

Blurring the center

On the politics of ethnography

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Abstract

Whereas ethnography has been identified as an important method for developing situated IT for specific workplaces, its political pertinence and fuzzy practice have been underexposed. In this paper, I challenge the idea that ethnography leads to 'better' technology. In this context 'better' is often seen as 'more appropriate for a workplace'. However, I will show on the basis of fieldwork in a hemophilia care center (HCC) of a Dutch university hospital, that *what* this workplace is, and therefore what technology is desired, is equivocal. I will also show that 'doing fieldwork' cannot be separated from 'informing design' or 'intervening'. 'Intervention' is a subtle, layered concept and a continuous activity. Based on these insights an emerging interventionist approach is outlined that is geared towards interweaving fieldwork and informing IT design in an intentionally ad-hoc and non-sequential way. My aim with this approach is to sensitize the fieldworker to the located and strategic multiplicity of a site, to the data that can be found in roles that are being ascribed by various actors resulting from their 'view from somewhere', and to the action space that is constantly emerging and changing in an interventionist research project. The approach should lead to *sensitized interventions based upon politicized ethnography*.

Keywords

Ethnography, IT design, research methods, design and development methods

'Reality' is not compromised by the pervasiveness of narrative; one gives up nothing, except the illusion of epistemological transcendence, by attending closely to stories.

– Donna Haraway, 1997

Introduction: first aid for technology development

On December 21st 2000, Jacques Chirac, President of France, opened a hospital that was to change hospital administration and patient care around the world. The *Hôpital Européen Georges-Pompidou* would be the first paperless hospital, with complete electronic registration of patient data, and small operations being performed by robots. However, the hospital has been called a fiasco in many respects by French media (Le Monde, 22nd December 2000, Le Monde, 10th January 2001)¹.

First, the aim of paperless care was not achieved and has led to the need of developing paper medical records as an emergency call – without the logistics for this being in place. Second, out of the 24 high-tech surgery theatres, only 4 were being used a few months after the opening due to a lack of skill and training for healthcare professionals in operating the complicated technology needed (Anon. 2001).

The unworkable situation in this high-tech hospital does not just beg the question why the implementation was carried out so carelessly. It also makes a more fundamental issue pertinent; why would such goals be set at all? The rationale behind such a layout and development of a high-tech hospital can be seen as one of the causes of its failure. Though the scope of this failure – being a € 273 million project – is extraordinary, the conceptual mistakes that form its foundation are widespread among policymakers and technology developers. Even more than being sacrificed to a French liking for *grandeur*, the hospital has fallen victim to the dual myth of the possibility of standardizing care work (Berg 1997) and technology leading to inherent progress².

This dual myth – which is the foundation of a substantial part of the management literature (Ciborra 2000) – lies at the heart of top-down approaches for IT in health care that have proven problematic and unfruitful. With the exceptionally high failure rates of such projects and the growing insight that the ‘technological’ cannot be separated from the organizational context of a working practice that is inherently complex (Berg 1997), there has been a tendency to look in other directions for realizing IT

development in particular settings. Ethnography has been identified as an approach that can be used for elucidating sociotechnical complexity (Lloyd 2000) by unraveling the tacitly present practices that make workplaces function properly. Whereas initially researchers trying to make ethnographic approaches relevant for design settings: “used the most outdated version of anthropology” (Latour 1990, p. 146³) of trying to be a ‘fly on the wall’, there has been a substantial development in which the interpretation has shifted to participant-observation. Here the definition of ethnography is much closer to that used by contemporary anthropologists: “Ethnography means talking to and interacting with people, and ultimately attempting to understand their symbolic worlds and *social action*” (Hess 1992, p. 4, italics in the original). I would like to stress here that the symbolic is not merely a result of humans attributing meaning but of a sociotechnical interplay⁴. With this definition in mind, cases have been described where a thorough understanding of the sociotechnical character of work was translated into the development of meaningful situated technology in a specific workplace setting⁵. But a methodological question that soon had to be addressed was how ethnographic findings can be successfully translated into the realm of technology development. Various authors realized that this translation was being hindered by structural matters such as: “The discontinuities across our intellectual and professional traditions and associated practices”, due to which: “[ethnographers] could not simply produce ‘results’ that could be handed off to [designers]” (Suchman, this volume). This meant that the working relations between ethnographers and designers had to be altered to come to: “mutual learning and partial translations” (ibid.). An important consequence of this observation is that the chronological separation of first ‘doing fieldwork’ and only then ‘informing design’ or ‘intervening’ is problematic.

In this paper I will underline this argument by showing that these activities are not sequential since ‘intervention’ is a highly layered term that is part and parcel of doing fieldwork. Moreover, by not realizing the inappropriateness of the dichotomy, one faces the risk of remaining

insusceptible to opportunities for subtle interventions during the period of fieldwork, thereby reducing the acting space that is dearly needed in interventionist research.

The issue of how ethnography and technology development can be brought together has led to a considerable amount of reflection amongst some researchers working on the crossroads of ethnography and technology design or computer supported cooperative work (CSCW)⁶. They have pointed out various seemingly promising ways to deal with this issue, but these approaches share being geared towards creating better technology by means of ethnography. However legitimate this as a principle may seem, they hereby fail to deal with the politically highly relevant issue whose interpretation of 'better' they support⁷.

In this paper I will analyze this *problématique* of the political implications of doing ethnographic studies of workplaces and technology design by presenting fieldwork from an ongoing IT development project in a Dutch university hospital. I will claim that 'viewpoints' tend to vary substantially in a highly dynamic working environment, and that ethnography can function as a method to bring to light these differences – rather than finding commonalities on the basis of which 'better' technology can be developed. This insight has normative implications for the role of the ethnographer and begs for a conceptual framework that enhances sensitivity for the politics of practice in order to avoid instrumentalist concepts for referring to the researcher's design-informing work. This framework can be partly provided by the work of researchers working on feminist technology studies, such as Donna Haraway. Though it has been stated that the work of Haraway cannot be 'followed' because of her: "idiosyncratic, hybrid style of speech and writing ... [that] cannot be easily reduced to a package of methodological guidelines" (Prins 1995, p. 362), I will see it as a source of inspiration to reflect on the political nature of ethnographic interventions in technology design and, coming to my second and related aim of this paper: to outline some aspects of an emerging interventionist approach that is geared towards interweaving fieldwork and IT design in an intentionally ad-hoc and

non-sequential way with a continuous sensitivity to the issues of accountability and situatedness of the researcher. Thereby intervention is made a strategic and located activity manifesting throughout a research project, rather than being its closing phase.

Beyond better: the politics of ethnography

In the search for ways of communicating ethnographic findings to engineers, various roads have been pursued. Besides a rather scientific solution that is seen in an enhancement of methodological rigor (Avison, Baskerville and Myers 2001)⁸, more creative approaches have been proposed. Peter Lloyd (2000) focuses on the importance of creating a common language among engineers through storytelling. He claims that ethnography is a fruitful way of acquiring insight into the social mechanisms that facilitate the emergence of a common frame of reference by narrative agreements. This insight can then lead to the support for these mechanisms, which Lloyd sees as an indicator of 'good design'. What he actually means by this concept, and for whom it will be good, is a question that remains unaddressed.

Hughes et al. (2000) deal with the issue of communicating ethnographic findings to engineers more explicitly by developing an approach for: "bringing ethnographic field studies more systematically into the design process" (ibid. p. 188). One of the important features of this method is a tool that is used to: "allow the structured ethnographic record to be used for the development of requirements, prototype designs, design variants and so on" (ibid. p. 189). This device is an IT application called The Designers' NotePad (DNP), and its main feature is that it combines model-based representations of a worksite with underlying links to text notes. The claim of the authors is that they hereby merge the two worlds of designers (who are said to think in models) and ethnographers (living their professional lives in text). Though the possible conflicting desires of actors are recognized by Hughes et al., an essential feature of their method is that it is designed not to focus on the antithetical viewpoints encountered during ethnographic research, but to represent: "generic features"

(ibid.) that can be made useful to design. They hereby not only explicitly avoid a positioning in the battle being fought in technology design, but also delegate the choices that need to be made in the design process to the DNP and thereby to the designers. This is a stance that I will prove to be lacking political relevance in the remainder of this article and that has been shown to be problematic in a substantial body of literature from the field of (feminist) technology studies on design. Following Lucy Suchman's (this volume) distinction of various forms of design practices, the DNP faces the risk of contributing to 'design from nowhere' by which: "designers are effectively encouraged to be ignorant of their own positions within the social relations that comprise technical systems". Furthermore, Hughes et al. maintain the chronological dichotomy between ethnography and intervention to a large extent, thus failing to admit the complexity and interventionist richness of 'doing fieldwork', and remaining largely insensitive for opportunities to intervene that emerge – possibly for a short period – during fieldwork.

This dichotomy is largely absent in the third solution that I wish to discuss here. Hartswood, Procter, Rouncefield and Sharpe (2000) and Hartswood, Procter, Rouchy, Rouncefield, Slack, and Voss (forthcoming) present an approach that deals with many issues raised in the discussion on ethnographically informed design and development. They find their counterpoint in participatory design (PD) approaches that tend to be 'user centered' rather than 'user led'. They state that PD hardly ever transcends the design phase to provide guidance during development and implementation. This results in the failure to include requirements that cannot be identified outside of the context, and more subtle observations on the way in which applications are or should be implemented in work practice. Hartswood et al. wish to solve these problems by: "taking the technical work of IT design and development into the users' workplace" (2000, p. 97). For this they introduce the concept of the 'IT facilitator'; an individual that is to help the users realize their needs in whatever way required. This implies a combination of roles such as design consultant, ethnographer, programmer, troubleshooter, handyman, etc. that are to be acted out during a

prolonged stay in a specific site. While the clear-cut chronology in the activities of doing fieldwork and intervening is abandoned in this approach, a problem may arise resulting from the array of roles requiring a substantial amount of accompanying qualifications. This implies that the IT facilitator is asked to be a rooster that also lays eggs, and therefore Hartswood et al. see the need to raise: "issues of skill repertoires and the possibilities of overloading" (ibid. p. 104), a point I will return to at a later stage. Through their ad-hoc intervention strategy, an 'over-formalised' way of participation is transformed into: "a situation where participation, through the routine, informal interaction between users and IT facilitator, becomes a part of the daily activities of both parties" (ibid. p. 100). A major advantage of this approach is that the design and development activities, that normally remain opaque, are rendered visible, thus giving the users a sense of which demands are time-consuming and which are simple. This forces users to define specifically which features they desire in, for example, a database, thereby preventing an overload of work for the IT facilitator, and more importantly, not asking for a 'comprehensive' database that will be cumbersome to use (ibid. p. 101).

However elegant a solution this may be to some of the problems encountered by PD and ethnographically informed design strategies, it still leaves some of the issues that I focus on in this paper unaddressed. Hartswood et al. aim at optimizing the process of involving users in technology development, which is: "universally recognized as the key factor in guaranteeing more usable and effective IT-based systems and artifacts" (ibid. p. 96). As with the approaches of Lloyd and Hughes et al. it remains obscure what is actually meant by 'more usable', 'effective', or 'better' technology. Hartswood et al. state that the IT facilitator may find him or herself: "dealing with conflicts of opinion" (ibid. p. 103) and read this as a result of the ad-hoc nature of the interactions between the users and the IT facilitator. Based on this problem-definition, they propose the solution of organizing more formal interactions, but they also state that the facilitator needs to be able to explain the road that was taken to the present situation. Making understandable: "how things

have come to be this way' when alternatives are proposed" (ibid.) should suffice – at least methodologically – as a solution to the conflicting opinions.

Besides the practical problems this solution will pose for the IT facilitator of being in a direct discussion with several users having to justify – and thereby becoming responsible and accountable for – 'how things have become this way', the framing of the problem may also be questioned. The present problem definition seems to stem from an underproblematized and unsophisticated concept of 'better' technology design. This concept can be found in all three described approaches dealing with the issue of informing design by means of ethnography. The possible conflicts of opinion between users are either dismissed by focusing on the 'generic features' in research findings (Hughes et al.) or marginalized by stating that: "So far, instances of this have been few" (Hartswood et al. 2000, 103).

An alternative way to frame this issue is to state that conflicts are the quintessence of technology development. There is a large volume of research from the field of Science and Technology Studies (STS) focusing on precisely this theme¹⁰. Moreover, authors on the crossroads of STS and feminist studies have shown that design incorporates and actualises values in technology which has been a reason to argue in favor of opening the 'black box' of technology production (Wajcman 1991) Drawing upon these insights and siding with the political agenda proposed in these fields of research, the conflicts of opinion are not to be taken as something to be marginalized during design and development, but can form a focal point for interventionist ethnographic fieldwork. It is exactly by means of detailed empirical fieldwork that stories on the dynamic multiplicity of a specific site can be told. Focusing on this aspect of technology design sensitizes the ethnographer to possible political implications of his or her activities and for various opportunities to intervene, including their political consequences for the various actors involved. These will not be crystal clear and predictable, but some of their contours can be taken into account. Meanwhile, this focus will prevent the ethnographer to withdraw into a

position that Donna Haraway has called: "unlocatable, and so irresponsible" (Haraway 1991, p. 191) and facilitates taking a: "*substantive* position" by which the various actors that are encountered in a site – not excluding oneself – can be embraced as: "active entities who might be seduced into joining – temporarily, and partially – the shaping of a differently organized work practice" (Berg 1998, p. 480, italics in the original).

I will present the interventionist approach that is emerging on the basis of these insights by describing my entry into a hemophilia¹¹ care center (HCC) in a Dutch university hospital. In this ongoing project I have not taken a perspective identical to that of the IT facilitator, but certainly kept an actively involved stance. The difference between a position as IT facilitator and my own approach was not just that I am not much of a programmer; it also stemmed from my different positioning in the academic landscape. Since an IT facilitator – as proposed by Hartswood et al.¹² - is involved primarily in the IT design, it also means that the agenda for the kind of solution that is proposed has to be relatively fixed – it will have to be an IT application. As Randi Markussen has pointed out: "Designers describe the work of the users from the point of view of the technological solution they have in mind" (Markussen 1996, p. 136). Of course this also implies that I do not transcend these situated solutions. I entered the site with the explicit aim of being a 'change agent' supporting and bringing about transformation, without the problem, nor the solution having been framed rigidly yet. From my professional position at a research group with a focus on sociotechnical issues of IT in healthcare I offer certain 'affordances': there is obviously a wish to include IT developments in the change process, or rather, because the medical center asking for our assistance perceived IT to be an important factor in solving their organizational problems they approached us in the first place. As will become clear from the remainder of this article the alterations that were proposed and instigated were not all involving IT in a narrow sense. This is to be seen in the light of the early phase that this project is in, and from the point of view that organizational and social issues are highly relevant for IS research¹³.

My interest in the positioning of the change agent and the politics of intervention in design is another substantial difference between the position of the IT facilitator and the approach laid out here. Markussen stresses the importance of a sensitivity for the specific positionings of technology designers, and in my view this insight can easily be extended in a reflexive way to the position of the change agent: "As long as you focus on the historical and social conditions of the users and their organizations without including the historical and social conditions of the designers and the technology, you cannot account for the designers' location and historise their experiences"¹⁴ (ibid., p. 136), and to come to a research approach that does not play the god-trick of hiding in a scientific 'culture of no culture' (Haraway 1997) this very positioning of research is vital.

From this methodological starting point I entered the department of the hospital providing care for hemophilia patients. This department had been subjected to a dramatic policy change when being appointed as a HCC. The Dutch ministry of health laid down a policy document (Borst-Eilers 1999) that set the standards for the desired care. Demands such as integrated care in a multidisciplinary care team¹⁵ had to be met and therefore substantial organizational changes were due for the HCCs. This situation made an internist-hematologist at the HCC under study approach the department for which I work, to ask for assistance when realizing these changes on an organizational level, and on the level of the development of IT that he and his colleagues at other centers deemed necessary. The strategy of entering as a change agent implied that my role in the scene was not narrowly defined in advance; rather, what I would be doing – or would be expected to do – was kept fuzzy and left open for situated construction, within the limits – and sometimes beyond – of my interest and competence. My position of being a 'change agent' did imply a positive definition of 'change'. First of all, there was a clearly defined and imposed need for change in a particular direction pointed out by the minister of health. But besides this externally imposed alteration of the site, 'change' is not something the minister introduced into an otherwise static setting. Change is a state that is: "already and always in progress" (Blomberg, Suchman and Trigg 1996,

p. 260, original in italics). This reality of continuous 'redesign' accommodates continuously asking the politically pertinent question who benefits from a certain regeneration of a site or, following Susan Leigh Star *cui bono?* (Star 1991, p. 43). This sensitivity for the political importance of change helps "put the boundary between the technical and the political back into permanent question" (Haraway 1997, p. 231) but also includes the risk of being marginalized¹⁶ because of its inherent preference for siding with 'inappropriate/d others' and a lack of sensitivity for the limited number of interventions that actually seem feasible – based on all kinds of 'sensible' considerations. Interventions therefore had to be both politically sensitized, as well as highly pragmatic since I was not in any way positioned 'above' the practice, but was continuously situated.

Without a narrow, identified focus, I was present at the HCC with the aim of identifying acting space, assessing where interventions would be possible and trying to remain sensitive for the way in which the regeneration of a site would influence the positions of various actors. This activity in itself already consisted of more subtle forms of intervention and it is not to be seen as 'preparing the ground' for the 'real' intervention of developing IT for the center. Of course the cherished fuzziness raised similar problems as those pointed out by Hartswood et al. in relation to the competencies of the researcher and the risk of being overloaded with demands, but I will also show (in the section 'Many Lives in a Hospital') how the various expectations and roles that were attributed or adopted were turned into an important source of data in both the research and the interventions, and thereby became part and parcel of the methodology.

But before turning to this aspect of the approach, I will first question the concept of 'better' technology, by showing that 'the' HCC that I expected to encounter was a rather equivocal and multiple entity.

Countless care centers

Important concepts that have been coined within feminist technology studies are 'diffraction' and 'situated knowledges' (Haraway 1991). They indicate the inherent partiality of perspectives on a 'practice', a 'fact' or a 'site'. Questions that proved to be illustrative of the diffracted nature of the HCC were: 'What is the HCC?' and 'How do we make the HCC work?' It was when focusing on these matters that the multiplicity of 'the' HCC would easily come to the fore. The clearest, and most explicit answer to this question came from a representative of the Dutch Association of Hemophilia Patients. This informant reacted as if she had been stung by a bee: "What do you mean 'to make it work'? It is already there! The ministry has appointed them, so they already exist." For her, discussing the present functioning of the care center was out of the question: it *already existed*. All the aims were laid down, and now it was just up to the care providers to live up to these standards.

Initially, a rather opposite reaction came from the internist-hematologist, who was my key contact at the center. He stated that we had to be very careful, because: "if we don't make the care center work, we may be closed down. I think that is a real risk, and the more so for some smaller centers. The only center that would then remain would be the Van Creveld¹⁷". The fear of being closed down, and the resulting perception of the HCC as a *threatened unit* was initiated by the way the implementation of the policy by the ministry was presented. The initial demands were that a formal examination with direct consequences for the continuation of the status of HCC would follow within one year. Since the problems were substantial, this informant seriously doubted the chances of passing the exam.

The perceived viability of the center altered after a powerful reaction came from medical professionals. They expressed in strong words to the ministry their discontent with the state of affairs on the implementation of the policy. This changed the ministerial aim of 'examining' the centers into drawing up an inventory, which diminished time-pressure to shape the HCC substantially. This also seemed to transform the perception of the internist-hematologist on the HCC. Instead of the center being threatened, he

became eager to present it as an *efficient unit* in the hospital. This situated idea of what the center was came to the fore when we were discussing an internal document I had prepared for the hospital pharmacy to indicate the amount of money that went astray due to sub-optimal registration and logistics of medication¹⁸. I carried out this investigation in order to generate a budget to employ an extra person at the HCC dealing with medication, and to increase my credibility at the site (see section 'Many Lives in a Hospital'). The internist-hematologist was called to the Board of Directors of the hospital after they received a copy of the survey that he had filled out and sent to the ministry as part of the inventory. He had filled it out quite strategically, focusing more on problems than on achievements and now assumed he would have to justify himself for the way he had represented the hospital. He said: "I would like to bring this paper along to the Board of Directors. It is good to show them that we do quite a bit more than just filling out inventories here!" The very changes that were taking place in the setting 'redesigned' the HCC, and enabled him to state that the care providers and I were turning it into an efficient unit.

When I arrived, the '*multidisciplinary care team*' that I expected to find turned out to be nothing but a number of individuals, not meeting at all, not knowing what procedure to follow in case a hemophiliac would show up; not showing any characteristics of a 'team'. During my stay there, the care providers of the team started meeting up, and discussing patients together. Meanwhile, a protocol folder was created for all disciplines. This turned out to be a highly constitutive activity for healthcare providers since it made the HCC all the more tangible in the hospital environment. Even though it proved difficult to implement the protocols they did give guidance to the discussion among the various disciplines. For the professionals from other disciplines, this way the HCC was starting to work: the care team started functioning.

When I started the project in the HCC, one of the important activities of the hemophilia nurse was her dealing with all the contacts with pharmaceutical companies. She would maintain her own stock of medication, acquire product

information, place orders directly with the companies and receive the sales managers when they came to visit. She stated that this was definitely improving the quality of care, and was a task that should be carried out by her. She also realized that most patients hardly ever saw a doctor, and in general administered their own medication. Therefore providing them with the proper medication and product-information was the most important function of the HCC. It made her situation in the outpatient-clinic – of which the HCC is part – special, and it defined the working of the HCC as operating an *own shop*, i.e. a separate place in the clinic that she was running herself with a substantial amount of autonomy with respect to the hospital pharmacy and her superiors.

This definition was a thorn in the flesh of the head-nurse of the integrated outpatient-clinic hematology/oncology. When giving me a reprimand after a meeting (see section 'Many Lives in a Hospital'), she stated that it was of utmost importance that: "we shouldn't return to the situation where hemophilia is something completely different, with different privileges and all. That was the case when I came here, and I was told that was exactly the problem with this clinic!". For her, making the HCC work was to keep it as an *integrated unit*, i.e. as part and parcel of the hematology/oncology clinic. She tried to install this interpretation by rotating the nurse as much as possible to the other positions in the clinic, and by stressing in meetings that officially there doesn't exist such a thing as a 'hemophilia nurse' in the Netherlands. She also insisted on the fact that there was no permanent function for a nurse dealing with hemophilia: the work was just part of the activities at the outpatient clinic.

However dearly the head-nurse may have wanted to describe the clinic as integrated, other actors enforced the definition of the center as a *separate unit*. One of the decisions made in the working group that was formed for the HCC¹⁹ was that a PC was needed for its development. The perception of the head-nurse that the center is based in, and part of an integrated hematology/oncology clinic was challenged by a non-human intervention. In the clinic the nurses work with 'dumb' terminals that provide access to the hospital information system (HIS)

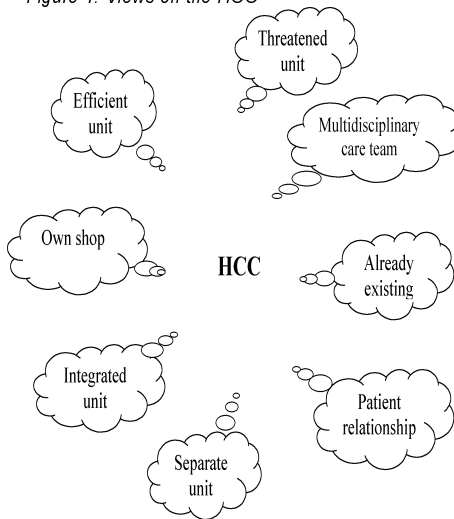
through the hospital's mainframe computer. The PC was to be placed on the desk where the hemophilia nurse was sitting most of the time, and was to replace the terminal. After having decided on the need for a computer however, it turned out that the network box to which it was to be connected was a dummy: it was merely a box, with no cable leading to it to connect it to the hospital network. As a result, the whole ceiling would have to be opened in order to provide such a connection. In a crowded outpatient clinic, this is close to disastrous, and the head-nurse quickly arranged for a room to be allotted to the HCC. Though the head-nurse was trying to factualise her perspective of the center as integrated, the alliance of the PC and the box provided the irrefutable argumentation for obtaining a separate place designated to the HCC.

The discussion on the logistics and registration of the coagulation factor concentrates led to yet another view on what the HCC was. Among participants of the working group, the view became dominant among the internists, the hospital pharmacist and the head-nurse that the position of the hemophilia nurse would have to change. Not only were her tasks concerning registration seen as secondary to a nurse's job – and this in a clinic with a serious lack of nurses – it had also turned out to be costly since registration was not optimal. It was decided that an extra position would be claimed for an assistant-pharmacist to be employed and take over a substantial amount of the nurse's activities. In the period prior to this change I had observed that the nurse's encounters with patients were some of the rare remaining moments of communication between the center and the patients and the activities of running an 'own shop' actually included a lot of 'invisible work'²⁰ that was valuable for the primary patient care. However, it was no longer feasible to maintain this situation because of the strong opinions against it from powerful actors in the HCC. When it became clear that the activities had to be shifted from the hemophilia nurse to the hospital pharmacy, I pleaded for a reallocation of the time that would become available to a more formalized nurse-patient relationship in the form of a nurse led home-treatment clinic. The head-nurse and the internists-hematologist agreed upon this

initiative and before it was actually operating the nurse one morning asked me: "Do you have any appointments today? Because I have my first nurse-led consult today". She said it with a lot of enthusiasm, and what it meant to make the HCC work seemed to shift slowly from running an own shop to creating a formally intensified *patient relationship*. The apparently main advantage being that now she would not be considered to be 'just chatting' with patients by other nurses, i.e. the invisible work would be made visible.

Based on these observations on the different ideas on what it means to make the HCC work, the diffracted range of views of the center can be seen in figure 1²¹.

Figure 1: Views on the HCC



The displayed equivocality is not without consequences for me, as a researcher, who entered the setting as a situated yet fuzzy change agent, and is seen as someone who can be aligned with a certain view, but who is also searching for room for intervention in line with his pragmatic/political aims. As a result of this there was a large array of roles that I was expected – or trying – to play. Besides that, some roles seemed a result of my prolonged stay as an ethnographer. To these various roles and their different origins I will now turn.

Clothes make the man: get a large wardrobe!

When I entered the research setting, it soon became apparent that the level of flexibility required by me was substantial. Due to the situated ideas of various actors of what the center is, I found that many times roles were being attributed to – or enforced on – me that stemmed from a specific interpretation of the HCC. Also some roles seemed to arise as a result of my presence as an ethnographer. And besides all this, of course, I tried to position myself and adopt roles strategically, seeing if they would enable intervention or alter the site in a way that could facilitate changes that could both 'work' in general, and redesign boundaries in accordance to my politicized insight into the diffracted HCC. For this subtle interventionist work, an instrument that was at my disposal, or rather, that I tried to use was a large wardrobe. This is a well-known ally of an ethnographer facing various groups within one setting²². But of course, I could only do so much to divert the attention of my informants from the roles they wished to ascribe me.

At first, I was rather cautious of these different roles, and felt somewhat threatened by the idea that my informants were trying to 'use' me for their various goals. However, it didn't take long for me to start taking comments on my work and roles being ascribed as valuable sources of information on the setting I was researching. All the more so, since this provided insight into the setting in which I was to act strategically. Had this strategy been based on a preconceived Grand Idea on the way to proceed and intervene, roles being attributed may have posed a threat, but while aiming for ad-hoc intervention as a situated activity the information on the diffracted nature of the site proved an essential prerequisite for identifying acting space. When thus shifting the perspective on the roles that I was asked to play, a stressful situation turned into a rich source of data. The anthropologist Mascarenhas-Keyes states on this issue that: "since stress seems to be a sine qua non of fieldwork (...), rather than escape from it I suggest that we could usefully integrate it into fieldwork methodology" (Mascarenhas-Keyes 1987, p. 189)²³.

Many lives in a hospital

In one of the first weeks of the project the internist-hematologist suggested that I should visit some of the other centers to compare existing organizational practices. He made a phone call to a colleague at the largest HCC in the Netherlands in which he said: "We have a logistic manager employed here, who would like to take a look at the whole logistics of coagulation factors at your place". Though I was quite surprised to be portrayed as an added direct employee rather than an external researcher, this remark made me aware of the positioning taking place in relation to this other center. Also it helped me to realize that the HCC was being perceived as a threatened unit, and that it was important to show that we were doing all we could to get the center organized. This of course had consequences for the space that I perceived to have in order to act on behalf of the center and stressed the need for a concrete result of the project.

A somewhat similar, but more broadly defined role was that of the 'project leader' in the HCC. This was a role that I partly took myself, and that simultaneously was attributed by the internist-hematologist. My choice for this role became apparent just before the first meeting of the project group. Since the aim of this meeting was to present possible directions to pursue organizational change, I had attempted to enhance my credibility by dressing more formally than before. The suit I was wearing was an – by managers well known – ally in the attempt to start an organizational change. As I walked in, the internist-hematologist saw I had dressed more formally, and being quite content his only remark was: "Very good! I will buy you a tie some day". Apparently he wanted to stimulate this development into a more managerial position for me, seeing the need to do much work to survive as a center. Therefore this role was related to his interpretation of the HCC as a threatened unit. Of course, while this managerial role put me in a position with a substantial amount of acting space, it also put me at guard, since it might be conflicting with more subtle ways of intervening and therefore be detrimental to my approach. The responsibility I would have for the outcome of the process would be far beyond my research

goals – not to mention my competence. On other occasions the suit was also a strategic and essential ally. For example when I had to report to the company providing the funding for the research. In a strong alliance with a slick PowerPoint presentation (with the logo of the company embedded in the background of all slides) it helped me to perform competence to this pharmaceutical company²⁴.

In a very different setting, the head-nurse called me into her office right after a meeting. When I entered she closed the door behind me saying: "So, that door we fully close...". After this, she gave me a reprimand like one can only give to an employee ranked much lower in the hierarchy who has stepped out of line. She had been quite displeased with the tone of something I had said during the meeting, and said she didn't appreciate me being cynical at all. Besides the fact that it was highly puzzling for me to understand what she meant – since I hadn't intended any cynicism during the whole session – it was interesting to be treated as an 'employee' all of a sudden. I took this situation as an opportunity to learn that I posed somewhat of a threat to her view on the HCC as an integrated unit. Since my arrival, the separation of the center from the outpatient clinic had materialized and her action made me realize that this interpretation was seriously restricting my acting space; I would have to be creative in finding ways to keep its representatives on board, while not minimizing my acting space.

A role that I adopted mostly in the early phases of the project was that of 'ignorant eyes and ears'. Since this phase consisted mainly of observing the medical practice, it was important to gain the confidence of the nurses. Therefore, in this phase, substantial modesty was needed. I performed this role by asking many questions, by following the nurses wherever they went, not interrupting them when they were engaged in conversation, and by wearing leisure wear. Being surrounded by healthcare professionals in their white 'uniforms' made any possible sign that clothing might project much more visible, which made me aware of the work I had to do not to stand out, but become part of their reality. This role, and the activity of 'observing', should not be taken as passive and different from interventionist activities. They proved part and

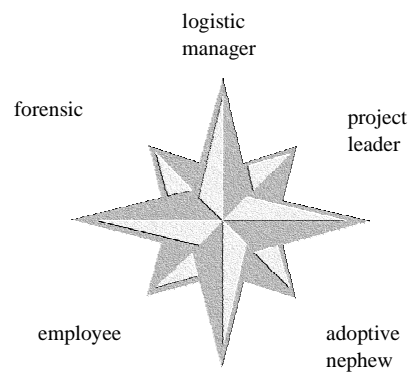
parcel of interventions in meetings and when the installation of a PC was carried out, since at many such times the good relationship with the nurses was very helpful for pursuing a change that I perceived to be possible, desirable, pragmatic, and politically sensitive.

As mentioned above, at some point in the project I was carrying out an investigation of financial and procedural consequences of the registration procedure of medication. It had become clear to me that the existing process of ordering and registering coagulation factor concentrates was problematic. The hemophilia nurses took care of the entire process, and since their primary focus was on providing care to patients, erroneous registration was unavoidable. This made the process costly while simultaneously frustrating the primary care process²⁵. Though participants of the working group of the HCC agreed with the importance of separating activities for the sake of registration and process-supporting activities²⁶, they also indicated the pertinence of being able to underline such a point with financial data, and suggested that I would carry out the investigation to obtain such figures. Though not being equipped with much knowledge of (nor interest for!) accountancy processes, taking up this role seemed a way to realize substantial acting space. A relatively small investment of time could lead to substantial managerial changes if an extra member of staff could be employed with the money that was traced. Therefore, I 'chose' to take up this quite foreign role of 'forensic accountant' – though the 'choice' was highly influenced by not wanting to diminish my position as a 'useful' entity. Realizing that I was facilitating an organizational shift, which was not quite in line with my findings of the importance of the afore mentioned invisible work the nurse carried out while running her 'own shop', made me stress the importance of trying to allot (a part of) the gained time to the nurse led clinic. This was however all I could do, without knowing at that time if this could actually be any kind of an adequate replacement for the informal contacts between patients and the nurse when she was handling the medication. Not taking up this role, however, seemed to jeopardize and marginalize my position substantially.

Where these roles all seemed to emerge from, or at least be related to a specific view on the HCC, a number of roles was also ascribed stemming from other ideas or situations. One such role that was attributed after several months on the site was that of 'adoptive nephew'²⁷. The close cooperation with the internist-hematologist over an extended period contributed to this role that became more apparent after a protocol meeting, where a presentation of the HCC project was given to all hematologists of the outpatient clinic. During the discussion I found that I had gained enough insight into the medical aspects of hemophilia to be able to discuss on an equal level with the professionals²⁸, and after that meeting, the internist-hematologist was quite content with the proceedings. He complimented me in a fatherly manner: "I am really impressed with the medical knowledge you have gained so far". This role may be interpreted as a result of the intense collaboration in this project, and has also been interpreted as being gendered. Waring (2001), has described that her role as a female action researcher led to significantly different and more problematic contact with the actors at her setting than the later introduced young, male IT programmers, who were adopted instantly. Whatever the interpretation, it certainly contributed to the acting space and credit I had.

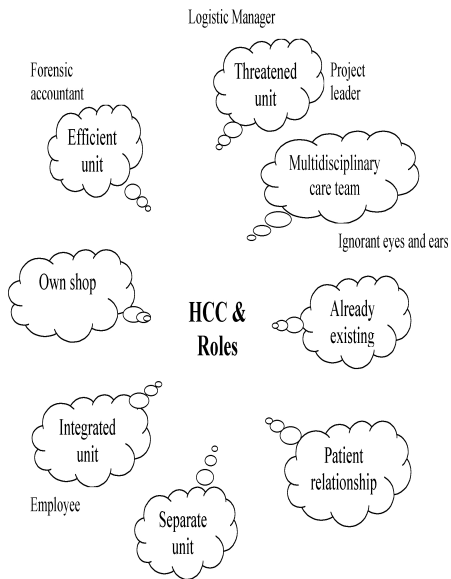
Based on the observations of the different roles that were ascribed to me, and that I tried to adopt myself, I can draw the inscription of figure 2.

Figure 2: Roles ascribed and adopted



The relationship between the views on the HCC and the roles that were ascribed becomes apparent when combining figure 1 with figure 2.

Figure 3: Roles and Views on the HCC



With the resulting creation of figure 3, I wish to indicate that the roles that were ascribed by actors in this research setting proved highly informative of the interpretations that were present among those involved in the HCC. The remaining role of adoptive nephew did not emerge due to a specific interpretation of the center, and this indicates that there are other factors to be taken into account when studying a setting, such as the gendered nature of relationships and roles. Besides being left behind with a role that does not match any specific interpretation, I also face certain interpretations that are not accompanied by a role. Reasons for this are varied. In some stories on the HCC I was being aligned in quite an obvious and central way, whereas in others – such as the separate unit – I seemed to be a lot less ‘present’. Of course, even the configuration of the computer network and the resultant strengthening of the interpretation of the HCC as a separate unit have consequences for the roles that I am being ascribed or can try to adopt. And therefore it would have been possible to make the inscription more ‘neat’

with roles matching all interpretations. However, this was not the aim of this exercise. The aim is to show how roles that are being ascribed can be used as findings to gain insight into the different ways in which a site exists from different perspectives, while thereby providing crucial information for identifying room for intervention.

Discussion: dissection and selection

Centering my realization of the multiplicity of the setting has enabled me to get a feel for the politics of the HCC, for problems that are perceived, for the various expectations of me as a change agent and for the resulting space for intervention. The method of participant-observation has been highly instrumental in obtaining information on the HCC, on the numerous stakes involved, and to intervene subtly by positioning myself in the HCC.

After having shown the hybrid and equivocal reality of the center, I would now like to return to reflecting on the role of the ethnographer, and more importantly for the ethnographer with the intention of engendering situated interventions in sociotechnical design.

The problematique of the idea that it is possible for an ethnographer to enter a site without aligning with one or more of the ‘sides’, has been discussed extensively amongst scholars within STS²⁹. One of the outcomes of this debate is that it is proving highly problematic to try to maintain a ‘neutral’ position. Stuart Blume describes how his initial: “unwillingness to make an assessment [of whether or not the technology of cochlear implantation for deaf ‘worked’] proved literally impossible to sustain” (Blume 2000, p. 156). If this is the case for an ethnographer who started without interventionist intentions, it should be all the more indicative of normative responsibilities of the interventionist researcher. Any contribution to design that is proposed, will influence the setting, and thereby shift the balance of those actors that are more included and excluded in the design: who is constituted as ‘inappropriate/d other’. Realizing this gives the researcher the obligation to become aware of stakes and interpretations that are present or emerging. This does not mean that the

ethnographer will be able to disinterestedly 'map' all positions that are 'relevant', but that sensitivity should arise for the diffraction and the possible consequences of change. As studies in STS have indicated: "each merger of actants – humans, artifacts, technologies – create a new entity, whose capacities cannot be fully foreseen" (Berg 1998, p. 475). This implies that an interventionist ethnographer faces the inevitability of being hoodwinked and tricked by design changes proposed. Though 'better' technology design often seems to refer to the idea that the technology 'fits' onto the work-practice, I have shown in this paper that what this work-practice is, is opaque and equivocal. At this point it seems appropriate to further theorize the question how to proceed from this acquired complexity in pragmatic yet politically significant ways and how to act upon the insights in the setting and its possibilities for intervention.

Mainly, three options now seem opened up, some more well-trodden than others. First, there is the solution of shunning interventions, when realizing the complexity of the site, and the performativity of any interference in regards to its configuration. But, as we have just seen in the work of Blume, this would actually mean ceasing to do research, for the problem of performativity is not merely one of intentionally interventionist research³⁰. Therefore, this solution is actually not an option, especially when realizing that the aim of the research was to operate as a change agent.

The remaining two options both imply creating a new, workable story of the site that is based on modifications of its various interpretations. A first possible way to pursue such a new story is by engaging actors in a confrontation with the various interpretations, in order to let them define the problems and interpretations that they wish to adopt and work on³¹. By means of this approach the aim is to achieve – if not consensus – closure and unification of (coexisting) views. The risk of this method is that it can easily lead to an enactment of positions, rather than challenging them. Feminist studies have made us "reluctant about overly simplistic egalitarian discourses, as they may hide important differences and in practice make space for manipulation" (Markussen

1996, p. 131). Caution is needed not to start seeing the method as an unproblematic solution that obtains its importance from a sublime 'democratic' procedure (Berg 1998, p. 480). If seen as such, there is every risk that the politics of the setting can be reduced to the positions of the people involved.

In this article I have shown how technology at times acted as a constitutive force, with consequences for the configuration of the HCC, and for my position as a change agent. Without the 'trick' played by the combination of network, network box and PC the conceptualization of the center as an integrated unit would not have been questioned to the same extent, and my acting space would have been substantially reduced. This shows that: "[technology] is not just a screen upon which the negotiations between social actors are written out" (ibid. p. 475), and that the tricks it plays are shaping the room for intervention. If the sensitivity for these kinds of interventions is subordinated to the human interpretations and deliberative procedures, this results in a lack of sensitivity for the acting space that emerges because of these changes, and the difficulties in inscribing the outcomes of choices in the setting will be underestimated. Though it seems hard to argue with such 'egalitarian methods' I wish to side with Randi Markussen who stresses the importance to question their functioning in power-differentiated work settings (Markussen 1996, p. 131).

Conceptualizing technology as acting, creative and 'tricky' I can see the act of trying to create new stories as a more strategic enterprise in which a researcher tries to identify which aspects and interpretations in the sociotechnical setting can be combined and allied. Hereby politics as a procedural activity is transformed into the activity of a change agent, i.e.: "immersing oneself in the networks described and searching for what is or can be achieved by new interlockings of artifacts and human work" (Berg 1998, p. 482). Adopting this approach to realize a new story on the setting provides the interventionist researcher with a hybrid collection of aspects, that can be combined, shifted around, and kept for reference when identifying acting space or deciding on an action to be taken. It provides the starting point for,

what I would like to call sensitized interventions based upon politicized ethnography. 'Based upon' as used here should not be taken as indicating linearity and a temporal separation. As stated, the intervention and the fieldwork co-exist and -develop. This story will certainly not come out as 'planned' by the interventionist researcher, who – just as any other actor in the setting – is bound to be hoodwinked by the constantly eluding technology. The dilemma of striving for changes, while realizing that they will turn out differently than intended, cannot be solved. Though I perceived the work of the nurse in dealing with patients informally through running her 'own shop' to be important for the quality of the work of the nurse and the care for the patients, I still found myself contributing to the discontinuation of this practice. Though reluctantly, I contributed to the story of the center being an efficient unit, and though attempts were made to ensure a continuation of the patient-nurse relationship in the form of the nurse led clinic, the functioning of this in practice is still to be seen. Without being able to solve this dilemma, it is all the more important to be aware of it, and keep striving for continuous interventions - that turn out differently than perceived.

Though compatibility of perspectives and positions is of course an important criterion for identifying room for intervention, I have shown it is by no means exclusive. If it would be, this would imply a loss of political pertinence. Yet, the interventions that are being pursued result from a choice – albeit one that is mediated by the research site and the researcher's affordances. Siding with Haraway's plea for explicit situatedness, as opposed to playing the god-trick of claiming to have a view from nowhere (Haraway 1991, p. 193), I would like to plea for situated interventions based on fieldwork. The positioning this implies can be justified in numerous ways. Of course, it is bounded by possibilities for intervening that seem to emerge, thereby problematizing Haraway's idea of diffraction as an activity to favor those who are excluded from certain knowledges or designs. Similarly it is situated on the grounds of social mechanisms that occur in fieldwork. In the case of the HCC, the close working relationship with the internist-hematologist who instigated the project, would

tempt me to be adopt his view on the site and strive to realize it – if only it was clearly identifiable. Another possible choice could stem from an ideological commitment leading to the wish to give voice to a certain (group of) actor(s), such as the hemophilia nurses who seem to be at the bottom of the organizational hierarchy³²; the 'inappropriate/d others'. This choice would of course bring the mentioned problem of marginalizing oneself by working for the marginalized (if identifiable) to the fore. In this project I had to be quite careful not to be maneuvered into an arguably 'weak' position, which would make it very difficult to materialize any intervention supporting changes that I saw as desirable. Though pragmatism should not be the sole leading principle when choosing an intervention, it should certainly be taken as a critical factor, thereby excluding the possibilities for unbridled political activism, but creating space for situated and politically sensitive action.

To conclude, I will give one further example that may be illustrative of how this sensitized intervention materializes in the project. Though I've shown the taking up of roles and my very presence as an interventionist researcher at the site to be interventions, there are also more explicit moments where I chose to act in a slightly more 'traditional' interventionist manner. At one occasion, the future of the hemophilia databases for the care centers in the Netherlands was discussed in a meeting with internists from various HCCs, a representative from the patient association, a software developer from a company involved in the design and a programmer from the hospital IT department. I was also invited to attend this meeting. The point that caused some commotion was whether there should be one national database that all HCCs share, or decentralized databases in all centers. Though the salesperson from the software company tried to stress the convenience of a centralized database, his view was strongly countered by the internists, who claimed that for such a structure trust was lacking among hospitals and care centers. To the obvious discontent of the salesperson, it was stated that there would have to be sixteen databases for sixteen centers that would have to be linked locally to the existing hospital information systems. When this was proposed I

decided to intervene by stating that this might prove problematic for smaller HCCs since they would be lacking finances to integrate the systems. Quickly a solution was found in the possibility of providing an Access viewer for the database, which would also enable the use of local databases as stand-alone systems for the smaller HCCs because with this viewer there would not be a need to link it to a hospital information system (HIS)³³. The final remark from one of the internists of a large HCC that this database without the viewer would have been an appropriate tool to reduce the number of centers from sixteen to twelve, made me realize that this had been a valid intervention on my behalf. I could intervene on the basis of my knowledge of problems patients and healthcare professionals were facing with home-treatment. The distance between the HCCs and patients had increased in both a literal and a metaphorical sense with the introduction of this treatment method, and, especially for the patient association, the geographical distribution of care centers was an important issue to at least not further increase the physical distance between HCC and the patients. Since the design of the technology posed a threat to some of the smaller centers, it seemed appropriate to intervene on behalf of the patients that are not located close to a large HCC who were about to be constructed as 'others' vis-à-vis the system and thus further marginalized. Without denying the perspective of the health authorities and their wish to reduce the number of HCCs to increase the quality of the provided services, these arguments seemed secondary to the wish of some large centers to increase their number of patients in the competitive times for hemophilia care. If the issue of the amount of centers was to be discussed, this should be done in a more open and direct way, and with other actors present than by means of this technical design. If I had explicitly defined my role as an observer, who would afterwards intervene, I could not have taken this opportunity to act and shape the technology design on the spot. For this the intentionally ad-hoc nature of my approach was indispensable. Similarly, the period prior to this meeting, in which I had intervened in more subtle ways and had positioned myself more or less strategically, enabled me to act in this 'stronger' way now.

Though the intervention was an attempt to make the technology 'better', this was not a naïve, absolute 'better' – it was a situated better for hemophilia patients living at considerable distance from a large HCC. And the reason the intervention could take place, was because the aim of reducing the care centers by means of the database design was seen as inappropriate by various other actors.

The fragility of 'better'

It is important to note here that the sustainability of this situated 'better' might be limited. The perspective of the health authorities on the number of HCCs needed may at other times become more predominant, challenging the position of the small HCCs. In such a situation, the importance of focusing on the political consequences of the database design in relation to the number of centers that are able to work with it would decrease. The alliances that constitute what is 'better' therefore are undoubtedly fragile. Especially in this setting where it is not in any sense obvious who is being marginalized or defined as an 'inappropriate/d other', it remains of utmost importance to keep assessing which interventions seem suitable. For example, the position of the nurse running an 'own shop' may have initially seemed an important and 'better' aspect of the care provided. However, it proved to be 'better' to transfer the logistics of medication to the hospital pharmacy in the light of the situation concerning personnel in the understaffed outpatient clinic, of the financial consequences of sub-optimal registration, and of the legal problems that might arise when a medication problem would occur without the pharmacy being involved in the distribution of coagulation factor concentrates.

This realization of the frailty of 'better' in this particular case makes a simple 'critical' position problematic. Whereas historically, many researchers within STS have been striving for the improvement of the position of citizens, workers or patients, since they were clearly marginalized³⁴, the 'others' in this research are not as easily identifiable. The chronic patients have been treating themselves for several years, and have become 'experts' on their treatment. They are also strongly represented by their patient association. This results in a situation in

which they are barely influenced by medical professionals. In a talk I had with a patient he stated that "This doctor has just recently joined us". This shows that it is not unproblematic to see hemophilia patients as marginalized. And hemophilia nurses with their primary patient focus are no more 'other' than head-nurses running the clinic and looking after the 'productivity' of the ward to ensure care for all patients.

In this setting in which inappropriate(d)ness is constantly emergent and ambiguous, it becomes unavoidable to reflect upon the problematic position of a researcher claiming to know who is marginalized. A traditional critical approach towards interventionist research with clearly identified 'included' and 'excluded' actors, and political agenda's that seem inherently 'right' do not do justice to the complexity encountered here. Taking the emergent nature of otherness into account, makes the work of the interventionist researcher a pragmatic exercise in balancing the constantly performed and reconstituted 'interests'. Within this methodological setting a researcher is facing the dilemma of continuously assessing the political sensitivity of situated interventions in an emergent landscape of positions, without ever being ensured that the actors that are favored are actually inappropriate/d. On top of this dilemma the tricky nature of a (technological) intervention makes it impossible to ascertain that the intervention will actually benefit those that seem to need support.

These dilemmas similarly apply to the funding structure of this research project. Whereas the critical stance within STS would be highly skeptical towards commercially funded research – especially when it is being done in a medical setting while being financed by a pharmaceutical company – it here seemed to provide me with considerable acting space. I could contribute to the improvement of the working situation of the medical professionals in HCCs that were facing significant difficulties, and that would undoubtedly detriment the quality of the care for hemophilia patients. Meanwhile the company gave us all the freedom to work as we wanted, without directly trying to influence the outcomes or approaches in the project. Their main aim with the grant was to

create good will among hemophilia doctors by showing their commitment to improving the organization of hemophilia care. Though the idea that governmentally funded research would be more 'autonomous' may seem it seems quite awkward from an STS perspective, it has proven to be necessary to defend the funding structure of this project to various STS audiences. Until now the project has proved that – in this case, and until now – letting go of ideas on the 'purity' of research funding facilitated my attempts to work for situated 'better' solutions.

As I have tried to show in this paper, ethnographic fieldwork is a very suitable methodology for obtaining information on the diffracted nature of a site. Especially the reactions to my presence and the roles that were attributed proved highly illustrative and informative for dissecting the HCC. Similarly, the concepts that were introduced from the field of feminist technology studies such as 'situatedness' and 'diffraction' proved instrumental to tell the story as I told it. This combination is leading to politicized ethnography that allows me to take the multiplicity of the setting into account when identifying acting space and working on solutions for perceived problems. It also facilitates continuous awareness of the consequences of the changes that occur in the 'redesign' of the setting and emergent acting space. The result is an interventionist research strategy that abandons 'control' as a useful concept for structuring interventions, and that nurtures situated, continuous, and politically sensitive interventions. It also redefines the idea that ethnography or user participation inherently lead to 'better' technology, by explicitly begging for ad-hoc positionings of a change agent in IT development projects that define 'better' as a situated concept. This results in a politically relevant design and development practice, and in the methodological advantage of being highly sensitized to emergent acting space. Though the outcomes of interventions will not cease to elude us, this does not absolve the change agent from the responsibility to keep working towards situated better technologies.

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Notes

1. Quoted in: (Anon. 2001).
2. See, among many others, Toffler (1981), for an example of work in the long tradition of techno-utopian writing.
3. Quoted in: Hess (1992, p. 4).
4. Concepts that have been framed for this are for example "hybrid collectives" (Callon and Law 1995), "actor-networks" (Latour 1987) and "sociotechnical ensembles" (Bijker 1995).
5. See for example Brown and Duguid (2000), particularly chapter 4, and Suchman (1999).
6. For example Hughes et al. (2000), Lloyd (2000), Hartswood et al. (2000); Hartswood et al. (Forthcoming).
7. This critique is of course not generically applicable to CSCW researchers, who often have an explicitly political agenda when trying to develop IT for specific categories of employees – preferably shop-floor workers. However, it is relevant for the authors that I will discuss in this article. And they are the ones not merely signaling the problems concerning the question on how to bring together ethnographic findings and IT design, but also trying to develop approaches to deal with this issue.
8. The discussion on this point is somewhat beyond the scope of this article, but briefly it can be stated that by means of increased 'rigor' the aim is to enhance the 'control' of projects (Avison et al. 2001, p. 38). This should be obtained through "determine[d] control structures in the early stages of the project" (ibid. p. 40), and this would be a requirement for the ability to 'manage' projects. This whole approach is rather opposite

to the intentional fuzziness that I will prove to be highly valuable – both conceptually and practically – for interventionist research in the remainder of this article. The idea that 'control' is an appropriate and fruitful managerial requirement or strategy is highly contested. See for a thorough critique Ciborra (2001).

9. Though I am certainly aware of the explicit political discussions on the positioning of research within the Scandinavian PD / Cooperative Design tradition, it is beyond the scope of this paper to give an account of the way a reflexive and politically sensitive approach towards ethnographic interventionist research relates to the Scandinavian tradition. For this I would like to refer to Markussen (1996) who gives a historically sound and conceptually interesting positioning of the common ground and differences between them.
10. See for some classics Bijker (1995), Latour (1996).
11. Hemophilia is a hereditary bleeding disorder that is treated by administering clotting factors intravenously.
12. Of whom it is worth noting that they are based at various computer science departments.
13. This point has been made in many STS and IS articles. For an excellent example, see Monteiro and Hepsø (2001).
14. This comment is a direct critique of PD approaches that have a tendency to hide the interests and interventions of designers behind a discourse focusing primarily on the support of user-interests.
15. Needing to consist at least of a hematologist, medical social worker, orthopedic surgeon, medical psychologist, physiotherapist, rehabilitation doctor and oral surgeon (Jones 1991).
16. A risk identified by Downey and Dumit (1997b, p. 27). Whilst they don't perceive this to pose a substantial threat to an established scholar as Donna Haraway, they all the more stress the danger for the less established researcher.
17. By far the largest HCC in The Netherlands, and the only center already living up to the majority of the demands.
18. Hemophiliacs treat themselves intravenously with coagulation factor concentrates. The use of

medication is always a sensitive issue, since the medication is extremely costly and scarce, and since the patients are largely responsible for diagnosing and treating their own bleeds.

19. Forming this group itself was a constitutive and interventionist activity, since it brought together some of the people involved in the HCC, thereby rendering it all the more tangible.

20. A concept that, according to Blomberg et al. (1996) should be a focal point in studies of ethnographically informed technology design.

21. Note that the inscription might make it seem as if the positions are equal in size and strength. I wish to stress here that equivalence is a highly inappropriate concept for describing the views, since they are constantly being performed and altered.

22. See for an interesting account of the way dress was used in order to deal with different groups in an anthropological study in Goa, Mascarenhas-Keyes (1987, p. 182-183).

23. On turning fieldwork problems into research data, see also the contribution of Ross Winthereik, de Bont and Berg (this volume).

24. For the consequences of this type of funding, see the Discussion.

25. For an analysis of the problematic nature of integrating registration for secondary purposes in the primary care process, see Van der Lei (1991).

26. An important distinction suggested by De Kluiver et al. (2001).

27. A role that has also been observed in an action research project by Waring (2001).

28. Note that hemophilia is a rare disease with only some 1500 patients in The Netherlands, and that for most hematologists their knowledge of treating such patients is rather basic.

29. See, for this debate, Scott, Richards and Martin (1990) and the reaction from Collins (1990).

30. For a collection of studies dealing with the inherently interventionist nature of anthropological work, see Downey and Dumit, eds. (1997a).

31. See, for a method to obtain this unification Checkland and Holwell (1998), especially chapter 6.

32. Though, as Berg rightly states, it is much more interesting to see how the processes of

codevelopment of tools and practices lead to unforeseen configurations that "transform the very nature of the issues at stake (...) [Therefore] we should focus more on how the very meaning of 'hierarchies' is being transformed rather than discussing whether hierarchy is becoming less or more pronounced" (Berg 1998, p. 478, italics in the original).

33. Though this would increase the chances of the database being used in small HCCs lacking the funds to establish links to the HIS, a resultant disadvantage of this solution is that, of course, patient data would have to be entered twice; both in the HIS, and in the hemophilia database.

34. This position has been identified as 'critical STS' on which Hess states that its diversity and anarchy: "insure the vitality of dissent that is at the core of *democratic* research" (1997, p. 157, italics added).

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