Dilemmas in Cooperative Design

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ABSTRACT

The Scandinavian tradition of systems development has a long tradition of involving end users within a cooperative and egalitarian perspective. Initially, Marxist perpectives formed an important point of departure in understanding questions of empowerment and involvement of workers. Over the years, other theoretical approaches have informed the practice of cooperative design, but without a reassessment of how issues of power and empowerment are understood. What is empowerment? Who gives it, who gets it? What is power? I'll address these questions from a feminist perspective and from my own experience of cooperative design projects.

KEYWORDS: Empowerment, minority power, cooperation, accountability.

INTRODUCTION

"A maximally objective science, natural or social, will be the one that includes a self-conscious and critical examination of the relationship between the social experience of its creators and the kind of cognitive structures favored in its inquiry."(Harding,1986:250)

"In various ways and for good strategic reasons, industrial science (like academic science) seeks to represent itself as its own inverse – transparent where it is opaque, open where it is secret."(Bowker,1994:19)

"Learning how we are situated, inventing the situations from which we can learn more about our situation does not give power to emancipation over cognition. It associates both emancipation and cognition." (Stengers, 1994:46).

The Scandinavian approaches to design have a long tradition of involving end users in the development of computerized information systems. Historically, empowerment of workers, work democracy, and support of unions formed an important point of departure, a perspective however that also reflects the historical traditions of managing work relations in the Scandinavian countries (Markussen,1994). The strength of this perspective is not just as a voluntaristic project. Dealing with the messy empirical world is an inexhaustible source that put questions of how theoretical concepts are linked to the real world, and how people themselves experience work practices, at the heart (Hughes, Randall, Shapiro, 1991:312).

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In recent years – at least as seen from Aarhus in Denmark – projects have increasingly focused on everyday practices, technics for intervention and design and development of technologies, less explicitly on issues of power and democracy. Theoretically the approaches have been pragmatic, drawing on many different traditions from sociology and activity theory and computer science. A more explicit theoretical reflection and reassessment on the reorientations taken in the projects has as yet not occurred. What does these reorientations imply for how questions of power and empowerment are looked upon?

Several trends make such an endeavour relevant. Technological and organizational developments increasingly become intertwined; the worlds of computer systems development and use are characterized by blurred boundaries, as for instance the growing interest in tailorability shows. Large, monolithic computer departments are subdued to new management strategies, and changing labour market relations, which point to changing historical conditions for systems development itself.

It puts participatory design strategies og cooperative design in productive dilemmas and challenges how the tradition accounts for its practices. Emergent interdisciplinary research communities that cross the conventional disciplinary borders may both challenge and support such an endeavour. In line with Harding's idea that a maximally objective science, should be self-conscious and critical of its own position (1986:250), I'll tentatively explore some of these issues from a feminist perspective and based on my own experiences in participating in an interdisciplinary research project in cooperative design, the AT-project and earlier projects.

SYSTEMS DEVELOPMENT: WEBS OF CONNECTION AND ACCOUNTABILITY

In "Working Relations of Technology Production and Use." Suchman describes the networks in which technologies are currently being stabilized: "The first, prevailing form is stabilization through the handing-off of technologies across multiple, discontinuous worlds each of which stands as a black box for the others. Actors within these discontinuous worlds work to achieve enough coherence in the artifact that

it becomes possible to hand it off to others. So product developers hand off a technology to marketers, whose work make it possible to effect hands-off to third-party developers and system integrators, whose work makes it possible to effect hands off to purchasers, whose work makes it possible to effect hands-off to local implementers, whose work in turn makes it possible to effect hands-off to end-users. Two aspects of this process as currently constituted are crucial. It relies on articulation work at each border crossing and that work, whether mythologized or denigrated, is largely invisible."(forthcoming)

Informed by feminist theory, Suchman raises questions of accountability and responsibility of designers. She suggests that an understanding of design that builds on located accountability is an alternative to the dominant design practices described above. That is, designers should realize the partiality in their perspectives and the invisible work that makes systems work, and be responsible towards and engaged in the work practices in which the technologies are going to be used.

From such a standpoint the Scandinavian approaches score high. And feminist theorizing about power may further explain the strength in the perspective. Within a vein of thought similar to the one suggested by Suchman, Stengers distinquishes between what she calls majority power and *minority power*: "I mean by minority not a part of the population which is not, but could be or tries to become the majority, but active minorities who do not dream of obtaining for themselves the power of a majority. Like Felix Guattari I dream about multiple connections among minorities, so that each of them would become able to work out its own singularity through the creation of alliances, not in isolation, and so that each individual would be simultaneously part of many minorities." (Stengers, 1994:41)

Stengers suggests that science at its best is based on minority power: "Many of the works of people who are consciously open to the problem of racism, sexism, classism are more lucid, more challenging, more innovative than the others. They are able to critize the others, to show shortcomings, blindness and stupitidy, while those others are unable to do the reverse. This is because those shortcomings are those of majority power.....The task of being objective is always, to me, a collective task: you do not learn alone, but in a collective, demanding, inventive, controversial collaboration. This is why I am against any idea of political correctness which would imply that we know what it is to be correct, which would imply what I call a majority power." (Stengers,1994:49)

If we look at systems development in the light of this, one may argue that participatory and cooperate design strategies challenge other strategies more than the reverse. In the Great Belt project, for instance, the project group critisized the systems initially bought and developed by the firm (Grønbæk, Kyng, Mogensen, 1993). They were large, monolithic systems which mirrored the formal structures of work. They did not support the supervisors in their daily work, but caused their part of the organization extra work. The challenge in the project was to develop CSCW technologies that supported the perspectives of the supervisors.

Similarly, in the AT-project we found that a centralized computer system, which was used to record interactions with companies in the local area, primarily supported management in getting an overview, but not the local case-handling (Bødker et al.1993). Engestrøm's project on the work of general practitioners' and computer support in health stations in Finland may also bear witness to the perspective that minority power positions challenge the majority positions often held by management or based on the idea of control from a centre, more than the reverse (Engestrøm, 1990).

Zuboff deals with similar questions (1984). She describes the capacity of computerized technologies in terms of both automating and informating. The technology not only replaces human labor; it also translates activities, events and objects into visible information, underscoring the hermeneutic dimensions of the technological representations, the technology also informates. Exploiting the informating properties – that is how it translates and how translations become stabilized – requires detailed knowledge of the specifics of work practices. She suggests that it ultimately implies an empowerment of workers and employees, as this cannot happen exclusively from a centre.

Zuboff argues that management has primarily focused on the automating part without fully exploring the informating potentials of the technology, but eventually must realize this, if they want to develop flexible informated organizations. In the words of Suchman we deal with a technology which challenges "longstanding distinctions between the physical and the social, in the special sense of those things one designs, builds and uses, on the one hand, and those things with which one communicates on the other." (Suchman, 1987:6) The paradoxes of the technology pose new dilemmas of well known boundaries between *erklären* (explaining) and *verstehen*, (understanding) of the sciences and the arts, and finally of control and learning, and how we conceive power and authority (Markussen, forthcoming).

Suchman's perspective, however, not only underscores accountability in the work of designers towards the usage and the users of the technologies or the potentials in informating strategies. It also shows a way of reconceptualising 'micro' and 'macro' levels in work practices and systems development in pointing to the networks and the power that stabilizes them. And the network metaphor may be said to be significant in a double sense, when dealing with information technologies.

In Giddens' account, globalisation implies increasingly complex relations between local involvements - as circumstances of co-presence - and interaction across distance as connections of presence and absence. "In conditions of modernity, place becomes increasingly *phantasmagoric*: that is to say, locales are thoroughly penetrated by and shaped in terms of social influences quite distant from them. What structures the locale is not simply that which is present on the scene; the "visible form" of the locale conceals the

distanciated relations which determine its nature." (Giddens, 1990:19).

Following Giddens, technologies play an important part in establishing this separation of time and place. Just as computerized technologies tend to integrate former divided units and divisions of organizations and their environments and make them increasingly interdependent, systems development helps networking technologies around the world and linking the industry of computers to other organizations. This may be done in different ways and within different practices of accountability, as suggested by Suchman: "The alternative form of technology production that I hope to have indicated here is built around a deepening awareness of and orientation to the articulation work required to achieve technology stabilization, and one's location within the extended network of working relations that makes technical systems possible." (Suchman, forthcoming)

Located accountability means realising that different activities do not happen in a vacuum or in isolation – they are always located somewhere from which they may account for themselves. They are connected more often that not to different worlds. An awareness of boundaries and connections does not imply a simple deterministic view; on the contrary, boundaries may be viewed as both restraining and enabling, and seldom static.

This is no less the case in research projects. Even though researchers enjoy the freedom of making their own accounts of their work, which may blur the sense of location and boundaries, there are boundaries to our work, too (Agre, 1993).

Traditionally, cooperative design projects have had to relate to and make themselves explicable towards different communities, project groups, research-communities, unions etc (Kjær, Markussen, 1989). In reflecting on this, however, the focus has primarily been on the work of the people involved, less on the boundaries of the research-communities and reflections on the technology.

In the A.T. project, for instance, the interdiscplinary project group cooperated with a local branch of the National Labour Inspection Service, which was about to introduce PCs and networks. Our commitments enabled us to explore typical CSCW questions in cooperation with the local branch in terms of how computerized information systems may be designed to support the local employees in their daily work. The project group could together with them develop different suggestions, and point to how it may affect work divisions and organization and other important questions they had to consider. During our work, however, we changed our initial ideas of developing prototypes within a Macintosh framework, and decided to work with PC's, which were closer to the technology chosen by the organization. From a technological point of view we thought of this as less challenging at that moment; the point is, that our initial agenda was not made explicit, until we changed the decision.

Even then the project group had no power to finally decide what systems they should buy and develop in the end, or to decide how the work should be organized. The local branch was not an island, and all these kind of suggestions were deeply entrenched in broader polical issues in the organization as a whole and in fact had a say in the rather turbulent atmosphere it experienced at that time (Bødker et al. 1993; Mogensen,1994).

As the AT-project was set up as a rather informal and explorative project, we could focus on and experience the tensions involved in relating to different 'research communities', which set and explore different discourses. This is no doubt a source of zero point experiences with both pain and possibilities (Star,1991). Being insiders and outsiders to each others worlds intensify the attention not just to what goes in cooperative design projects, but also how it is reported into the research communities.

I'll take a closer look at the discourses in the cooperative design tradition and how it relates to – translates – what is going on in cooperative design projects, and discuss what a reconceptualising of 'micro' and 'macro' levels as suggested by Suchman might imply.

COOPERATIVE DESIGN PROJECTS AND ACCOUNTABILITY

Stengers' understanding of science is relevant in deepening the awareness of the dilemmas in accounting for cooperative design. She explains sciences at their best, including both hard and soft sciences, in terms of invention and risks, and as inherently polemical. Talking especially of the experimental sciences, she states that the power in scientific objectivity is based on the power you give to the phenomenon: "You have to invent a way of dealing with it in such a way that this phenomenon has the power to put your hypothesis at risk." (1994:32) It involves the invention of ways of transforming a phenomenon in order to give it the power to testify. These purifications have a prize, however: "The only true place for a paradigm is the network of research institutions. It is in a research laboratory that phenomena are worked out in order to become reliable witnesses. As soon as you get out of the laboratory you meet everything you have excluded at high cost in order to purify the phenomenon and the paradigm cannot protect you from being wrong or irrelevant." (1994:34). Following Stengers, objectivity in other sciences is much more demanding: "As for what is called the human sciences, social sciences, psychology, anthropology, and political economy.... there is no possible peaceful separation between the social experience of the creator and his or her scientific field. The challenge has no limitation, no easy solution. You cannot be objective in these fields as if it was some kind of property." (1994:48).

From this perspective design and especially cooperative design involves complicated boundaries. On the one hand it borrows from experimental sciences in shaping the technologies by using mock ups, prototypes etc in inventing new suggestions, on the other hand it seeks to do this by taking the work practices, in which the technology is going to be used, into account in processes of joint constructions among designers and users. There may be said to be a double agenda, as the designers might have a quite legitimate interest in developing and stabilizing the

technology that also goes beyond the immediate work practices in which it is tried out.

The discourses developed in the tradition to account of this, have stressed the symmetrical and egalitarian nature of the relationships. Expressions as 'processes of mutual learning', or 'experts working with experts' suggest this. End users are considered experts on what good computer support in their context of work might be, while designers are considered the technical experts. These assumptions are historically understandable, considering the rationalistic and cognitivist traditions the approach has been developed against, and the dichotomies that formed its point of departure: formal versus empirical, hierarchic versus egalitarian, univeral versus contextual, traditional science versus action research. But the risk of being caught in the dichotomies rather than reconceptualising them is at stake.

This becomes clear in a recent article by Kyng: "In our approach we consider cooperation, particular cooperation between end-users and professional designers to be crucial." (1994:6) In a footnote he adds: "I use the terms "end-users" and "professional designers" to denote the practitioners doing the work to be supported and those who have the design of computer artefacts as their profession respectively. In relation to cooperative design I do so only reluctantly, since cooperative design implies that a group of professional designers and practitioners /end-users cooperate on the design." (1994:6) In another passage he writes: "We use artefacts – including representations – in design to do a better job than we could have done without the artefacts." (1994:4) and adds in a footnote: "Obviously this a gross oversimplification. We use artefacts because our superiors wants us to, because they are considered to be high-status etc." He obviously struggles with a poverty in discourses available to capture the experiences and account for the strategies.

Here is a dilemma. On the one hand we have a certain practice, where boundaries are blurred; on the other hand a translation into the scientific community that maintain these boundaries. It may be looked upon as an inversion: transparent where it is opaque, open where it is secret, even though the footnotes - honest enough - reveal them. This is clearly not just a problem in this approach, as Bowker suggests. But it becomes problematic in a discourse that explicitly understand itself as trying to overcome these boundaries.

Feminists have often been reluctant towards overly simplistic egalitarian discourses as they may hide actual and important differences, and hence blur questions of who is accountable towards whom. The approach I try to develop here, suggests that designers – researchers – may refine their reflections on how the relations in cooperative design projects are constituted in order to better account of its practices - and develop them further.

The assertion that experts work with experts is a paradox, meant to challenge a naiv understanding of what it means to be an expert. But it may not fully capture what goes on in cooperative design. Viewing the relation as an exchange of competences may hide more than it reveals. Asserting that cooperative designers are technical experts may be looked upon as an inversion in the sense that designers draw on lot of techniques that hardly can be called technical and which is not just specifics for design – future workshops, organizational games, interviewing people. When this is not accounted for and openly discussed, it is hard to question just how this is done and what it means. These competences are silenced. In my view they cannot just be understood as tacit knowledge, it is possible to invent discourses about them.

Cooperative designers are well aware that the technical and the social are inextricably interwoven, however; the technical is not just technical, it is at the same time social: Developing object-oriented design environments or for that sake others, is experimenting with structures that eventually will have their share in shaping structures of work practices – and at the same time support some part of the computer industry. But if the practitioners whose work is going to be computerized is constituted as the *other* (someone who needs help in spite of the symmetrical intentions) their lack of technical knowledge is both seen as the problem and the challenge that make designers' work legitimate. But what about developing systems for professional designers in their work practices, does this make the approach obsolete? I don't think so, and here is a problem which is difficult to articulate within this discourse. Following Stengers, the power the designers get from the users is not made explicit.

It is easy to find good strategic reason for this discourse. As long as designers have to make themselves accountable towards communities based on a technical and natural science understanding of computers, it may be easier to apply such a discourse. But if you are situated – as I am – in research communities that have to make themselves legitimate towards other traditions, in this case the faculty of arts, you get into trouble. The gain in presenting oneself as a technical expert is, of course, that you may enjoy the aura, traditionally linked to technical experts. The prize is that precisely this theme – our images of experts and hence of power – becomes difficult to address openly in the translations – even if you do it in your actual practice. What will it take to bring the problems, delegated to the footnotes by Kyng, into the texts?

If I were to reassess the idea of a symmetrical relation in the light of this critique, I would say that the symmetry may be based not on different competences and their exchange, but on a mutual accountability between the designers and the people they work with. People engaged in cooperative design commit themselves to be held accountable towards how they work and how they experience it, both towards designers, fellow workers and eventually management. And designers in cooperative design projects commit themselves to be held accountable both towards the people they work with, each other, and their research communities.

This distinction I have tried to show, may seem very subtle, but I think it has important consequences in how the cooperative design approach makes itself accountable. On what grounds may designers make themselves accountable? How do we account for the processes of negotiations among the participants that goes on in the work? I'll

mention some of the dilemmas we experienced in the AT-project, and some of the problematics the tradition – in my view – faces in reconceptualising this.

DILEMMAS IN PRACTICING COOPERATIVE DESIGN

The idea of scenarios has stabilized as a course of actions that is suggested in cooperative design projects, and it was a practice we worked with in the AT-project. We began by 'field' studies: Following the different categories of employees in their daily work, participant observations of work, and talks with many different people at the work place including the local management. We also met with people from the central computer department, placed at the headquarters and in another town. The insights from these experiences were translated into different scenarios. We organized a future workshop for all the employees. An initial development of a prototype that demonstrated how different work tasks may become integrated due to the power of the technology, and an organizational game, based on critical and exemplary work situations were tried out in another scenario that took shape of a three days seminar (Bødker et al. 1993; Mogensen,1994).

After these initial steps, the project group focused on how the newly organized work groups could develop their work locally, supported by computers in terms of PCs and a local network, and worked especially with one of the work groups.

From my perspective, the initial steps are significant, and I'll concentrate on them. How we translate our insights into other activities is an important question. In our case, I experienced the translations of our insights from the 'field studies' into exemplary work situations as on the one hand rather obvious and easy, on the other hand bewildering especially in terms of what grounds the decisions were made upon. In our initial investigations we had experienced what people themselves found problematic; in listening to this and watching what they actually did in their work, we may find other problems.

But what is a critical situation and for whom? Which situations should we choose? The idea of the organizational game was to make this a cooperative task. None the less, we were to initially suggest situations and had our share in how they were treated and discussed. What themes were we to select and touch upon? What were the important problematics in the work from our perspective? What were the limits to our mandate and how could we handle that?

When we evaluated the outcome of the game, it became clear to us that the situations we had stressed were the ones that could be supported by the technology we had in mind and which may support the local groups in coordinating their work. We also found that questions of the power delegated to the project group in such a game is rather complex (Bødker et al. 1993:13). In my view, these are significant dilemmas which I will go into some detail with.

In cooperative design projects it is increasingly realized that when designers initially 'scan' the work and the workplace, interviewing, observing, talking to people, their perspectives are for very good reasons shaped by their knowledge of the technology and how they want to develop it. Kyng comments on an example of a work description from the great Belt Project: "The description is rather broad – basicly it just summarises the different media used by the supervisors. However, when one takes a closer look it is rather obvious that those who made the description had hypermedia technology as one of their concerns." (1994:9).

Cooperative designers are neither innocent nor all powerful helpers that may shape the technology in any direction. More often that not they have their own legitimate agenda in developing the technology in specific ways. From the perspective of accountability, it is puzzling that there has not been more attention to this within the tradition. The reconceptualization of the micro - macro levels, as suggested by Suchman, points to how cooperative design activities are situated within webs of connections. An reflective and critical awareness of these boundaries may support a more self-conscious and self-reflective point of view.

It does raise questions of what discourses are available and employed, however. Engestrøm and Saarelma have critized the cooperative design approach for lacking a systematic understanding of work. They argue that the main object of development is the informations systems, even though they are recognized in some sense to be subordinate to the work processes themselves. They claim that the Developmental Work Research aims at both changing the work practices and designing informations systems on the basis of systematic analysis of work (forthcoming).

Even though they comment on earlier projects in the tradition, I think their critique still holds, and touches at important issues. The different approaches also reflect different networks of accountability, however. In the Developmental Work Research tradition researchers have the mandate to work with work organizations as a whole, as far as I have understood it, while the cooperative design approach traditionally has been responsible towards design of computerized systems. It clearly reflects a division of labour in society in general, which points to the divides between the natural and human sciences, divides that precisely is challenged by information technologies as they blur these distinctions.

Development Work Research may point to one way of handling these dilemmas, and it is an approach that in many ways has influenced our work (Bødker,1990; Mogensen, 1994; Markussen,1994). A historical perspective as Development Work Research shows, is one way of situating the activities in cooperative design within a broader context, which may guide the decisions that are taken. From our perspective, however, the question one may ask is, do we have to look at work as superior to the technology, as Engestrøm and Saarelma suggest? The idea of symmetrical relations in the cooperative design approach may be said to point to a more profound interest in the technology, and what the shaping of the technology implies. The techniques developed so far may point to experiences in shaping the technology, even though this has not been treated within a framework and a discourse that

consider the relations among work and technology more explicitly.

What discourses of work and technology may be invented that goes beyond the languages now primarily at hand for designers? No doubt, there are many approaches underway based on for instance hermeneutic, semiotic, ethnographic and sociological traditions that are more sensitive to the hermeneutic and communicative properties of the technology than the cooperative design approach so far has been oriented towards, its main focus being the tool metaphor as developed by Ehn. (Andersen,1990; Ehn,1988; Hirschhorn, 1988; Ihde,1990; Star,1991; Suchman,1987; Yoneyama, forthcoming; Zuboff, 1984). But none of these approaches may be said to have been tried out in relation to what goes on in cooperative design.

This involves the second dilemma, how designers handle the power delegated to them through the processes of design. Designers may be offered the ideas of interviewing, checklists, problematic situations etc. But as long as they are not told about the basis upon which to make these decisions, they are still in need of some frame of reference from which they can make themselves accountable. Thinking of these problematics in terms of toolboxes may answer questions of *what* to do; but it may also run the risk of reducing the communicative dimensions to instrumental ones. Interviewing people about their work is for instance only superficially the same as an every day conversation, as many studies in qualitative research methods have shown (Foged & Markussen,1989; Mischler,1986). Scenarios may be looked upon as tools that help bring about the technological suggestions, but at the same time they may also be understood as rich situations of face to face interaction and communicative and reflexive spaces, where the meaning and significance of the work are being negotiated. This may become even more important when technological and organizational developments increasingly become intertwined.

It is striking that the cooperative design approach started out with a critique of the deskilling of work brought about by the implementation of computerized technologies. While I do not think this has become obsolete, it is remarkable that many problems as we for instance experienced it in the AT project and as other studies within CSCW have shown, hardly can be understood within such a framework. When focus is on the informationg capacities, the notion of skill as belonging to one person or specific group with clear defined boundaries is often questioned, and one may even find that the technology demands extra work and new skills, and questions traditional power structures (Hirschhorn, 1988).

Cooperative design clearly seeks to handle power beyond well known images of expert knowledge. But even if we may be said to practice this, we have not fully developed a voice to speak about it in. My assertion is that designers need a more comprehensive discourse to account for the dilemmas here described, both in order to handle them during their work and in order to account for them into the scientific communities. These voices should be based on assumptions about what the designers do and need, and not just how the users are and what they need. This is how I understand the assertion of Haraway: "The knowing self is partial in all its guises, never finished, whole, simply there and original; it is always constructed and stitched together imperfectly, and *therefore* able to join with another, to see together without claiming to be another. Here is the promise of objectivity: a scientific knower seeks the subject position, not of identity, but of objectivity; that is partial connection." (1991:193)

Cooperative designers do struggle with how to account for their position, and as researchers we enjoy the freedom to invent our own images. We like to say that we work to support people's work, not to control it. But even such a well-intentioned statement may be said to be caught in a dichotomy between control and support, unable to articulate that we may in fact sometimes do both. We may envision ourselves in the role of provocateurs – but why do *we* need to provoke people raises other questions that the idea that *people* need to be provoked – ; we may look upon ourselves as teachers and pedagogues – but if this assertion is not to be grounded in the needs of the people we work with, but also in our own work, how may we then develop the idea of mutual relationships? From such self reflective positions we may further develop our ideas about what cooperative may come to mean.

CONCLUSION

Where are designers and especially practitioners of cooperative design situated and how do they account of this, are the questions I have tried to deal with here. They may be said to dwell right in the middle of great divides, not the least divides between what we usually think of as belonging to the natural sciences and questions of *erklären*, and what belongs to the humanities and questions of *verstehen* – a situation that in my view has to do with the technology itself. This is not an easy position, but a challenging one. It does not only challenge users and organizations, but just as much designers and research communities as well, if they reflect upon it and want to make themselves accountable.

By sketching the webs of connections through which technologies become stabilized, as suggested by Suchman, I have pointed to one way of reconceptualizing questions of so-called micro- and macro levels which situate designers not outside organizations and questions of power, and in a 'helping' position, but as part of organizational connections and power structures at a global scale. From this assertion, and through an initial analysis of the discourses by which the cooperative designers traditionally have made themselves accountable, and from my own experience in participating in these kind of projects, I have suggested that we as designers may develop our understanding by emphasising a more self-reflective approach.

In writing this, I happened to listen to Anne Lennox where she sings: "Sisters are doin' it for themselves. Standin' on their own two feet. And ringin' on their own bells." (Lennox/Stewart,1985) I was a little surprised, as I felt that it confirmed what many feminists suggest, and did not remember the record that way. But what does it mean to speak one's own voice? I do not want to mythologize the

position of designers – one of the things that makes design interesting to me is that it may be said to highlight challenges in work practices in society in general, and in this sense is not so extraordinary, but important. And this is to me what the feminist perspective underscores: In speaking your own voice you also allow others to do the same.

I think the cooperative design approach is solid enough to speak not in the voices of the users and their needs, but that we may further develop our own voices and learn to speak for ourselves. Such self reflexive endevours will not happen in isolation, as Stengers points out, but in polemical discussions within and across research communities and with the people involved in cooperative design projects.

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