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## **The role of emotion in design reflection**

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### **INTRODUCTION**

Reflection on design processes performed by designers is called design reflection. In our view, this kind of reflection aims at answering essential questions like “Is my design answering the stakeholder concerns?”, “Am I solving the essential problems or am I wasting time on irrelevant aspects?”, “Does the result feel satisfactory or are further iterations necessary?”, “Does my design obey the rules of conceptual integrity and aesthetics?”, and “Is my design process appropriate for the problem?”. Design reflection is important since it can improve the design process and the product being designed (Reymen, 2001). It can also help the designers to learn from their experiences, i.e. their thoughts and feelings, and to improve their professional capabilities. Recent design research recognised the need for stimulating reflection, including the development of supporting methods (Badke-Schaub et al., 1999; Reymen, 2001; Schön, 1983; and Valkenburg, 2000).

Reflection is, however, often interpreted as evaluating the design rationally, giving no explicit place for emotions. For answering the questions mentioned above, we state that both feelings and thoughts are important. We advocate a balanced approach in which both *rationality* and *emotions* play a role. The underlying idea is that we hope that balanced answers to essential questions lead to balanced design decisions and to a balanced design process. The goal of this paper is to explore the possibilities of letting emotions play a role in design related reflection processes. The exploration is partially based on our experiences with a method that supports reflection on design processes; a description and discussion of the method can be found in (Reymen, 2001).

This paper introduces the concepts emotion, reflection, and design reflection and with exploring their relations. Based on these insights, the paper continues with describing a prescriptive model of a reflection process in which emotions of designers and stakeholders play an important role.

### **DESIGN, REFLECTION, AND EMOTION**

From a social-psychological point of view, reflection and emotion are related to each other. Rosenberg (1990) illustrates that reflexivity (the process of an entity to

act back upon itself) is a central feature of determining the nature of our emotions (emotional identification), of attempting to regulate their display (emotional display), and of seeking to control the experiences of these emotions by producing effects on our minds and on our bodies (emotional experience). Mills and Kleinman (1988) describe a variety of ways in which people experience their thoughts and feelings. Their typology demonstrates four ways in which an individual may respond to a situation: reflexive and emotional, unreflexive and emotional, reflexive without feeling, and neither reflexive nor emotional. The typology is based on individuals experiencing themselves in various situations. The authors state that circumstances shape peoples emotional/cognitive style. These circumstances can be situations of uncertainty, group membership, or historical period. People usually develop their own emotional/cognitive style and can thus respond differently to emotion-provoking situations.

These studies evoke many questions when we apply them to the field of designing: “Are the four ways in which an individual may respond to a situation also manifest in design processes?”, “Are there important differences in the emotional/cognitive styles of designers and do they relate to differences in the personality of designers?”, and “Which circumstances (design situations) give rise to which type of emotional response?”. Mills and Kleinman (1988) state that situations of uncertainty are more likely than stable situations to evoke emotional responses. The fact that designers often have to deal with uncertainty is an indication that emotions are an important aspect of design processes. If we want to let both rationality and emotions play a role in design reflection, then, we must give designers the opportunity to express not only their thoughts but also their feelings. In the remainder of this section, we explore how we can relate emotion and design reflection. The questions mentioned above should be taken into account for further research.

In line with Reymen (2001), we consider reflection on a design process as an introspective contemplation on a designers perception of the design situation and on the remembered design activities. A design situation is defined as the combination of the state of the design process, the state of the product being designed, and the state of the design context at that moment. The goal of a reflection process is to plan appropriate future design activities. Design activities are appropriate if they are performed effectively and efficiently with respect to the design goal. The goal of reflection can thus be considered as investigating the future, based on the past, the present, and the current design goal. Looking back can help to analyse what went good and wrong and why this happened. Looking forward means thinking about further developments of the product being designed and about the activities that are necessary for this purpose.

To perform balanced design reflection, in our eyes, a holistic view on the design process is required. We believe that such a holistic view must be based on the viewpoints of the stakeholders of the design. The notion of stakeholders, stakeholder concerns, and related views is borrowed from software architecting and, for example, described in (IEEE, 2000). We consider the designers themselves also as important stakeholders; for, as a professional, they are very much related to their own designs. Typical stakeholder concerns are functionality, quality, cost, time-to-market, organisational issues, and the touch-and-feel of the design. In the remainder of this paper, we call the views of the designers and stakeholders *stakeholder views*.

Stakeholder views should incorporate both rationality and emotions and should be based on the involvement of the whole personality of the respective person. *Rational aspects* of a view are usually expressed in a formal way, for example, by models and formulas. Engineers are in general less experienced at expressing the *emotional aspects* of a view, for example, by expressing their feelings in words or artistic utterances. We consider here emotions that are related to the product being designed, the design process, the design team, and the design context. Important emotions are for instance related to the touch and feel of the object of reflection, to its aesthetical or artistic value, to the feelings about its usability, and to the feelings about its sensibility in a given context. Depending on the situation, these emotions can be positive or negative. Our approach differs from the usual way of describing views only in terms of abstract models. The problems that raise when designers are concentrating on abstractions are especially visible in software engineering. This mentality is one of the reasons why computer systems are notoriously failing to fulfil the expectations of their users, who are much more thinking in terms of their daily business. Of course, abstractions are important in engineering design. They are, however, only related to our thinking and not to our feeling.

To develop a holistic view on the design process, many stakeholder views need to be combined into a *lively image* of a design or a design process. Under a lively image, we understand an inner image that is build from a number of stakeholder views that is sufficient to allow the designer to have not only an intellectual but also an emotional relation to the object of reflection. This means that not only technological views are incorporated, but also views related to the expected future use of the artefact and to its environmental, social, ethical, and psychological impact. The lively image should be the basis for planning future design activities. To do so, it is important that the designer gets a deeper meaning of the lively image, both rationally and emotionally. We call the creative act of apprehending the deeper meaning of a situation *intuition*. If the creative act needs to be more than a spontaneous free association, it must be carefully prepared. This means that the design and design process are first carefully evaluated from all relevant points of view by building a lively image; a lively image is thus a prerequisite for intuition. Next, the designer must be abandoned for some time in order to create room for deeper insights.

Summarising, emotions should play an explicit role in design reflection. Contrary to the more usual reductionistic ways to deal with design, our approach is holistic in several ways. First, the reflection is based on the input (views) of all stakeholders. Second, rationality and feelings are both taken into account. Finally, the designer is involved as human being and not only as intellectual being.

## **A REFLECTION PROCESS**

In order to include emotions explicitly in a design reflection process, we divide it into the following five steps: defining the questions to be answered by the reflection process, collecting the relevant stakeholder views, building of a lively image, investigating the deeper meaning of the lively image and answering the initial questions, and drawing of conclusions. We group the first three steps into a preparation phase and the last two steps into a conclusion phase. Between the two

phases, a break should take place. Such a break simulates 'natural' reflection processes in which some incubation period is necessary before conclusions can be drawn. An explanation of each of the five steps is given below.

The *preparation phase* starts with defining a number of essential *questions*, as indicated in the introduction. These questions can concern the current and the desired state of the product being designed, the design process, and the design context. In the second step, the relevant stakeholders, their concerns, and the related *stakeholder views* must be defined, depending on the questions defined in the first step. The thoughts and feelings that are relevant for the different views can, for example, be worked out by means of checklists and models. The third step concerns imagination. Here, the designer tries to integrate the various stakeholder views into a *lively image*. To do so, they have to lean back for a while and make a synthesis of the views in order to get an as complete as possible image.

*Break* between preparation and conclusion phase: during the break, things that are not directly related to reflecting or designing should be performed. Designers can also communicate with other designers or stakeholders for completing or checking their views on the design situation and design activities. We assume that during this break, the reflection process continues, but in an unconscious way.

The *conclusion phase* starts when the lively image reveals its essence by means of intuition. Grasping the essence of a design or design process usually takes some time and probably several reconsiderations of the image and its views. The designer is now ready to *answer* the essential questions formulated in step 1. Also here, the designers may use their own feelings to validate the answers. The reflection process ends with drawing *conclusions* and defining the further actions to be taken.

## CONCLUSIONS

Summarising, we introduced a prescriptive model of a reflection process that incorporates emotion by giving attention to the feelings of designers and stakeholders. The result should contribute to a balanced approach to design reflection in which both rationality and emotions play a role. To really support well-balanced design reflection in concrete design processes, aids for each of the five steps of the reflection process must be developed and the reflection process must be integrated into the design process. The latter can be obtained by performing the reflection process at the beginning and end of design sessions, as proposed in Reymen (2001). Special attention must be given to the attitudes needed for well-balanced reflection and to personality traits related to expressing emotions. As already mentioned, further research should therefore also concentrate on studying the usefulness and consequences of the typology described in Mills and Kleinman (1988) in the field of designing, and more specific, for design reflection.

A main limitation of our approach is that it only works when the designers are well trained with respect to emotions and intuition. This means that they must (a) take these phenomena serious, (b) be able to observe them carefully, and (c) differentiate between different types of emotions and their meaning. Unfortunately, most engineering programmes do their best to achieve the opposite.

Another problem is that feelings can be based on prejudices, the personal situation of the designer, and the context. A designer can thus make mistakes when they base decisions on feelings. However, the danger of making mistakes may be reduced when the designers are well prepared, i.e., if they follow the process described in the paper, which includes taking into account the viewpoints of several stakeholders.

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