A Comparison of Different Paradigms of Architectural Design Process: Unconsciousness, Consciousness, Hyperconscious

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ABSTRACT: There have been different investigations on architectural design process and different models have been propounded to illustrate this process. These attempts have had two aims; first to describe the process and second to improve it based on this description. The interfaces of most of these models are analysis, synthesis, and evaluation. In this research, it has been tried to investigate different aspects of human mind (unconsciousness and consciousness) in aforementioned process. The probe in the role of these items in a single design showed the traces of unconscious more in preliminary designs as in concepts than other steps and also revealed the high activeness of conscious aspect in analysis, evaluation, and detailed design. In the chronological sequence, the delve in the process depicted the unconscious process for designing and constructing in traditional systems which were more based on prefixed archetype patterns able to adapt to trivial and gradual changes of those eras which is not applicable in today's speed of changes and demands created newly. Therefore, the process has got to be scrutinized as a “ready-to-hand” process with a more consciously methods. At present time, the combination of designers mind and the help of cyber data storages and algorithms with computer appliance have pushed the process in a “hyperconscious” paradigm. Altogether, the goal for enhancing the architectural design process can be achieved via enriching the unconscious with valuable creative paragons, developing the rational models caught from other fields of science, and using the diverse aiding instruments and appliances.

Keywords: Architectural design process, unconsciousness, consciousness, hyperconscious, analysis, synthesis, evaluation

INTRODUCTION

There have been different attempts to define architectural design process with different models in recent decades. There are at least two causes for bringing up these endeavors; first, the academic education of architecture, and second, the process of thinking in other sciences (Lang, 1987). The aims of these efforts are to create a model for architectural design process, evaluate it, and enhance it.

The basic idea for architectural design process is a step to create a suitable solution for eliminating or lessening some existing inconsistencies. Some of the researchers believe that this process is mysterious, and cannot be defined exactly as in other sciences. On the other hand, some others believe that even this process can merely differ from other sciences, there are some steps that is used or should be used to identify or enhance the design process in architecture. There are some interfaces in different models proposed for this process as analysis, synthesis, and evaluation.

The aforementioned process has been done by human being or groups of them with all their characteristics. This means although we would expectedly see the effects of logical consciousness of designers in
final products, these outcomes would reveal the traces of unconsciousness of the designers too. These footprints can be inquired in different levels. As an example, there have been researches on the differences of architectural design process between previous and recent generations based on the dominance of consciousness and unconsciousness mainly in Christopher Alexander’s notes (Alexander, 1964). Beside from this chronological point of view, the role of these facets of human being can be investigated in a single design process.

In this research, first it has been tried to investigate the definitions of architectural design process, and the role of consciousness and unconsciousness in this process propounded by previous researches; then a hyperconscious paradigm is propounded as this process at current time. These investigations are in two different forms. One of them is chronologically and the other one is the investigation in a single design process.

Architectural Design Process

Architectural and environmental design has been considered as an attempt to reach at an inconsistency between a context and a proposed form (Alexander, 1964). Inconsistency will appear when the context is not in accordance with desirability or requirements (Lang, 1987). In this case the context would be the case for recognition and the product of the design would be the cause of eliminating conflicts.

There are different approaches to this process. Some of researchers have proposed a way for achieving toward these goals. As an instance, John Pitch has prescribed designers to have an exact goal checklist and an also an exact criteria for their evaluation. The only thing remained to do is to create diverse solutions based on the requirements on the checklist and then omit the items that do not meet all criteria (Jones, 1970b). This will consume more time in analysis and synthesis but will cause solutions with lower inconsistencies.

Alexander also proposes that the designer should have a list of functions and standards that are needed in each special case based on “misfits” variables and after manipulation and synthesis of these elements, we would reach at a compatible design with its context. Some of the difficulties of this system are the difficulty in finding all misfits because of the fuzzy systems in recognition between fits and misfits, the negligence of the point that fits information can be as important as misfits, and also the oblivion of the fact that sometimes solutions does not come from subsystems to upper level in architecture and totalistic view is an important feature in this process.

Alexander challenged his earlier notes and focused more on patterns illustrated in Patterns of Language which would create final designs based on 253 patterns based on the way that people build and use their milieu (Alexander, 1977), and emphasized on the whole rather than the importance of individual parts of the design (Alexander, 1979).

On the other hand, some of other researches do not believe in the strict way of solution finding in architecture. Many designers believe that the process of design process in architecture differ from other science disciplines. Accidental concepts by intuition or the help of mathematics and computers sometimes brings this process out of the routine steps defined above. Some believes that intuitions in a creative design would be achieved accidentally in somewhere and sometime unexpected (Poincare, 1924).

It should be mentioned that there is a difference between architectural theory and design manner. The former one is indicative and the latter is instructive. Here it has been tried to describe the process with lower hints of prescription and has been tried to more indicative.

Theories of design are consisted on two items. First, praxis theory or positive theory which is related to the knowledge of the process of analysis, synthesis, and evaluation, second, normative theory which is related to the knowledge about the environment (with its encompassing meaning), the interaction between people and environment, and the perception of people from their environment (Lang, 1987).

Most of the first generation models for architectural and environmental design process were established in late 1960s and early 1970s. The steps proposed by Swinburne (1967) are recognition, analysis, synthesis, development, implementation, and evaluation (Figure 1). In some cases, these steps are linear without any feedback to previous steps (Archer, 1970), and in other methods there are different feed backs based on the results of each step. Another model is propounded by Salvadori (1974), which consists of programming, concept production, preliminary design, detailed design, and construction.

The similarity in different phases of different models is that all of them need analysis, synthesis, and evaluation. But, some special characteristics in each phase creates the difference between them (Lang, 1987). Also these three phases would happen in different steps as defined in spring like diagram in Johnes model (Jones, 1970a).
There have been other investigations on design process and some methods have been proposed that can be considered as another view to analysis, synthesis, and evaluation. For instance, Brawne has proposed the model showed in Figure 2 (Brawne, 2003). In this model, it can be considered that Problem recognition (P1) equivalent to analysis, Tentative Solution (TS) similar to synthesis, and Error Elimination (EE) equivalent to Evaluation. The end of the process is the Problem recognition for another step (P2).

The methods of using the aforementioned steps are different among designers. Some of the designers would use ascending method which means that they would use a sequential method likely as Brawne’s model. Some other would use intuitive methods and start their process by accidental concepts based on their own intuitions or based on mathematical equations via using computer appliance (Lang, 1987).

Both of the mentioned methods can be used in two different approaches. First, in a width perspective approach which happens when different alternatives would develop in parallel with each other, second, in a depth perspective approach which is more common among designers and is a way that one alternative would be developed at a time until it has been proved that this does not satisfy the requirements. Investigations have showed that the width approach have had better results. This is more applicable for larger companies with different designing teams developing their own alternative (Lang, 1987).

**Problem Recognition Phase**

Problem recognition is among the very beginning steps of each solution finding method and sometimes it has been considered as planning. Although this step is consisted of analysis, synthesis, and evaluation, but it is essentially an analytic step that will show the problems that have to be solved.

It is worthwhile to mention that the clarification or the recognition of some problems would be noticed among other steps of design. This would cause a feedback to this step and in many cases it is a clarification for limitations.

Planners in this phase would make some predictions on its future use and the results would be supposed in a nondeterministic way. Altogether, this phase would create the basis of the design and alter the final design.

**Design Phase**

Design is a step that responses to the problems identified in previous stage. The preliminary design starts with the creation of a concept. Then, with implementing qualitative and quantitative features to the concept, idea would appear.

There are different approaches to design as pragmatic, iconic, and canonical (Broadbent, 1973). There are also creative approaches to this process. Creativity is an advantageous part of the design step. John Lang (1987) has offered four paces for it as Preparation, incubation, illumination, and verification. Preparation is recognition
and incubation is a vague mental process for creating scenarios for solving problems. Illumination depends on the insight of the designer about the problem and potential solutions and verification is a process in which the potential solution would be selected. These items will alter the design to a considerable extent.

Design phase has two essential processes of divergent production which produces different concepts and convergent production which in contrast has a logical way to a single solution (Lang, 1987).

**Evaluation Phase**

Evaluation is a step that is based on the assumption of the future function of the items and would lead to select between alternatives. If there is not an appropriate choice, all of the options will be declined and the process will go to the first or one of the previous stages (Lang, 1987).

This process is based on some rational decision makings which demonstrates the values and also shows the compatibility with the problem requirements. Whenever a decision is made, an estimation of values and goals has been performed. These decisions are based on different criteria. As described by Lang (1987), although financial parameters are among these gauges, intuitive and abstract factors are more important.

**Consciousness In Architectural Design Process**

Consciousness is the state, quality or fact being aware of an object or within oneself (Merriam-Webster). This requires a degree of control of the subject. During the design process, there are some steps that crave conscious way of thinking to a great extant. Praxis theory tries to demonstrate models for conscious-based design process (Lang, 1987).

From another point of view, the consciousness in architectural design process can be compared with methods of design in previous eras. Alexander (1967) mentions the difference between traditional way of architecture and the way prevalent today. He believes as systems in current time changes more rapidly than before, there cannot be prefixed compartments in this system that do not need to be manipulated consciously. This means the changes makes the system to be rearranged and to be reshaped as the requirements changes more rapidly. These changes can be the results of diverse developments, population growth, changes in construction based on progressive industry, and many other items.

Architecture as a profession has also changed the way of thinking in its process (Lang, 1987) If we consider architectural design process as a matter that has interaction with human, it can be said the interplay between designer and this process has become more “ready-to-hand” than being “present-to-hand” (Heidegger, 2008). It means although there have been descriptions about the design process from Vitruvius up to now, there has become more theoretical investigations on this process at recent century. But at previous time, the practical features were the only point of focus and the process was not delved as today. Academic teaching and the professional style of architecture play important roles in this case.

Most rational methods suppose to divide a problem into some subproblems and combine their solutions to achieve to a desirable totality. These methods are supposed to describe the design process and also try to have some prescriptions for this process.

The problem of design praxis method is its disability to demonstrate some symbolic characteristics of the interaction of human and environment. The omission of this step can cause some problems as the lacks in some modernism productions.

If we consider the holistic feature of human perception described in gestalt psychology with famous phrase “The whole is other than the sum of its parts.” from Kurt Koffka, sometimes said as “The whole is greater than the sum of the parts” (Hothersall, 2004), we would doubt about the ability of bottom-up sequence in design process for guaranteeing the achievement of appropriate results in architectural design process.

Among prescriptive methods for enhancements in creativity, synectics coined by Arthur D Little which has the Greek root meaning “the joining together of different and apparently irrelevant elements.” (Gordon, 1961) is an important perspective to conscious creativity. This is in opposite of the description that propounds creativity and innovation as a vague and mysterious process. Making the strange familiar, making the familiar strange and free use of metaphor and analogy are some of its features. In this process, creativity is considered as a conscious process which is the same in different fields.

**Unconsciousness In Architectural Design Process**

Unconscious means free from self-awareness, not possessing mind or consciousness, and not consciously held or deliberately planned or carried out. It also means “the part of mental life that does not ordinarily enter the individual's awareness yet may influence behavior and perception or be revealed” (Merriam Webster). We use this way of thinking when something has been done repeatedly that no longer needs extreme consciousness for being
done (like playing instrument by professional musicians). Also, this can be done by some perceptions and some
cognitive characters occurred in some hidden layer of human. As an example, the space that is perceived as
private one when talking to someone or in queue is not something that someone measures physically and think
about it directly and would be preserved unconsciously (Hall, 1990).

There are many designers who think that design process is an internal one in architecture. Most of them
believe that the process of analysis, synthesis, and evaluation are produced by some mysterious process
accomplished by designer. In this case, the designer is a black box and creates outputs with some mental systems
in which unconsciousness plays an important role (Lang, 1987). Also, it has been said that it is not possible to
define how we design (Brawne, 2013). Mahmoudi (1999) believes that an architectural design is the reflection of
designers’ characteristics and goals for satisfying occupants use in a special time and place.

There are different designers who believe that although the process has different steps, but the role of
unconscious is more visible in some steps. The preliminary design phases are those in which concepts and ideas
would appear. The previous mental and physical experiences of the designer or the group of designers play an
important role in this case. So, enriching the backgrounds of the designers’ mind can be a step to enhance the
results. Unconscious also appears in evaluation. After the repetition of different designs, some evaluations would
be done unconsciously (Lang, 1987). These items are the ones that affect the results but are not the result of direct
rational thinking.

Christopher Alexander (1964) divides civilizations into two groups; one of them design based on imitation
and amendment which is called unconscious, the other one design based on academic rules and principles and is
called consciousness.

In an unconscious civilization the relation between diverse cultures is limited, specialization occurs rarely,
written and maps for buildings are not necessary and is more based on the repetition of previous patterns.
Altogether, behaviors and designs are more based on habits and customs. This is the cause of approximately
exact repetition in some traditional constructions in specified regions (Alexander, 1964).

The aforementioned process has the self organizing characteristics. It means, the forms changes as the
context changes and as these conversions of context was slow in traditional civilizations, the form had enough time
to adopt with new requirements (Alexander, 1964). Also, this fact is true in renovations. This consistency makes
these constructions have more attachment with their physical and behavioral environment. These resistant patterns
which are adapted with their context persist from being changed. In this case, these systems have the most
important feature of internal structure of a dynamical system which is its response to the changes.

Another feature of this kind of design is the combination of design and construction. This is a process of
design like “black-smith design” (Lawson, 1997) and an example of this is illustrated in The Wheelwright’s Shop
written by Sturt (1923).

Some researcher describes the design process as an adaptation of previous experiences of designers to
current situation (Lang, 1987). This process happens unconsciously to some extent. Repeated previous
experiences of a designer would make them unconscious like the process of being expert. This is the process that
Lawson (1997) points as a good feature when a professional flute player plays the instrument unconsciously. This
supports the statement that most of the works done by designers are related to their past experiences (Lang,
1987). As an instance, the previous visual experiences of Kahn in his travels in Europe and the Middle East at
different times had some impressions on him with is recorded in his sketches. Many of these show massive vertical
forms; the solidity of the form and its relation to light are the most recurrent theme (Brawne, 2003).
Barron (1965), with “Minnesota Multiphasic Personality Inventory” investigated the personality of creative architects. One of his findings was their flexibility to complexity and vagueness. He believes this is mainly because of their preparation for the reception of unconscious aspects.

Altogether, there are some steps, mainly in design phase that may be produced unconsciously. Eisenman talks about digging into the traces of one’s history and cultural history (Interview: Peter Eisenman 2013). If we consider the collective unconscious propounded by Jung (1986), we can see how the unconscious historical and mental storage of a group of people can affect the designer unconscious and therefore its final design. As an example, in mosques, minarets main function isto call the prayer. It also becomes a sign of a mosque. As the calling for prayer has become with the use of speakers, the symbolic function of this elements seems more powerful.

Hyperconsciousness In Architectural Design Process

Architecture has had an obvious interaction with the paradigm in which it exists. The more complicated functional requirements and aesthetic desires of the present time have made the architecture based on data rather than conventional manipulation of the items by the architects. The aforementioned transmission has caused the introjections of some intricate and substantial parts of the design process to cyber space. This has been occurred due to the capacity of digital technologies. As solutions in architectural design are related to finding the optimum of diverse parameters based on diverse criteria, computer would offer accomplishable methods in this case such as generative algorithms and soft computing methods. This approach has been flourished in the two recent decades, after the first attempts had been fulfilled by 1960 (Levin, 1964).

There are different approaches in using computer as the medium of architectural design as well as representation. These are called Digital Morphogenesis (Kolarevic, 2000) like Topological, isomorphic, animate, metamorphic, parametric, and evolutionary architecture (Kolarevic, 2000). The evolutionary method, which tries to mimic the way that nature adapts itself in accordance to the specific environment, is a way that helps architectural concepts to be emerged with information and rules as fitness function (Frazer, 1995). The evolution and development can be accelerated by the use of computer appliance (Frazer, 1995). Based on the defined fitness function, constraints, crossover, and mutation, genetic algorithms will evolve prototypes and find optimum solutions which may be unpredictable (Verma and Thakur, 2010;Kalay, 2004). Objects would have mutual relations based on user defined data (Burry, 1999). As the evolutionary architecture is based on data, it is very important how to create and manage the required rules.

The use of computer in architectural design process is not limited in BIM systems or systems for generating form. These appliances are used widely in presentations and more importantly in analysis. As an example, there are different Software that use the previous weather data of different zones in thermal or lighting analysis of a model. The other example which may have a looser connection to architecture but still in the core of related design process is Software that use previous seismic data for constructional design. On the other hand, the Architecture Information has been developed for this purpose and the connection between different data sources has become a part of design or at least evaluation of design process.

This level of precision is far beyond the normal capability of human mind to be manipulated in normal deadline for a project. Therefore, here it is relevant to call it Hyperconsciousness as the combination of human
thinking and virtual data storages and computational algorithms have created an experience that had not been done before.

CONCLUSION

In this research, it has been tried to investigate the role different aspects of human mind and related affairs in architectural design process. This was done in two aspects as abbreviated below:

One perspective, it has been scrutinized that what is the role of subconscious and conscious in a single design process. As described above, the architectural design process models have three phases in their interface as analysis, synthesis, and evaluation. It has been delved that the role of consciousness is important in all phases; but it is more critical in analysis, evaluation, and latter steps of design phase like detailed designs. On the other hand, although we can see the hints of the unconscious in different steps, it seems to have more important role in preliminary design phases as in creating concepts. This is especially true when the case is a creative design.

In another point of view, in a chronological sequence, it has been investigated that the process of design and construction has changed from unconscious to conscious one. This means the mentioned process was more based on customs an prefixed components which was adapted to the gradual changes with a slow speed. The changes is much higher today and requirements with newly created problems like pollutions, population growth, health care and other similar affairs are more complicated to be solved by some trivial manipulation in subsystems. The professional architecture and the academy system of teaching it which has made it to become more “ready-to-hand” than being “present-to-hand” has also supported the more need for conscious thinking.

The emergence of computers and its effects combined with flourishes in Information Architecture field and other related sciences, has made designers to be able to use vast data storages in their design which is above human mind capacities at least in an specified time. This has been the motivation to propound the word “hyperconscious” for the new generation of design.

REFERENCES