



# Interactive Architectural Approach (Interactive Architecture): An Effective and Adaptive Process for Architectural Design

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## Abstract

and multi-relations are being achieved through it. This approach, which is identified as an interactive architecture, the effects of each factor or parameters on final design will be considered. Thus, the final design will be resulted factors and parameters. So, the final design will be resulted

~~Keywords: Interactive Architecture, Adaptive Process, Architectural Design, Interactive Architecture, Adaptive Process, Architectural Design~~

## Nature of Design Process

Designing is an attempt to create solutions before implementing. Extensively, design is a kind of activity that relies on wide varieties of knowledge and factors such as visual arts, building engineering, economic and commercial management and logic studies [3]. Professional designers, in every fields of design, use design principles to achieve the answer through the question. Designers learn the set of patterns, which are used repeatedly, as a style or method to develop methods of speculating problems in their mind [1].

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fields of design are encountered to the others from the largest aspects to the smallest issues. Therefore, it is serious important issue to identify the participants, introducing the users, professionals, legislators and those other people involved in design [15]. Usually, in designing a problem comes from a client not a designer mind; a person who has a need but unable to solve the problem or even entirely understand of it without any help. Thus, client is a brilliant sample of problems source and also designs constraints [7].

The user not only considered as a main factor, but has an influence on the other factors [13]. The clients may be the users of the design, maybe not [7]. Although the main and apparent parts of a designer work is creating place and space, the other important part of architecture (which is infrastructure) is balanced interaction based on the logic and emotion of client [16]. It is essential to understand the relation between the designer and client in order to perceive the fitness among requirement of user and building designer [12].

The relation between client and user is mutual, so it depends on the nature of design problem and client-designer relation that designer is permitted to satisfy his artistic interests to what extent. Therefore, there is a stress factor in the midst of client-designer relation. Each of them depends on the other one, meanwhile, both worried about the different solutions that might be the other one involves in his work, too much [11]. Thus, it is unpermitted that the architecture reflects the personal and selfish legendary ideas of architect or exhibits the merely vulgar images [17]. As Le Corbusier told that the architects must be involved the requirements and demands of client in design while he combines the spaces and forms with his artistic and functional ideas and it must be done in an appropriate mutual relation with client [18]. In most environments, the needs of users and demands interests groups must be met simultaneously. However, it must be considered that receiving the needs of users does not mean programming for users; it means programming with them [19].

The foundation of a collaborative design approach is based on the change of the amount of different involved groups which participate in process. The architect, user, client, legislator and the other groups participate in different stages of process based on their role and the ability of decision-making. However, nowadays most of the projects are ordered by clients which are not users of those buildings. This issue causes a 'gap' among designers, clients and users. The design problem is more obscure when the client is not the final user of the design [12]. Although design cannot be done among a social gap, there is a social gap and administrative gap in some designs [3]. Indeed, presence of the other performer such as clients, users and legislators make the design so challenging. Hence, the designing must be considered as an activity containing a wide range of social skills, which enables the designer to discuss for a mutual agreement or to be a director and this means presence of tension or even conflict.

Moreover, the environment design issue has been appeared when a difference emerges among the current combination of environment and the combination which satisfies the needs of people. In fact, form means the appearance of systematic demands and needs. It is the final production of the process which has been aroused by the effects of various factors and demands. The designer has responsibility to create order (discipline) and creates environments which enhance human perception. The purpose of designing is to combine different elements in order to illustrate the values.

It is expected from designers to participate in extending the design problem [7]. Therefore, the designer and user require collaboration in

design. It is a way for a designer to understand the user and client and also to make a relationship with them and knows their needs; for a user, it is a way to acquire the experience from the others (people and designer) and promote his knowledge [20]. During recent decades, the collaboration becomes a significant topic in landscape programming and demands for people's collaboration has been increased along with the discussion about sustainable development and multi-functional landscapes [21]. The collaboration design is a view which does not put people on one side and the architect on the other side, but also locates the designer among people and in ideal status it means that 'design has done with people' [22]. In the other word, the collaboration design is considered as an activity based on the redistribution of power in designing actions among designers, beneficiary groups and peoples, which prepares an appropriate condition for people collaboration in a meaningful, practical and purposeful method in order to reach environmental sustainability.

Legislator is another factor which is effective in design process. Although the legislator is not involved in designing, directly, he imposes the ranges that must be considered by designers. There is an apparent conflict among designers and those, who responsible for implementing the rules that define the range of designer works. It is important to know that sustainable interaction among local community and land, is impossible only through the government intervention (outside people). In the other words, interaction among them depends on the consistency of local community collaboration [23].

## Design Constraints

The first step in preparing a design is illustrating the effective forces in creating the form and determining the model or pattern which is produced by effects of the pressures comes from those forces and the form must be reflected them [13]. Therefore, the design is a process that a form is produced along with its technology and social environment's demands [21] and every good form is balanced with this system as it seems that the form is located in a point which effects of mutual forces are neutralized each other, completely. Architectural domains are divided into two part, that each four groups of design generators (designer, client, user and legislator) are influenced on them by different extent and in their specific way [8]. These domains include

- **Internal constraints:** These constraints are created by relations among parts of an element or a system that supposed to design and they give more freedom to designer and also they are the basis of the design. They include the numbers, size, different types and qualities and almost they considered as the main part of design planning.
- **External constraints:** This part is given more constraint to design and is not optional for a designer and also sometimes it determines entire design. External constraints are the essence of the special or maybe a unique circumstance that makes the design distinctive. Parameters such as external constraints are created by some factors including context, position or special background which are implemented by the design.

These constraints can be come from designer, client, user or legislator, although each group has a different level of flexibility. In general, Flexibility is used about the capability of modifying in objects and things. In architecture and environment design flexibility means the spatial flexibility and organization of built environment space and changes in them in order to achieve a new conditions, requirements and applications. Figure 2 indicates the model of flexibility among all

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four effective groups of design.

### **Interactive Architectural Approach**

Architectural design process is complex series of different variables in various levels and scales which has an interaction and effects on each other in order to provide the goals of an architecture project [24]. The design activity can be considered as a new way to combine the known elements together or to introduce new concepts [25].

Additionally, the design activity is done mostly in groups. When two or more person involve in a design process, they have to speak to each other about it. The nature of design thinking is discussion-base. The design issues are multi-aspects and extremely interactive, mostly. It is happened rarely that each part of the design only fulfils one purpose.

Hence, interaction means a mutual relation among two or more person or groups or system. American dictionary explain the meaning of interaction as 'the activity of talking to other people or working together with them' and also 'a process by which two or more things have an effect on each other'. So, the 'Interactive architectural approach', which is called 'interactive architecture' here, is an approach that the mutual relations between the factors, groups and systems affecting architectural design process are analysed based on it and the final architectural design will be a result of a relative balance of mutual interaction of all these factors, groups and systems. Since design problems are multi-aspects, the purpose of interactive design is to achieve a level that creates a kind of balanced mutual relation among different aspects. It is important to say that the balance does not necessarily mean the equality of each force, but it means to achieve a level which the resultant of different forces and factors will be equated and neutralized by each other. So, the effectiveness of each various

be used requirement. Semiology approach can be used as one of the methods that are capable to recognize and decode the architectural and urban environment and also the social-cultural context of problem.

(4) The methods and researches in human sciences can be used in order to recognize the human values of problem and its background.

(5) There will be more potential to do next stages of design and creating interaction among different factors, when designer recognizes the design contexts and design problem and also discovers the relations as well. However, the amount of designer success depends on various factors.

(6) In next stage, the analysing will be done based on studying and gathering information in cognition stage. Analysing means that organizing and arranging the problem. In analysing stage, the attempting is to make logical connections among different factors of problem. In fact, a logical and systematically organization will be created between various groups and factors of problem, in this stage. Then, the design process will be advanced based on this logical organization. The conceptual model of this logical organization will be explained more in the next part.



which is affected by internal and external constraints. In fact, this multi-relation is formed in a field of internal and external constraints. Therefore, the final production will be created in this field, too.

(5) The balance is relative in this relation and it will be changed based on the circumstances of place and time. The relative balance is amount of adaption which results among different factors of a design. This adoption produces from commonalities and differences interaction of each factor in a relation with the others.

(6) Internal and external constraints act as the controller factor and also deterrent factor. Internal constraints result from the mutual relations among designer, client, user and legislator. External constraints affect these mutual relations from outside. Apparently, the internal constraints will be less when the adaption and flexibility produce more among these four groups, thus they understand each other better.

The above conceptual model can be expanded for a better understanding and also the relation among different factors will be analysed. Therefore, Figure 5 shows these mutual relations. All these four groups are important as well in interactive architecture and none of them can be ignored or removed, although the designer has a key role. In these multi-relations, designer acts as an analyser and must be able to make an appropriate conclusion to achieve a comprehensive solution. The solution should contain the views of all four groups. In fact, it is the designer who must find and make a final solution.

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interaction approach in design process. In this approach, the ability of flexibility and adaption is so important and vital. The designer has a strategic and key role to achieve optimum solution, although he cannot impose his idea or acts unilateral. Finally, it can be expected that the final design will reach an appropriate interaction, which is accepted by all involving factors in designing, and also achieve the highest level of adaptation with its contexts. Therefore, interactive architectural approach would be considered as an efficient and practical model to achieve the sustainability in architecture and urban development. Furthermore, interactive architectural approach can be identified as a kind of contextual architecture due to the adaption with all contexts of design. Additionally, interactive architectural approach has a great potential to create the places with sense of belonging.

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**References**