the standard process steps and its possible flow.*

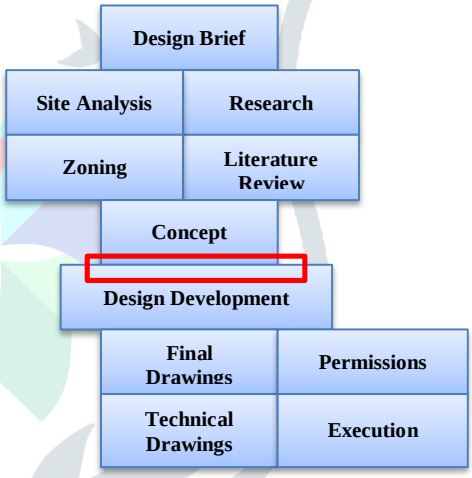


Diagram 1: Depicts the standard process steps and its possible flow
Source: Author

2.1
De Architectura; Vitruvius

The perfect geometry and proportion; that Vitruvius derived was discussed in the Philebus by Plato. This Human Body based proportioning system of The Vitruvian Man *(diagram 2)* was not just a pre-cursor to building design; it gave way to other art forms and medical fields also. The thought was only of Man at the centre and its universe around. These ideal proportions led into the understanding of basic design principles like Symmetry and Balance. They also provided the perfect forms to generate plans; thought it did lead into the rise of high Renaissance. It was then a rise of mathematical design; one that would be completely based on systematic calculations and grids. The grid resonated with various ideas of later centuries; The Modular Man, The Eisenman Cubes, The Parametric Design etc. Bauhaus was the next main architecture school of the 20th Century, it did add a lot of complexity to itself; even though it was influenced

by an orthogonal grid abiding contemporary style called De-Stijl.

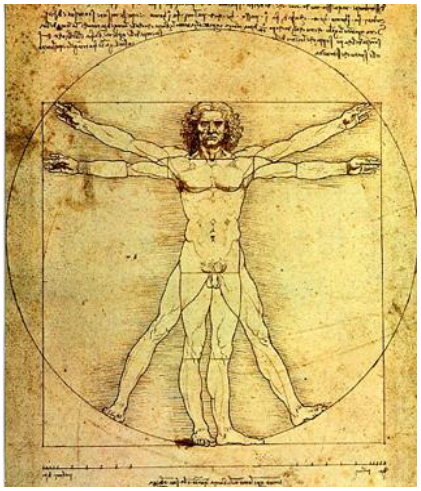


Diagram 2: Vitruvian Man
Source: https://vitruvianstudio.com/about/about-our-name/

2.2
Bauhaus Model

It was based on a 'form follows function' formula. The aim was to have Architecture as an amalgamation of art, sculpture and painting. None would exist in isolation; they would all lead into the making of architecture. Hence one will witness not just a single form of geometry or grid; instead a full range of compositional forms, ideas from socio-political scenarios, influence from contemporary growing styles (De Stijl, Cubism) etc. Modernism in its rise and death gave birth to many new schools of thoughts; International Style, Brutalism, Pots Modernism. One of the offshoots of Post Modernism was Robert Venturi with his Complexity and Contradiction.

2.3
Complexity and Contradiction

Venturi begins with saying *"I like the complexity and Contradiction in Architecture"* (venturi, 1977), in his book Complexity and Contradiction in Architecture. Venturi's theory is based on the idea of 'Less is Bore'. His book is a detailed study of the modernist orthodoxy and a strong critique on the works of the Modern Masters. With due contemplation of what happened to the modernism; Venturi goes on to proposing a design ideology that would be called Post Modernism eventually. He provides Design principles like the Vitruvian theory and in his case he also demonstrates the application of his principles in his own designs. His idea does shed away the modern principles or rather evolves on them; but he does involve the theory from classics and Renaissance. So he is a recollect of the Vitruvian model geometry; only now it's with a tinge of complexity and hence a contradiction within itself. This paradoxical recollect from the past and leading a new paradigm shift continues as new thoughts are born.

2.4
Post Functionalism

"Post Functionalism, thus, is a term of absence" (Eisenman, 1998)*;* the negating of the Functionalism (Bauhuas / Modernism). Beginning of Eisenman is also very similar to Venturi; stepping away from the on-going and yet embracing and evolving something from the past. Post Functionalism acknowledges and accepts that a pure form should be the beginning as Vitruvius, Modular Man, De Stijl Grids; at the same time it says that one cannot stop here further exploration should continue. It may be safe to say that further exploration will lead into the complexity and contradiction of Venturi; yet it is not Venturi's answer at the end because the Historicism and identification of the user with the object is completely missing. Complexity here is not just of design but at the experiential level also. Contradiction is not just of theories but of execution also.

Eisenman's cubes are born in the light of Post Functionalism *(diagram 3)*. He begins with a single cube; then goes into the manipulation and transformation of its form. A pure cube that cannot be held responsible for any kind of complexity or nostalgia; is taken up here and is then manipulated to evolve a new idea which is like its source relieved of historicism but flourishing with complexity.

This design is not of the past (historicism), present (contextualism) or future (futurism); it is a celebration of architecture as a pure thought in itself. At this point the critiques did not like the universality of architecture and they found it objectifying, that's where the new school of thought was born.

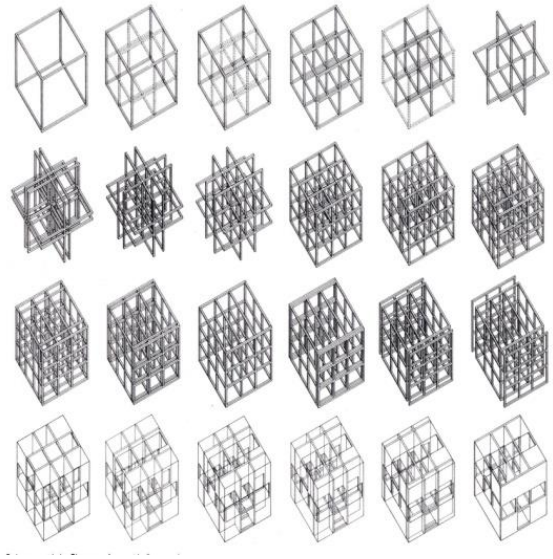


Diagram 3: Eisenman's cubes
Source: architizer

2.5
Critical Regionalism

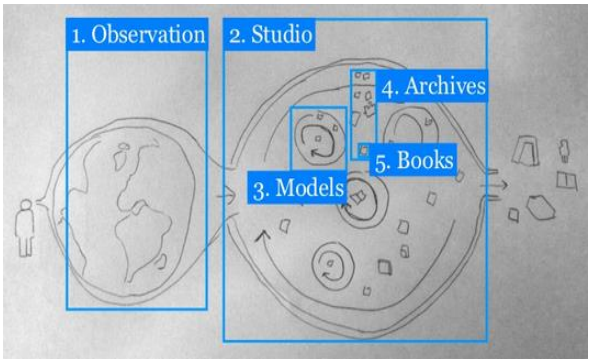
Subjective approach that would celebrate the present (contextualize), acknowledge the past (history of the place) and build for the future (timeless) was the aim of the critiques of Post Functionalists.

The word critical is evolved from the Kantian philosophy of self-assessment and personal critiquing. Regionalist comes from Alexander Tzonis; through his intensive research on the idea of region. One of his beginning publications was 'Lewis Mumford's Regionalism'; hence we realize that regionalism as an idea went all the way back to Mumford. Overall regionalism only asks for a self-evaluation before providing a solution. Self over here is multi-layered discussion namely; Designer, User, Function, Place, Space, Time, stimulus and values. Kenneth Frampton's two treatises on this theory of design provide six points and later a ten point agenda that is meant to guide the architect during the process of design.

Correa facilitates himself with this notion of contextualization and hence fits into the boundaries of Critical Regionalism. He develops some of his own design processes while also using Frampton's guidelines. Correa's process is very similar to the way Eisenman begins. Here the beginning is a shape in 2-dimension as opposed to a 3-dimensional form. Addition, multiplication, subtraction and divide of the squares generate the plan, section, elevation and finally the spatial character.

2.6
OMA Idea Machine

OMA Idea Machine is based on five steps for design process – Observation, Studio Practice, Models, Archives and Books *(diagram 4)*. To being with is a keen eye on the situation at hand, its detailed study and analysis. Then is the studio brainstorming where an important person is introduced "Critique"; one who will question and comment on every part of the design. 'Models' is an important stage where every part of the idea is tested in 3-dimensional form. Each model is preserved in the archives of the OMA, this helps the designer to de-archive any old idea whenever needed. The luxurious model making at every stage comes handy at some point then. No idea is lost or forgotten. 'Books' stage is not just about reading what is published but is about publishing everything that is



thought, made, processed and archived. These steps build the basis and support the working of the exemplary firm.

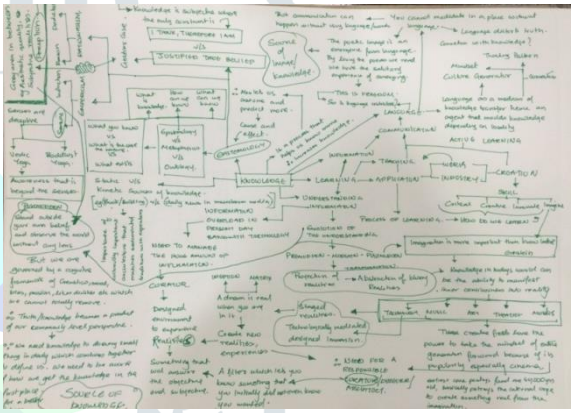
Diagram 4: OMA Idea Machine

Source: (Timmer, 2012)

3
The Inter-Connect

The paper here is only addressing these schools of thoughts very briefly and providing a standard interconnect tool between the concept and design development stage. Yet we do understand that there is a lot of scope for furthermore 'inter-connect' studies. The connection solution may be in varied forms namely; mind map, matrix, or any other brainstorming method.

The solution in discussion here is a mind map. The Mind Map also has to be dealt with in a particular step wise process. For one to be able to address the mind map; their all initial stages of design study should be complete. Refer diagram 1 for the point at which interconnect mind map may be used. *Diagram 5 is the concentric circle mind map pattern for use.*



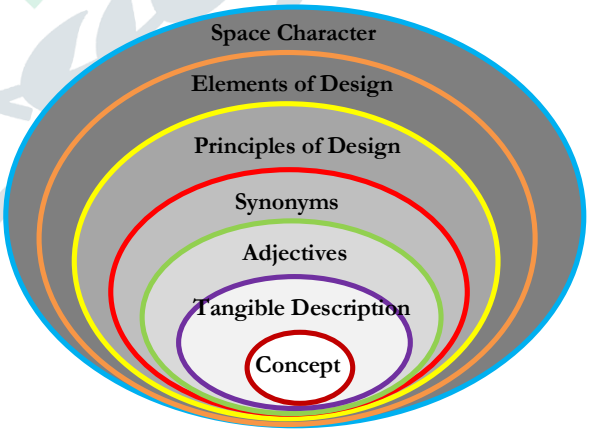


Diagram 5: Mind Map
Source: Author

Stage 1 is the inner most circle called the concept. Whatever may the designer's idea for the concept; may be placed here and the study may be under taken from that point. Next stage is a physical/ tangible description of the concept. For example if the concept is a

philosophy/phrase/thought; then one may begin by providing its source, influences, existing designs from it, books etc. Stage 3 is of intangible descriptions. Here one may provide adjectives, or characteristic ideas of the central concept or of the tangible descriptions. It is always better that each stage has strong connection with its consecutive stage before and after. At stage 4 and 5 one may start providing synonyms /Design principles to the intangible description. These synonyms at times are themselves in the form of design principles; if not then one can continue the synonym process until a design principle is achieved. Stage 6 is Design elements; one has to provide separate small detailed ideas of design for each principle that have been achieved. Eventually these principles may be connected; the elements will surely connect to create a space character.

This process has been tried by the author with students from first to fifth year. It has also been taught by the author at multiple FTP conducted by COA. *Examples below are of mind maps created by students and at FTP COA.*

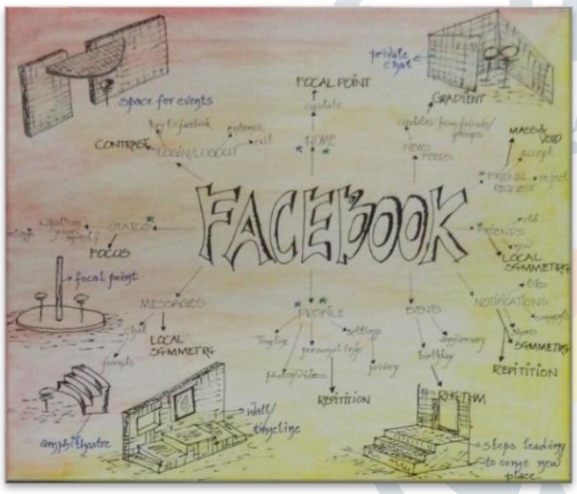


Diagram 6 & 7: Mind Map done by first yr student & Thesis student respectively
Source: Rizvi College of Architecture

4
Scope and Limitation

The tool provided can be further evolved to facilitate each school of thought separately. There is also need to study each school of thought in detail and develop a tool that would explain the design process of the given school of thought better. Further within each school of thought the missing interconnects may be noted, studied and evolved.

First and second year response to the mind map and design development is very good. As the grade increases the requirement of the project becomes very wide and one cannot only use the mind map once to achieve design from concept. This is where the mind map needs further input research on and a more elaborate tool needs to be evolved. The mind map was also taught by the author at many faculty training sessions conducted by COA. Its success rate increases the keenness of one to study the idea further.

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