

# Understanding the Meaning of Experiences with Technology

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## ABSTRACT

User-experience is an emerging research topic and the approaches for understanding experiences are still relatively limited and maturing. This paper aims at understanding what experiences are and how they are constructed. We present a review of the psychological nature of experiences as a construction of meanings and the role of affective experiences in this process. We also give an overview to user experience models underlining the role of meaning and understanding. We analyze and relate reviewed literature of experiences in psychology to literature of user-experiences. Our work identified some similarities, but also differences between these approaches leaving the challenges for further work. To conclude, for understanding the experiences with technology, role of meaning and affective components in its construction should be understood in depth.

## Author Keywords

Experience, user experience, meaning

## INTRODUCTION

People experience the world both psychologically and socially. We also experience the world physically but the physical experience becomes conscious for us through psychological processes. Naturally, people also have experiences of and with technology.

The term user experience has not been clearly defined and it is sometimes used without describing what is meant by it. Until now, there have been quite few efforts to understand user experiences with technology deeply and grounded in theory [those include, for example, 13; 16]. The aim of this paper is to examine what experience is and how experiences with technology should be approached and studied.

## WHAT IS EXPERIENCE?

### Experience as meaning

It is well known that people are psychological-physical-social beings. According to phenomenological approaches, our knowledge about the world is based on observations that we make about the world. Thus, we can separate the objective world from our subjective world that is based on our observations. We experience the world individually and subjectively in our mind. When we share our experiences they become social and,

furthermore, we also form individual subjective experiences of the shared experiences.

Both psychological and social experiences can be seen as constructed of meanings and research of experience studies these meanings. We give meanings to objects and thereby form meaning relations where the meaning relates the object to us. A central concept for studying meanings is signs. Meanings are carried by signs, just as a traffic sign carries the meaning of, for example, “stop here”. Thus, we are not directly in touch with the outer world – our relation to it is mediated by meanings and signs that carry the meanings. We also share the world with others and interact and communicate with others about our meanings and their meanings of the world. [3]

### Studying experience

There are long traditions in studying experience in psychology and sociology. The nature of the experience (whether it is subjective or social or which aspect of it we want to study) defines the methods used to study it.

The empirical analytical tradition of natural sciences is founded on observing and measuring phenomena that can be sensed. However, what goes on in people’s minds and the meanings that people assign to different objects cannot be observed or measured. In the tradition of reconstructive sciences, research on experience is based on understanding the expressions of meaning [11]. This scientific tradition aims at understanding a person’s meaning construction through a dialogue with the researcher and the research participant. Thus, the aims of empirical analytical and reconstructive sciences are different: the former aims at observing phenomena and describing them and the latter at understanding phenomena and explicating (i.e. interpreting) them.

The empirical analytical approaches provide us with a description of “average experiences” while reconstructive approaches enable us to understand individual meanings. The individual meanings can often be very important for getting a broad picture of the phenomenon under study. In the case of technology, an understanding of the meaning that people assign to technology and how and why they use it. Thus, user experience research should also concern with studying subjective and social meanings related to technology.

Phenomenological and phenomenographic psychological approaches aim at understanding subjective experiences as the meaning making process that happens in a given psychological state when we give meanings to objects. Meanings arise in our mind through the formation of our thoughts, emotions, perceptions, beliefs, opinions, and values. The research relies heavily on the participant's introspection (expression of one's experiences). [11]

### **Affective experiences in meaning extraction**

The process of extracting meaning of human experiences is significantly related to evaluation of affective experiences. According to Fredrickson [5], the evaluation of affective experiences is based on only few moments, peaks and ends. The peak-end-rule is very robust as its existence has been proved in various fields with heterogeneous episodes (e.g. short episodes of image quality and films to surgery episodes and its post-examination) [5, 8]. The peak-end-rule describes the way we construct our global overall affective judgments effectively and efficiently about a specific episode in time. Affective peaks and ends are used as heuristics in our evaluation of episodes and we direct our future actions based on these judgments [5].

The peaks convey information about capacity that a person needs in a certain situation in a person-environment interaction. When constructing overall judgments of a situation we count them peak-by-peak and these peaks have strong impact when people are forced to re-experience a certain type of situation. When the end point is not known, the earlier peaks have the major role while recent emotions have low impact on overall judgments. End itself provides a peak. It symbolizes the outcome of goal-oriented action, ends the certain episode which can also be ritualized and provide a story to tell. For example, long queuing in a market can be a bit annoying, but we might accept it as at the end we are able to reach our goal of shopping. The affect during the outcome is a very strong proxy. The duration of these affective episodes is not an important factor; the peaks and ends are the kings. [5]

The peaks and ends also convey personal meaning. Personal meaning combines the information about human-world-interaction and it is also used as a proxy for the global evaluations. The meaning of certain moments describes how harmful or beneficial they are for a person. High-meaning emotion relates to human social relations or personal growth, and are extremely strong drivers for further behavior. Love is an example of positive and shame, remorse and guilt of negative high-meaning emotions. Low-meaning emotion describes immediate individual survival in relation to environment. Sensory pleasure, feeling of safety, and comfort represent low-meaning positive emotions whereas pain, disgust, and anxiety illustrates the negative dimension. People aim at positive experiences especially in the high-meaning emotions. In the low-meaning emotions they aim at positive experiences too, but they can temporarily gain negative ones to fulfill the long-term aim of the high-meaning emotion. [5]

## **WHAT IS USER EXPERIENCE?**

The term user experience has emerged partly as a holistic design concept that includes various aspects of a user's experience with a product and partly as an expansion from traditionally cognitively oriented usability to aesthetics, enjoyment, fun, and pleasure. Much of the research is design-oriented and many models that describe user experiences are designed to be simple enough to be useful in design.

### **Overview of frameworks of user experience**

To describe differences between user-experience approaches and to understand underlying motivations, Battarbee [1] has categorized the models and frameworks into three groups 1) person-centered, 2) product-centered, and 3) interaction-centered. Person-centered frameworks aim at describing people's needs [1]. These include, for example, Jordan's four pleasures framework [11], Marcus's six degrees of freedom of user experience [13], and Battarbee and Mattelmäki's model of meaningful relationships with products [2].

Product-centered frameworks aim at acting as design and research checklists and are rather design-oriented [1]. These frameworks include Garrett's elements of user experience [7], Hassenzahl's model of pragmatic and hedonic product attributes that lead to appeal, pleasure, and satisfaction [9], and Rhea's life cycle model of product experiences with components of integration, involvement, commitment, and disengagement [45]. For understanding experiences, person-centered and product-centered frameworks are limited as they reflect rather a design viewpoint, but disregard construction of meaning and its context [1].

Interaction-centered models come closer to describing how meaning arises in interaction as compared with person and product-centered models and include context and time [1]. Also, the person and product-centered models describe the elements that belong to the process, but they do not describe how these elements impact to each other. Examples of interaction-centered models include Mäkelä and Fulton-Suri's model of user experience as motivated action where the present experience connects past and future experiences [15], Forlizzi and Ford's model of experience in interaction [6], McCarthy and Wright's four threads of experience [14], and Vyas and van der Veer's framework of experience as meaning. Battarbee further divides these models into "experience-in-interaction" that describe subjective experiences in relation to time and "perception-and-meaning" that describe the changes that happen and how the moment is experienced [1].

The models reviewed above are mostly concerned with subjective experiences. To understand socially constructed experiences the models should incorporate also sociological perspectives [1, 3, 16, 18]. Recently, for example, Battarbee [1] has studied how meaning is constructed in social interaction while using communication technologies and suggested the concept of co-experience.

## MEANING IN USER EXPERIENCE

The role of meaning is essential in some of the existing descriptions of user experience. McCarthy and Wright [14] have approached user experience basing their contemplation on pragmatist theories of experience by John Dewey and Mikhail Bakhtin. They outline four threads of experience. *The sensual thread* describes human sensory engagement with situation which results to concrete, palpable and visceral character or experience. *The emotional thread* illustrates qualities of experiences and is closely related to understanding and sense making process. *The compositional thread* draws relation between part and whole, and explains the relation of these two in immersive and distracted experience. *The spatio-temporal thread* defines characteristics of experiences related to space and time. All of these threads are described in very general level and they are related with each other.

McCarthy & Wright [14] attaches meaning to the sense making of experience. Shortly expressed, personal meaning of an experience depends on the sense we make of it given our particular history and disposition. They describe sense making as a process in referring to self and how it changes us at becoming. It is characterized as creative, dialogical processes that construct self, other and the living traditions in which self in relation to others occurs. It includes constructs from past and future and they become present through dialogue. An essential part of meaning making process is also intrinsic meaning making that is described as the value of an event for the people who are engaged in it.

Vyas and van der Veer [19] contemplate experience as meaning and identify four concepts related to designing technologies to support user experiences. *Experience in interaction* states that the interaction between the experiencer and the designed artifact happening in lived reality is a prerequisite for experiences to take place and experience is a dynamic process that is constructed through the interaction. *Experience in interpretation* means that users do not just passively receive experiences – they actively construct meanings using their knowledge and prior experiences. The meanings are social and cultural products. *Experience as what the designers offer and what the users bring to it* refers to the fact that expert artists can trigger certain experiences through an art piece but a specific interpretation can never be guaranteed. Experience depends on the experiencer and the experienced product that has been built by designers with some meanings attached to it. *Four forms of experience* denotes that art as well as interactive technology involves us cognitively, sensually, emotionally and practically. These are four inseparable and interrelated forms of human experience that are experienced as a coherent whole.

They also present a design framework that is derived from the concepts above which has three steps. First, experience occurs in interaction between the user and the system in a lived environment. Second, designers convey meanings with the system's appearance, interaction, and function. And third, the users construct coherent

experiences that are a combination of sensual, cognitive, emotional, and practical forms of experience. Thus, experience-conscious design activities can be supported by thinking about the relationships between the system's appearance, interaction, & function and the users' sensual, cognitive, emotional, & practical experiences.

## User experience as affective peaks and ends

The affective peak-end-rule describes the way we construct our global overall judgments about the whole past episode and the way we direct our future actions based on these judgments [5]. It illustrates the process of constructing affective experiences in relation to time dimension. The temporal dimension or process has been taken into account also in many of the interaction-centered user experience models. For example, in Mäkelä and Fulton Suri's model [6], previous experiences and expectations influence the present experiences by creating more experiences and modified expectations. Similarly, the dynamic nature of experiences has been characterized by Vyas and van den Veer [19] and McCarthy & Wright [14]. However, the crucial role of affective experiences in characterizing the quality of experience in a compressed form is not described in these models.

The end-point of an event symbolizes the outcome of goal-oriented action and closes a certain episode and at the same time represents an affective peak [5]. There is a clear connection to the definition of an experience: "*We have an experience when the material experienced runs its course to fulfillment e.g. work is finished, a problem receives its solution, writing a book* (Dewey, 1934 in [14])". An experience is also described as completeness and uniqueness; it involves emotional engagement and offers a narrative to tell [14]. The end-point of an event is also strongly related to the ability to finish goal-oriented actions [5] and from this viewpoint it has also been taken into account in the tradition of usability (e.g. effectiveness, [10]). Extremely simplified, the assumption seems to be that reaching goals provides a positive affective overall experience.

According to Fredrickson, affective peaks provide a compressed evaluation of the whole event [5]. The role of peaks is not very explicitly expressed in user experience models. However, there are some similarities in McCarthy & Wright's [14] model. The compositional thread describes the relation between parts and the whole, and further explains the relation of these two in immersive and distracted experiences. They describe that when we are highly immersed in an experience, the elements, such as subject, object, events, and environment interpenetrate each others and we lose our sense to separate these elements. Interruption of an experience, for example, when something goes wrong or we pause what we were doing, makes the elements seem distinct.

The meaning of a certain moment in person-environment interaction is also a proxy for global evaluations. People aim at positive high-meaning and low-meaning emotions whereas in the low-meaning emotions, people can temporarily seek negative emotions to fulfill the long-term aim expressed in the high-meaning emotion [5]. In the

current user-experience models, the pieces of high- or low-level meaning emotions have been implicitly listed using the concepts of emotions, values and interpretation [6, 19]. Based on our best knowledge, we have not seen user experience models where personal meaning is attached to affective peaks. By understanding this relation we might be able to gain deeper understanding the process of creating experiences.

## DISCUSSION

The topic of understanding experiences is very broad. We limited our presentation to a couple of different aspects of it. We highlighted the basic nature of experiences as meaning constructions and reviewed research on experience as meanings. We also examined the process of how people construct affective experiences. We related the chosen aspects of experience in psychology to user-experience with technology. We clearly find some similarities but also differences.

In the long traditions of research on experience in psychology and sociology, meanings have a relevant role in understanding experiences. Some user experience models also highlight the importance of meanings that are constructed in interaction and the interpretations that the user makes.

The peak-end framework for understanding the extraction of meaning in affective experiences seems to have useful connections to user experiences. The peak-end model could be relevant both when evaluating a specific use session as well as in a long-term examination during the life cycle of human-technology interaction.

To conclude, experience is a multifaceted phenomenon and getting to the bottom of it requires understanding the users' meanings related to technology. Those meanings exist in people's minds and studying them requires appropriate methods with which users can best describe their experiences. It would be very interesting to work further with the presented approaches and study their usefulness and potentiality for user-experience research in more depth.

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