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CHAPTER 3

The Thing and I: Understanding the Relationship Between User and Product

1. INTRODUCTION

We currently witness a growing interest of the Human-Computer Interaction (HCI) community in *user experience*. It has become a catchphrase, calling for a holistic perspective and an enrichment of traditional quality models with non-utilitarian concepts, such as fun (Monk & Frohlich, 1999; Draper, 1999), joy (Glass, 1997), pleasure (Jordan, 2000), hedonic value (Hassenzahl, 2002a) or ludic value (Gaver & Martin, 2000). In the same vein, literature on experiential marketing stresses that a product should not longer be seen as simply delivering a bundle of functional features and benefits - it provides experiences. Customers want products "that dazzle their senses, touch their hearts and stimulate their minds" (Schmitt, 1999, p. 22). Experiential marketing assumes that customers take functional features, benefits, and product quality as a given.

Even though the HCI community seems to embrace the notion that functionality and usability is just not enough, we are far from having a coherent understanding of what user experience actually is. The few existing models (e.g., Logan, 1984; Jordan, 2000) of user experience in HCI that incorporate aspects such as pleasure are rare and often overly simplistic. In the present chapter, I will propose a more complex model that defines key elements of user experience and their functional relations. Specifically, it aims at addressing aspects, such as (a) the subjective nature of experience *per se*; (b) perception of a product; (c) emotional responses to products in (d) varying situations. It is a more detailed and further developed version of a research model, I previously presented in Hassenzahl (2002a). I view it as a first step towards a better understanding of how people experience products and a valuable starting point for further in-depth theoretical discussions.

2. A MODEL OF USER EXPERIENCE

Figure 1 shows an overview of the key elements of the model of user experience from (a) a designer perspective and (b) a user perspective.

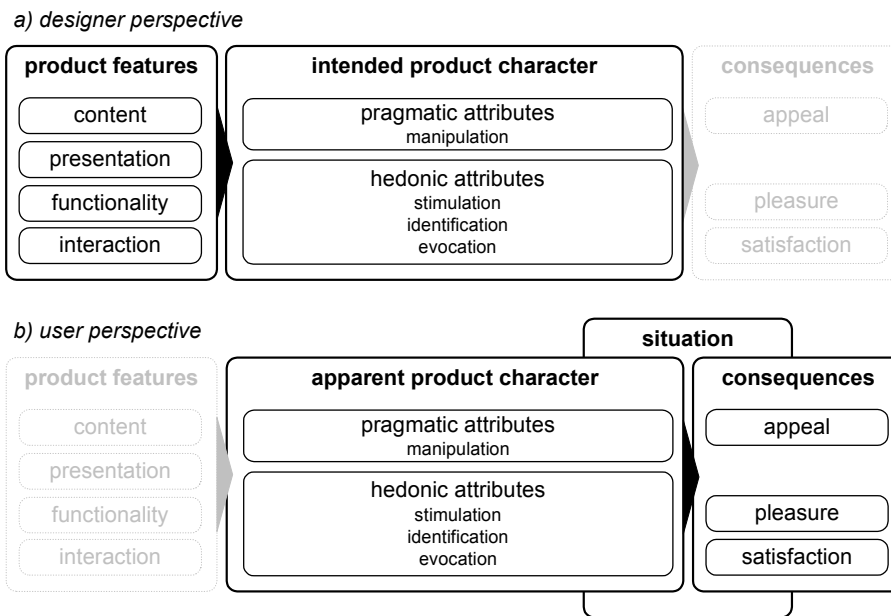


Figure 1. Key elements of the model of user experience from (a) a designer perspective and (b) a user perspective (for details refer to text).

A product has certain *features* (content, presentational style, functionality, interactional style) chosen and combined by a designer to convey a particular, *intended* product character (or gestalt; Janlert & Stolterman, 1997; Monö, 1997). A character is a high-level description. It summarizes a product's attributes, e.g., novel, interesting, useful, predictable. The character's function is to reduce cognitive complexity and to trigger particular strategies for handling the product. When individuals come in contact with a product, a process is triggered. First, people perceive the product's features. Based on this, each individual constructs a personal version of the product character - the *apparent* product character. This character consists of groups of *pragmatic* and *hedonic* attributes. Second, the apparent product character leads to *consequences*: a judgment about the product's appeal (e.g., "It is good/bad"), emotional consequences (e.g., pleasure, satisfaction) and behavioural consequences (e.g., increased time spend with the product). However, the consequences of a particular product character are not always the same. They are moderated by the specific usage situation. In the following, each key element is discussed in detail.

2.1 From the intended and apparent product character to consequences

A product designer "fabricates" a character by choosing and combining specific product features, i.e., content, presentational style, functionality, interactional style.

However, the character is subjective and only *intended* by the designer. There is no guarantee that user will actually perceive and appreciate the product the way designers wanted it to be perceived and appreciated. For example, a product with a specific screen layout intended to be "clear" will not necessarily be perceived as "clear." A suitable design process must assure that an appropriate product character is selected and that this character is properly communicated to the user (see Hassenzahl, 2002b). For online banking, for example, an appropriate character may consist of attributes such as "trustworthy", "sober", and "clear". The features (e.g., tone of voice, screen layout, colours, news ticker) have then to be chosen and combined by the designer according to the character to be communicated.

When users are confronted with a product, a process is triggered: First, an apparent product character is constructed. It is a user's personal reconstruction of the designer's intended product character. Second, the fit of the apparent character and the current situation will lead to consequences, such as a judgment about the momentary appealingness of the product, and emotional or behavioural consequences.

People *construct* the apparent product character based on the particular combination of product features and their personal standards and expectations. A personal standard most likely consists of other objects the product can be compared to. Variations of the character *between* individuals can be explained by differing standards. The apparent character can also change *within* a person over time. This change is due to increasing experiences with the product. For example, a product that was perceived as new and stimulating in the beginning may lose some novelty and ability to stimulate over time. Conversely, with increasing experiences products originally perceived as unusable may become more familiar and, thus, might be perceived as easier to handle. To date, not much is known about how perceptions of products will change over time. However, the specific way of change, i.e., direction and rate may be an integral part of a product's character extended over time.

Using a product with a particular product character in a particular situation has certain emotional and behavioural *consequences*. In some situations, for instance, to be novel is appreciated in a product; in others it can be neglected or even unwanted. Depending on the situation, character attributes become more or less relevant. The value of a product can be expressed by the user as judgments of appealingness or may manifest itself as emotions (see section 2.3). Compared to perceptions, consequences do vary more strongly because of their embedding into a particular usage situation. Consider, for example, an automated teller machine (ATM) designed to be highly understandable. To achieve this, the designers divided the process of receiving money into a number of small steps. If they got it right, you will perceive the ATM as highly understandable. The first time you try to get money from the ATM, you will certainly value this attribute. It will add to your satisfaction. Now imagine yourself being more experienced with the ATM or even under time pressure. The succession of small steps slows down interaction, and although you still perceive the ATM as understandable, this attribute is not relevant at the moment. It may even frustrate you. In this example, an individual's (your) appraisal of the ATM strongly varies (from satisfaction to frustration) because of the

particular usage situation, whereas the perception of the ATM as understandable remains relatively stable.

The whole process of perceiving and constructing the character and experiencing consequences will *always* take place, no matter how insufficient the available information about the product seems to be. A study using the Repertory Grid Technique to gather product characters, for example, showed that people make far reaching inferences about quality and behaviour of online banking Web sites on the basis of simple screen shots or very short interaction sequences (Hassenzahl & Trautmann, 2001). However, the outcome of the process, i.e., the inferences made about the product character and the resulting consequences, may change with growing knowledge and experience of the product. This also implies that the process is repeated over and over again.

In the following section, I will take a closer look at two universal groups of attributes that define the product character and the underlying human needs they address.

2.2 *Product character: Pragmatic and hedonic attribute*

An apparent product character is a cognitive structure. It represents product attributes and relations that specify the co-variation of attributes. It allows inferences beyond the merely perceived. For example, a product with a simple user interface may also be thought of as easy to operate, although the user has no actual hands-on experience. But what groups of attributes can be distinguished? This is best answered by considering the major functions of products: They enable people to manipulate their environments, to stimulate personal development (growth) and to express identity. Moreover, a product can provoke memories and thus has a symbolic value.

2.2.1 *Pragmatic attributes: manipulation*

Manipulation of the environment requires relevant functionality (i.e., utility) and ways to access this functionality (i.e., usability). I call this group of product attributes *pragmatic*. Typical pragmatic attributes of software products are "clear", "supporting", "useful" and "controllable". A pragmatic product is primarily instrumental. It is used to fulfil externally given or internally generated behavioural goals. If, for example, somebody asks you to drive a nail into a wall to put up a picture, you use a tool to do so. From a pragmatic perspective, the only requirements for the tool are that it can in principle be used to drive in a nail and that you are able to figure out how to do so.

2.2.2 *Hedonic attributes: stimulation, identification, and evocation*

All other remaining product attributes I subsume as *hedonic*. I have chosen this term for two reasons: first, it is meant to highlight that hedonic attributes and the underlying functions of the product strongly differ from pragmatic attributes. Whereas pragmatic attributes emphasize the fulfilment of individuals' behavioural

goals, hedonic attributes emphasize individuals' psychological well-being. Second, the American Heritage Dictionary of the English Language defines something that is hedonic as "of, relating to, or marked by pleasure". Thus "hedonic" expresses my belief that the functions and attributes it subsumes are strong potentials for pleasure - much stronger than pragmatic functions and attributes. Typical hedonic attributes of software products are "outstanding", "impressive", "exciting" and "interesting".

The hedonic function of products can be further subdivided into providing stimulation, communicating identity, and provoking valued memories.

- Stimulation

Individuals strive for personal development, i.e., proliferation of knowledge and development of skills. To do so, products have to be *stimulating*. They have to provide new impressions, opportunities, and insights. McGrenere (2000), for example, found in a study on "bloat" (i.e., "creeping featurism") in Microsoft's Word that on average only 27% of the available functionality was used. However, only 25% of the participants (13 of 53) wanted to have unused functionality entirely removed. I argue that these unused functions are viewed as future opportunities for personal development. They are not needed to fulfil current behavioural goals, but nevertheless wanted for future perfection of the way current goals are accomplished or for future generation of entirely new goals. Thus, functionality that is used and works well will be perceived as pragmatic, whereas functionality not *yet* used but interesting will be perceived as hedonic. The stimulation provided by novel, interesting or even exciting functionality, content, presentation or interaction style will also indirectly help goal fulfilment. It may raise attention, compensates for a lack of motivation to fulfil externally given goals, or facilitates new solutions to problems.

- Identification

Individuals express their self through physical objects – their possessions (Prentice, 1987). This self-expressive function is entirely social. Individuals want to be seen in specific ways by relevant others. To be socially recognized and to exert power over others is a basic domain of human motives (Schwartz & Bilsky, 1987). To fulfil this need, a product has to *communicate identity*. For example, personal homepages can be used to present the self to others. Borchering and Schumacher (2002) found that students who believed that others hold unfavourable opinions about them, such as a lack of humour and few social contacts, presented more information about family and friends and humorous links on their homepages. In this case, the possession – a personal homepage – is deliberately shaped to communicate an advantageous identity. In general, people may prefer products that communicate advantageous identities to others.

- Evocation

Products can *provoke memories*. In this case the product represents past events, relationships or thoughts that are important to the individual (Prentice, 1987). For example, souvenirs are a whole product category that provides only symbolic value by keeping memories of a pleasant journey alive. Mackenzie (1997) presented the example of wine collectors, who may appreciate the wine in their cellar because of

the aroma *and* the memories and effort attached to each single bottle. A more technology related example might be the trend to play vintage computer games. What do they provide? Definitely neither complex game play nor striking graphics. Their value comes from triggering memories of the good old days, when these games were exciting and kept people captive for hours.

To summarize, a product may be perceived as pragmatic because it provides effective and efficient means to manipulate the environment. A product may be perceived as hedonic because it provides stimulation, identification or provokes memories. Reconsider the example of driving in a nail. From a pragmatic perspective you prefer a tool that allows you to drive in the nail without much effort. You decide to buy a hammer. From a hedonic perspective you may buy a certain brand that communicates professionalism to others. Or you buy a whole set of tools instead of only a hammer. Although your current goal is to drive in a nail, you anticipate that do-it-yourself may become your new, most exciting hobby. Or you prefer to use an old hammer your mother once gave you as a present. Using it reminds you of the pleasant hours you spent with her as a child in her workshop. What you actually prefer to do depends on what is relevant to you. You then decide for the product which character suggests realization of your needs (i.e., the cheapest hammer that works, a professional hammer, a hammer and other tools, the hammer your mother once gave you).

2.2.3 *ACT and SELF product characters*

I view pragmatic and hedonic attributes as independent of each other. In combination they are the product character. If we take into account that peoples' perception of pragmatic and hedonic attributes can be either weak or strong, four types of product characters will emerge (see Figure 2). Notice, that products can be pragmatic or hedonic for different reasons. For example, a tool of a certain brand may be hedonic because this tool communicates professionalism to relevant others (i.e., communicates identity). Other tools may be hedonic because they are an innovation, which stimulates its user to do exciting new things.

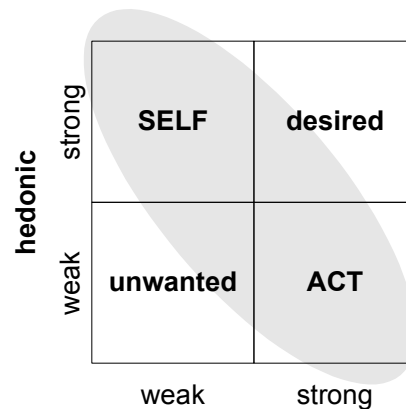


Figure 2. *Product characters emerging from specific combinations of pragmatic and hedonic attributes*

The combination of weak pragmatic and weak hedonic attributes is simply unwanted. It is a character implying a product that is neither able to satisfy pragmatic nor hedonic needs of potential users. The combination of strong pragmatic and strong hedonic attributes signifies the desired product. An uncompromising combination of both is the ultimate design goal. Most likely, both attribute groups will be not in balance. I call a primarily pragmatic product (i.e., "strong pragmatic / weak hedonic") an ACT product and a primarily hedonic product (i.e., "weak pragmatic / strong hedonic product") a SELF product.

The ACT product is inextricably linked to its users' behavioural goals. As already stated above, goals vary. They can be externally given by others or internally generated by the individual. Moreover, they can be of different importance to the user. Depending on the actual status of goals the appealingness of an ACT product varies (i.e., the importance of pragmatic attributes is decreased). Imagine: to reduce commuting time you bought a downright pragmatic car instead of going to your office by train. Unexpectedly, shortly after you purchase somebody offers you a new, cheap and attractive apartment only a five-minute walk from your office. You accept and suddenly your new car is not as appealing as before, because the main behavioural goal you have meant to fulfil with the car ceased to exist.

On contrary, the SELF product is inextricably linked to users' self, e.g., their ideals, memories, and relationships. If, for example, the car you have bought had been a luxurious sports car that not only stimulates your senses but also communicates success to others, the move would not have decreased the car's appeal. The appreciation of SELF products is much more stable than the appreciation of ACT products, because the probability that individuals change what they require from a product to satisfy their self is much lower than the probability

that behavioural goals change. Moreover, the bond between a SELF product and its user should in general be much stronger than the bond between an ACT product and its user. Only when the behavioural goals accomplished with the ACT product are of high personal relevance a strong bond between an ACT product and a user can be expected. This emphasizes the importance of hedonic attributes. Only products, which provide at least some opportunities for being related to the self, are likely to be truly and stably appreciated.

2.3 *Consequences: Satisfaction, pleasure and appealingness*

Experiencing a product with a certain character will have emotional consequences, such as satisfaction or pleasure. They are momentary and take the usage situation into account. Note that these consequences (i.e., satisfaction, pleasure, appeal) are viewed as outcomes of experience with or through technology (see also Wright, McCarthy, & Meekison elsewhere in this book).

Human-Computer Interaction regards satisfaction with a product as a major design goal (e.g., ISO 9241-11). However, its definition as a "positive attitude towards the product" remains superficial. Moreover, attitudes differ from emotions in several aspects. Ortony and Clore (1988, pp 118, see Desmet & Hekkert, 2002 for a further application of Ortony et al.'s theory) define satisfaction as being pleased about the confirmation of the prospects of a desirable event. In other words, if people hold expectations about the outcome of using a particular product and these expectations are confirmed they will feel satisfied. In contrast to satisfaction, joy or pleasure requires no expectations. It is defined as being pleased about a desirable event *per se* (Ortony et al., 1988, pp. 86). The more unexpected the event is, the more intense will be the pleasure. In other words, if people use a particular product and experience desired deviations from expectations, they will be pleased.

In practice, one is likely to experience combinations of satisfaction and joy. To give an illustrative example, consider software for playing MP3 music files. You expected that it support you in managing the files on your computer hard disk by giving you an easy possibility to generate and save play lists. Indeed, the software provides this functionality and you feel satisfied whenever you use it. Moreover, you unexpectedly discover that it is possible to produce standard audio compact discs from the play list by only one click. You are pleased about the unexpected benefit you discovered. Satisfaction is linked to the success in using a product to achieve particular desirable behavioural goals. Pleasure is linked to using a product in a particular situation and encountering something desirable but unexpected.

If a product is able to trigger positive emotional reactions it is appealing. Appealingness is a group of product attributes such as good, sympathetic, pleasant, attractive, motivating, desirable, and inviting. Appealingness weights and integrates perceptions of product attributes by *taking particular situations (i.e., contexts) into account*. For example, individuals may consider an ACT product as appealing because the goals achievable by the product are of high relevance to them in a particular situation. However, other individuals (or even the same individual) can consider the same product as less appealing in the same situation, maybe because

people were rather interested in communicating a favourable identity to others than achieving behavioural goals. In short, appealingness integrates experiences with and feelings towards a product in a particular situation into an evaluative judgment.

In practice, I argue that particular product characters will render some emotional reactions more likely. ACT products emphasize fulfilment of behavioural goals. This can be interpreted as an expectation, which – given that goals had been reached – is more likely to lead to a positive expectation-based emotion, namely satisfaction. With an ACT product, pleasure may additionally be experienced if expectations about goal achievement (e.g., ease of achieving a goal) are exceeded. SELF products are used to fulfil psychological needs rather than behavioural goals. Because of the weak connection to goals and expectations about fulfilling these goals, these products are more likely to lead to a positive well-being based emotion, namely pleasure. Satisfaction will only play a role, if hedonic functions are explicitly called for and expected, for example, if a person buys a product to impress a particular other person and is successful in doing so.

The susceptibility of emotional reactions and the judgment of appealingness to variation caused by situation is an argument for separating *potentials* for consequences (i.e., the product character) from the *actual* consequences - the former is simply more stable and, thus, more reliable. Furthermore, in a product design process it is important to know why users judge a product as appealing, pleased by or satisfied by and thus one should rather focus on the product character and the usage situations than the consequences. However, this is not meant to imply that appealingness and the emotional reactions are unimportant. Both will certainly affect future use of the product.

2.4 Situation: Goal and action mode

I have repeatedly stressed the importance of different *situations* for understanding both judgments of appealingness and emotional reactions. A usage situation combines the perceived product character with a particular set of aspirations, such as specific behavioural goals or need for stimulation. Obviously, these situations can be quite diverse, which poses a serious problem for predicting emotional reactions or appealingness in particular usage situations. As a solution to this problem, I propose to focus on the mental state of the user by defining different *usage modes* (see Hassenzahl, Kekez, & Burmester, 2002). Specifically, I distinguish a goal and an action mode¹ (see Figure 3 for an illustration).

Usage *always* consists of behavioural goals and actions to fulfil these goals. In *goal mode* goal fulfilment is in the fore. The current goal has a certain importance and determines all actions. The product is therefore just "a means to an end". Individuals try to be effective and efficient. They describe themselves as "serious" and "planning". Low arousal is preferred and experienced as relaxation. If arousal increases (e.g., because of a usability problem that circumvents goal fulfilment), it is

¹ Usage modes were inspired by Apter's reversal theory (Apter, 1989). In the present chapter I, however, use the term "action" instead of Apter's term "activity" to avoid a potential confusion with "activity theory".

experienced as mounting anxiety (frustration). In *action mode* the action is in the fore. The current action determines goals "on the fly"; the goals are "volatile". Using the product can be an "end in itself". Effectiveness and efficiency do not play an important role. Individuals describe themselves as "playful" and "spontaneous". High arousal is preferred and experienced as excitement. If arousal decreases (because of a lack of stimulation) it is experienced as increasing boredom.

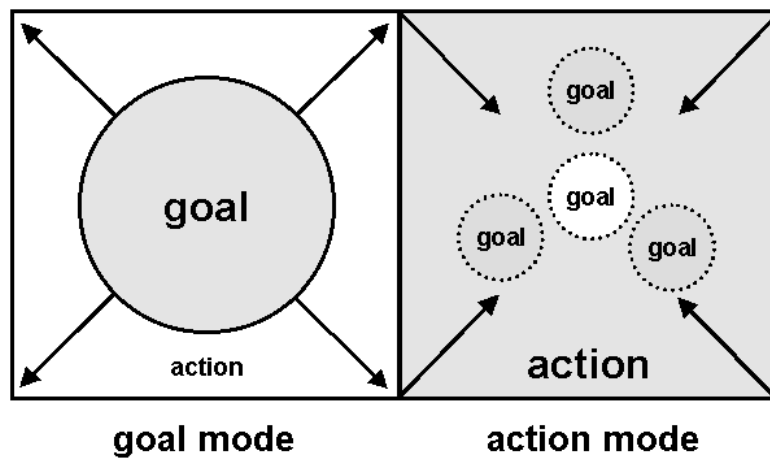


Figure 3. *Goal and action mode (inspired by Apter, 1989)*

The particular usage mode is triggered by the situation itself. If, for example, your boss wants you to do an important task that must be finished within two hours you most likely will be in goal mode. In contrast, if there is not much to do at the moment and you start exploring the new software you just got, you are more likely to be in action mode. In principle, I view usage modes as psychological states and every product can be experienced in either state. The perception of a product character as primarily pragmatic or hedonic will not be influenced by usage modes. However, appealingness and emotional reactions depend on the product's momentary fit to the usage mode. Thus, usage modes become the moderator between the product character and consequences. Usage modes can be chronic, i.e., a part of an individual's self-concept, too; to be in a particular usage mode becomes a stable personal trait.

To conclude, usage modes are certainly a more helpful distinction between ways of approaching a product than the classical "tool" and "toy" or "leisure" and "work"-dichotomy. The advantage lies in the emphasis on the fact that each product, irrespective of whether it is a computer game or a word processor, can be used in both modes.

3. SUMMARY AND CONCLUSION

User experience encompasses all aspects of interacting with a product. Its psychological complexity cannot be underestimated. First of all, user experience is subjective. Consequently, actual experiences with products may considerably differ from experiences intended by the designer. Experiences vary between individuals because of different personal standards. In addition, they vary between situations and they may change over time. Products have a character that suggests a capability to manipulate the environment, to stimulate, to communicate identity or to provoke memories. The first capability is pragmatic, i.e., inextricably tied to internally generated or externally given behavioural goals. The other three are hedonic, i.e., tied to individuals' self and their psychological well being. People value products on the basis of how it satisfies needs in particular situations. As a consequence, products have a certain appealingness and cause emotional reactions. Different emotional reactions may be distinguished: Satisfaction may be related to the fulfilment of expectations (i.e., behavioural goals), whereas pleasure may be related to the unexpected.

Approaches to user experience in HCI lack theory and empirical investigation. It seems important to better understand user experience itself, its determinants and situational/personal mediation *and* to validate this understanding. So far, several studies tested key elements of the model (e.g., [Hassenzahl, Platz, Burmester, & Lehner, 2000](#); [Hassenzahl, 2002a](#)) and used the concept of "hedonic" attributes in product evaluation (e.g., [Kunze, 2001](#); [Sandweg, Hassenzahl, & Kuhn, 2000](#); [Seifert, Baumgarten, Kuhnt, & Hassenzahl, 2001](#)).

I view the benefit of the suggested preliminary model of user experience as two-fold: First, designers may better understand how people perceive and value objects. Second, it allows operationalisation and measurement of key elements. Both will inform design and lead to better, more satisfying and more pleasurable products.

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