



LUND UNIVERSITY

A social perspective on the interview technique in design research. Part II: The interview as a social situation

Motte, Damien

Published in:

Proceedings of the 2nd International Conference on Research into Design - ICoRD'09

2009

Document Version:

Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (APA):

Motte, D. (2009). A social perspective on the interview technique in design research. Part II: The interview as a social situation. In A. Chakrabarti (Ed.), *Proceedings of the 2nd International Conference on Research into Design - ICoRD'09* (pp. 490-498). Research Publishing Services.
http://www.designsociety.org/publication/32317/a_social_perspective_on_the_interview_technique_in_design_research_part_ii_the_interview_as_a_social_situation

Total number of authors:

1

General rights

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

2

A SOCIAL PERSPECTIVE ON THE INTERVIEW TECHNIQUE IN DESIGN RESEARCH. PART II: THE INTERVIEW AS A SOCIAL SITUATION

Damien Motte

*Department of Machine Design, LTH, Lund University, P.O. Box 118, 22100, Lund, Sweden
Tel: +46-(0)46-2228513, Fax: +46-(0)46-2228060. E-mail: damien.motte@mkon.lth.se*

Many studies focusing on design activities use the interview technique as part of their investigation. Nevertheless, methodological discussions about the interview setting as the locus of a social interaction between the interviewer and the respondent and its implications for the interpretation of the data obtained are rarely found in publications within our design community. Part I of this publication reviews the positions taken on that matter in different studies of design research. Part II presents the social aspects affecting the interviews on the theme of design activities and the means to identify and deal with these factors. Systematically taking this set of social aspects into account when analyzing interview data makes it likely that the bias induced by social factors can be identified and dealt with. The two parts can be read independently

Keywords: Interview Technique, Social Factors.

1. INTRODUCTION

Engineering design is increasingly regarded as a social activity in more and more studies, and the same thing applies to the interviews themselves. As soon as an activity involves collaboration of some kind, it is important to consider it from a social perspective in order to understand the ins and outs of the situation. The previous paper in this series of two,¹ presented a review of different types of studies of design activities involving interviews (post-experimental interviews, interviews in field studies, or studies based on interviews exclusively). It was established that only a few studies addressed this issues.

This paper presents the social aspects affecting interviews related to design activities (Section 2) and the means to identify and deal with these factors (Section 3). This is illustrated by the analysis of interviews with three designers (Section 4).

2. INTERVIEW AS A SOCIAL SITUATION

Figure 1 presents the social factors that influence the interview activity. Considering the interview uniquely as a place of transfer of data, in a mechanistic way, with the only difficulty of controlling the communication channel (the double-arrow in Figure 1) can lead to misunderstandings and misinterpretations of the data.

It is a major theory in the branch of social sciences that deals with social interaction (also called ‘micro-sociology’) that social interactions are *constructed*.² Each individual constructs his or her subjectivity by interacting with others, and during interactions, social schemes are produced and reproduced that, in turn, affect the individuals involved. These social schemes, taking place during interviews about design activities, are examined below.

By identifying the schemes or social factors affecting the interview, researchers will be able to reflect on the value of the information they are acquiring. If an utterance from the interviewee turns out to be the product of the interview setting only, the information is of little practical use. But if the utterance passes through the filter of social factors, it can be considered to be saying something about the design activity.

The first part of this section will discuss the concept of ‘social interaction’ in relation to the interview. The second part will define the social factors that may affect the interview. The squares in Figure 1 will be discussed one by one. The fact that the squares are interwoven means that some social schemes are constructed and exist only at the interactional level and during a precise interaction, while others are less dependent on the context and can be repeated under other circumstances. The demarcations between different factors are fuzzy, and there are some overlaps. Hence some authors prefer to speak of “multiple voices” that speak through the interlocutors e.g. Ref. 3 rather than of social factors. The third part will present the means by which these social factors can be dealt with. A fourth part contains a brief discussion of the value of the data obtained.

2.1. Social Interaction

Considering the interview from the social perspective implies, at the interactional level, that two persons act and react in response to one another’s responses. In everyday life, we identify any encounter by means of certain patterns or schemes that will affect our behaviour and every change in our interaction will lead to new patterns that will change our behaviour. In this sense we *construct* our reality. If we perceive a stranger as a ‘jovial’ person, we can begin to get on with this person, unless we notice that this joviality was an expression of superiority and self-righteousness, which change the course of actions (from Berger & Luckmann).² There is no reason why the interview should fall into this social model. Interviewees cannot help reacting in response to how they apprehend the interviewer’s behaviour. Thus the interview has to be apprehended as a social setting. Referring to Cicourel⁵, Dingwall⁴ makes the following good summary of the implications:

If the interview is a social encounter, then, logically, it must be analysed in the same way as any social encounter. The products of an interview are the outcome of a socially situated activity where the responses are passed through the role-playing and impression management of both the interviewer and the respondent. This is not the technical problem that survey researchers assume, which might be resolved by better interview training, more elaborate scripts or whatever. The interview is an artifact, a joint accomplishment of interviewer and respondent. As such, its relationship to any ‘real’ experience is not merely unknown but in some sense unknowable. (p. 56)

The consequences are dramatic. Whatever the interview setting (structured or unstructured), the “respondent seeks to produce *locally* acceptable answers” (*ibid.* p. 59, my emphasis). This means that

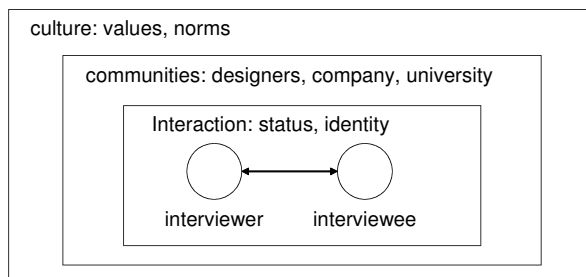


Figure 1. The social factors influencing the interview.

the link between interviewees' utterances about their design activities and the real design activity can be weak in comparison with the burden of producing locally acceptable answers.

2.2. The Interview: Place of the Expression of Different “Voices”

What are then the social factors that control the respondent's discourse? In the case of studies related to the design activity, the following factors are considered relevant: 1) at the interactional level, status and the roles deriving from this status, social identity and “behavioural-like” responses; 2) the importance of the community the respondent belongs to; 3) finally, at a cultural level, (working) norms and (working) values.

Other factors have been deliberately ignored or left out. At the interactional level, some factors merely related to the subjectivity of individuals are not discussed, because interviews about design activities are often less intensely emotionally charged than social interviews (about child abuse, drug addiction, etc). Moreover, the guidelines available for conventional interviews handle this kind of situation. At the cultural level, symbolic or countercultural aspects may be important in particular settings, and these themes remain open for discussion. In this study, however, it seemed more beneficial to focus on communities. Finally, other factors like gender, ethnicity, institutions and even political issues have not been considered.

2.2.1. The Interactional Level

A status is a recognized social position that an individual occupies, and this is a sensitive subject for the interview as a social interaction. First of all, interviewers and interviewees adopt two different social positions during the interview. Naturally, interviewees tend to let interviewers take the lead. They expect interviewers to indicate a direction that will orient their answers. Thus the interview, as a place where reality is constructed, is not the ideal setting to hope for utterances radically different from those expected. According to Dingwall,⁴ unstructured interviews, in which respondents are supposed to let themselves go, will not help: “Sit someone down in front of a tape recorder and ask him/her about his/her life. You will almost invariably find that the response is, ‘What shall I talk about?’ The initial talk is punctuated by uncertainty, check on relevance, requests for confirmation of the direction and so on” (p. 59).

Another social position that influences the interview is professional status. Interviewers are researchers, and they are expected to possess considerable knowledge about the theories and models of the design activities or process. This can slow down the respondents, who will be more careful when discussing the data requested, less for facts than for speculations, however. On the other hand, the difference in professional status can also be seen as a challenge to the respondents, who can try to show that the label “researcher” has no higher value than theirs.

An infinite variation of reactions to status may occur in the interview setting; it is up to the interviewers to consider its influence on the data. Age plays a role; Alvesson³ refers to Parker,⁶ who conducted interviews with managers. Parker observed that, depending on the age of his respondents, he was sometimes addressed as a novice by members of the senior management and sometimes as an expert by junior managers. Even the fact that two people have nearly the same status (often the researcher is a designer too) may not facilitate matters. If researcher status is overshadowed by designer status, the interviewer's legitimacy can be questioned. Interviewees are constantly trying to make sense of the unusual situation and act accordingly.

Identity is coupled to the issue of status. Our social identity is our understanding of who we are and who other people are, i.e. making the distinction between others and ourselves. At the same time, this understanding implies that we are constantly defining ourselves and other people in a way that is coherent and makes sense. During the interview, respondents will assign different identities to their interviewers. Consequently, the same person, i.e. the respondent, will address alternately the “designer”, “the “manager”, the “CAD user”. These personalities will in turn trigger different answers. Sometimes the “assigned identity” may be unclear, which can lead to confusion. In different contexts, the same question may lead to different answers.

During the interview, some apparent contradictions can be identified in the discourse of the respondent. This can be due to social factors that locally justify the respondent's statement. Silverman⁷ describes such a phenomenon of what he calls a "charge-rebuttal sequence". A doctor asks a mother about her diabetic child:

Mother: She's going through a very languid stage. She won't do anything unless you push her.

Doctor: So you're finding you're having to push her quite a lot?

Mother: mm no well I don't. I just leave her now. (p. 121)

The doctor's question is experienced as criticism of the way the mother takes care of her child, and she responds in a defensive way. During the interview, people do not have time to reflect on what they say, and they can react in contradictory ways. When there is more time available, people naturally behave more rationally.⁸ This contradiction can often be explained in social terms. In the example above, Silverman interprets the woman's behaviour as a feature of motherhood. Hence, the mother did not actually answer the doctor's question; he asked for down-to-earth facts, and she answered at a social level.

2.2.2. Communities

At a higher level, the *community voice* may speak through the respondent. This has several implications. First, the respondent may show what is characteristic of his or her community. Dingwall⁴ describes it as follows: "Whether of interest or not, the respondent is still concerned to bring the occasions off in a way that demonstrate his or her competence as a member of whatever community is invoked by the interview topic" (p. 59). Respondents' thoughts can reflect the image their community is meant to have. If we return to the example in Section 2, Visser⁹ reported that "the [mechanical engineering] designers described their activity as being organised in a hierarchical way, but their actual activity was opportunistically organised — a characteristic of design activities that, since these early days, has been observed more and more in empirical design studies" (p. 22, referring to Visser & Hoc¹⁰). This can be seen as a characteristic of the mechanical engineering design community: since people with an engineering background *are* structured, they will reproduce the pattern and present an organized activity plan. The same question posed to an industrial designer, an architect or a stylist would have triggered a different pattern (see also Section 5.4).

As individuals, we belong to more than one community. Respondents are not only designers; they belong to an organization, an industry, a company. Asked about their working environment, interviewees may answer that their company encourages creative freedom, while a subsequent observation may reveal a rather bureaucratic environment. This is a case when respondents' statements can be regarded as the recitation of a *script*.³ The company and the members of the company have an image of themselves as working in a free environment. This is not also a political script but a statement of how designers experience their work environment within the company. The "real" environment remains unknown, however.

Respondents that belong to a community may feel some sense of duty vis-à-vis this community. In this case, their utterances may take the form of what Alvesson³ calls *moral storytelling*. They are aware of the consequences of a negative discourse towards their profession (and thus towards themselves). They can then try to formulate their thoughts in a direction that glorifies their community. An illustration is given Section 5.3.

Since interviewers themselves belong to different communities, it can be important to bear this aspect in mind when preparing the interview questions and analyzing the answers.

2.2.3. Values and Norms

Values are the "standards that serve as broad guidelines for social living" and *norms* are the "rules and expectations by which a society guides the behaviors of its members".¹¹ These terms are components of what defines a culture. The concepts of 'values' and 'norms' also hold for subcultures. In the context of interviewing designers about their work and activities, interviewers and interviewees are very likely

to share the same values and norms. They have probably gone through the same education system, have the same standard of living, may have the same profession, have the same perception of the industrial world, and often have the same nationality. The difficulty is then to distinguish the part of the cultural background that explains the way designers think and act. Since interviewers have the same preconceptions, this cultural background does not appear easily to them. Some types of behaviour seem self-evident, obvious or non-interesting, as they are shared by the interviewer and will therefore not be expressed by the designer. Within the time assigned to the interview, there is little chance to access the relevant norms and values that are present during, and will bias, the interview.

3. OBTAINING USEFUL DATA

How should the social factors presented above be identified and dealt with? Although a number of different techniques have been examined, no overall method that takes all the factors into account has been found. A combination of different techniques and a pragmatic attitude towards the data seems to be the best attitude to adopt.

3.1. Changing the Interviewer's Attitude

Some authors claim that it is possible to obtain data about authentic experiences during the interview by establishing a rapport of trust and commitment with interviewees. In this way, respondents will come to trust the interviewer, will tend to abandon the social conventions that control the interaction and more genuinely report their opinions, ideas or intentions. Kvale¹² describes the ideal interviewer as open, friendly and sensitive. Romantics, or 'humanists', as they are called (because the individual's subjectivity is the centre of attention), emphasize interactivity with and closeness to respondents. In Cross¹³ and Cross & Clayburn Cross¹⁴, the interviews take the form of conversations. The idea is to break down the formal atmosphere of the interview and allow the respondents to express themselves more openly. Darke¹⁵ as well adopts a slightly romantic stand, preferring a "conversational rather than an interrogational atmosphere". In return, the respondents are very keen to elaborate on the interviewer's themes: "It was found that the designers were generally very willing to talk about their schemes and appeared to enjoy doing so, as if talking about a favourite child" (p. 36).

Conversation-like interviews are one of the techniques used by romantics. For Kvale,¹² on the other hand, one of the criteria of a good interview is that it is characterized by short questions and long answers (p. 134), which, according to Alvesson,³ implies an interviewer that is more a passive listener. Active interviewing is another romantic approach.¹⁶ In contrast to Kvale's criterion, the interviewer must here badger, ask respondents repeatedly, make them focus on the question so that they can constantly be in a state of producing knowledge. To attain this goal, interviewers must assist and support their interviewees during the interview and this help must be accepted, creating a need for empathy and closeness between interviewees and interviewer. Jagodzinski *et al.*¹⁷ used active interviewing in their study.

Undoubtedly, the main contribution of the romantics concerns the problem of status. Interviewers try to break down the barriers caused by a difference in status. This is no guarantee that respondents will feel released from the interview setting, but the status bias will tend to disappear. Some "behavioural-like" responses, e.g. the charge-rebuttal sequence in Silverman's example above (see 2.2.1), will be avoided. If the doctor had been considered a friend, the mother would probably have been more talkative. She might, for example, have spoken directly about the problem of forcing a teenager to go on a diet. On the other hand, romantics take and give a new identity, i.e. that of a "friend" or an "accomplice". They will never be "neutral". Their respondents will give an answer adapted to this situation.

At the community and cultural level, the romantic approach will introduce more bias than it will relieve. To be close to an individual implies to share, or at least to accept or adopt, this individual's norms and values. Thus the respondent feels secure and is more open to the interviewee.

3.2. Focusing on the Data

The romantics focus on the framework of the interview. We have seen above that this could not solve all the problems presented earlier. Moreover, undertaking a social analysis during the interview is an additional burden for interviewers, who have many things to control as it is. Romantics assert that an ideal interview is an interview “where the meaning of what is said has been interpreted, verified and transmitted when the recorder stops” (Kvale Ref. 12 p. 135). Given the limitations of romanticism, this work should be conducted in the analysis stage. The next step is thus to study the transcripts of the interview. The basic idea here is to go through each factor and ask oneself what social phenomenon is likely to have been expressed. The method used by Alvesson³ is to consider the different social factors as ‘metaphors’, a term which, in this case, does not refer to associations. A ‘metaphor’ is the substitution of one phenomenon by another. The substitute is intended to evoke a new view of the substituted phenomenon and so inspire new interpretations of this phenomenon. The question researchers ask themselves is: “What if this phenomenon is the place of expression of this social factor (status, identity, community, values or norms)?” For each factor, they then have to develop the implications it may have on the phenomenon in question. Two of Alvesson’s metaphors related to the community level were presented above (*moral storytelling* and *script*).

How can it be verified that one has found a social factor? As in any work of an interpretative character, there is no strictly deductive way to identify a social factor. The best way is to consider the data with caution if a doubt occurs. Moreover, researchers are competent and informed. They can use their knowledge about the phenomenon under consideration, comparing it with previous research and observations. These elements should facilitate the analysis of the interview. Moreover, a research study is not a strictly social one. It is not very important to exactly define one social factor; the point is rather to be able to identify it and then question the relevance of the data.

Alvesson³ also recommends being pragmatic when analyzing the data: “postpone some doubt and still use the material for the best possible purposes” (p. 25). In addition, the level of abstraction of the data should also be considered. The more abstract the data, the more likely it is to find some bias due to social factors.

The analysis of the example in Section 2 followed these guidelines. The different social factors were considered at the interactional and community levels. The scant information did not allow an analysis of the possible values and norms. The main question of this analysis remains unanswered: do mechanical engineering designers think they follow a structured plan, or is the entire situation a social construction?

3.3. Value of the Interview Technique

As an indirect method of data acquisition, the interview will always be problematic. For purely practical reasons (respondents do not recall a certain phenomenon) as well as social ones, the interview is not a trustworthy source of information. Taking a romantic position may help in some cases (e.g. to obtain sensitive data), but the value of the information remains unchanged. A genuine conversation-like interview does not guarantee that respondents’ statements have a value of “truth”. We just adapt to a new social setting. One way to reach the reality behind these statements is no more direct than another just because it is “authentic”.³

Validity itself has been extensively discussed in the field of qualitative studies. The elements presented in this document do not add or retract anything from the previous discussion.

In some cases there are no other possibilities to obtain data about a phenomenon but interviews: study of past events, of the designers’ “interior” and speculations, lack of time. Some interview techniques exist that afford the interviewer better control of the situation. Bonnardel & Sumner,¹⁸ for example, used a card system with which the respondents could describe themselves. Repeated interviews are always an option. Once interviewers know more about the phenomenon, they can change the interview setting and conduct confrontation interviews instead of romantic-inspired ones. If this does not ensure the validity of the data, it does, in fact, ensure their internal reliability.

4. APPLICATION

By way of illustration of the use of the proposed set of social factors, an analysis of the interviews with three industrial designers is presented. These interviews were conducted as a part of Olander's Master's thesis.¹⁹ The analysis presented below postdates the thesis. The analysis focuses on the moments where the utterances reveal the kind of social situation — the context of the interview — they are produced in and includes a discussion of how these moments impact the truth value of those utterances. Only the most representative moments are reported.

4.1. The Interview Settings

The interviews were part of a project investigating creative methods, e.g. brainstorming and synectics. At the time of the interview, the interviewer was a student of industrial design. The participants were all male industrial designers. Participants B and C worked in two different design offices, and participant D was a freelance designer (the interview with participant A is not studied). The aim of the interviews was to determine the creative moments in the design process as well as the creative methods used. The interviews traced a design task, namely the development of a fastener system for different packages.

The interviewer took a rather romantic stand. The interviews began with a long introduction; the interviewer relieved the designers of the pressure of proving their creativity. The interviews were semi-structured; the interviewer let the designers speak freely but asked questions related to their statements from time to time, following an agenda. Consequently, the interviews had the appearance of conversations, which helped win the interviewees' confidence.

4.2. The Interactional Level

At the interactional level, the participants had different attitudes. This could also be coupled with how the interviewer's professional *status* was perceived. Participant C regarded her as a peer; the entire interview was in a conversational mode. Participant B initially regarded the interviewer more as a researcher and was more intimidated. Confirming Dingwall's⁴ assertions, participant B began by saying that creativity could not be described easily, letting the interviewer develop the subject further. Very soon, however, the relation changed, and the interviewer was increasingly regarded as a designer student rather than as a researcher. B and D then adopted a very pedagogical tone when describing, one his methods, the other his design processes. For participant B, this did not alter the quality of the information. On the contrary, B explained how he felt about being in competition with another designer or being inferior to an expert in the area. In the interview with participant D, it happened once that the interviewer took the subordinate position and let D lead the interview, trying to adapt to what he wanted.

The *identity* aspect appeared regularly during the interviews. Since designers define themselves through creativity, the interviewees always emphasized their competence in that area. Participant C stressed the importance of taking a comprehensive view in a project, something that is difficult to teach and to learn. D expresses himself in the same way: "He [the client] already after one hour of meeting has already got a lot of 'aha, I didn't think of that' [...] so that even [if] he does not accept the offer, he's got tips probably worth 100,000 SEK [15,000\$]". This need to constantly re-affirm oneself as a creative, versatile and skilful designer had consequences for the truth value of certain utterances. D was reluctant to admit that some creativity methods were unknown to him and **it was difficult to get an objective picture of how he would use them.**

4.3. Communities

Belonging to an industrial design community is very close to the identity aspect. Although the interviews concerned strictly creative methods within the design process, the discussion often turned towards the role of the designer within product development. The designers (B and C) distinguished industrial designers from engineering designers; the former can visualize the whole project, while engineers see

parts of it only; the industrial designer is better at relating the project to the company vision, etc. This is also an example of moral storytelling; the interviewees do not answer the question but describe the unique and superior character of industrial design (as opposed to engineering design, thus giving legitimacy to their community).

4.4. Values and Norms

As both the interviewees and the interviewer had an industrial design education, they understood each other well on that level. It is worth recalling, however, that this introduced the bias of not calling these values into question. This constant distinction between the industrial designer on one hand and the engineering designers on the other was commonly accepted by both sides and was therefore not discussed.

Let us also revert to the example in Part I Section 2 and the way engineering designers described their process. They described a relatively structured process, while industrial designers insisted on the erratic nature of design: “One cannot pick up a raisin called creativity and put it in a working day between 8.00 and 16.00” (designer C). Are **these thoughts** facts or expressions of values or norms? This requires other types of investigation techniques.

Creativity is a sensitive spot for industrial designers, since that is an important part of what defines them. Nevertheless, apart from the moments when the designers felt personally affected by this theme, they provided relatively reliable “facts”. Even if Alvesson’s³ tactics of postponing any doubtful utterances are applied, the interviews could provide enough data by overlooking them.

5. CONCLUSION

The social aspects of the interview situation are rarely addressed in our field. Even if the interactional, community and cultural levels of the interview are taken into account, it is possible to identify and deal with the bias in the data induced by social factors. However cautious researchers might be, interviews present many risks of bias. However, the importance of this bias is largely determined by the subject of the interview. The more the interview touches the person’s status and identity, the greater the risk of bias.

Ways to determine “social noise” have also been discussed. It should be possible to identify and describe similar factors that emerge for the same categories of interviewees (for example for designers from the same community) and thus facilitate further research work by using interviews as a data acquisition technique. The social aspects put forward in this paper concerned interviews about design activities. Other themes, or more specific subjects, e.g. decision-making, could be studied in the same way.

ACKNOWLEDGMENTS

The author is grateful to Elin Olander from the Department of Industrial Design, Faculty of Engineering LTH, Lund University for having granted access to the interview data presented in this paper.

REFERENCES

- [1] Motte, D. (2009). A social perspective on the interview technique in design research. Part I: Interviews in design research, ICoRD '09.
- [2] Berger, P. L. and Luckmann, T. (1966). *The Social Construction of Reality — A Treatise in the Sociology of Knowledge*, Penguin.
- [3] Alvesson, M. (2003). Beyond neopositivists, romantics, and localists: A reflexive approach to interviews in organizational research, *Acad of Manage Rev*, 28(1), pp. 13–33.
- [4] Dingwall, R. (1997). Account, Interviews and Observations, In Dingwall, R. and Miller, G. (Eds.), *Context and Method in Qualitative Research*, Sage, pp. 51–65.
- [5] Cicourel, A. V. (1964). *Method and Measurement in Sociology*, Free Press.
- [6] Parker, M. (2000). *Organizational culture and identity: unity and division at work*, Sage.

- [7] Silverman, D. (1993). *Interpreting Qualitative Data*, Sage Publications.
- [8] Lopes, L. L. (1991). The rhetoric of irrationality, *Theory & Psychology*, 1(1), pp. 65–82.
- [9] Visser, W. (2004). *Dynamic Aspects of Design Cognition: Elements for a Cognitive Model of Design*, Research Report, INRIA, Le Chesnay, Report No. 5144.
- [10] Visser, W. and Hoc, J.-M. (1990). Expert software design strategies, In Hoc, J.-M., Green, R., Samurçay, R. (Eds.), *Psychology of programming*, Acad press, pp. 235–250.
- [11] Macionis, J. J. and Plummer, K. (2002). *Sociology — A Global Introduction*, (2nd Edition), Pearson Education Limited.
- [12] Kvale, S. (1996). *Interviews: an introduction to qualitative research interviewing*, SAGE.
- [13] Cross, N. (2003). The expertise of exceptional designers, 6th Design Thinking Research Symposium DTRS'03.
- [14] Cross, N. and Clayburn Cross, A. (1996). Winning by design: the methods of Gordon Murray, racing car designer, *Design Studies*, 17(1), pp. 91–107.
- [15] Darke, J. (1979). The primary generator and the design process, *Design Studies*, 1(1), pp. 36–44.
- [16] Holstein, J. A. and Gubrium, J. F. (1995). *The Active Interview*, Qualitative Research Methods Series, 37, Sage Publications, Thousand Oaks, CA.
- [17] Jagodzinski, P., Reid, F. J. M., Culverhouse, P., Parsons, R. and Phillips, I. (2000). A study of electronics engineering design teams, *Design Studies*, 21(4), pp. 375–402.
- [18] Bonnardel, N. and Sumner, T. (1996). Supporting evaluation in design, *Acta Psychologica*, 91(3), pp. 221–244.
- [19] Olander, E. (2002). *Creative Tools in the Industrial Design Process* (In Swedish), Master's Thesis, Division of Industrial Design LTH, Lund University, Lund.