Psychological Considerations on Behavior and UX

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Abstract

The topics listed here will be discussed more in detail at the workshop. They include issues deeply related to the mental process of the user, and the discussion will be mostly from the psychological viewpoint

Keywords

Independent variable, Dependent variable, usability, UX, memory, emotion, anticipation, expectation, GOB, POB, and SOB

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

General Terms

Theory, Human Factors

Introduction

Because the user experience (UX) can be regarded as a part of the whole mental process of the user, there are many issues that should be discussed in terms of its psychological nature. This position paper will deal with the user experience from the viewpoint of the mental process and the psychology.

1. Shift of Focus from the Independent Variables to the Dependent Variable

Borrowing a rough framework of R=f(S) from the S-R psychology, the traditional usability engineering has been dealing with the usability as an independent variables (S) of the artifact.

The usability is the objective characteristics that can be represented by such measures as time, cost, number, and percentage, as can be found in the annex B of ISO9241-11:1998 [1], especially in terms of the effectiveness and the efficiency.

In this situation, a typical example is a well written love letter (S) will not surely guarantee the result of love ®.

In other words, the traditional usability engineering approach has been focusing on the independent variable (S). On the other hand, the UX are on the dependent variable (R) side. And we need to specify other independent variables than the usability to fully discuss the UX as R.

2. Relevant Measures for User Experience

Although there have been proposed various methods that claims to measure the UX, But the author does not agree with the idea to use such usability measures for evaluating the UX. Because, 1. there are various types of UXs depending on the type of behavior (as will be discussed in 3), 2. the UX is a 4-phased temporal process (as will be discussed in 4) and 3. The UX will vary on the type of the context of use (as will be discussed in 5).

3. Three Types of Behavior

First of all, we will have to differentiate the behavior and the experience. The behavior is a series of actions to do something whether it is covert or overt. The experience is the result of the behavior and is mainly a reflective process in the internal world of the human being.

In this sense, types of behavior will result in the corresponding types of UX. Kurosu and Hashizume (2011) [2] differentiated the human behavior into three categories, i.e. GOB (Goal Oriented Behavior), POB (Process Oriented Behavior) and SOB (State Oriented Behavior) and conducted an experiment to find out the most adequate measure for each type of behavior.

The GOB includes almost all kinds of goal-achieving behavior such as turning on the TV, talking to somebody by the cellphone, cooking something by using the electric oven. On the other hand, the POB includes the goal-achieving behavior but what is more important is the process of achieving the goal itself and is not the goal per se. Playing the game, eating something, listening to the music are some examples. In addition to GOB and POB, there are SOB where there is not any goals but people want to keep the same state as long as possible. Sleeping in a bed and sitting down in a chair at the veranda are some of that kind of experience.

In the experiment, participants were given a list of the combination of behavior and situation (including all of GOB, POB and SOB) and another list of evaluation words. Then they were asked to rate the fitness of each evaluation words to each combination of behavior and situation.

Based on the experiment, the author found that the satisfaction can be regarded as the measure for GOB, whereas the enjoyment for POB and the comfort for SOB.

Important point here is that the concept of usability is related to the goal achievement (ISO9241-11), i.e. related to GOB. Though this experiment was a temporary one and more empirical data should be collected, it can be suggested that the UX resulting from the goal oriented behavior (GOB) can be represented by the concept of satisfaction and can be measure by satisfaction scales (as will be discussed in 4). Another important point is that there are other types of behavior POB and SOB that will lead to other types of UX that cannot be measured by the satisfaction scales
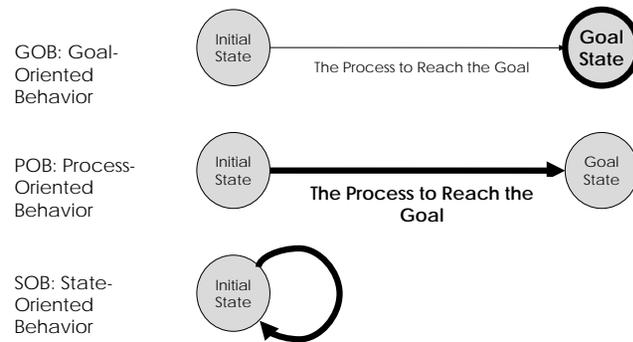

Figure 1 GOB, POB and SOB.

As can be seen in Figure 2, each type of behavior will have different evaluation keywords and this means we'll have to develop evaluation scales for each of 3 kinds of behavior.
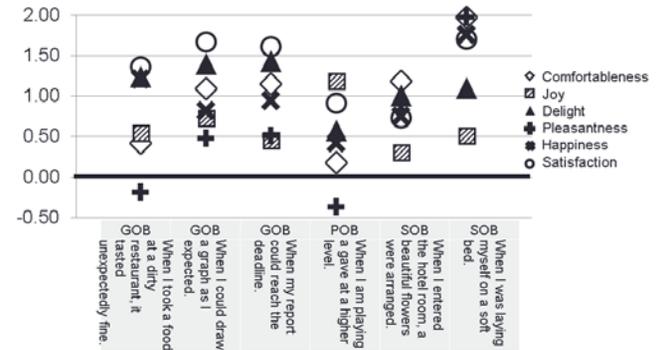

Figure 2 Relationship between various behavior and the evaluation keywords.

4. Four Phase Structure of UX

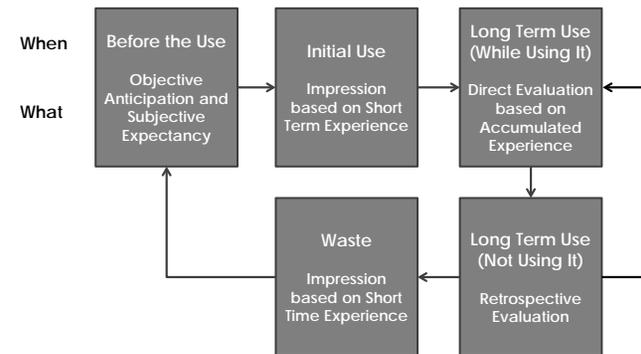Figure 3 represents the temporal structure of User Experience.

Figure 3 Five Stage Model of UX

Before the Usage
Human being will have rather-objective anticipation and rather-subjective expectation before the usage.

Theoretical background of this type of UX will come from a psychology of judgment: the demand level (ideal level vs. reality level) and the theory of adaptation level [3].

Initial Use
In this phase of UX, the user will start to use the artifact. This process is similar to the problem-solving situation in the cognitive psychology. The adoption of protocol analysis in the early phase of usability engineering could've been validated for this reason.

Long Term Use (While Using It)
The psychology of cognition and memory will play a key role for understanding the evaluation process during the long-term use. People will use the artifact based on the procedural memory. If there will be a problem for using it, the user will face the problem-solving situation again and will give it a negative evaluation. But if s/he may find a better way of using it or find a new function that will suit his/her purpose, the user will give it a positive evaluation. Thus, the UX during the long term use will be accumulated (as an adaptation level) and will thus give a total evaluation at each specific moment.

Long Term Use (Not Using it)
After the usage, the user will make up of a retrospective evaluation for the artifact based on the information stored in the memory.

These two stages of Long Term Use will be repeated until the user will decide to waste it.

Waste
The UX evaluation in this phase will influence the next purchase of related artifact as, for example, in the form of the brand image.

5. UX in Various Context of Use
As ISO9241-11 describes, the context of use includes user, task, equipment and environment. I would add the type of behavior (as was described in 3) and the phase of UX (as was described in 4) to this list. ISO9241-11 is strongly focusing on GOB and is focusing on the short term use. On the other hand, ISO9241-210 [4] emphasizes the importance of long-term

Further Discussion
Such issues as "the relationship between the general (everyday) experience and the UX" and "the predictability of UX" should also be discussed from the psychological perspective..

References
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[3] Helson, H. (1964) "Adaptation-Level Theory - an Experimental and Systematic Approach to Behavior" Harper and Row

[4] ISO9241-210:2010 (2010) "Ergonomics of Human-System Interaction – Part 210: Human-Centred Design for Interactive Systems"