Uncovering the Invisible: Gender-Sensitive Analysis of Call Center Work and Software

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"Look at the things that others have forgotten, the things they consider unimportant, the things behind the scenes -- and you're likely to find some important deleted work." (Star 1991: 83)

New telecommunication and information technology has enabled a new, booming field of work: customer care in call centers. What are the working conditions of call center employees and does call center technology improve these conditions? To answer these questions, we will combine insights from Applied Computer Science[2], more specifically from the field of participatory design, with insights from social sciences, specifically Gender Studies.

Computer science, in our view, is a discipline that mainly deals with modelling and formalisation (for a more detailed discussion of the image and the practices of CS studies, see Maass, Wiesner 2006). In order to support or automate real world processes, static and dynamic structures in our world first have to be discovered and then explicitly described. One of the main things computer science students are taught is to see structures and to discern recurrent structures in various areas – to see the same in the diverse. They are trained in abstraction and formal description. Hence, in systems analysis computer scientists become quite efficient in seeing similar patterns in what they study and in shielding their perception from what might be particular in the current case. In a way they standardise what is relevant in the world they model. What does this have to do with gender?

According to perceptual psychology (Neisser 1979) humans first of all perceive those structures that are familiar to them. We primarily see what we know, what we expect and what is important to us. Our life experiences and life situation play an important part in these perceptions. "Our biological sex, whether we are born as male or female, has a large influence on the kinds of experiences we are more likely to have in the course of our life, e.g. on what kinds of toys we are given, whether we give birth or are drafted for the army and how we are perceived and treated by others. These experiences influence our choices, identities and perceptions of ourselves and of the world we live in." (Hagemann-White 1989: 37) Moreover, gender is one of the

[2] In Applied Computer Science, the social context of computer design and use is studied (e.g. users, societal effects, desirability of software solutions) with the help of social science methodologies.

main ordering structures in society. Our binary understanding of the world as consisting of behaviour, characteristics and items that can be classified as either masculine or feminine influences our perception, which subsequently influences our expectations, behaviour and self-identity. Hence, it is almost unavoidable that computer scientists perceive and model the world along gendered lines and following familiar gender stereotypes, whether or not these stereotypes form an adequate representation of the case being studied.

The outcome of unconsciously gendered design processes may be an inadequate system that does not support the requirements of its users. Especially if designers have been unaware of gender, or gender-blind, they may unconsciously design for the male norm in society, leaving out or making invisible feminine connotated elements of the work or of work done by women in general. This may lead to the system not being used or furthering inequities (Star, Strauss, 1999: 14). The design of the 'smart home' of the future forms a good example. Designers of the 'smart home' have unconsciously modelled their technologies to the male norm of inhabiting houses with priority given to energy saving, safety, communication and entertainment. These features are in general more important to the life and habitation patterns of male inhabitants. Whereas men more often use their house for eating, sleeping and relaxing, for women it is more often a place to work, to socialise and to take care of children. The invisibility of women's habitation patterns in this case may have led to less development of technologies that could be useful for them, such as caring technologies (Berg 1994). Similarly, Wajcman and others have called attention to the fact that suburbs have been called 'sleep villages' by policy-makers, who subsequently based the geographical and mobility-patterns planning on the needs of car-owning, commuting people of whom a large majority was male (Wajcman 1991).

Gender-blind design may also offer an explanation for the 'productivity paradox': the introduction of new technology to increase productivity will actually lead to a drop in productivity because "the invisible work that keeps [socio-technical networks] stabilised will go unaccounted for" (Star 1991: 87). Muller, e.g., found such a productivity paradox in a study on call center agents and explained it by the fact that much of the work of call center agents was ignored by the computer systems meant to support them (Muller 1999: 44). Only after the previously invisible parts of call center agents' work were considered in the software, the anticipated work-time savings were reached.

If, on the other hand, designers are not 'gender blind' but design a new technology based on gender stereotypes, the technology will congeal and reinforce these stereotypes (Rommes 2006). When e.g. computer games for girls are about fashion design for Barbie and are given a pink colour, girls are simultaneously taught to be interested in fashion and to have caring values (while boys are signalled that this is not for boys). Girls with interests other than Barbie are signalled that they do not conform to the female norm. Although some girls, at some point in their lives, like to play with Barbies, designing based on stereotypes means that no critical reflection has taken place as to the needs of the particular users of the technology under development, nor about the kind of world we would like to live in. Computer systems design is no 'innocent' activity, as design processes are both shaped by gendered assumptions and perceptions and shape society and the gender-relations therein.

A gender-sensitive look at the social context of software development and use may reveal the gender-biased understandings, priorities and exclusions within the development process. It provides a more diverse picture as a basis for technical innovation than 'normal' software design. In this chapter, we will analyse the work

2

practices of call center employees from a gender-aware perspective and find out to what extent the software that is meant to support them does so adequately, and whether it reinforces gender stereotypes or not. First, we will look at the working conditions of call center employees, and then at the information technologies they use. We will conclude by more generally characterising this approach of gender studies in Applied Computer Science and by suggesting more gender-sensitive methodologies for the early analytic phases of software development.

1. Call Center Work: What Analysis Methods Reveal

The spectrum of call center (CC) services is extremely wide and services cover a wide variety of products. In call center work, a division is made between inbound and outbound services. Hotline agents deal with inbound calls and may offer information or advice on e.g. insurances or technical devices. Similarly, telesales agents respond to inbound calls by taking orders for goods or reservations. Alternatively, telemarketeers make outbound phone calls, e.g. they may dial up potential customers such as all cafés in a certain area and offer demonstration and free use of new coffee machine models. They then arrange dates for their field service personnel. Call centers are organised as internal business units or as independent companies providing services to other companies. In our research project we have studied call center work and software of three call centers of different kinds.

Call center work has all attributes of so-called 'female jobs': the work is considered to be intellectually simple and repetitive, clean and physically light, not technical but rather social – or at least so it seems. Alluding to female stereotypes and life situations, job offers for call center agents implicitly address women: a telemarketing job for a coffee company is announced by "Feel like coffee and communication?" Another ad says "If you are diligent, single-minded and feel like earning money, and if you can smile with your voice you can start immediately." No formal training seems to be required for such jobs. Ads and qualification criteria do not address people seeking a steep and profitable career path. This, too, associates call center work with female employees. CC agents have a low social prestige, get low salaries, have few career options and often work part time. Part time work again ties CC work to 'female work', as in present western society more women than men take the responsibility for caring for children, hence they experience a bigger need for the personal flexibility that part time work seems to offer. In fact, about two thirds of call center agents in Germany were and still are female (cf. Schietinger, Schroth 2001).

To study the requirements and conditions of CC work and to see the extent to which it does indeed follow these (gendered) stereotypes of simple and light work, we have held twelve observational interviews with agents. We followed the principles of ethnographical critical analysis, which state that the researcher has to be present in the context to develop a thorough understanding of the work being done by employees. Moreover, a relationship between researcher and employee needs to be established based on a partnership in which the employee is considered the "master" who teaches the researcher as an "apprentice" about their work. Interpretations of the analysis need to stay as close as possible to what the employees have stated and need to be checked with them. The last but not least of the principles of ethnographical critical analysis is that although the focus of the analysis needs to be clear beforehand, it also needs to be flexible, leaving room for adaptations if other

problems or focus points turn out to be more important. (For a detailed description of "contextual interviews" see Beyer, Holtzblatt 1998.)

Our focus of analysis was on the criteria for "humane work" as defined by the "Kontrastive Aufgabenanalyse" KABA (contrastive task analysis method, Dunckel et al. 1993). According to work psychology in general, in order to be considered as humane, work has to require a wide variety of personal competencies and to allow for further development of these competencies. KABA characterises humane work by great latitudes regarding responsibilities ("decision latitude"), temporal planning and cooperation with others; also by variety in task aspects, transparency of and influence on working procedures and a low degree of stress. To comply with the last criterion of critical analysis mentioned above, we remained flexible in our use of the focus of KABA. Hence, when we found out that one of the main factors in the work of call center agents could not be measured with the help of KABA, we have critically analyzed and adapted these criteria. Moreover, we have paid particular attention to those aspects of work that tend to be overseen when focussing on the male norms of what 'work' implies.

So what does a call center agent do? Basically we found that she has to mediate between the requirements her organisation poses to her and the demands of her customers. The organisations CC agents work for want their agents to quickly get the customers' data and initiate some transactions. They define rather strict standards for the interaction with the customer; they decide what products and services agents can offer to whom and how to proceed in the interaction process to be as efficient as possible. Companies define rather short average call times and find ways to display waiting queues to the agents. To handle large numbers of calls, agents are expected to apply strategies to take the lead in conversations and speed up the process. The software they use takes the data input and displays information about and for the customer. Altogether, this results in a general view of well-organised data processing work on a production line. It differs a lot from clerical work where the desk workers can to a certain extent choose in what order to deal with their tasks.

However, in our view, agents' interactive service work requires much flexibility as they face customers who want individual service. An agent will try to somehow compensate for organisational and technical rigidities and deficiencies that result from the production-like organisation of work. At times she will take the risk of disregarding organisational directions in the interest of good customer service. Customers expect friendly and flexible responses to their often unclear and changing wishes. Agents and customers permanently have to cooperate and adjust on a functional and a social level. The interaction process very much depends on the customer. Some callers are well organised and know exactly what they want; some are not cooperative, they may be in a hurry or call from noisy environments. Others take their time to decide and re-decide or just love to talk. This makes the work process very unpredictable for the agent who has to react flexibly and immediately in any situation. If she realises that the customer has no time she may shorten or skip certain phases of the interaction process. If the customer desires something that the software does not easily support she may note customer data on paper and correct the data in the system after the end of the conversation. She may explain at length or look for more information and call back to satisfy customer requests. Thus, agents as intermediaries balance the partly conflicting interests of their organisation and their customers.

In the course of our analyses in the workplace we realised that the criteria of the well established task analysis method KABA we were using could not sufficiently

characterise the tasks we studied. The criterion "decision latitude" discriminates task requirements only on the functional level. In most cases of CC work the decision latitude is rather low: agents have no choice to sell products cheaper or refuse to answer a question. Such decisions have been taken by the organisation itself - agents just carry out what they are advised to do. However, on the social level where "emotion work" (Hochschild 2003) is being done, they very often develop strategies and take decisions themselves. They take responsibility for how to display emotions in order to influence the customer's emotions. To describe the options agents have to act on the level of communication, we introduced a new criterion we called "interaction latitude". (For more detail see Theissing, Maass 2006.) So while their behaviour in customer interaction may seem predefined and not very challenging (low functional decision latitude), their tasks may in fact be quite demanding and rich on the social level. Similarly, another study of CC work arrived at the conclusion that CC work is much more complicated than generally is thought as it contains "significant aspects of expertise and knowledge work" (Muller 1999: 36). According to Muller, developers, human-computer interaction experts and vendors of software systems had not seen the complicated aspects of CC work, amongst other reasons because of gender biases in analytic techniques. Our new criterion allows us to see and characterise this additional interaction latitude that may organisationally and technologically be more or less granted and supported.

Most of today's task analysis methods primarily aim at production work and clerical work, rather than at work where interaction is of primary importance. Researchers and practitioners in work psychology must be asked why there are almost no adequate analysis instruments for person-oriented service work. Could it be the case that the requirements of such fields that count as female (let alone house and family work) remain invisible or less relevant to them, as has often been pointed out by gender researchers (Smith 1987)?

Our research helped to deconstruct the image of simple and unqualified CC service work and showed how complicated their work really was. In line with this finding, another study on call center agents in Bremen revealed that in fact their general level of education was very high: more than 20% graduated from secondary school (Abitur), more than 60% had finished vocational training and 7% even had a university degree (Baumeister 2001). Similarly, the high percentage of part time positions may not reflect the wish of (female) call center agents to combine their work with family obligations, but rather the fact that part time positions were organisationally desirable from the standpoint of personnel planning in accordance to variable service demands. This requires a high degree of flexibility on the part of the employees. Moreover, the high level of part time work amongst CC agents reflects the fact that interactive service work on the phone is physically and mentally very strenuous; it requires almost permanent concentration and often cannot be done for 8 hours a day. The image of call center work as 'simple' work certainly does not fit. Our next question is to what extent the software used by call center agents supported the multiple facets of CC agents' work.

2. Evaluating Software for Interactive Service Work

Call center agents work with various sorts of software. In fact, the whole idea of efficient centralised customer service via call centers depends on computer technology. Automatic call distribution systems (ACD) manage incoming calls and direct them to "the next available agent". Computer-telephone integration allows to

identify a calling customer and to display her data immediately for the agent receiving her call. Customer relationship management systems store and process customer, product and transaction data, keeping and disclosing the customer contact history for any agent dealing with that customer at any time. Automatic diallers speed up the dialling process for outbound calls and interactive dialogue scripts steer the agent along the standard phases of customer interaction. Does this software support all the facets of their work as we analyzed above, or was it rather based on gendered stereotypes of call center work as being simple, repetitive work strictly following routines? In other words, does it confirm and reinforce gender stereotypes on what female work means, or is it designed on the basis of what call center agents point out as relevant in practice?

In tests with users and in expert reviews we evaluated the agents' software for its usability and probed for task adequacy and deficiencies. Following a participatory approach, we cooperated with the agents, taking care to include as many women as possible. In one of the CC we studied, software was to support the processes in which callers would order electronic parts or inquire their price and get advice about their properties or about equivalent products. Products and written offers would then be sent to them by mail. Figure 1 shows the steps the CC agents and their customers have to take to accomplish this process. First the customer identifies herself (1). The existing customer data such as address, contact person and paying modality, are quickly verified and updated (2). Then she chooses to either order parts or get a price offer (3). Product data are typed in (4) and the transaction is terminated (5). This triggers a shipping process. Obviously this software models customer interaction as a highly structured information exchange that follows a clear and uniform logic. In order to achieve efficiency, such software is optimised with respect to data transfer rates, parallel display of customer and product data and the sequence of transactions according to an ideal one-best-way customer dialog.
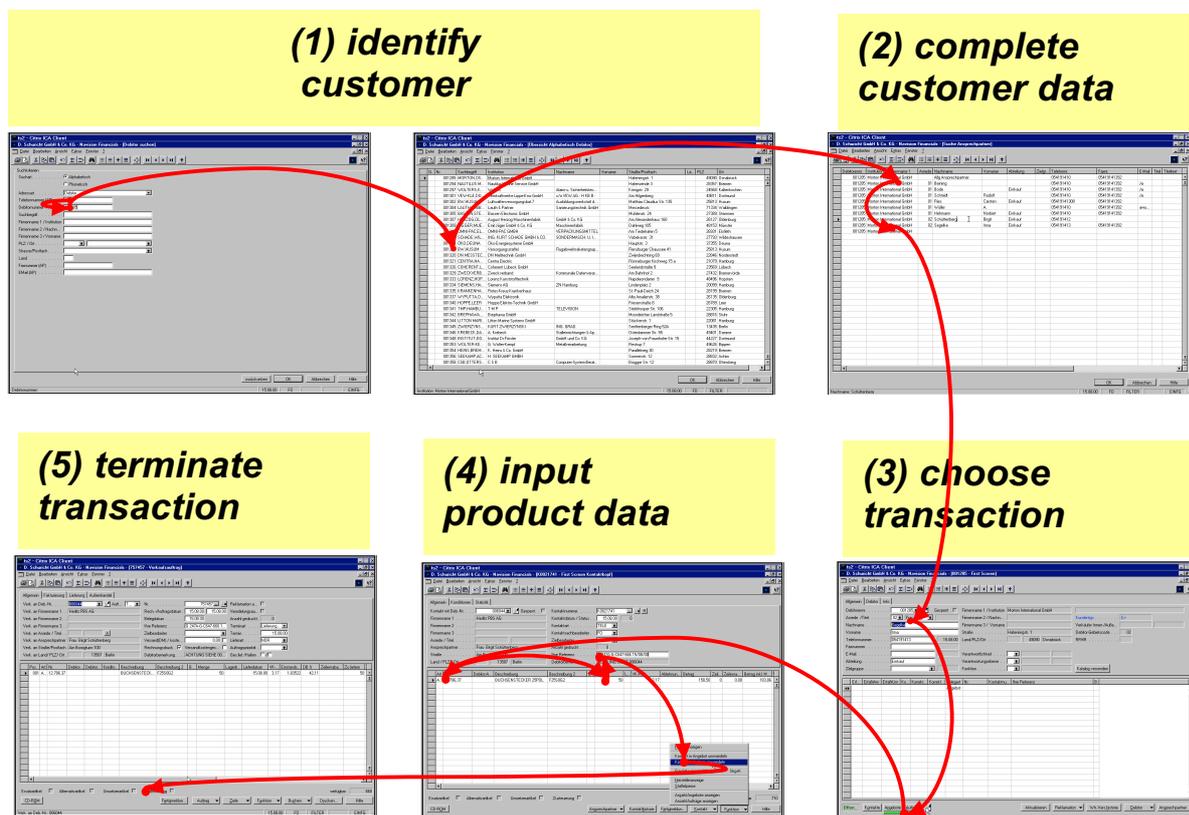
Figure 1 One-Best-Way of Customer Interaction

However, as we have shown in the analysis of CC agents' work, customer interaction does not always take this ideal course. Callers with just a short question refuse to identify themselves. Others first want to check whether the desired product is in stock, before they are ready to discuss paying modalities. Very often a caller changes her mind in the middle of the conversation; she only orders some of the parts and wants a price offer for the rest. Since the software requires an early decision (order or offer?), agents must find work-arounds and explain and compensate software rigidity on a communication and emotional level. Clearly, the designers did not see how crucial flexibility in interaction is to be able to offer service of a high quality. Rigid software that neglects the actual complexity and diversity of dialogues impairs flexible customer service. Hence, rather than supporting their work, in this respect CC technology posed an extra burden on the agents.

Based on our task analyses and the subsequent software evaluations we came to the conclusion that CC software was designed on the basis of the stereotypes of simple female work rather than to fit customer interaction as we have learned to see it. Careful analysis of CC agents' tasks and usability tests of CC software showed many software deficiencies, in particular lacking task-adequacy and a lack of support for social, interactive and emotional aspects of CC agents' work. One could argue that only a limited or restricted understanding of work-processes can be incorporated in software design anyway, following the inherent modelling and formalisation requirements. However, for one of our partner companies we developed our assessment further into a prototype for a new interface to the front office systems used in customer interaction, showing that an alternative design in fact was possible. In our software revision with the agents we made an effort to design it task-adequate with respect to the social aspects of interaction. This "interaction adequacy" first of all requires efficient input and high flexibility regarding the sequence of transactions. Standard proceedings may be implemented, but a deviation without loss must always be possible. The agent must be supported in keeping an overview and remaining in control of the interaction process. (For more detail see Maass et al. 2002.) The revised software that later was developed from our prototype was well received and very much appreciated by the agents.

It seems that earlier developers of the software had overlooked or ignored the complicatedness of the work done by call center agents. Hence, they had tried to capture and standardise parts of the work of call center agents that were too complicated to be formalised and standardised. Call center agents needed their software to support their interaction latitude rather than ignore this part of their work. In addition to developing software that was more supportive to the call center agents than the previously developed, our detailed report on agents' tasks, their strategies and know-how, their situation in customer interaction, and their obvious commitment to good customer service had the advantage of making those parts of their work visible that had previously been ignored. Indeed, our report was received with surprise by management and technical staff. It seemed that for the first time management and IT experts got a lively impression of CC agents' work. They learned what CC service demands from the agents and what the effects of software are that is not optimised for interactive work. The agents, on their part, learned that software does not have to be accepted as it is and that they themselves have the know-how to stand up for and inform software revision. So, for those agents involved, our project lead to an increase of knowledge, of professional self-esteem and to a sense of empowerment.

3. Conclusions

It is striking that the designers of the CC software as well as of scientific work analysis instruments such as KABA oversaw particularly those aspects of service work that the agents themselves described as extremely relevant for good service: flexible communication and emotion work. And exactly those aspects of the job have a feminine connotation. According to Muller, "historically, the culture and work of people marked as different from the main-stream has been analyzed as simple or even inferior" (Muller 1999: 51), in this case they were even not seen at all. Indeed, in call center work, service mentality and communication skills were not considered professional abilities that must be acquired, as the mentioned advertisements showed. Rather they are assumed to be something women have 'by nature' and as such can be taken for granted. For CC agents the necessary professional skills shrink to "the smile in their voice".

The stereotypic connection of social and interaction skills with femininity and with 'natural' skills that can be observed here may also be responsible for the low validation, wages and appreciation for this kind of work. Indeed, as has been shown in many previous studies, feminisation is known to 'devaluate' professional fields. Not seeing undervalued or invisible female work may mean that such work is not rewarded. Work aspects that remain invisible will not be included in the model of work that forms the fundament for the development of technologies that are supposed to support workers. Hence, we can conclude that the designers of the CC software were 'gender blind'. This may lead, as Star and Strauss would argue, to "more 'shadow work' or invisible work (…) as well as the (sometimes) obvious social justice and inequity issues" (Star, Strauss 1999: 20). In the case we studied, ignoring the interaction latitude part of the call center work in the software system meant that agents spent more time to work around the software system in order to maintain the level of service and interaction latitude they wanted to offer: a good example of the productivity paradox.

To summarise, our gender-sensitive view on interactive service work in CC has in fact revealed gender biased understandings, priorities and valuations of call center

work that are mirrored, congealed and reinforced by technology. Gender studies stress the importance of being aware of how power is divided and to look for the invisible and the undervalued. From there on, we can start looking for ways to overcome power-imbalances. In our case participatory methods have been shown to serve to empower those who normally have no say in analysis and design and who have to work with technology as the experts have conceived it for them. We have also shown how the perspective of gender studies and especially their focus on stereotypes and the invisible and undervalued aspects of what counts as feminine may help to improve participatory analysis and design. We have uncovered hidden aspects of CC work, consequently we can offer a new concept (interaction adequacy) for the scientific discussion of work-oriented software design and an additional criterion (interaction latitude) to append to the KABA criteria of humane work.[3]

The detailed account of our CC study was meant to show that Applied Computer Science and Gender Studies can be combined successfully. Applied CS projects offer opportunities for Gender Studies to enter and influence the field of technology construction or more generally, the field of technological innovation. By entering this field, not only an analysis or deconstruction is possible, but also suggestions for (re)construction can be made. Likewise the gender perspective may serve as an eye-opener in the field of technology development and critique. Exemplarily it points out social differences, reveals mistaken generalisations and highlights power structures in society. It helps to study application areas and leads to a refined understanding of the diverse requirements of institutions and people: employees, customers and other persons affected by new software. It serves to anticipate and interpret effects of new technology and to assess and refine the methods applied in technology construction. Combining the two may eventually lead to a world in which invisibility and undervaluation of work and people is no longer gendered.

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[3] Like Muller, we discovered "important relationships between choice of analytic technique and visibility of operators' work": (….) "invisible work is invisible to someone or from a particular perspective" (Muller 1999: 34, 31).

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