

Co-experience: user experience as interaction

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User experience is becoming a key term in the world of interactive product design. The term itself lacks proper theoretical definition and is used in many different, even contradictory, ways. This paper reviews various existing approaches to understanding user experience and describes three main approaches and their differences. A missing perspective is noted in all three: their focus is on only the individual having the experience and neglects the kinds of experiences that are created together with others. To address this, a new elaboration called co-experience is presented. It builds on an existing approach but borrows from symbolic interactionism to create a more inclusive interactionist framework for thinking about user experiences. Data from a study on mobile multimedia messaging are used to illustrate and discuss the framework.

Keywords: User experience; Social interaction; Mobile communication; Multimedia messaging

1. Introduction

Usability experts know that while usability is important, it is not enough on its own to guarantee a product's success with customers. While helping people take advantage of a product's functionality, usability also needs to pave the road for pleasure. Usability techniques can be used to improve a given solution, but they do not reveal whether a different solution might deliver better and more enjoyable experiences.

Consequently, designers have begun to apply hedonistic psychology (Jordan 2000, Hassenzahl 2003) and to design for user experience. For example, Jordan takes a hedonistic perspective by proposing that pleasure with products is the sum of sociopleasure, ideopleasure, physiopleasure and psychopleasure. He defines pleasure with products as 'the emotional, hedonic and practical benefits associated with products' (Jordan 2000, p. 12). Hassenzahl (2003) shows that satisfaction, a part of usability, is the sum of pragmatic and hedonic quality. However, as Desmet (2002) notes, the problem

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with focusing on pleasure is that it ignores the unpleasant emotional experiences related to product use. Perhaps to overcome this deficiency, user experience has become the new buzzword in design (for example, see Shedroff 2001, Garrett 2003, Kuniavsky 2003). User experience is subjective and holistic. It has both utilitarian and emotional aspects, which change over time (Rhea 1992).

In this paper, we deal with what we see as a major problem in the user experience literature, which is its implicit individualistic bias. We refer to the mostly missing social quality of experience with the term ‘co-experience’, and propose an interactionist perspective for studying co-experience. We show that with this concept, we are able to pay attention to things that are not addressed by existing theories of user experience. We illustrate this perspective by showing how people communicate emotions with each other via mobile multimedia technology.

2. Three approaches to user experience

Currently there are three main approaches to applying and interpreting user experience in design. These are the *measuring approach*, the *empathic approach*, and the *pragmatist approach*. The role of emotional experiences is important in all three, although, as they stem from different disciplines, they treat emotions differently.

The measuring approach is mainly used in development and testing. It builds on the notion that experiences can be measured via emotional reactions. Thus, the approach is narrow—the definition only includes those aspects of user experience that can be measured and, through measuring, understood and improved. There are several alternative orientations within the approach. The first builds on the idea that people experience things as reactions in their bodies. People’s bodies react to situations chemically and electrically, and experience this reaction in terms of emotions. As these reactions are often fleeting and sometimes difficult to verbalise, tools for monitoring such reactions, such as facial expressions or changes in galvanic skin response, can be recorded in order to understand when and where people get frustrated (Picard 1997). A second orientation is based on subjective reports (e.g. Jordan 2000). For instance, Desmet (2002) has developed a testing tool to elicit emotional responses to products such as cars. His tool, PrEmo, uses animated cartoon characters to describe 14 different emotional responses. By selecting all that apply, the user creates an emotional profile. Universal evaluation criteria for user experience do not exist, though some have been proposed for interaction design (Alben 1996). Rather, the ‘soft and emotional experiences’ need to be translated into ‘experience goals’ relevant to each project and included in the testing of products and prototypes (Teague and Whitney 2002).

The empathic approach also claims that experience is emotional in nature but that the kinds of experiences that products elicit should be connected to the needs, dreams and motivations of individuals (Dandavate *et al.* 1996, Black 1998). Designing for user experience begins with creating a rich, empathic understanding of the users’ desired experiences and only then designing concepts and products to support them. The term ‘design empathy’ has been in use since the late 1990s to describe the role of the designer/researcher (Leonard and Rayport 1997, Segal and Fulton Suri 1997, Koskinen *et al.* 2003). Design empathy makes use not only of the emotions of the users, but also those of the designers. In order to become not merely informed but also inspired, designers must both observe and feel for the users (Mäkelä and Fulton Suri 2001, Kankainen 2002). The methods used in empathic approaches aim to provide an understanding of users’ experiences with qualitative methods; they also assist users in constructing, for designers,

descriptions of their experiences, dreams, expectations and life context (Dandavate *et al.* 1996). Typically, these methods combine visual and textual data, self-documentation and projective tasks, several of which are used in parallel. This approach aims to inspire designers rather than produce testable hypotheses through measurement and conceptual elaboration.

The *pragmatist approach* borrows much of its perspective from pragmatist philosophy (see Dewey 1934). Recently, Forlizzi and Ford (2000) presented a model of user experience in interaction. This model is theoretical in nature, and shows that experiences are momentary constructions that grow from the interaction between people and their environment. In their terminology, experience fluctuates between the states of cognition, subconsciousness and storytelling, depending on our actions and encounters in the world. Experience is something that happens all the time: subconscious experiences are fluent, automatic and fully learned; cognitive experiences require effort, focus and concentration. Some of these experiences form meaningful chunks and become demarcated as ‘an experience’—something meaningful that has a beginning and an end. Through stories, they may be elaborated into ‘meta-experiences’ that are names for collections of individual experiences. Even more recently, Wright *et al.* (2003) focused on what is common to all experience, describing four strands—the compositional, sensory, emotional and spatio-temporal strands—which together form experience. They also describe sense-making processes such as anticipating, interpreting and recounting.

These three approaches propose divergent methodologies for studying user experience, but imply different things. The measuring approach focuses on emotional responses, the empathic approach on user-centred concept design, while the pragmatic approach links action to meaning. The measuring approach is useful in development and evaluation, but is more difficult to apply at the fuzzy front end of design (Cagan and Vogel 2002). The pragmatist approach concentrates on the embodied nature of experience and interaction.

The first two approaches, the measuring and the empathic, share one main problem. Both see emotions as driving forces of human conduct, an assumption contested by more situated views of interaction (Blumer 1986, p. 7; about plans, see Dourish 2002, pp. 70–73). Of user experience approaches, only the pragmatist perspective really accounts for the situated unity of action, emotion and thought in the individual in a theoretical way. The pragmatist perspective is broader than the others in its scope; in fact, other models can be seen as its special cases. However, all these approaches are individualistic, thus missing a crucially important aspect of human experience. People as individuals depend on others for all that makes them truly human. Experiencing happens in the same social context—therefore, it is necessary to account for this context and its effect on experience.

3. Co-experience: elaborating the pragmatist perspective

We use the term ‘co-experience’ to describe experiences with products in terms of how the meanings of individual experiences emerge and change as they become part of social interaction. To explore co-experience more deeply, we expand the pragmatist model of user experience in interaction (Forlizzi and Ford 2000) and address the mention of meaning in more detail by building on three classic principles of symbolic interactionism. First, people act towards things through the meanings they have for them. Second, meanings arise from interaction with one’s fellows. Third, meanings are handled in, and modified through, an interpretive process used by the person in dealing with things he encounters (Blumer 1986, pp. 2–6). These are the classic statements of symbolic interactionism, a sociological tradition that builds on the pragmatist philosophy of John

Dewey, William James, and George Herbert Mead (see Joas 1997). This perspective adds social interaction to the pragmatist model, maintaining that people come to define situations through an interpretive process in which they take into account the non-symbolic gestures and interpretations of others.

The improved interactionist model for co-experience uses these meanings to explain how experiences migrate between the different levels of Forlizzi and Ford's model (for an elaboration, see Forlizzi and Battarbee 2004)—from the centre of attention to the periphery or into stories and acts of personalisation and back again. Such migrations happen in at least three general ways.

- *Lifting up experiences.* Often subconscious experience migrates to become 'an experience' through a social process. People constantly lift things from the stream of events in everyday life and communicate them to others. For example, a person may describe something that has happened to them, evaluating it as meaningful enough to be told to others.
- *Reciprocating experiences.* Quite often, once it has been lifted up in this way, recipients acknowledge and respond to experience. For example, they may reciprocate by telling about their own, similar experiences, or simply offer a sympathetic response (Mauss 1980, Licoppe and Heurtin 2001, Koskinen *et al.* 2002, Ch. 7, Taylor and Harper 2002). In doing so, they show that the experience (as well as the person sharing it) is meaningful for them. This can be shown in various ways, for example, by appreciating the experience, or by taking sides with it. Experiences can be maintained, supported and elaborated socially. Memories of relevant experiences may be retold in this way as well.
- *Rejecting and ignoring experiences.* Finally, experiences brought to the attention of others may also be rejected or downgraded by others. For example, something that is important for one person may be too familiar, uninteresting or even offensive for others. They may indicate this in various ways to soften the rejection, for example through humor or teasing, or with varying degrees of topic change, direct response or inaction.

Similarly, people often elaborate 'meta-experiences' together (see Forlizzi and Ford 2000). In this paper we do not focus specifically on meta-experience for two reasons. First, the pragmatist model of Forlizzi and Ford already accounts for it. When people compare experiences, often collected over several years, they come to find similarities and differences, and classify them in stories. Ultimately, some stories may become key symbols of their identities (see Orr's 1996 analysis of technicians' 'war stories'). Also, stories provide one of the main mechanisms for reconstructing memories (Neisser 1981, Orr 1996). Second, we see storytelling as just another form of social interaction. It is significant when sharing experiences verbally, but not necessarily the dominant form for digital media. Although storytelling has well-studied forms and traits, it nevertheless is included in the more general approach of symbolic interactionism, thus making it a special case of the more general argument for all social interaction.

The following example (figure 1) illustrates the strength of this framework. The figure is a mobile multimedia message (MMS): a photo, audio and text message sent from one mobile phone to another during a pilot study in Finland in 2002 (the pilot study and further details of the messaging are described in Section 4). The story behind this MMS is how Thomas, a father, lifts up a significant experience: the toddler Mikey's evening tantrum. Jani, a friend, reciprocates by saying that his experiences in babysitting Mikey

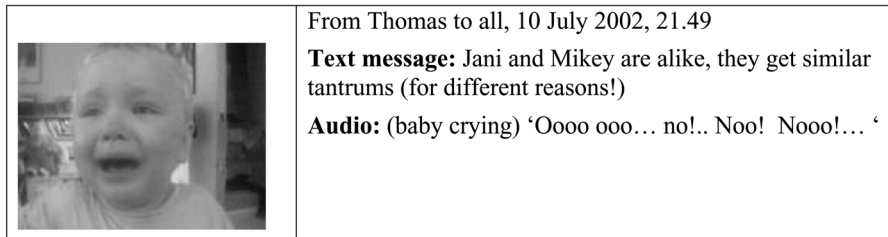


Figure 1. A little boy's bad mood.

have been similar, and Thomas should consider getting him a soccer ball of his own. Jani's comment could be taken as a rejection, suggesting a disinterest in Mikey and his temper. In a subsequent reply (shown in the figure) Thomas reinstated the importance of the event, and furthermore, turned it into an opportunity to tease Jani. His reply contained a good audio sample of the howling and a picture of the boy, red in the face and tears streaming down his cheeks, and suggested similarities between Mikey and Jani. However, Jani's softened rejection was successful: there were no more reports on Mikey crying after that.

As this example shows, people may use technology to share meaningful experiences, to sympathise with them, to suggest that they are not particularly significant, or even to reject denial of their significance. These experiences would not occur to a user alone; identities, roles and emotions are resources for interpreting and continuing interaction (Blumer 1986). For instance, in the example of figure 1, Thomas and Jani do more than share an experience: they actively interpret it, relate to it, reinterpret it and, in so doing, constitute a line of action and come to define their mutual relationship for a brief moment. The other recipients of the MMS remain more or less neutral bystanders.

The interactionist perspective on co-experience claims that experience is a social phenomenon and needs to be understood as such. Also, it claims that bodily and psychological responses to external phenomena do not necessarily lead to predictable emotional reactions, because of an interpretive social process in between (see Shott 1979). Thus, relying solely on emotion as an index of experience leads us astray. For these same reasons, empathising with individuals does not explain co-experience. Empathy is necessary, but the focus must first be on interaction. When people act together, they come to create unpredictable situations where they must respond to each other's actions creatively. In the lifecycle of an experience (cf. Rhea 1992), we need to pay attention to co-experience, not just to individual aspects of experience. This is the crux of the symbolic interactionist perspective on user experience.

4. Data and methods

We illustrate our argument with data from Mobile Multimedia, a multimedia messaging pilot study organised with Radiolinja, a Finnish telecommunications operator. In Mobile Multimedia several groups of friends exchanged multimedia messages with each other for about five weeks in the summer of 2002. Each participant was given an MMS phone (either a Nokia 7650 with an integrated camera or a SonyEricsson T68i with a plug-in camera); the service was free of charge (see Koskinen 2003). Out of the Mobile Multimedia pilot, three mixed-gender groups of 7, 11 and 7 members were selected for a

detailed study to explore in more detail gender difference, terminal types and the city–countryside axis. The qualitative study focused on the messaging of these groups.

During the pilot, the three groups sent over 4000 messages which were analysed quantitatively; two samples of the messages were also analysed qualitatively. The messages are published here with permission; the names of people and places have been changed. The data reveal how people themselves construct messages, and how others respond to them. Even though there is no access to what people did when they received the messages, we can see their virtual responses: exactly the same content of text, image and audio as was received by the participant (see Battarbee 2003, Koskinen 2003, Kurvinen 2003 and references therein).

The study of co-experience is the study of social interaction between several people who lift up something from their experience to the centre of social interaction for at least a turn or more. Since the focus is on how people give meanings to things, and how they understand them, the study setting needs to be naturalistic, i.e. to happen in the real world rather than in a controlled setting such as a laboratory (Glaser and Strauss 1967, Blumer 1986). Designers need to explore how interaction proceeds and aim to describe its forms before trying to explain it in terms of such structural issues as roles or identities. Rather, inference proceeds inductively (Seale 1999). Roles and identities may be made relevant in interaction, but they are resources people can use rather than features that explain co-experience. In this paper, we aim to indicate the value of the concept by showing that experience has features that cannot be studied adequately with existing concepts of user experience. Here, we aim to illustrate co-experience as a sensitising concept (Blumer 1968), rather than trying to provide a comprehensive analysis of the varieties of co-experience.

5. Lifting up experiences into the focus of social interaction

From the symbolic interactionist standpoint proposed in this paper, the key feature of experience is symbolisation: what people select from experience to be shared with others. People communicate with each other for a variety of reasons, ranging from practical to emotional. In so doing, they place the things they communicate at the focal point of shared attention. In presenting things as ‘an experience’, they invite others to join in. However, these communications remain open to negotiation, something that may or may not be picked up by others and made into something more meaningful than merely the scenic background of experience.

As an example of an ordinary message that illustrates this argument, we may take the simple pleasures of eating, drinking and socialising (see figure 2). This message is part of a sequence of holiday reports between two groups of friend: the ‘land lovers’ and the ‘sailors’. Susse and her friends choose to describe their evening sentiments with a multimedia puzzle. The audio explains the picture and the text suggests that the key element is in fact still missing and remains to be imagined: the smell of hot pizza.

Susse may have tried to convey a realistic sense of what the experience of hot pizza is, but she is also acknowledging that it is impossible, with the smell (and the pizza itself) missing. However, she seems to trust that with the names of the ingredients, the ‘sailors’ will get the idea—and share their sentiments as she has shared theirs.

Sometimes experiences belong to larger themes and can be called scalable (Forlizzi and Battarbee 2004). For example, an eagerly waited holiday trip to Paris is a complex experience that may last for weeks and contain many larger and smaller, sometimes contradictory, elements. Documenting such experiences requires more than one message,

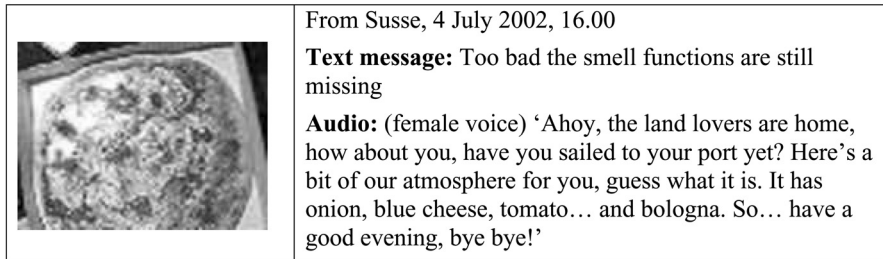


Figure 2. A pleasant evening.

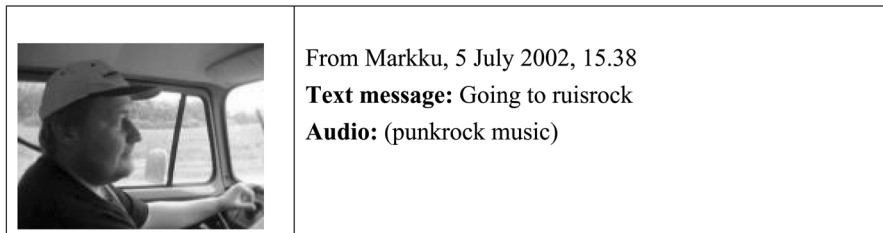


Figure 3. Driving to the rock festival.

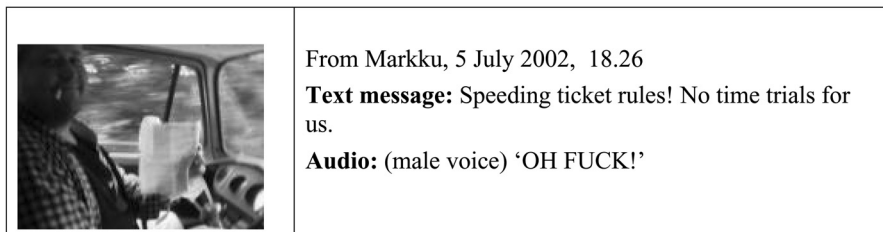


Figure 4. Reporting on the speeding ticket incident.

as in the case of the following monologue. Markku and his friends are driving to a weekend rock festival. Their first message (figure 3) describes the mood inside the van. The second message (figure 4) reports that they are still on their way, but something unexpected has happened—they were caught in a speed trap and fined. When experiencing strong emotions, the process of symbolisation requires more effort. The description of the experience has to take into account the responses of others, such as anger, fear, disappointment, ridicule or sympathy, and explore which interpretations are desirable and which are to be avoided.

What is offered here for common attention is laughing at the experience and making fun of it, with only a side reference to the actual event and the emotional experience of being caught by the police and receiving a fine.

In principle, almost any detail of ordinary life can be meaningful enough to send. In MMSs, people document food, drink, children, pets and spouses (see Koskinen *et al.*

2002, Lehtonen *et al.* 2003). In addition, people report events such as rock festival trips and events in summer homes as well as moods, socially significant things and emotionally relevant experiences. The reason for sending an image and audio is its topic rather than its artistic quality. The literature on experience tends to emphasise and focus on experiences that are emotionally strong and that stand out as memorable. However, the content in the Mobile Multimedia project focuses predominantly on small, everyday and mundane matters, suggesting that in social interaction, the strength of emotions does not correlate with the emotional satisfaction of the experience of communicating and sharing them.

6. Reciprocating experience in social interaction





People do not merely compose Multimedia messages, they also acknowledge them in replies. In responding, recipients pick up the gist of the message and fit their response to it. Typically, they show that they either share the experience or empathise with the sender on a more general level, as is suggested in theories of gift-exchange (Mauss 1980) applied to mobile communications (Licoppe and Heurtin 2001, Taylor and Harper 2002). Parents share pictures of their babies, expecting others to mirror their delight, but even in more ordinary cases, the expected response is a positive, reinforcing one. Of course, recipients may not always produce a proper response, and this may prompt problems in subsequent interactions. For example, the sender may become embarrassed or hurt, and may even lose face (Gross and Stone 1964, Goffman 1967, pp. 5–45). Between the need to maintain social interaction and support others, and the need to look out for personal gain and be selfish, the more likely people are to meet again, the more they will try to keep the interaction going and help everyone maintain face. This, among socially connected people, results in an in-built tendency to reciprocate experiences in human interaction—and in Multimedia messaging.

Most responses follow this logic. Sometimes people start with a parody, as in figure 5. Replies to such messages (figure 6) are usually not explicit congratulations. Risto, however, makes a point of saying how much he enjoyed it. However, to really mean this, he needs to respond with a similarly overdone picture, a reflection of the first one. Pleased with his message, Risto reuses the picture and shares it with other friends as well, this time with a new text (figure 7). The response to Risto's message does not merely share the holiday mood, but also copies the response format almost perfectly (figure 8).



People may also align with negative experiences, as in the following example in which two young women share a mood. First, Maria lets Liisa know that she is experiencing something 'typical', which seems neither exciting nor fun. Liisa sympathises, and reciprocates the experience, sharing her own interpretation of what a 'typical' experience is like (figures 9 and 10).

This example demonstrates the power of the visual in MMS. Compared to emotions, moods are lower intensity and last longer. Because moods are not focused on any particular object, objects do not describe moods very well. Here, the focus is on the face. The MMS phones were often used for literal self-documentation—taking a picture of one's own face at arm's length—although collaboration was also frequent.

Through this exchange, Liisa and Maria indicate that they know each other and have shared similar experiences before: how else could they talk about 'this' being 'typical'? The closeness is also expressed by the framing of the picture. Whether Liisa's response is sincere or a parody is hard to say. Maybe the interpretation is intentionally left for the recipient to decide, and to remain open for future interactions.

	<p>From Liisa, 11 July 2002, 18.35 Text message: Listen Risto, we have our spiritual values evident in our work and leisure!</p>
	<p>From Risto, 11 July 2002, 19.03 Text message: Yeah... The photo (an excellent one, I laughed for several minutes ☺) said more than a thousand words... A victory of spirit over matter... I must try to fill my spiritual void in this fashion...</p>
	<p>From Risto, 11 July 2002, 21.54 Text message: Vacation starts tomorrow!</p>
	<p>From Tero, 12 July 2002, 1.07 Text message: Been on holiday for a week and still going strong!</p>

Figures 5–8. A staged picture prompts staged responses.


	<p>From Maria, 24 July 2002, 19.15 Text message: This is so typical...</p>
	<p>From Liisa, 24 July 2002, 21.40 Text message: How about this?</p>

Figures 9, 10. Exchanging pictures of mood.

7. Rejecting and ignoring experiences in social interaction

For a number of reasons, experiences that are offered to the common awareness may also be rejected, downplayed or made fun of. A certain banality is almost built into MMS use, which focuses on mundane experiences rather than, say, key rituals of life or experiences with fine art. Banality may go overboard and lose the recipient's interest; sometimes, the report may stretch the bounds of what is morally acceptable, for example by being sexually explicit (see Kurvinen 2003). Recipients, then, may have many different reasons to interrupt or redirect the messaging, even when it may be difficult to do so without insulting the sender. How can they accomplish such actions without causing the sender to lose face?

The first thing to notice is that rejection may be active or passive—communication always offers multiple alternative possibilities for interpretation, and choosing one option may negate others. In the following sequence, Thomas offers a significant experience (getting engaged/married) for others to respond to (figures 11–13). Predictably, he receives several congratulations and pictures of happy faces. However, Jani did not notice the engagement message until 25 hours later, and takes a different course of action. In his response, he teases Thomas indirectly for losing his freedom, proclaiming that he himself has no intention of getting ‘snatched’, and thus inverts the value of Thomas's experience. In response, Thomas defends his case by returning the tease and peppering it with an insult. The communication between Thomas and Jani is a clever play on the possibilities of multimedia, as the joke is largely a visual play on the theme of hands.

	<p>From Thomas, 16 July 2002, 13.41 Text message: It took 15 years ! But good things come to those who wait.</p>
	<p>From Jani, 17 July 2002, 14.11 Text message: Screw your ring. Nobody snatches me, except Miss Universe.</p>
	<p>From Thomas, 17 July 2002, 16.25 Text message: Well screw you! Just think that I've had more mornings with my woman than you with both of your hands ! Hah hah heh hee</p>

Figures 11–13. Two teases.

Generally, a positive experience like that sent by Thomas calls for an aligning response. Responses rejecting the intended value of such messages normally incorporate accounts and disclaimers that soften the impact of the rejection. Typical examples of such accounts and disclaimers are humour, excuses, justifications and hedges (Scott and Lyman 1968, Hewitt and Stokes 1975). With these devices, the communication channel is kept open despite the interactional problems posed by the rejection. This was also the case in the messaging around figure 1, in which Jani indirectly indicated to Thomas that Mikey's tantrums were no longer a welcome topic. By advising Thomas to buy a ball for Mikey, Jani softened the message by suggesting that maybe Mikey had good reason to be upset, i.e. not having a soccer ball of his own. However, the tactic failed, and Thomas countered by comparing Jani with the baby—humorously, of course, but the comparison still turned his reply into a tease. No matter how nice, such rejections may still insult the original sender—or at least give them an opportunity to behave as if they were insulted.

8. Conclusions and discussion

In this paper, we have introduced the notion of co-experience and present it as an elaboration of Forlizzi and Ford's (2000) model of user experience in interaction. Our claim is based on a simple observation: people create, elaborate and evaluate experiences together with other people, and products may be involved as the subject, object or means of these interactions. Social processes are particularly significant in explaining how experiences migrate from subconscious into something more meaningful, or lose that status. The concept of co-experience builds on the understanding that experiences are individual, but they are not only that. Social interaction is to the experiences of the individual the same as a sudden jolt is to a jar of nitroglycerine: it makes things happen. We claim that neglecting co-experience in user experience leads to a limited understanding of user experience—and a similarly limited understanding of design possibilities.

The concept of co-experience enriches design in several ways.

- Co-experience extends the previous understanding of user experience by showing that user experiences are created together and are thus different from the user experiences people have alone.
- It suggests an interactionist methodology for studying user experience. It is important to see what the content is, what people do, or, in the case of the Mobile Multimedia project, what is in their messages. This alone, however, is not enough to make sense of co-experience. It is also necessary to study the interactions between people with and without technologies, and to put the messages into context.
- Co-experience opens new possibilities in design for user experience by focusing on the role of technology in human action (parallel ideas can be found in the concept of embodied interaction, see Dourish 2001). Co-experience focuses on how people make distinctions and meanings, carry on conversations, share stories and do things together. By understanding these interactions, opportunities for co-experience can be designed into the interactions of products and services.

To put this into design terms: user experiences can only be understood in context. New technologies are adopted in social interactions where the norms for behavior (and product use) are gradually developed and accepted. These rules are never absolute or complete. For example, instead of merely responding to a suggestion, people may turn their response into a mock tease. There is therefore little point in creating an interface

with a selection of the possible ways to reply to a message. Such an approach assumes that people are not creative, but act in terms of rules.

This takes us towards two possible extensions of the concept of co-experience. The first concerns the way in which technology guides action: people are creative. Sanders (2003, 2004) presents a view of what creativity means to everyday people. First, it is doing things with a product and being efficient with it. Second, it is about adapting, making the product one's own. Third, it may be about making something with one's own hands and, finally, it can be an expression of one's creativity, with possibly far-reaching innovations. The interest levels and levels of emotional engagement range from insignificant to passionate. Furthermore, creativity is enabled and constrained by technological possibilities. For example, MMS technology allows recipients to include the people and things in their surroundings more easily in their remote interactions. However, it does not make complex forms of storytelling or sharing the experience of fragrances possible. It 'affords' mutual entertainment rather than precise communication. For such communication, a phone call provides a better instrument (see also Mäkelä *et al.* 2000; for a recent discussion on affordance, see Hutchby 2001, Arminen and Raudaskoski 2003). MMS fits into a wireless technological framework in which people seamlessly switch from medium to medium to do different tasks.

The second point is methodological. Our Mobile Multimedia study relied on information from messages in a log, and thus missed phone calls, plain text messages and face-to-face interactions. There are many similar technical challenges in studying co-experience. A suitable technique for analysing co-experience requires not just log data, but also observations and interviews, as well as visual documentation. Comparisons between technologies need to be conducted to understand co-experience in relation to technology. In our experience, however, it is possible to study co-experience at various phases of the design process. Sometimes, new products already on the market have qualities that make them suitable for field testing (Mäkelä and Battarbee 1999, Koskinen *et al.* 2002). It is also possible to study co-experience with experience prototypes, by letting users explore the technology and its possible meanings together (Buchenu and Fulton Suri 2000, Kelley 2001, pp. 41–42, Mäkelä and Fulton Suri 2001, Kurvinen and Koskinen 2003). Contrary to appearance models or technology prototypes, these are prototypes that primarily aim to give an insight into the experience of use. Blue-sky ideas built into robust prototypes are useful for discovering how new designs and technologies might work in real contexts (Tollmar and Persson 2002). Experiences can also be communicated to some extent with scenarios (see Carroll 2000, Battarbee *et al.* 2002). Empathy is necessary in order to understand the experiences of others; any study aiming to focus on co-experience needs to apply design empathy in its interaction-oriented approach and to aim at creating an empathic understanding rather than a factual explanation (Segal and Fulton Suri 1997, Koskinen *et al.* 2003).

Co-experience aims to complement and broaden the ways in which user experience is currently seen in the design professions. It suggests that people's interactions and collaborations are relevant not just for sociology and computer-supported collaborative work, but are also relevant for studying user experience.

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