Abstract

Architecture can be defined as human creation. Architecture is created by human and for human. However, in the real world, through the history of architecture, human component had receded to the background over shadowed by personal idea of the designers. As a result space designed by architects is often aliened by human being. In other words such space ceased to become livable. In this paper I will discuss about an increasingly used user oriented design process. Such method can re-humanize spaces that are designed by architects and designer at large. The user oriented design process discussed in the paper will include user oriented parametric design, user oriented design process, phenomenological approaches, and participatory design process. In this paper I also discuss the consequences of the user oriented design to the pedagogical aspects in design schools. Therefore, the applications of user oriented design process can also be taught to younger generation and future designers.

Keywords: User, stakeholder, parameters, phenomenology, participatory design.

Introduction:

Broadbent (1973) considered architecture as a system consists of three interrelated sub-systems. By adopting systemic concept developed by Markus T. A., Broadbent (1973) described the three subsystems as: environmental, building and human system (Figure 1). Vitruvius in the 1st century BC, in his famous 10 series book, De Architectura, mentioned three dimensions of architecture, firmitas, utilitas, venustas. However there is one other less known but never the less important idea of Vitruvius which is directly related to human known as Vitruvian-Man (Figure 2).

Most of architect of Modern Architecture consider that architecture should be able to change and transform human for the best according to the idealism of the architect. For instance Le Corbu’s concept, “a house is a machine for living in,” is based on his idea that good house can transform its inhabitant for the best (Moos and Walker, 2007).

Post-Modern Architecture can be considered as a reaction to the failure of Modern Architecture to fulfill its idealism (Brolin, 1976). According to Brolin (1976) Modern Architecture has failed to embody the complexity and contradiction that exist within human nature. Therefore, the emergent of Post-Modern Architecture can be considered as an effort to put once again human as the subject rather than the object of architecture.

As it is mentioned above, we can see that from the time of Vitruvius to the present day Post-Modern Architecture, human is considered as an important aspect that should be considered as the main factor in architectural design. However, in reality, along the history of architecture, human was less considered as important design consideration. Human factor has receded as only as the backdrop of design process, and ceased to be the main factor of architectural design.

For example, some ideals of the modernist architect, like Le Corbu’s concept, “a house as a machine for living”, seem to put human as the central consideration of design. In reality most design of modernist architect pay more attention to the idealism of the architect. Most of the time, the idealism of an architect is not in line with human factor especially of the users. Brolin’s example on how Le Corbusier houses designed for people at Chandigarh in India had failed shows how Modern Architecture did not really pay attention to the contemporary Indian’s way of life (Brolin, 1976).
**Figure 1.** Interrelated environmental, building and human system

Source: (Broadbent, 1973).

**Figure 2.** Vitruvius-Man.

Source: (Vitruvius, 1st Century BC)
Post-Modern Architecture is considered as a reaction to the failure of Modern Architecture, and it were thought to be more democratic than its predecessor. The concept of pluralism of style, in contrast to the dominant style of Modern Architecture could be the drive for Post-Modern Architecture to put human component as its central attention. However, after 30 year of its existence, Post-Modern Architecture went only as far as to accept architecture as a narrative. The content of the narrative of most Post-Modernist architecture, not unlike the dominant style of Modern Architecture, is centered on the architect archaic idealism (Lobel, 2009). For me, this fact indicates that once again architecture has betrayed human that supposed to be the central component of an architectural design. As results of such betrayal of architecture to human, we can see many works of architect, whether it is Modernist or Post-Modernist architecture has become a lifeless space with minimum of human usages. In this paper I will discuss a design process that put back human as the main subject of architecture.

User Oriented Parametric Design

A design can be considered as an optimum combination of many parameters or parameters-mix (Wikipedia, 2007) and thus the process of producing the design are called parametric-design (PD). The current PD usually used the state of the art information technology to combinatorically produce a large number of design alternatives. Each of the alternatives is usually evaluated by using certain objective criteria. By developing certain computer application, the production of alternatives (combination of parameters) and the evaluation of each alternative are done automatically by computer. By such process, an optimum design alternative can be found but detached from human touch. In this paper instead of IT based parametric design, I propose a user oriented PD. A user oriented PD is usually consists of the following basic steps:

1. The designer decides the parametric tree.
2. The designer produces the design alternatives by combinatorically mixing the parameters.
3. The users or other stakeholders evaluate and choose the best out of the generated design alternatives.

However, the above basics steps contain several problems in its operation. First, the production of parametric-trees, in the face of multiplicity of design paradigms, can baffle the designers on which paradigm they can use and based their parametric-tree. To solve such problem, we could resort to the subjective bias or bent of the designer. For example if the designer has an environmental bent, then he or she might based the parametric-trees on environmental system rather to other system such as the building system (see Broadbent, 1973).

Second, it is not certain on how can designers decide the operational level of the parameter they will use. For example, a designer could stop only at the level of factor (Figure 3) and decided not to go more deeply into the level of variable or indicator. Higher level parameters means that the number of parameters is relatively smaller and thus it can resulted in much smaller number of parameters-mixes that must be generated by the designers. Lower level parameters resulted in a large the number of parameters-mixes. The number of parameters-mix to be generated is equal to $O^n$ number of parameters used for the design alternatives. However, lower level parameter is more operational and also more quantifiable and the possibility of its multi interpretation is smaller than higher level parameter.

Other problem rise when we have to limit the number of design alternatives (or parameters-mixes) that are going to be evaluated and chose by the stakeholders. Conventional parametric-design can afford to generate large number of parameter mixes and automatically evaluate all the parameter-mixes by using computer. In the case of user oriented parametric design, the evaluation of parameter mixes are manually done by the stakeholders. Therefore, the number of design alternatives that are produced in terms of alternatives parameter-mix should be limited in accord to the capacity of each stakeholder.

User Oriented Design Process

In user oriented design process (UODP) the parameters-tree is developed and defined by users or stakeholders (Figure 3). Therefore, the participation of users is done at the beginning of UODP. While the user prepares their parameter tree, the designer prepares themselves with all repertoires of possible design alternatives. In this sense, this step of UODP is very similar to Friedman’s design process developed in 1975. The design repertoires can be in many forms such as buildings type repertoire (Pentti, 2007) and repertoire of semantics and syntaxes such as the pattern language developed by Alexander (1977). The design repertoires latter on can be used to limit the design alternatives (parameters-mixes) that must be generated by the designer.
The next step is the design alternatives generation process. This process is done by the designers based on the user’s parameters-tree and design repertoires of the designers. Those design alternatives are then evaluated and the best design alternative is then picked by the users as the design solution. From the above description, we can see that the involvement of the users in the design process is much deeper than the parametric design process described on the previous section. The problems with UODP lie on the ability of the users to make a relevant parameters-tree. Even if there are users among all of the users that have the ability to make parameter tree, the possibility of cooption of the other users by other more dominant and knowledgeable users will make the parameters-tree less relevant to the users’ real needs.

Other pitfall of UODP is the mindset of designers that limit themselves on the higher level of parameters-tree. As a result, the ability of the designer to communicate their design alternatives to user is quite limited. The constructed parameters of the designer will not be understood by the users and vice-versa. As we can see here, in UODP, there is the problem related to the wide variation of languages needed for communication among the users and designers. To make UODP work well the design process needs a common language that can be used by all stakeholders and designers to communicate their thought and ideas as clear as possible.

Another problem that must be solved in order to have a good UODP is the mindset of the users which usually are partial in its nature. The partiality of the user’s mindset will cause the widening gap of communication among the users themselves, much less between the users and the designers. To solve the problem of partiality of mindset of each user, UODP should be done with as many a possible cycles of communication among the stakeholders and also the cycles of communication between stakeholders with the designers.

**Phenomenological Approaches in Design**

Another possible means to include users into design process is to implement or phenomenological approaches (PA) into the process. Phenomenology means that we put lived experience of peoples as the central consideration of any design endeavors. Therefore, the implementation of phenomenological approach to design also means that the lived experience of the users or in wider scale the stakeholders as the most important design consideration. For example, with PA we do not talk about “space” but “place” and not of “house” but a “home”. A place is a space that is dwelled by people. Therefore, desolated space can never become place. “House” that are empty of people is not a “home”. In other words, a place or home is a type of space that has high live ability.

The first step of implementing PA in design is to develop the understanding of the designer about the lived experience of the peoples, the users, or in wider cases the stakeholders. For that purpose, the designer, before designing, should do a type of phenomenological study of the lived experience of the stakeholder. From such phenomenological study the designer will understand the existence of phenomenological themes. Each phenomenological theme is actually a certain category of lived experiences of the stakeholders. The second step of PA is the formation of design alternatives by the designers. Based on each phenomenological theme, the designer develops design alternatives. Among the design alternatives made by the designers, the stakeholder evaluates and chooses the best design alternative. PA can help the designer to produce a relevant but lesser number of design alternatives compare the two approaches describes previously on this paper. However, there are problem that must be addressed by the designer who chose to use PA as the design process. First, since user or stakeholder could only provide their past lived experiences to the designer, PA does not provide the needed knowledge about future possibilities of the design. The lived experience of people does not have the envisioning power that is needed for the future (Muller, 2007). After all when we talked about design we actually talked about the future.
Secondly, the limitation of PA caused the production of design alternative tends to be depended at a certain degree of the designer ability to predict the future when the design will be operational. As a consequence, the design process cannot be considered as a pure phenomenological where the design is fully determined by the users' lived experiences.

**Participatory Design**

Participatory design (Part D) is a relatively more democratic design process compare to other design process, described previously in this paper. If Post Modernist is considered as more democratic in style than modernist architecture, then Part D should be the mainstay design method for the post-modernist architect. In Part D, various stakeholder participate fully in the design process. The stakeholders are not only the users, but also the experts of various fields. In such case the designers themselves can be considered as one of those experts. Therefore, unlike the conventional design process, designer is considered not any more as the main subject of the process but only play as a part of the component of the design process.

The participants of Part D participate fully in not only in generating design alternatives but also participate in problem definition, sharing solution (design alternatives), development of ideas (generating, design alternatives), evaluation of ideas (design alternatives) and deciding which is the best idea out of all the generated ideas in the process (Wikipedia, 2007; Spinuzzi, 2005). Other discriminating characteristics of Part D compare to PD for example are the cyclic hyperbolic nature of the process (Figure 4). Each cyclic of Part D consisted of the consecutive steps beginning from information gathering, generating ideas, followed by sharing ideas, evaluation and choosing the best alternative solution (Figure 5).

![Figure 4. Cyclic hyperbolic nature of participatory design or Part D](image)

Sumber: (Agus, 2009).

![Figure 5. One cycle of Part D.](image)

Therefore, a full cycles of Part D can be described as a series of a Part D cycle. It is assumed that a Part D cycle of time (t+1) will bear a better solution than the solution derived at t cycle. In other words, each cycle must bear a
better solution than its proceedings cycle. It is hoped that after certain number of cycle, the best design solution can be produced by the stakeholders.

The cyclic hyperbolic nature of Part D is very similar to the well known Delphi method. The difference lies on the fact that if the Delphi method is a means to get an equivocal understanding of certain phenomena, while the Part D is a method to get an equivocal understanding about the best design solution among the stakeholder.

Part D also has its own problems. The first problem that we must face when we implement Part D where the mindset of the professional stakeholders that are reluctant in giving up the ability to control the project. At the initial cycle of a Part D every stakeholder usually cloaks themselves with the principles or ethics of their field of work. To open the cloak of principles, it is advised that at the beginning of a Part D, there is an ice breaking steps and not directly go to the main step. Other method to break the cloak of principles especially among the professional stakeholders is to send them to the field (Asaro, 1999).

Another difficult problem in implement Part D is in identifying the stakeholder or participant that accurately reflects the profile of the actual users (Webcredible, 2006). Even if we could identify such stakeholders, another problem is on how we could ascertain their participation and attendance in every steps or cycles of Part D. according to Asaro (1999), non-professional stakeholders are often do not appreciate their own knowledge. Therefore it is very often such stakeholder has a relatively higher reluctant in participating in Part D. The solution that can be use to boost the spirit of participation among non professional stakeholder is to bring them in the meeting room and let them have the feeling on how to seat on par with other stakeholder (Muller, 2007).

**Pedagogical Aspect of User Oriented Design**

Finally as practitioner and education, I have the responsibility to also discuss the pedagogical aspect and consequences derived from a user oriented design process as it is explained previously in other part of this paper.

Educationally, user oriented design can give some degree of enlightenment to all stakeholders (Asaro, 1999). For the case of non professional stakeholders, the intense communication among stakeholders during the design process to a certain degree might open their tacit knowledge about the project. In long terms such process could give the non professional stakeholder a self confidence and enthusiasm when they are seated on par with other stakeholders.

For example, the various user based approaches that were implemented in the rehabilitation and reconstruction of Aceh after the tsunami in 2004 has hardened the militancy of the people in Aceh. Such degree of militancy among stakeholders is very important to counter the emerging and sometime contradictory external influence such the case in Aceh. In other words, the various users oriented planning and design that were done in Aceh after the tsunami of 2004 had transformed the non professional stakeholders from compliant people to a more militant stakeholder. In any way, such user-oriented approach has changed the roles of all stakeholders of a development projects.

Professional stakeholders can also benefit from a user-oriented design. By sending professional designer to the field (Muller, 2007) the salon designer will get on hands understanding about the real problem faced by users. Furthermore, the intense communication among various stakeholders that follows a user-oriented design will change the mindset of the professional stakeholders. As it was explained in the previous section, a user oriented design can break open the cloak of professional ethics of professional stakeholders. Therefore, user oriented design process can enlighten the professional stakeholders with the condition that they are not the main stakeholder, but only a part of a total stakeholder that should work together in order to make a successful design.

Finally, if user-oriented-design should be included as pedagogical items in the education of designers, then a serious change should be done to the existing curriculum, especially the current studio practice that were conducted in most design school in our country. However, before explaining about the consequences of user-oriented-design to the teaching process in design school, I think it is better if we first described the current education process in most design school.

According to Watt and Cottrell (2006), with the purpose to controls the learning process of the student, most design studio in design schools are isolated from the real world, artificial in its nature. As a consequence of such studio, the student became too dependent to their instructors. Another condition in a conventional design studio is the lack of communication between the student and the instructions, much less among the students and as a result of such condition, the communication ability of the student are quite poor.

The introduction of real project and real stakeholder into the design studio will transform the overall studio culture. The studio project will expose the student to more complicated real world problems. The studio learning process will not be easy to control but the benefit of letting the student be exposed to the discussion among the stakeholders could give the student a more complete knowledge that is need by the student after they graduate.
from the school. Furthermore the intense communication between the student and the various stakeholders can also hone, the communication skills of the student.

To prepare the student for the user-oriented studio, the curriculum of design school should also be transformed. In conventional design school the students is intensely educated to improve their ability to present their idea to other people. In design studio, the student is usually directed to hone their skills of presentation. The word “presentation” is the most important key word in most design school. If the student should be exposed to a user oriented studio, the curriculum of design school should stress on giving the student the ability to absorb the information emanated from the users or stakeholders. Subject like the one taught in reporting school should be an important part of design school curriculum. Also to be included in the curriculum of a design school is more qualitative techniques that can give the student them ability to catch the lived experience of most stakeholders. To give the student the ability to understand social and psychological aspect of the user, the curriculum of design school should contain enough subjects on sociology and psychology. Such a subject is important to the students so they could have the necessary technique to develop their repertoires of solution that is relevant to stakeholders needs.

Conclusion
Architecture needs to be re-humanize. The central position of human component in architecture should be reinstated. One of the most important mean to reinstate human in architecture is by the implementation of user oriented design process. Currently, there is several potential user oriented design process that could help architecture in reinstating human. At present, that user-oriented design process still contains several problems such as the relatively rigid mindset of the stakeholders. If those user oriented design process should be effective alternative design methods, then those problems should first be solved.

In this paper I also discussed the consequence of user oriented design to the education of designers. The introduction of user-oriented-approach into the education of designers should be accompanied by relevant user oriented techniques such as phenomenological research methods and other related techniques and knowledge.

Finally, I can conclude this paper by mentioning my optimism on the potentiality of user oriented design on putting back human as the central subject of architecture, and thus a creation of more to a livable space.

Reference
15. Vitruvius, De Architectura, 1st Century BC.