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EFFECTS OF SELF SELECTION IN ARCHITECTURAL DESIGN PROCESS (ADP); CONSIDERING USER CENTERED DESIGN (UCD)

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Abstract
Diversity of human requirements in his living environment is obvious. Architecture ideal is to respond such varied requirements. The Architectural Design Process (ADP) which has been defined for this basic purpose aims at fulfilling not only physical and functional but also psychological human necessities.Recent trends in architectural design show that in most of the cases, the focus of ADP has been shifted to the business goals, fancy features and technological capabilities. Even if none of these approaches can be blamed, what has been lost here is a mere respect to human values. In this regard, paying attention to end-users' ideas, believes, attitudes and desires, which has been named self-selection in this paper,can be considered as an appropriate method for deriving final users' values. In fact, User-Centered Design (UCD) is a format of self-selection which focuses on designer's side. UCD attaches importance to architectural plan as an output.This type of architectural plan tries to adopt to final users' requests, wishes, feelings, behaviors and life styles. Inspired by the concept, some different methods have been created. Designing according to UCD principles and basics contributes to architectural plan to be more satisfactory and desirable by the users since they would able to realize their ideas. In addition, this kind of ADP encourages end-users to personalize more eagerly their surrounding built environment. Ultimately, the users would feel more comfortable and convenient in his living space. In this respect, not only designers but also the users share the same amount of satisfaction.

Keywords: Self-selection, Architectural Design Process (ADP), User-Centered Design (UCD),Usability, Personalization

1. Introduction

Even with the highest level of public participation, most people will still have to live or work in places which have designed by others. It is therefore especially important to make it possible for end-users to share their ideas with designers and personalize these existing environments; this is the only way most users can achieve an environment which stands the stamp of their own tastes and values.

Based on Rokeach's (1997) concept of value, "values" are a structural theory about the organization of belief systems and are the most significant components of belief system. The value concept is also able to unify the apparently diverse interests of all the sciences concerned with human behavior. Rokeach's work shows the importance of priorities in the values process and the importance of the free personal options. It has also shown that there is a need for a well-defined set of objective values and that these values are universal in their nature.
According to Schwartz's (2005a) work, "values that purport to be universal must meet three fundamental criteria. First, they must have scientific value, i.e. their exploration must yield leverage on important questions of our time. Second, they should correspond at least roughly with a recognized definition of values. Finally, they should include or overlap with values commonly identified by lay persons as of central importance in their life". Schwartz has presented his twelve values as universal to humankind but this research argues that because of these criteria the potentially large number of values cannot be perfectly accounted in twelve items. They are Power, Achievement, Hedonism, Stimulation, Self-direction, Universalism, Benevolence, Tradition, Conformity, Security, Financial Success and Respect.

Unfortunately, this calls for considerable effort from the main stakeholders who want to ignore personalization of end-users and go after a specific plan. While this strategy which supposes to satisfy them, the aim can be earned in a best way with better understanding of user experiences and effects of their self-selection on Architectural Design Process (ADP). They believe self-selection causes problems in ADP. In particular, Although self-selection makes it difficult to evaluate architectural plans, and makes it difficult to do market

research which is a very important component of business approaches, with User-Centered Design (UCD) methods these difficulties can be changed to best opportunities for creating a common vision of ADP.

2. Self-Selection

2.1. General Meanings of Self-selection

There are lots of explanations of self-selection which have used in specific areas. But in this research we had to choose some of them which are related to ADP. Referring to primarily studies, the general meanings of self-selection are explained. "Self-selection is a situation in which people decide for themselves to do something rather than being chosen to do" or "Self-selection is selection of or by oneself" and also "Self-selection is selecting of self. It means the choosing of you for something or the choosing of something for yourself". On the other hand, "Self-selection is selection of merchandise by oneself from a display counter or rack in a store", "Selection made by or for oneself: goods arranged on shelves for customer self-selection", "Self-selection is commerce. It means same as self-service" and "Self-selection is a contract that encourages the participation of only a single group such as one consisting of low-risk investors". It is commonly used to describe situations where the characteristics of the people which cause them to select themselves in the group create abnormal or undesirable conditions in the group".

2.2. Definitions of Self-selection

Since self-selection is based on behavioral decisions of people, behavioral definitions play a fundamental role in better understanding of self-selection in ADP. In this area, "Self-selection is a term used to indicate any situation in which individuals select themselves into a group". Self-selection also happens in buying choices, if some people decide to buy a new product and others decide not to buy this product. Otherwise, based on the nature of active travel as one of the design definitions, there are two key results which are directly related to self-selection: "Self-selection is linked to higher levels of walking in traditionally designed neighborhoods" and "Neighborhood design has an impact on walking regardless of self-selection". In the context of residential self-selection Mokhtarian and Cao (2008) and also Litman (2005), self-selection refers to "The tendency of people to choose locations based on their travel abilities, needs and preferences". It means this kind of definition of self-selection is normally related to attitudes of end-users. Ultimately, we believe that self-selection is a style to further understanding the concept of people's choices that will help all architects to improve their design.

3. Personalization

3.1. Concept of Personalization

"Personalization is about prevention, maintenance or intensive support – whatever is needed. It means enabling people and professionals to work together to manage risk and resources. It is not about withdrawing professional support or indeed ignoring risk or the limits on resources, but about actively engaging in a dialogue about how to manage risk and use the money and support that are available in the best way". The principle of personalization is in line with the National Care Standards for services. These require services to recognize and accept people as individuals, adhering to the principles of: dignity, privacy, choice, safety, realizing potential, equality and diversity. It also fits with the principles of good social care practice which "…promotes social change, problem solving in human relationships and the empowerment and liberation of people to enhance well-being..." Personalization has been adopted as a term which encapsulates some of the key aspirations of Changing Lives, Public Service Reform (PSR) and other policy developments across government, and delivering better outcomes for people.

3.2. Areas of Personalization

"Personalization needs to happen for everyone. It desires to be owned by users and careers as well as practitioners. To achieve those local partnerships need to develop a strategic approach to:

- ***Personalization as prevention:*** Building the capacity of individuals and communities to manage their own lives with appropriate and proportionate intervention at the right time.
- ***Personalization for complex cases:*** Help people to find the right support solutions for them and to be active participants in the development. Encourage people to come up with their ideas and put effort into devising solutions which suit them in their particular circumstances drawing on their own strengths, family or community capacity. This does not mean that people are not supported and left without guidance or that risks are not addressed, but that solutions are developed in partnership with professionals.

➢ ***Personalization as choice:*** Sometimes people just want to have efficient, reliable, off-the-shelf services which respond to their values and needs.
"In personalizing a place, end-users are both confirming their tests and values to themselves, and communicating them to others. The former occurs mostly inside an end-user's space and the latter across its boundary, real or implied. This boundary separates the end-user's private domain from the public realm: it enables us to make the important distinction between private and public personalization".

3.3. Personalization in Architectural Design Process (ADP)

According to the meaning of personalization, it has significant and unique position in Architectural Design Process (ADP). By encouraging each end-user to dress their space differently, it can make each activity overt. Personalization can be earned in two ways: "Improving practical facilities" with designer decisions or "Changing the image of place" by self-selection of end-users. Sometimes, designers intentionally encourage end-user to motivate personalization by designing unsuitable images. In fact, this is a form of architectural coercion: "people only develop truly participatory relationships with places they like".

4. User-Centered Design (UCD)

In most of the time, systems are designed with a focus on business goals, fancy features, and the technological capabilities of hardware or software tools. All of these approaches to system design omit the most important part of the process – the end-user. User-Centered Design (UCD) is the process of designing a tool, such as a website's or application's user interface, from the perspective of how it will be understood and used by a human user. Rather than requiring users to adapt their attitudes and behaviors in order to learn and use a system, a system can be designed to support its intended users' existing beliefs, attitudes, and behaviors as they relate to the tasks that the system is being designed to support. The result of employing UCD to a system design is a product that offers a more efficient, satisfying, and user-friendly experience for the user, which is likely to increase sales and customer loyalty.

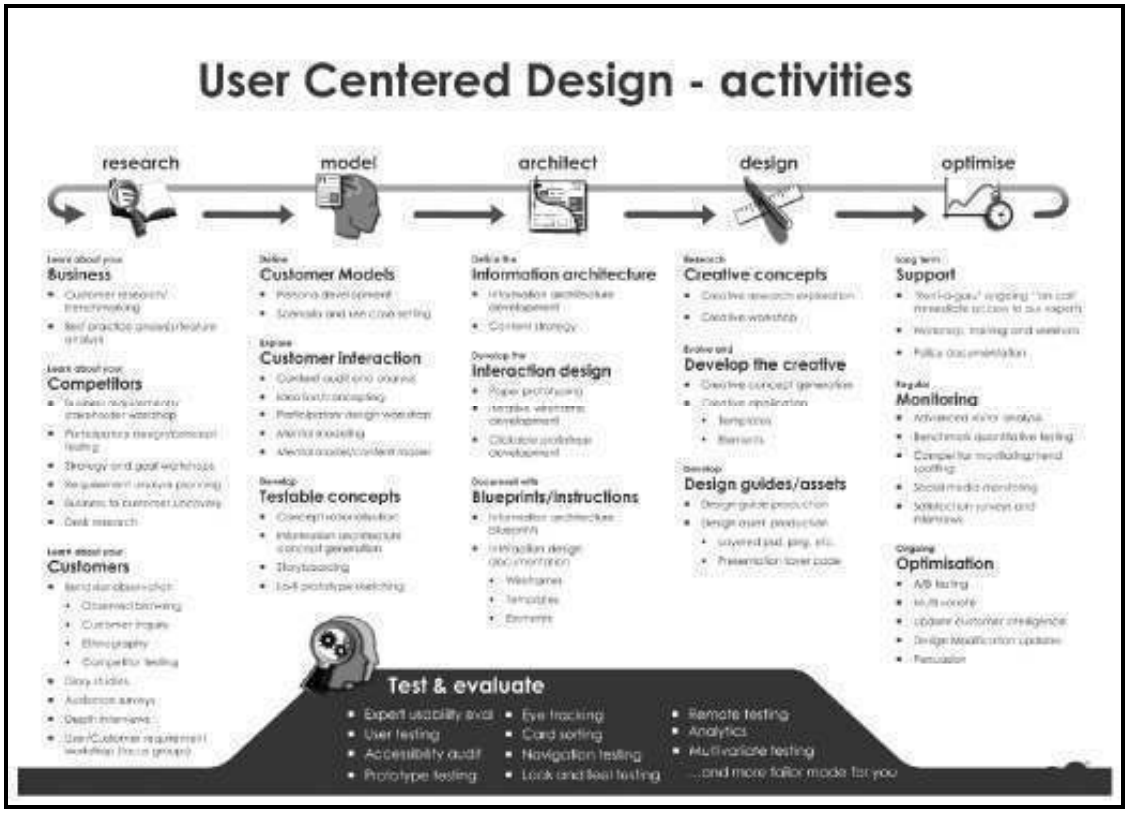

Figure 1: User-Centred Design (UCD) - Activities
Source: Jon Dodd (1999). Available on: http://publishing.brookes.ac.uk

4.1. *Usability*

Usability is one of the focuses of the fields of Human Factors Psychology (HFP) and Human-Computer Interaction (HCI). As the name suggests, usability has to do with bridging the gap between people and machines. On the other hand, Usability is a measure of the interactive user experience associated with a user interface, such a website or software application. A user-friendly interface design is easy-to-learn, supports users' tasks and goals efficiently and effectively, and is satisfying and engaging to use.

An interface's level of usability can be measured by inviting intended users of the system to participate in a usability testing session. During a usability test session, a user is given a series of tasks to complete by using the system in question, without any assistance from the researcher. The researcher records user behaviors, emotional reactions, and the user's performance as the he attempts to accomplish each task. The researcher takes note of any moments of confusion or frustration that the user experienced while trying to complete a task, and also tracks whether or not the user was able to satisfactorily complete each task. Analysis of data from several users provides User Experience Engineers a means of recommending how and where to re-design the interface in order to improve its level of usability and thus, the user experience in general.

Usability depends on a number of factors including how well the functionality fits user needs, how well the flow through the application fits user tasks, and how well the response of the application fits user expectations. We can learn to be better user interface designers by learning design principles and design guidelines. But even the most insightful designer can only create a highly-usable system through a process that involves getting information from people who actually use the system. Usability is the quality of a system that makes it easy to learn, easy to use, easy to remember, error tolerant, and subjectively pleasing.

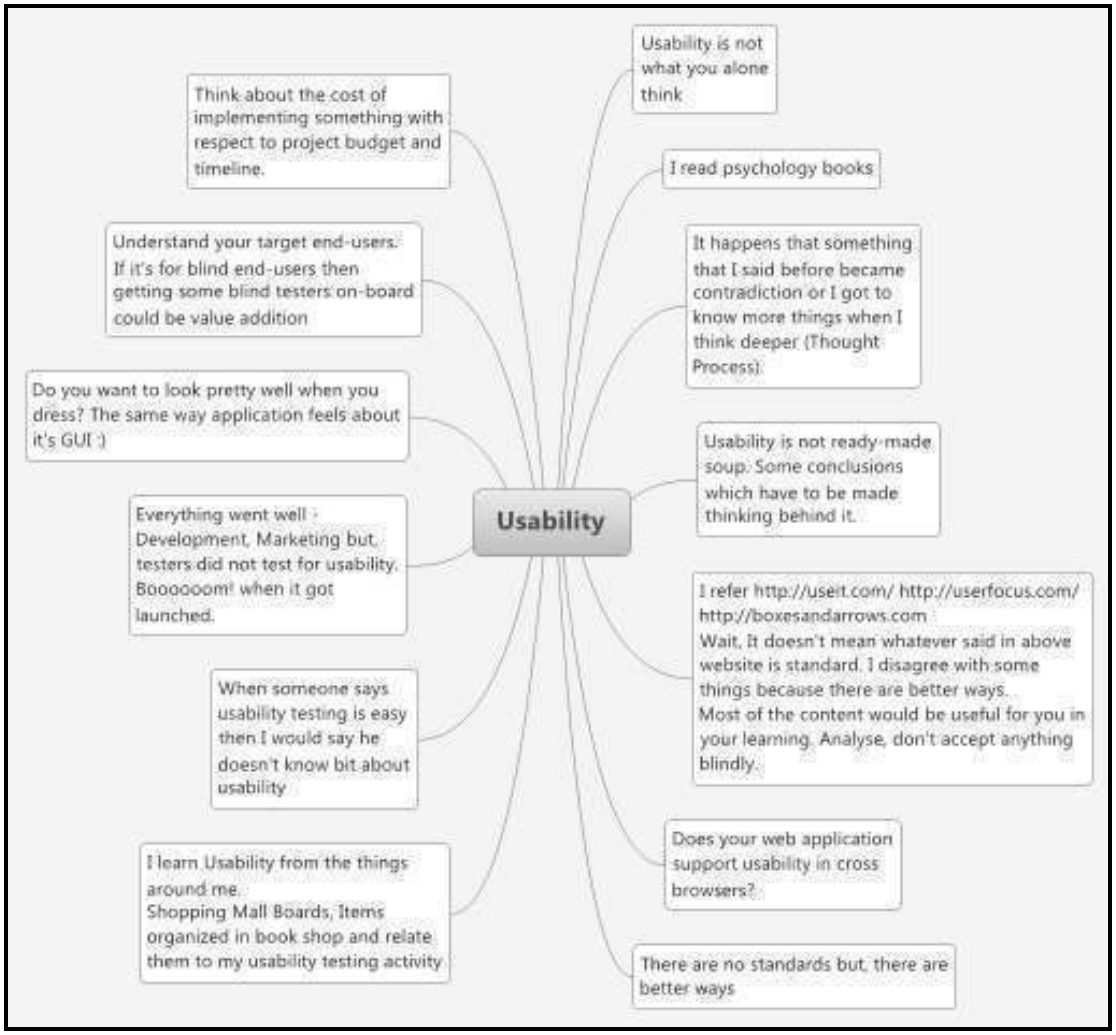

Figure 2: A quick usability cooking through mind map
Source: SanthoshTuppad (2012). Available on: http://tuppad.com

4.2. Main Benefits of UCD in ADP

UCD improves the user experience associated with an architectural plan. An understanding of the users' needs and values with respect to goals, or features of ADP, becomes the set of user experience requirements. These requirements should be implemented throughout the entire user experience. We can get the main benefits of UCD by using three simple techniques in ADP:

- ***Arrange a one day meeting of the main stakeholders*** (including the project manager and a user representative) to develop a clear shared vision for the purpose of spaces in the architectural plan, how they will be used and the usability goals. This meeting ensures that all factors that relate to use in ADP are identified before design process starts. Other benefit of this technique is to create a common vision by bring together all the people relevant to the development and finally, provide a basis for designing later usability tests.
- ***Evaluate early design concepts from an end-user perspective*** (preferably using paper and post-it-notes), before starting detailed design. With considering this manner, potential usability problems can be detected at a very early stage in ADP before any architectural plan has been designed. Hardly to ignore that communication between designers and end-users is promoted. For every designer, paper prototypes are quick to design, thus enabling rapid design iterations. Because of this evaluating; only minimal resources and materials are required.
- ***Test the usability of prototypes with end-users.*** This test will help to identify the major usability problems, including problems related to the specific skills, expectations and values of end-users. Measures can be obtained for the end-users' effectiveness, efficiency and satisfaction. The stakeholder meeting should take place as early as possible. Prototyping is valuable during requirements and design. Usability testing can take place once there is a functional prototype. It is also important to collect feedback from users after release to inform any redesign. These techniques have been selected as the easiest and most cost-effective means of implementing the principles of UCD.

5. Conclusion

Recent trends in Architectural Design Process (ADP) show that in most of the cases, the focus of ADP has been shifted to the business goals, fancy features and technological capabilities. Even if none of these approaches can be blamed, but what has been lost here is a mere respect to human values. On the other hand, Values are the most important components of belief system. The value concept is also able to unify the apparently diverse interests of all the sciences concerned with human behavior. In this regard, although all designers know "ways of achieving the qualities", even with the highest level of public participation, most people will still have to live or work in places which are designed by others. Paying attention to end users' ideas, believes, attitudes and desires can be considered as an appropriate method, which has been named self-selection in this research, for deriving final users' values. It is therefore especially important to make it possible for end-users to personalize these existing environments: this is the only way most people can achieve an environment which stands the stamp of their own tastes and values".

Furthermore, as general meanings and definitions of self-selection which are related to ADP, this research has found out; Self-selection is "a situation in which people decide for themselves to do something rather than being chosen to do" or "Self-selection is selection of or by oneself" and also "Self-selection is selecting of self. It means the choosing of you for something or the choosing of something for yourself". Obviously, self-selection which relates to attitudes is a style to more understanding the nature of people's choices. On the other hand, User-Centered Design (UCD) is a format of self-selection which focuses on designer's side. UCD attaches importance to architectural plan as an output. This kind of architectural plan tries to adopt with final users' ideas, desires, attitudes, behaviors and life styles. Inspiring from the concept, some different methods have been driven. In addition, this research has found out, usability can be helpful to improve ADP. Usability depends on a number of factors including how well the functionality fits user needs, how well the flow through the application fits user tasks, and how well the response of the application fits user expectations.

As finally result, designing according to UCD principles and basics contributes architectural plan to be more satisfactory and desirable by end-users since they would able to realize their wants. In other words, this kind of ADP which designs by considering usability and methods of UCD encourages end-users to personalize more eagerly their surrounding built environment. Ultimately, the users would feel more comfortable and convenience in his living space. In this respect, not only stakeholders but also the users share the same amount of satisfaction.

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References

Bevan, N. (1999). *Quality in use: meeting user needs for quality.* In: Journal of Systems and Software,49(1). pp 89-96.

Bevan, N., Claridge, N., Earthy, J. and Kirakowski, J. (1998). *Proposed Usability Engineering Assurance Scheme.* INUSE Deliverable D5.2.3.

Bevan N. and Schoeffel R. (2001). *A proposed standard for consumer product usability.* Proceedings of 1st International Conference on Universal Access in Human Computer Interaction (UAHCI), New Orleans.

Bentley, I, Alcock, A, Murrian, P, Mcglynn, S and Smith, G. (1985). *Responsive environments: a manual for designers.* Architectural press an imprint of Elsevier Science, Jordan Hill, Oxford OX2 8DP. London.

Bentley, I. (1984) *User choice and Urban form: the impaCt of commercial redevelopment.* (JCUD Research Note 18) Oxford: Joint Centre for Urban Design, Oxford Polytechnic.

Bevan, N. (1999). *Quality in use: meeting user needs for quality*. Journal of Systems and Software, 49(1): pp 89-96.

Campbell I. (2006): *Building quality and sustainable capacity within the local independent sector home care market. Department of Health Care Services Improvement Partnership Commission for Social Care Inspection, Relentless optimism, Creative commissioning for personalized care* – Seminar Report

Duffy, F. et. al. (1980). *Taking stock: a technical study on an approach to the undertaking offeasibility studiesfor the re-use of vacant industrial buildings*. London: URBED.

Gediga, G., Hamborg, K. and Düntsch, I. (1999). *The IsoMetrics usability inventory: An operationalisation of ISO 9241-10.* Behaviour and Information Technology

Giedion, S. (1948). *Mechanization takes command,* New York: Oxford University Press.

Greenbie, B. B. (1981). *Spaces: dimensions of the human landscape.* New Haven; Yale University Press.

Handy S, Cao X. and Mokhtarian P. (2006). *Self-Selection in the Relationship between the Built Environment and Walking: Empirical Evidence from Northern California.* Journal of the American Planning Association, 72(1): pp 55–74.

Litman, T.A. (2005). *Land use impacts on transport: How Land Use Factors Affect Travel Behavior*. Retrieved December 24, 2011 from http://www.vtpi.org/landtravel.pfd (accessed January 13, 2006).

Mokhtarian P. and Cao X. (2008). *Examining the Impacts of Residential Self-Selection on Travel Behavior: A Focus on Methodologies.* Transportation Research Part B, 42(3): pp 204–228.

Murray, S. (2009). *Personalisation: A Shared Understanding.* Published by the Scottish Government, ISBN 9781412913195.
Available on the Scottish Government website: http://www.scotland.gov.uk.

Oppermann, R., Reiterer, R. (1997). *Software Evaluation Using the 9241 Evaluator Usability Evaluation Methods.* Behaviour and Information Technology v.16 n.4/5 p.232-245.

Rokeach, M. (1979). *Understanding Human Values, Individual and Societal.* N.Y. Free Press.

Schwartz, S. H. (2005a). *Basic human values: Their content and structure across Human values*. In a Tamayo & J. B. Porto (Eds.), idem pp. 56-95.

Souza, F. and Bevan, N. (1990). *The Use of Guidelines in Menu Interface Design: Evaluation of a Draft Standard.* Proceedings of IFIP INTERACT'90: Human-Computer Interaction. pp.435-440.

Scottish Government (2007). *National Guidance on Self-Directed Support.*

Scottish Government (2008). *Guidance for local authorities and health boards on the implementation of local area coordination for people with learning disabilities.*

Torabi, M., Jusan, M. and Daneshpour. A. (2012). *The Concept of Self-Selection in Architectural Design Process*. 2nd International Conference – Workshop on Sustainable Architecture & Urban Design. The School of Housing, Building & Planing, Universiti Sains Malaysia (USM).

Wells N. and Yang Y. (2008). *Neighborhood Design and Walking — A Quasi-Experimental Longitudinal Study*. American Journal of Preventive Medicine, 34(4): pp 313–319