CHAPTER SEVENTEEN

USING NARRATION TO RECALL AND ANALYSE USER EXPERIENCES AND EMOTIONS EVOKED BY TODAY'S TECHNOLOGY

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1. Introduction

User experience as a relatively new concept has attracted a lot of attention in the field of Human Computer Interaction (HCI). The main driving factor for the vivid interest in user experience is the increasing introduction of technological devices into application areas besides the office domain that brings along new priorities. A common assumption is that "technology as a tool" becomes "technology to play with". A central question when studying these experiences with regard to HCI is whether emotions are constitutional parts in the users' interactions with technology and if so which are of central relevance.

So far, several helpful models and frameworks on user experience have been developed with the goal to better understand the user's experience and to identify and systemize the factors influencing it (Arhippainen & Tähti, 2003; Forlizzi & Ford, 2000; Jääskö & Mattelmäki, 2003). Besides these theoretical approaches several empirically based studies with the aim to better understand and/or evaluate user experience have been conducted (Kidd, 2002; Steen, et al., 2003). Central to these models is the term of experience, which, according to Dewey (1980), embraces the totality of the whole lived experience but also can be broken up into a variety of separate "experiences" or situations. These situations are set off as self-contained wholes by virtue of an immediate "quality" that pervades each situation. These qualities are not mere feelings, but they are characteristics of situations themselves, which include natural events, human affairs,

feelings, etcetera. Examples of such qualities are satisfying, problematic, exciting, surprising, etcetera.

Likewise, there are several existing frameworks dealing with classifications of emotions (e.g. Cacioppo & Gardner, 1999). Ortony, et al. (1988) provide a structured approach to elaborate on different emotions such as (among others) hope, fear, desire, distress, admiration, reproach, satisfaction, and disappointment. The inclusion of certain emotions and the omission of others are however subject to heavy debate. Many researchers have proposed models of basic and peripheral emotions, but no theory has been widely agreed on (Ortony & Turner, 1990).

2. Goals

We address two key questions in this study. First, we want to find out if emotions are a constitutional part of technology use and if yes which ones are dominant? We further want to better understand today's experiences that appear in a real context when user play, work and interact with technology. Our aim is to identify characteristics of current experiences, to classify the involved emotions and compare these with existing conceptualisations of user experience. That findings on experience-related emotions can provide useful insights in designing-for-experience. We want to trace the content, generation and progression of these experiences and to derive implications and recommendations for designers based on these findings.

Secondly, we want to explore if “Narrations” proves to be a useful method for HCI to reveal emotions and experiences associated with everyday technology. We report on the applicability of the method and its potential to extract experiences and related emotions.

3. Method

User experience research has triggered the development of several new methodological approaches such as cultural probes (Gaver, et al., 1999) and perspective sorting (Forlizzi, et al., 2003). The development of such new methods reflects the difficulties in making the user's experience accessible to the researcher. Due to our focus on widespread and real-life experiences with technology we were also limited in the choice of applicable methods. Our answer was found in narrative interviews. The focus on eliciting narrations allowed us to make use of the structural

peculiarities story-telling follows e.g. the need to make meaningful selections, the need to provide sufficient details for the listener or the need to close a once started narrative figure (Kallmeyer & Schütze, 1976). The emotional content of the story is re-enacted during the narration therefore stories provide a more direct access to the experience than evaluative questions (Schütze, 1976). Beside these, we believe that respondent's intrinsic motivation to tell particular stories and experiences and the active involvement during the interviews leverage the exploration of experiences. Moreover, with stories as base material, the analysis can also consider structural elements of the narrations and characteristics of the used language. Latter is possible as narrations do not impose given phrases, wordings or mental-models (like in questionnaires) but allow respondents to express experiences in their own modality. Such considerations we believe as being utterly important for the given task as classifications are made afterwards as a result of responses and not vice versa by filtering answers and cutting off meanings using pre-given clusters and wordings.

3.1 Procedure

The interviews started with a short briefing of the interviewees. They were informed about the general goal of the study: to better understand the experiences of the interaction with systems of all kinds, e.g. mobile devices, robots, personal computers, personal digital assistants (PDAs) and consumer electronics.

Each interview started with open questions about "emotional encounters with technology" which introduce the interviewee to the focus of the interview and creates the right mindset for follow-up questions. Users were asked to remember any situation with technology in which they experienced emotions. They were asked to recount these memories in detail and to narrate stories as complete as possible.

After these relatively unfocused questions, we asked participants for negative and positive experiences, and then focused on specific experiences mentioned by the interviewees.

Then, the interview focused on special emotional and user experience factors that were selected based on the user experience work mentioned in the introduction. Questions on these factors included (1) *general experiences*, both positive (fun, pleasure) and negative (frustration, anger), as well as (2) *social experiences*, connectedness to other people and

sharing experiences with others, and (3) *personal experiences*, feeling intimate with a system, trust in a system and flow, the latter can be described as the positive experience of being totally immerged in something (Csikszentmihalyi, 1990). For each factor, participants were asked to narrate stories about situations in which they experienced it and elaborate on the precise circumstances under which the situation occurred.

Each interview took between 90 and 120 minutes and was audio taped. The audio data then was transcribed in detail. Analysis was based on the transcriptions, but the audio files were used during analysis as an additional source in the case where text based interpretation was not unambiguous. The interviews were conducted in German. Samples used below are translated into English by the authors.

3.2 Participants

Due to the time-consuming character of in-depth qualitative analysis and the explorative character of the study the number of interviews was limited to eight interviews. The eight participants were recruited from our database, which contains about 2000 persons who are interested in participating in usability tests and studies. The criteria for invitation were that users can be characterized as heavy users of new technologies and have wide experience with different kind of systems such as office computers, games, internet chats, mobile devices, etcetera. The average age of the participants was 24.1, with the youngest being 19 and the oldest being 30 (5 males, 3 females). All users use the internet at least 10-20 hours per week, and all use a mobile phone extensively. Additionally, all but one participant used a PDA. The target was to find people that have had a chance to encounter different situations with advanced interfaces that are used for everyday purposes. The drawback of inviting these specific users is that it introduces a certain early-adopter bias in the study. This drawback is compensated by the effect that more experiences with various new technologies can be addressed.

3.3 Analysis

The analysis was conducted in three steps. First, we summarized the qualitative interview data, next compared our data with existing conceptual classifications of emotions and last we analysed characteristics and differences of narrated experiences. Each step is detailed below:

The first step in the analysis of the interviews was to summarize the content of the narrations, classify them and see what type of experiences are actually mentioned and to which devices and situations they relate.

In a second step the emotions contained in the experiences were analysed based on a bottom-up approach that applies an ex post interpretation of users' experiences. After this initial processing, the findings of this analysis were compared with emotions in existing theoretical frameworks to find out whether all theoretical emotions are useful to analyse technology-related user experiences or if relevant subsets of emotions can be identified that are of particular importance in user experience research. As mentioned there are different existing approaches to classify emotions. In their structured approach, Ortony, et al. (1988) mention a number of emotions: prospect-based emotions for the self (confirmed and disconfirmed hope and fear) and for others (gloating, happy for, pity, resentment), well-being (joy, distress), attraction (love, hate) and attribution (pride, shame, admiration, reproach, relief), as well as compound emotions related to well-being and attribution (gratification, gratitude, remorse and anger). Ekman mentions a total of fifteen groups of emotions as a basic set, partly similar to the ones from Ortony, et al., but also including contempt, disgust, embarrassment, and sadness, as well as amusement, contentment, excitement, and sensory pleasure.

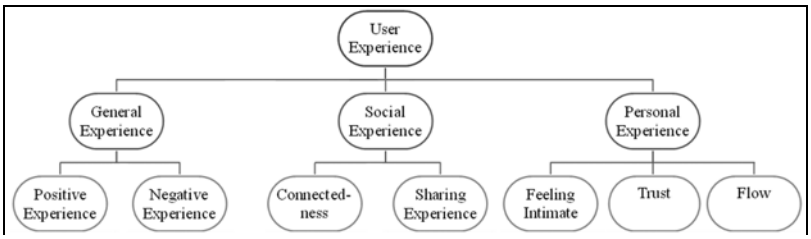
The third step of analysis concerned the common structural aspects of the different experiences and their implications for design. For analysing this aspect we followed the classical "grounded theory" approach as suggested by Glaser and Strauss (1967). We first approached the data without specific hypotheses in mind and developed analytical conceptualisations based on the data (so-called "codes"), searched for contrasting occurrences and cases for the identified codes and then integrated the results. Additionally knowledge from the field of structural analysis of oral narrations was used to enhance this approach (Schütze, 1976; Kallmayer & Schütze, 1976). Two researchers worked independently on the texts to ensure inter-subjectivity of the interpretations.

4. Results

Step 1: Interview analysis

Users were first asked to narrate stories containing *general experiences* with technology. The experiences they mentioned were grouped together into experiences with positive and negative emotions and attributed a label

by both interpreters. The following two parts of the interview focused on primary aspects of user experience: *social experiences*–connectedness and sharing experiences–and *personal experiences*–feeling intimate, trust and flow. These bottom-up narrated experiences were summarized, grouped and labelled by the two interpreters and are reflected in Figure 17-1.



Challenge	Anger	Companionship	Support	Compassion	Autonomy	Excitement
Completion	Annoyance	Completion	Feedback	Respect	Control	Fun
Competence	Deception	Connection	Involvement		Fear	Learning
Delight	Disappointment	Curiosity	Love		Vigilance	Sharing
Discovery	Disrespect	Involvement			Risk	Guilt
Fun	Distress	Surprise			Trust	
Novelty	Frustration					
Pride	Panic					
Safety	Restraint					
Support	Shame					
Surprise	Surprise					

Figure 17-1. Labelled experiences described in the interviews.

The kind of system the stories are about can be summarized as follows: the majority of narrations dealt with experiences with personal computers (67,7%; 21 mentions). Typically these were stories about interactions with software programs or a system crash. The next frequent categories were stories containing cell phones and consumer electronics (both 9,6%; 3). Only rarely users told stories related to cars/bikes (6,4%; 2), games (3,2%; 1) or other things (3,2%; 1).

Step 2: Analysis of emotions contained in the experiences

The narrations were further analysed in detail to gain an overview of the emotions central in the experiences. When we compare the above mentioned experience-related emotions to emotions from theoretical approaches such as those from Ortony, et al. (1988) and from Ekman (1999), this leads to interesting results. A comparison shows that many existing emotions mentioned by Ortony, et al. and those mentioned by Ekman are found in the list of experiences from our interviewees: *joy, fun, pride, anger, disappointment, distress, panic, shame, love, fear, excitement and guilt*. Some examples are the following:

Fun:

> The computer program does not have to tell jokes. Nevertheless, I like to notice that designers put some effort on nice features. For instance there is an absolutely useless function that supports handwritten notes in MS Messenger – but it is fun exploring it and see how it works.

Anger:

> I made an software-update on my computer that I expected to improve some functionalities. But the system did not work well afterwards. I was not sure what caused the malfunction. I was really annoyed.

In addition, some compound emotions might identify the additional factors *hope* (from discovery and novelty), *satisfaction* (from challenge and completion) and *gratitude* (from safety, support and feedback). Although many emotions mentioned in emotion theory also were described in the interviews, a number of emotions are not reflected in the interviews: *desirable and undesirable emotions regarding others* (happy-for, resentment, gloating and pity from Ortony, et al.) were not mentioned at all, nor were *remorse*, *admiration*, *reproach* or *hate* mentioned in any form.

One experience, *surprise*, occurred in a positive setting where the system is doing something unexpectedly good, as well as in a negative setting, where the system is doing something unexpectedly in a negative way. The following two citations should illustrate the ambivalent occurrence of surprise:

Positive surprise:

> Once my home computer crashed and I tried out a function that promised to repair the system automatically. Unless I didn't believe it to work I executed it. As it finally worked out I was really disabused and positively convinced.

Negative Surprise:

> My mobile internet browser (on the respondents cellular) was said to support JAVA. I tried it out but it did not work, I had no idea why, so I had to install different browsers to get it running. I did not really expect that…

Surprise is a difficult experience to relate to specific emotions. Some researchers have categorised surprise itself to be an emotion, but this approach is not undisputed (e.g. Derbaix & Vanhamme, 2003; Ekman, 1999). All emotions are valenced, that is, are either positive or negative, whereas surprise can be both. The findings from the interviews underline this non-valence of surprise on a theoretical level, implications of the presence of surprise in both positive and negative experiences can be seen on a practical level regardless of the theoretical discussion.

Step 3: Interesting characteristics from a design-for-user-experience point of view

The detailed analysis of the structure and the content of the narrations based on suggestions from the "grounded theory" as well as the work of Schütze give us an overview of striking characteristics that recur in multiple situations. These observations are described in detail below.

1) Positive Experiences

The first important observation based on the interviews is that we can identify three important key factors for positive experiences, *exploration*, *challenge* and *autonomy*. Almost all of the narrated positive experiences are strongly related to one or more of these three aspects.

- **Exploration**–Narrations about positive experiences contained as key element the exploration of "new territories" with the potential to discover novel and interesting possibilities. An interesting structural aspect of these exploration activities was that the outcome–i.e. if the user actually discovered something helpful–was only of secondary nature. Exploration was experienced as a satisfying activity in its own right. The perceived possibilities of a

device are powerful determinants for the exploration possibilities and the resulting positive or negative experiences. Users report negative surprises when advertisements introduced unrealistic expectations and positive surprises when they discover more possibilities than expected.

- **Challenge**–Another frequent starting point for positive experiences is a challenge that matches the ability of the user. Participants mentioned difficult situations that they could solve with the help of a system as example. An interesting aspect here is that the difficulty typically was not introduced by the system but by factors outside the user-system-interaction, e.g. a deadline is coming up and a lot of work still has to be performed, in this challenging setting a computer program has to be used. Computer-games are an exception to this outside influence; here the challenge comes from the game itself. The following example refers to the challenge of learning a software program (and increasing the ability of working with it):

> Using Adobe Photoshop is really challenging as there are so many buttons and functions. And you know nothing at the beginning… in a positive sense… exploring the instruction manual is really a challenge…

- **Autonomy**–Positive experiences included the increase of the perceived autonomy of the person. The system allowed the users to do things they were not able to do before e.g. they could chat to friends far away at low cost. But this relationship can be inverted dramatically if the system does not function well–the autonomy switches into dependence.

An example for a positive experience containing all three aspects is to learn to use a system auto-didactically–a situation mentioned strikingly frequent as example for positive experiences. To learn a new system you have to explore it. This is not always easy, it is a challenge. But when you succeed it increases your autonomy.

2) Negative Experiences

A general trend within the interviews was that *negative experiences dominated* both in terms of frequency and in terms of intensity. Negative experiences, e.g. frustration, anger or annoyance, were mentioned far more often than positive ones. Negative experiences were told using more emotionally loaded terms and the structural organization of the narrations

showed stronger patterns indicating emotional activation. Typically for positive experiences were terms like "*quite good*", "*nice*". For negative experiences similar terms were used, like "*bad*" but also much more expressive phrases like "*hit rock bottom*" or "*I would have liked it the most to throw the cell phone against the wall*".

3) Social Experiences

With respect to the social experiences participants mainly mentioned experiences where technology helped them stay in contact with distant friends and relatives via chat, e-mail and telephone conversations and share not only information with each other, but also "connect" and share experiences with each other. This corresponds with Battarbee's (2005) "co-experience", which mentions that social interaction is very important to many kinds of experience and technology needs to be designed to support this social interaction. To demonstrate such a social experience reported the following statement is mentioned:

> Using my Messenger I like to see whether some of my friends are online even though I do not talk to them immediately. I know that they are online so that I'm able to talk to them later. From time to time I turn on the "do not disturb-sign" in order to work patiently...

4) Personal Experiences

Regarding personal experiences with technology and relationships with technology itself, we found a number of interesting results. The personal experiences mainly revolve around four aspects: reliability, frustration, intelligence and goals which are described below.

- **I can count on you**–Regarding the perceived and expressed (implicitly or explicitly) relationship between the user and the system the most outstanding result is that reliability is the core value users appreciate in their relationship to technology. This we think is not only related to the above mentioned importance of functionality but also has to be understood in comparison to human-human relationships. It is especially what is different in technology that makes it appealing. Typical statements by our interviewees expressing this were e.g. "*It doesn't disappoint me*" or "*I can count on it*". This also can explain the importance of functionality as problems with it interfere with this model of relationship. This aspect is especially relevant for advanced systems, as with the emerging new interaction styles this model of relationship might be challenged.

- **Person-system relationships are coloured by usage goals**–What people use the devices for seems to be much more relevant for users' attitudes towards the device than what it is capable of. For example, if they use a system to communicate with friends the mobile phone becomes also kind of a friend, if the system is always running it becomes a companion, if the device is used in work it becomes a tool. The emotional characteristics of the usage situation–independent of the devices capabilities–are colouring the overall impression of and relationship with the device. There is no intrinsic property of the device that defines the relationships; there are just potentials and possibilities which are ignited by the way the device is used to reach other goals.
- **"It frustrates me" and "I frustrate me"**–Users report two ways in which they deal with frustration and anger in relation to technology. When a system reacts unexpectedly and leads to errors or data loss, the terms describing these experiences for all interviewees are either frustration or anger, or both. Interestingly, these are either a) targeted at the technology or the developers of the technology for some users, or b) targeted at themselves. These differences in blame attribution provide an interesting dichotomy in which both styles of blame attribution have different design implications.
- **Immergence leads to wasted time, not flow**–Although all interviewees reported that it occurred at least occasionally to them that they were so occupied with technology that they completely forgot everything around them and lost track of time (attributes of flow), the experiences reported by the participants were associated with wasted time and feelings of guilt or shame for not doing something productive. These negative emotions are quite different from the positive experience of flow. Interestingly, not one experience mentioned by any of the participants could be considered to be a real flow experience, even though they were directly asked to recall an experience in which they felt completely immerged in an activity including technology.

5. Discussion of results

Many experiences that were described could not be directly related to specific emotions. This could be related to the structure of the interview, as we asked for experiences and asked participants to give as many details as possible, and not asked for specific emotions. This bottom-up

processing of experiences led to situations that contain more than only a single emotion, giving also antecedents and results of emotional encounters. This allows a more *integrative approach to emotions in user experience research*, and provides us with interesting findings regarding the relative importance of negative emotions such as anger and its antecedents, and more generally, positive and negative surprises in encounters with technology. We believe that when designing for emotions "surprises" are a potent medium to convey particular experiences if sensibly applied. Hence, in a way "exploring a system" turns to be an important fact in order to generate such positive astonishments.

We also noticed that some experiences were dominated by certain emotions to such a degree that the experience was labelled after the dominant emotion (e.g. fun, pride, anger, excitement). Other experiences that were described by our participants were more abstract from their emotional content, and could not be directly related to emotions. These include challenge, completion, discovery, feedback, novelty, safety and support. Other positive experiences that were mentioned are curiosity, autonomy, control, vigilance, and trust, most of which were mentioned in describing "trust"-experiences. These abstract experiences could not be directly related to emotions, as they describe other appraisal processes and are not as emotion-rich as the above-mentioned experiences.

A comparison between the emotions mentioned in the narrations and emotion theory revealed us that *a very large part of general emotion theory is transferable* to emotions in users' experiences with using everyday technology. This makes emotions not only an integral part of user experience, but also one of its important parts. However, *designing for user experience comprises other factors as well*: we also need to take care about issues like trust, control, autonomy, challenge, and discovery to guide user experience, which do not have the same physiological and psychological characteristics as emotions, but are also important in good design. For instance, trusting a system goes hand in hand with reactions the user expects the system to perform. Users may only trust a system if they now how it reacts and if they are able to control and anticipate the systems' reactions. However, the system needs to address such circumstances being able to "tailor" one's experiences and emotions (e.g. identifying and identifying the source of error and provide proper feedback, etcetera). In any case, designing for positive experiences the system has to convey a feeling of control and give the user the possibility to understand the situation (even if an error occurs).

We can also see that, when we look at the emotions mentioned by Ortony, et al. (1988), that the emotions that are related to the "self" are all reflected in the interviews, but the ones that are all related to specific parts of emotions that are related to others, to agents and to objects are partly missing. This shows a particular focus on the self in respect to everyday technology. Partly, this can be attributed to the interview style that focused on personal experiences, but some questions were directed at interactions with other users, and users were often asked whether they experienced a situation with other people. This implies that, in dealing with technology, *the most salient emotions are the ones that are related to the self.*

The fact that both the amount and the intensity of negative experiences dominate, can be traced back to the notion of "negativity bias" as reported by Cacioppo & Gardner (1990), who explain this behaviour from an evolutionary point of view: a missed opportunity for exploration is not as dangerous as an overly positive assessment that can end in being eaten by a predator. This evolutionary footprint apparently also determines our experiences in relation to technology: this is the user's reality and interaction designers should consider this.

6. Reflections on using the method

The method proved to be a potent instrument to extract self-experienced feelings and emotions related to everyday technology. However, the key challenge proves to be extracting meaningful narration in place of evaluation. In our experience during the interviews respondent tend to continuously switch between narrations and evaluations that forces the interviewer to be sensitive in balancing the interview and holding the track. In such situations the interviewer needs to confront the respondent positively and empathically. He/She respond to the "narration-style" of his/her opponent without forcing the narration towards particular directions. Hence, a good introductory briefing, which may pre-eliminate such problems, should be part of any interview session. In social-theoretical literature good examples for valuable guidelines for the conduction of narrative interviews exist (e.g. see Schütze (1976)).

A limitation of the method is its incapability of generating narrations about systems that people do not know or have not worked with (it is obvious that respondents are not able to tell stories about something they do not know). The method is able to extract experiences and emotions of existing systems but is not able to pre-evaluate such issues. This fact limits

the method to be used in post-evaluations (or prototype evaluation). From the actual point of view we only see restricted possibilities to adopt the method in early design phases. However, in our experiences narration as well could help designers and research in creating ideas for new designs and solutions for particular problems (see for instance implications for the design of positive surprise).

We conducted interviews with 8 respondents. The qualitative material we gathered provided a satisfactory level of detail unless we recommend researchers to strive for a higher number of respondents. With session about 90 and 120 minutes respondents were able to finish about 3 to 5 stories. We believe shorter session to be unsatisfactory, as narrative interviews need time to develop over time during the session.

7. Conclusions and implications for design

This paper discussed the everyday experiences and emotions evoked by today's technology. We were able to identify interesting phenomena, e.g. the overlap between emotion theory and technology practise as well as the differences between them, the dominance of negative experiences and the influence of usage on the user-system relationship. Our results strengthen the position that designers cannot evoke positive experiences directly but the results also show that there are several things designers can do to make positive experiences possible. Based on these considerations we want to provide a number of recommendations for practitioners concerned with designing for experiences:

- Support approaches that invite the user to *explore* the system and provide possibilities for playful interaction without dead ends while not placing excessive demands on him/her.
- Create a realistic image of your product, or even omit certain features in your advertising. Users will be positively *surprised* by your features (of course, be careful not to omit too many features in your advertisements). This also means that negative surprise can be avoided which results in anger and frustration.
- When performance is different than expected by the user and the system is able to recognize such an exception, it should be designed to provide meaningful error messages. Try by all means to rescue data: deleting is easy, recovery difficult. Apologize for your imperfection and ask for feedback, show that you care, to reduce possible user frustration and retain trust.

- Unexpected behaviour is very tricky, especially in more or less autonomous systems. When analysing the sequential organization of experiences it became clear that untimely actions by the system can flip a formerly positive perceived process into an offending experience. In contrast, an unexpected but helpful intervention by the system can trigger positive experiences as for example thankfulness. To enable positive experience actions initiated by the system must match with the users' needs and expectations.
- It is important whom the user is blaming for occurring difficulties and errors. Think about proper mechanisms of blame attribution and how to channel this process. Users might blame the software, "take it" and do something with this emotion. Or users might blame themselves, which is a very negative experience for the users. Instead, try to redirect this blame towards the original target: the developers, who can do something against it.

As we could see in the analysis of the interviews, exploration, challenge and autonomy play a crucial role for positive experiences. The above recommendations, based on direct user experiences with everyday technology, can help provide the necessary preconditions for these concepts and to construct a positive user experience.

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