

Take Users Seriously, But Take a Deeper Look: Organizational and Technical Effects from Designing with an Ethnographically Inspired Approach

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ABSTRACT

In this paper we address how to do reliable systems design in small complex organizations - small in the sense that the design project we use as an example has approximately 50 employees, and complex in the sense that the employees had very different roles and relationships. We use the term design in the same way as architects do - focusing on the analysis of needs and the preliminary design of functionality and form - in contrast to what is common within computer science, where the design term is borrowed from engineering - focusing on construction and implementation.

Current approaches used in industry and published in literature (e.g. SA, SD, OOA, and OOD) tend to ignore design as being a political endeavour also. Also they tend to neglect the potentials in participatory design, and/or they tend to homogenize users not being sensitive towards individual needs.

Our approach is more in line with ongoing research within Participatory Design, in that we see results of a design project to include a conceptual design in terms of a written document, sketches, mock ups and/or prototypes. We consider an evaluation of individual and organizational consequences of implementing the design as well as a plan for the implementation to be part of the result.

Ethnographic approaches to systems design has proved valuable, especially within highly specialized product development and research oriented design settings, reports on concrete consequences on a specific design due to such an approach seem scarce.

We reflect upon an action research project carried out over a period of 1 1/2 years in a public organization in Northern Europe. We were called upon to conduct what ended up as 3 design projects. Having a design approach

inspired by ethnography and intervention, we did in-depth analysis of current work practices, carried out unstructured interviews, observation, video recording, document analysis, and the like. We set up participatory analysis and design workshops. The organization is currently implementing our visions and design proposals.

We are presenting the setting we have worked in, the establishment of the project, the activities we carried out in one of the design projects, and some consequences our approach had on the final design. All three design projects are documented in Simonsen, (1994). We conclude by discussing some of the organizational and technical effects the approach had on our design, as well as political dilemmas we got involved in.

The setting presented here represents the *application area* of the design approach we are developing: computer support for complex administrative, managerial, and professional work. The management's attitude is probably important for the relations we seek to establish with the individuals and the organization. Management should state that the purpose of the design project is supporting the existing workforce in meeting current and new challenges rather than headcount reduction.

INTRODUCTION

We spent approximately 14 person weeks over a period of 10 months on the project because it was also a research project. Had it been a real life consulting job, our estimate would be approximately 10 person weeks.

One of our goals in involving ourselves in action research is to develop an understanding of the conditions for and effects of applying ethnographically inspired approaches in systems design. This is part of our research¹ on *theories of and approaches to* early systems design processes. Part of our ongoing work is to relate results from our own design projects, results from others using our approach, and study results of designers working in industrial settings. Our research approach combines an ethnographically inspired approach with an interventionist approach. At a theoretical level there is a tension between those two approaches: the traditional

¹ In addition to the authors the research group consists of Keld Bødker and Lars Bogetoft Pedersen.

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ethnographer tries to leave the organization unchanged while the interventionist deliberately set up activities for change. We have found that in combining them they may work as a practical guide to handle what Ehn (88) refers to as the dialectics between tradition and transcendence in design.

The motivation for studying this part of systems development is a hypothesis that the early design processes are important to consider. In specific, the situation that often individuals and organizations experience: they don't get the computer support they (thought they) asked for (Lyytinen & Hirschheim, 1987; Bullen & Bennett, 1990; Orlikowski, 92).

Another motivation is that we agree with Kling (1993) in that many designers, academics and practitioners, need to broaden their perception of and approach to design of usable computer systems. We see organizations as frameworks for cooperation along with for conflicts. Therefore groups and individuals participating in design should be expected to have common and conflicting goals. The role of designers is neither to cover up nor to solve political conflicts in design. Rather they should help the parties to each formulate their visions and leave it to themselves to solve conflicts in relevant fora. We therefore rely on social web models rather than discrete-entity models (Kling & Scacchi, 1982). Also we find that what they call human factor analysis should be carried out as part of design to directly intervene the work on technical tasks.

The CSCW-group at Lancaster University works on a similar approach. Ethnographers from the discipline of sociology cooperate with computer scientists from the engineering discipline in design projects they refer to as *ethnographically informed* design. The ethnographers provide information that deepens the understanding of the application domain in question (Bentley et al, 92; Hughes et al, 92; Hughes et al, 93; Sommerville et al, 93).

We have a background in computer science but we try to study, adopt, and use ethnographic approaches in our own design practice - hence the term *intervention and ethnographically inspired* approach to systems design. This is more in line with the project reported on by Blomberg, Suchman and Trigg in this proceedings.

In the next section we present the organization we have worked with. This is followed by a section on activities establishing the project in terms of clarifying the commitments of the organization, as well as our commitments being in an action research project. Then activities and results of the projects are described, followed by a discussion of the lessons learned in terms of effects of and conditions for using our approach. The paper finally gives a short description of the initiatives taken by the organization to implement the visions and design proposals from the project.

THE ORGANIZATION

This section presents part of the shared understanding developed during the design project by applying our approach. We see the description as an example of what Kensing and Munk-Madsen (1993) call relevant structures on users' present work.

The Film Board is a public organization in Northern Europe under a Ministry of Cultural Affairs. The organization has approximately 50 employees with a budget of \$7.5 million a year.

The Film Board has two main functions specified by Parliament:

- To promote information, education, and artistic and cultural activities by producing² films and buying films.
- To promote information, education, and artistic and cultural activities by lending (on request from consumers) such films for educational institutions, associations, and individuals.

The Film Board produces films along with distributing films, thus mediating the needs of producers and consumers.

The Film Board has a governing body consisting of representatives of both consumers and producers.

The film-categories of The Film Board include:

- Cultural and social conditions, such as documentaries, portraits, and debate film.
- Education.
- Art, e.g. experimental video art.

The various departments of The Film Board are arranged spatially as depicted in figure 1.

The Editorial Board is located at the very top of the house. Nine people work here: three editors who consider applications (approximately 700 per year) and decide which productions should be funded (approximately 80 per year), one production manager who is in charge of the financing of all productions, three secretaries, a consultant specialized in buying and managing the translating of foreign films and videos, and one technician.

Located on the second floor are the President's Office, secretary, bookkeeping, and journalization. A total of twelve people work here.

The first floor houses the Order Receiving Department, which receives orders, counsels borrowers, and books 250.000 films and videos per year out of a catalogue of 1700 titles, along with the Marketing Department, which

² Producing film means funding and supporting directors and producers and to some extent managing the production.

takes care of marketing, press, festivals, premières, etc. These two departments have a total of sixteen employees.

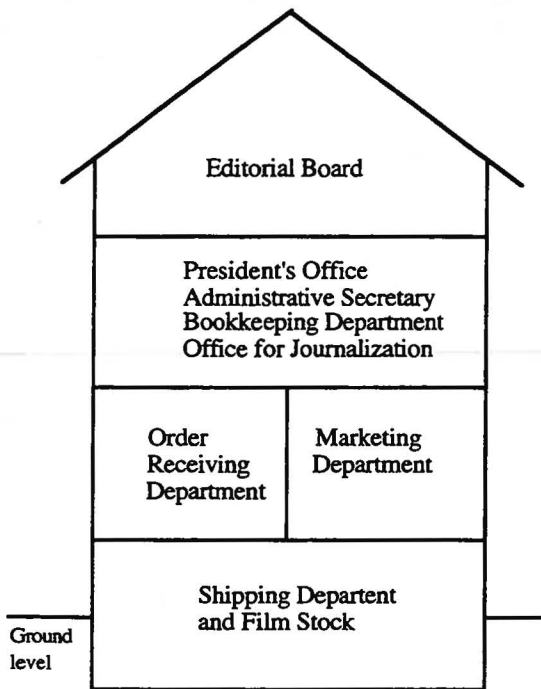


Figure 1: The house of The Film Board.

In the basement, half below ground level, are the Shipping Department and a large film and video stock for distributing, where nine people are working.

The house reflects the status of each department, with the Editorial Board above even the president. It also reflects the top-down flow of a production which the organization itself has outlined as in figure 2.

Directors, producers or manuscript writers send applications for a production or just a manuscript which later can be turned into a production. The applications are considered by one of the editors who decides to support or refuse. If support is given, a contract is negotiated and the film or video is subsequently shot and cut. The editor may review the production at certain phases e.g. when the first cutting is done, when the final cut is near and when the images and sound is mixed. Then the Marketing Department takes over and manages the première of the film or video. Afterwards the première distribution is handled by the Order Receiving Department. The Order Receiving Department receives orders (by mail or phone) from the consumers requesting copies of films and videos. The consumers are public and private institutions (e.g. schools and libraries) and private individuals. Films and videos are typically booked by the consumers for a specific period of time, e.g. a certain day or week. Also, the department issues invoices, etc. from the fee paid for borrowing a film or a video. The physical shipping and receiving of copies of the films and the videos (to and from the consumers) is managed by the Shipping Department.

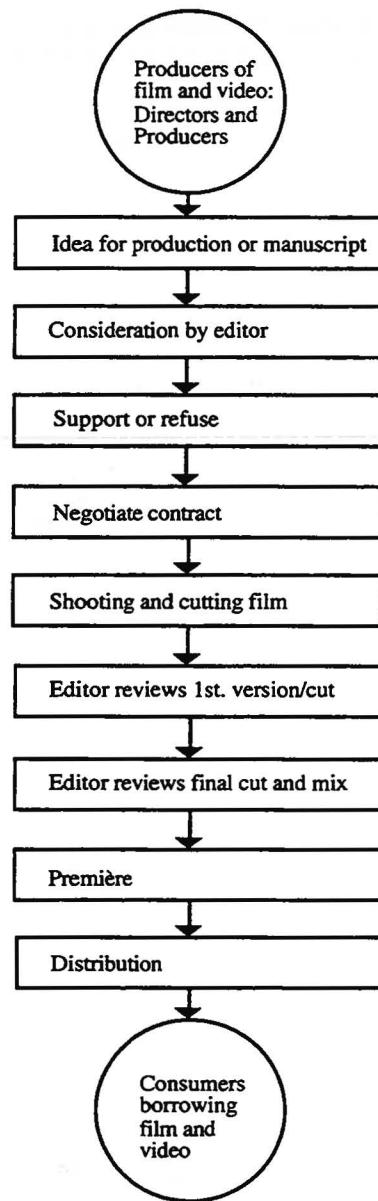


Figure 2: The production, from idea to distribution

As a whole, the production "cycle" starts at the "top" of the house and ends at the "bottom", involving nearly all employees.

The organization of the production process was mainly paperbased. The two top floors of the house were only supported by terminals for word processing. The Marketing Department had its own network with Macintosh equipment, supporting the production of text and layout. The Order Receiving Department had a central booking system but handled the booking to the Shipping Department by paper forms, as the Shipping Department had no computer support at all.

During the past few years the organization experienced the introduction of video as an additional medium besides the traditional 16 mm film. This has raised the number of

productions from about 25 productions a year to nearly 100. The whole organization was not geared for this.

The introduction of videos puts a large burden on the secretaries in the Editorial Board. The video media is less costly and less complicated to handle than the traditional 16 mm film and it is a very popular and widespread technology. In just a few years, the organization experienced a drastic increase in the number of applications and the number of productions. The secretaries in the Editorial Board carry out most of the paperbased administrative work for each production. From having an idea of and feeling for each production, their job was focused in only dealing with the paperwork. They started to discuss the possibilities of changing and simplifying the paperwork by adopting some kind of computer-based production-management system for recording all the information on a production and supporting the financial management.

ESTABLISHMENT OF THE PROJECT

The project was established by using the technique Systematic Project Establishment (Andersen, Kensing et. al., 1990). This technique deals with activities aimed at clarifying what the whole project is about. It comprises a clarification of the assignment and objective, organization of the project, level of ambition, resources, interest groups, critical conditions, etc., and it includes a social establishment of the project group as well. Its result is a project charter.

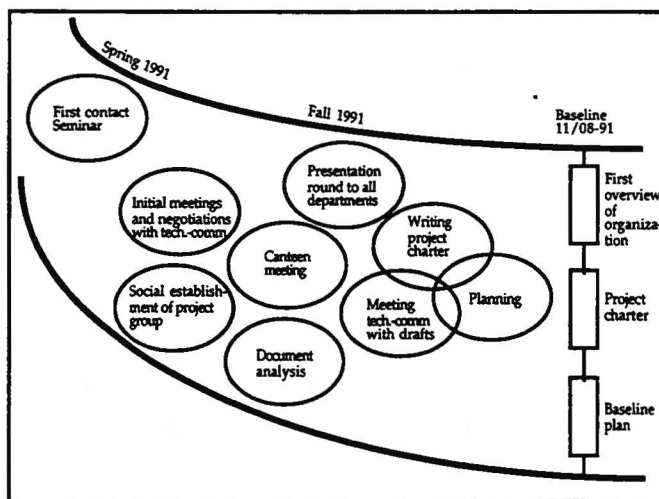


Figure 3: Establishment of the project. Circles indicating activities and boxes indicating intermediate results.

From the start it as an open question as to how much, and which parts of the organization should be involved in the design project. Our goal for the project establishment was to first establish an overview of the entire organization along with making the project charter and a plan³ for the

³ Planning was made using the technique "Project Management with Baselines" (Andersen, Kensing et. al., 90).

design project. In order to reach this goal we carried out the following activities:

- Initial meetings and negotiations with the technology committee of The Film Board. The committee consists of the president and representatives from various departments.
- Canteen meeting explaining to all employees what this project was about.
- Visiting all the departments and the employees in the organization.
- Social establishment of the project group.
- Document analysis.
- Writing the project charter, planning, and having meetings with the technology committee presenting drafts of the charter.

The project charter was finally negotiated and signed by the project group and the technology committee. We consider this to be an important ritual: its purpose is to seek commitment as to the participation, objectives, and intended results of the project.

As an assignment and objective of the project, the charter stated that we should answer questions like the following:

- How is the work organized?
- What is working satisfactorily and where are there problems?
- What are the needs for new information systems, and what are the needs for organizational and qualificational development?
- And finally, which technological solutions are available, which have to be developed, and how do they fit in with existing and future systems?

It was emphasized in particular that the project would not lead to any reductions in headcounts. If certain tasks and functions would be rationalized or removed the affected employees would be given other tasks and functions.

As the result of the design project, the charter stated that we could end up with:

- Map of existing work organization.
- Map of existing technology.
- Recommendations for changes in work practices and organization, in addition to recommendations for design and redesign of information systems.
- Evaluation of existing qualifications compared with existing and future tasks.
- A plan of action describing discussions and activities required to implement our recommendations.

THE DESIGN PROJECT

The design project in the Editorial Board is described in two parts. The first part was performed in fall 1991. The second part was performed in spring 1992.

Starting Point

The Editorial Board handles all applications for productions of films and videos, decides which to support, negotiates contracts, and supports and manages the following production of films and videos. Three editors (hired only for 2-4 years to secure a broad

selection of productions) are in charge of this task. They have the responsibility of four different areas of productions (16 mm. film; video; film and video for children; foreign film and video), each of which has its own budget. Also, the Editorial Board buy films and videos and handles the translation of foreign films and videos. A consultant (on the permanent staff), specialized in purchasing and managing the translation of foreign films and videos, supports the editors in this rather complicated process. The editors are supported by a production manager, who has the responsibility of the overall budget, and by three secretaries. The decision of which productions to support and the coordination of the different productions with other departments in The Film Board are done at the weekly production-meeting. At this meeting, where all employees from the Editorial Board along with the president, and the managers from the Order Receiving and Marketing Departments participate, information regarding applications, status, and actions for each production "in the air" is exchanged, and the necessary decisions and coordination are made.

The editors mainly take care of the applications and production in regard to content, while their secretaries handle most administrative follow up: fielding calls, informing relevant parties, receiving and filing applications and all succeeding data that concerns the productions (budget, funds, expenditures, technical data, correspondence, etc.).

All information needed for the weekly production-meeting, the administrative work on the productions, as well as all the coordination with the other departments in The Film Board were paperbased and the only technology available was word processing running on a central computer and accessed by terminals. Especially the secretaries in the Editorial Board felt the increased number of applications and productions was an overwhelming and cumbersome administrative burden and the paperwork and manual updating of all the paper files in each office engrossed most of their time. This left only a little time for the skilled and qualitative support of the editors, producers and directors of films and videos, that the secretaries were qualified for and used to doing.

The secretaries knew that their paperbased working practice could be radically changed and supported by computer technology. They wanted computer support for recording all the information on each production, and for the financial management of the productions. One key issue was to get rid of double work within the department and in relation to other departments too. Another issue was to keep track of the current status of the productions for cooperative purposes between the departments.

This situation, characterized as problem setting rather than problem solving (Andersen, Kensing et al., 90) was a unique possibility to experiment with and explore different design approaches. One of our goals was to develop an understanding of the conditions for and effects of applying ethnographically inspired approaches in such a design project. Would it for example be possible to

trace knowledge developed by such an approach to specific consequences on the design proposals?

We conducted the design project in participation with the employees of the Editorial Board.

Activities, First Part

To get the first overview of the work in the Editorial Board we interviewed all 8 employees one by one i.e. in their respective offices. Each interview lasted 1-2 hours. We used unstructured interviews organized as a dialogue around questions like "What are you doing?", "What do you like/dislike about your job?", "Have you encountered problems?", "Do you have ideas for improvements?", from the answers of these, the rest of the interview followed. In parallel with this activity we did thorough document analysis of all the written materials (leaflets, booklets, production plans, minutes from various meetings, the wording of the Act for the institution, etc.) along with studying the different paper-forms in use.

A second interview round was then performed with the secretaries. These interviews were all "in situ" and were conducted as dialogues, where the secretary often showed how she carried out specific tasks. Some of these interviews initiated thinking-aloud experiments, where we observed and asked them to think aloud while working. Often specific design ideas emerged during these interviews.

For example, one situation had the following progress: one of the secretaries supports the production manager in charge of keeping a financial overview of all the productions "in the air". Sitting

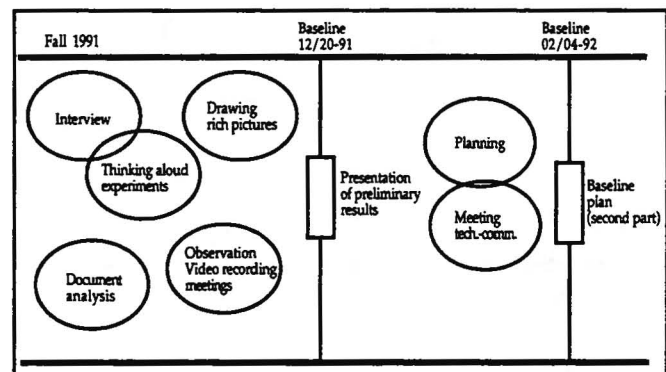


Figure 4: Design project, first part Circles indicating activities and boxes indicating intermediate results.

with the secretary at her workplace, she explained how she made her different postings, tables, and accounts by showing and referring to the files, documents, and papers, etc. available for this task. This quickly turned into a dialogue clarifying our understanding of the task and the problems of gathering information from the Bookkeeping Department, the editors, and the other secretaries from the Editorial Board. Soon design ideas of how she could arrange different amounts and sums for productions in a spreadsheet-type form emerged, and how some of this data could be transferred directly from a project

management system, which was under consideration, and the central account system in the Bookkeeping Department. Thus the interview established a mutual learning situation where relevant structures of the secretary's current work were developed on the basis on her concrete experiences. The outcome was a drawing that captured a design vision to support the tasks in question.

We observed and video-recorded three of the weekly production meetings in an attempt to capture the multitudinously coordination taking place here. The fact that we observed and video-recorded these meetings gave the employees in the department an occasion to reflect on and do some restructuring of this meeting. This was apparently only due to our presence (we may have given somebody a short comment on some of the things we observed). As one of the editors later (a bit irritated) stated: "I have asked for these changes in the productions meetings for months, but nothing happened. And now they were implemented just like that because you showed up."

As part of our reflections and discussions, we draw rich pictures capturing design-ideas. One design idea concerning financial support was drawn as a mock-up at a flip-over used for a presentation of our preliminary results on a the meeting with the technology committee in December 1991. This presentation resulted in further planning of the second part of the design project. A final plan was confirmed in a meeting with the technology committee in February 1992.

Results, First Part

We had identified and sketched out two systems:

- A production-management system, supporting that all data on a production was recorded only once in a central database. This system is technically quite straightforward, but to them, having all records on paper and each office and employee having his or her own private paper files, this was a radical change which would involve serious discussions of redesigning the work practices and division of labour.
- A financial part of the production-management system, supporting a general view of the budget and money spent on all productions "in the air".

We could have started refining and prototyping those two design ideas but we had one concern: they primarily supported the secretaries, the production manager, and the consultant. The functions of the secretaries, the production manager, and the consultant are to support the editors. The editors themselves had no idea of their needs besides word processors - they saw no relations between their problems and computers. Were our design proposals also supporting the editors? Was our design only about to "sub-optimize" the internal quantitative work in the Editorial Board, and in turn, neglect the overall function of the department: the qualitative work of the editors towards the producers of films and videos? In order to investigate this, we claimed that we had to get a thorough understanding of the editors work. This led to the second

part of the design project and turned out to have important consequences on the final design.

Activities, Second Part

To obtain a thorough understanding of the editors work we observed them in their daily work. This was done simply by "following" them for several days at their office doing their daily routines, having meeting with applicants, and when they negotiated new productions with directors and producers and when they went to review a version/cut and final cut/mix with the directors, producers, and sometimes the photographer and the cutter. The editors themselves helped by suggesting days and times where we should be with them. This assured that we observed the variety of different tasks in their job. At some of our observations, especially when they were "out of the house", e.g. reviewing a version of a production, the reason for our being there could seem peculiar in the eyes of the directors, producers, photographers, etc. They did not resist our being there even in cases of negotiating contracts and funding. In fact, they were all very kind, perhaps because the editors are in charge of the funding for the production! We video-recorded some of our observations at The Film Board. This was mainly the meetings where the editors participated negotiating with directors and producers, meeting with the production manager etc.

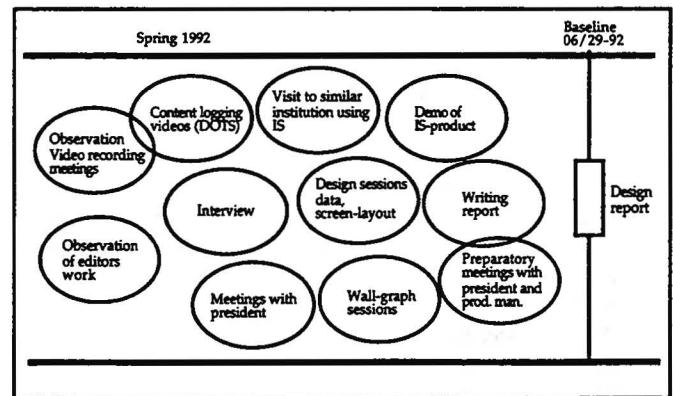


Figure 5: Design project, second part Circles indicating activities and boxes indicating intermediate results.

With parts of the videos we did content logging. This by using a HyperCard-tool developed at our department at Roskilde University: DOTS (Data Organizing Tool for Systems design). This tool is described in (Kensing and Winograd, 91). The DOTS-system was under development at the time we used it, which made the content logging rather cumbersome as we often experienced insufficient functions and ran into errors in the tool. The main use of the videorecordings was thus to re-play them and discuss what happened at the tapes. This was done at our lab at the University and the employees from the Editorial Board did not participate in this.

The observations and reviews of the videos opened a lot of questions that we subsequently followed up by interviews with all employees in the Editorial Board. The focus was on the cooperative aspects of the work both

internally in The Film Board and externally with applicants, directors, and producers from the film and video industry. Most of these interviews were audio-recorded. The audio-recording had the function of "note-memory", this allowed us to concentrate in participating in the dialogue during the interview without taking written notes. We then made our notes from these tapes without transcribing everything recorded.

The observations revealed a complex cooperative pattern in the life cycle of a production, involving all employees in the Editorial Board. In order to obtain a coherent picture of the production life cycle, we organized a series of what we call "wall-graph sessions". Wall-graphs are large pieces of paper where work involving various people and competencies is described in a coherent way. Coherent in the sense that it described the "flow" of a production: from idea to production and première, distribution, and, finally, until the film or video is discharged and removed from the film and video-stock. At the wall-graph sessions we gathered different participants in the life cycle of the production of a film or video (the secretaries, the consultant, the editors, and the production manager). We asked them to write down all activities and functions and who was in charge of it (on the upper part of the wall-graph), and data and information needed and/or recorded through the life cycle of a production (on the lower part of the wall-graph). Everything was written on one piece of paper (1x10 m) with the start of the production in one end (an application is received), and the end of the production in the other (the film or video is discharged and taken out of distribution). Each participant used his or her own color writing on the wall-graph. The wall-graph sessions were important for all to realize the complex cooperative work involved in the life span of a production. And it formed a coherent picture of the cooperative aspects of their work. The wall-graph formed the basis for a later presentation of how the design of a production management system could support the work with productions, and for discussions among all future users involved about "who is responsible for what" in an envisioned future work organization. The wall-graph hence served as a reference in the succeeding discussions concerning possible computer support, thus playing an important role in anchoring the vision of the design.

As the design was now revised and refined, we conducted two design sessions with the secretaries discussing functions and data in the system, screen-layout, etc. This was followed by a visit to an institution using a standard system supporting journalization and file/project management. The employees at this institution had rather positive experiences with this system, and since it seemed that it could offer much of the functionality the Editorial Board needed, this visit was succeeded with a demonstration and discussion at the computer company which offered the system.

The president had, during the spring, asked for several meetings with us where he quite confidently discussed several organizational matters, many of which did not

relate to our specific design project. At these meetings we found ourselves acting in the role of an organizational "therapist" where the president needed someone to discuss issues concerning ideas for changes in the organization.

Finally, we wrote a design report and had preparatory meetings with the president and the production manager before we presented the final report to the Editorial Board and the technology committee at a meeting in June, 1992.

Results, Second Part

The results to The Film Board were described in a 30 page design report, the content of which is indicated below. The report was enclosed with a diagram outlining the proposed design, the computer-based communication within the Editorial Board and between the Editorial Board and other departments in The Film Board.

The report was divided into 7 sections. Section 1 outlines the setting for the project as a joint project between our research group and the organization. It also describes the current status of the project. Section 2 describes the main function of the Editorial Board within The Film Board and points out the general areas where computer support is relevant. Section 3 describes the various work functions within the Editorial Board, grouped by the employees with the responsibility for these functions. We argued for their respective needs for computer support. In section 4, the design proposal is described. A scenario describing future work practices, supported by the design, and the consequences for the individuals and the organization, is given in section 6. Section 5 outlines possible visions for the future succeeding the current design in the report. Finally, a plan of action for the further development and implementation of the proposed design is given in section 7.

The technical design recommendations from the report are described as follows:

- A revised version of the originally suggested production-management system (a specific standard system).
- A revised version of the financial part of the production-management system (this was to be developed by in-house development with contract-developed (Grudin, 91) relations to the Central Account System in the bookkeeping department).
- Systems for communication (this included standard email, contract-developed "triggers," and in-house-developed lists in a standard system).
- Portable computers for the editors.
- A specified upgrading of the central server.

Our insight into the editors' work made two impacts on these design recommendations:

- 1) We realized that there was a difference in how a production was perceived by the secretaries and the editors:
 - To the secretaries, a production starts when the editor decides to fund it (from "negotiate contract", see figure

- 2). Besides correspondence, they mainly take care of a production from the point where the contract was made. That was how we originally were presented with the problem of managing productions.
- To the editors, the main considerations and decisions occur before it reaches this status. One editor often did not pay much attention to the productions after they had been funded, a contract had been made, and the secretaries "took over" the administrative follow up on, and management of, the production. The revised production-management system also supports the very early phases, providing direct support for the editors.

Support for the early phases of a production under consideration changed the design to:

- Support the three "top" activities (idea for production or manuscript; consideration by editor; support or refuse given in figure 2), where our first design only supported from the activity "negotiate contract" and down.
- Involve the office of journalization (the place where The Film Board receives mail and files all its stuff), allowing the production (or the application as its status is at this time) to be recorded when the first mail is received. The first design did not involve the office of journalization.
- Allow more applications to be recorded with important information about their early lifetime. This provided direct support for the editors, e.g. allowing a new editor to check if a similar application had been considered by his or her predecessor. The first design did not consider applications refused by the editors.
- Require the design to be portable, as the editors are frequently "out of the house." The first design, mainly supporting the secretaries, did not take this issue into account.

2) Support of the financial side of productions considered by the editors turned out to be strictly confidential.

None of the editors' personal calculations - about which productions they were considering to fund and with how much - should be public unless made so by the editor managing the production. If this important "feature" had not been included in the design, the editors simply would not have used the system for this complex task, and the financial part of the production would then only be supported by the system after the final decision to fund it had been taken.

Why was it important to keep the financial side confidential? The answer to this has to do with a power-struggle between the production manager and the editors:

- The editors are responsible for deciding which projects to fund and with how much. But, the production manager is responsible for the overall budget - including considerations about whether the total budget for a production looks sound and realistic.
- The editors are usually not very interested or skilled in the economic details of a production. They want as many as possible of their preferred applications to become productions.

- The production manager is concerned about the financing of each production and about how many productions the organization can handle. The production manager wants fewer productions to be funded with more money.

We believe that we could not avoid playing a part in this conflict when designing the system supporting the financial part: either the system is open to all (and that means supporting the production manager, as in our first design) or it allows the editors to work with their budget in confidence. How we approached this conflict and others is dealt with in the section below.

The example shows how our ethnographic approach or, to put it more simply, how our "taking a closer look" in the second part of the design project had specific consequences for our preliminary design proposal. The example demonstrates how multiple viewpoints on work practices may be harmonic or problematic in terms of consequences for different design options. In addition, we gathered experiences in our experimental use of different techniques (observations, videorecording, wall-graph sessions, etc.)

LESSONS LEARNED

Lesson no. 1: Designers may have to observe users while they are involved in their everyday activities. Observations may be necessary in establishing a mutual learning process with users, aiming towards a shared understanding of the current work practice and developing realistic visions of future use of computers.

Lesson no. 2: Taking a closer look may unveil users' multiple viewpoints on the current work as well as on future use of computers. Multiple viewpoints might be harmonious or problematic in terms of the possibilities of integrating them in a coherent system. In case of conflicting viewpoints, leading to different design solutions, designers should bring up the conflict and its consequences in terms of different design proposals.

In the design project for the Editorial Board, one of our goals was to develop an understanding of the conditions and effects of applying ethnographically inspired approaches. Since we have a background in computer science but try to study, adopt, and use ethnographic approaches in our own design practice, we use the terms *taking a closer look* and *ethnographically inspired* approach. Also, we did not only use ethnographic techniques like interview, observation, and videorecording and analysis. In parallel, we conducted activities as design sessions, wall-graph sessions, and visited other institutions in order to investigate changes of current work practices. Hence, the overall approach may be described as an *intervention and ethnographically inspired approach*, though the use of ethnographic techniques are in focus in this discussion.

Since our research agenda was to investigate possible effects on the design due to our approach, we paid special attention to knowledge developed about their current

work practices, the techniques we had used to develop that knowledge, and the effect it had on our visions and design proposals.

The relevance of applying an ethnographic approach to systems design has been argued by ... ethnographers and sociologists especially (Bentley et al., 93; Gougen and Linde, 93; Hughes et al., 92; Luff et al., 93; Sommerville et al., 93; Suchman, 87; Suchman and Trigg, 91; Wynn, 91). Even though an ethnographic approach to systems design has proved valuable, especially within highly specialized product development and research oriented design settings, reports on concrete consequences on a specific design due to such an approach seem scarce.

In the following, we report on what seems to be some concrete consequences on the design project in the Editorial Board, due to the attempt of being inspired from such an approach. Finally, we discuss the effects and conditions from using this approach.

Taking a Closer Look in the Editorial Board

The first design proposal was a result of achieving knowledge about the current work practices, mainly from interviews and document analyses, even though we, as designers, had only few experiences of the users performing their jobs. Hence, we had few possibilities of evaluating the relevance as to design of the more or less structured presentations of the current situation, that we obtained from the users and the written documents (Kensing and Munk-Madsen, 1993).

Through a detailed insight into their work, we wanted to test whether (also if and how) this would affect our preliminary design proposal. It was done mainly by observing the editors working and by observing and video-recording various meetings that the editors attended. Questions and situations which arose from the observations were further investigated in a second interview round.

Our insight into the editors work unveiled a different view on the life cycle of a production when compared to the secretaries and the production manager. To the secretaries, a production becomes relevant (in terms of being cumbersome/problematic and therefore considered a candidate for computer support) after an editor has decided to fund it. On the contrary, the editors spend more time and energy on productions while still considering them for support. The main concern of the production manager, who holds a permanent job, was the total amount of productions that the organization could handle simultaneously, as well as ensuring that each production was sufficiently funded from the very beginning. Instead the editors, hired for just 2 or 4 years, tend to be more interested in getting as many productions through the system as possible even to the point of becoming quite active in raising external funding. Since they are recruited from the film milieu to which they usually return, they also had to take into account their reputation in that milieu, thus preferring to give many producers and directors a possibility to produce films. In

informal talks this was referred to in terms like "unavoidable incestuous relations," unavoidable due to the size of the film and video industry in question.

Our observations told us that the editors too would benefit from computer support. This may be even more important: they agreed when we presented our ideas. The ideas were aimed at facilitating communication, establishing and maintaining an overview of the economy and the progress of ongoing projects, and supported fund-raising. We also suggested portable computers that would free them from rewriting a lot of material, if for instance while away from their office they reviewed suggestions for films.

The difference in viewpoint between the secretaries and the editors was *harmonious* in the sense that the functionality needed for the editors could easily be added to those functions needed by the secretaries. Referring to figure 2, the editors mainly needed support in the beginning of a production (from the application of an idea for a production is received to the contract being negotiated). The secretaries mainly needed support later in the production (from the negotiation of a contract to the final premiere of a production).

On the other hand, the difference between the production manager and the editors was more *problematic* and challenged our role as neutral experts. It was not possible to allow the editors to keep to themselves the current amount of funding for productions under consideration and, at the same time, to allow the production manager, who had the responsibility for the total budget, to have access to the same data. Through interviews, thinking-aloud experiments, and observing the editors and the production manager, (especially when together they negotiated contracts with directors and producers) we realized that this contradiction was crucial. E.g. one of our video tapes shows the production manager, trying to ensure that a production in question was sufficiently funded, eager to increase the support, while the editor was reluctant to do so, because it would make it problematic for the editor to support other projects currently under consideration.

The design of the financial part of the system could either provide public data and thus support the interest of the production manager or support the interest of the editors by allowing them to keep this data private until they deliberately wanted them to be public. We brought up this conflict by proposing a redesigned system of the latter type. The rules given by Parliament supports this, since it states that it is the responsibility of the editors, based upon artistic evaluation, to suggest to the governing body which films to support and with how much. In our earlier design, sketched before our detailed analysis of their work, the financial data was considered public. The situation was tricky since few of the editors, now and in the past, had been good at estimating production costs. The job of production manager was created for that reason. The current editors agreed to the need for such a job, however they expressed concerns that the production

manager implicitly would take over part of their responsibility.

The system we finally proposed intended to support the editors in budgeting the productions under consideration and provided the editors with the power of deciding when their personal calculations - about which productions they were considering to fund and with how much - should be public. This therefore would potentially reduce the production manager's influence. The production manager ended up agreeing to this proposal. It was however, "a hot potato" for some time, which at one point led the production manager to suggest to the president that our detailed analysis of their work should be brought to an end.

We are not suggesting that designers should bring up and play a part in all types of conflicts that manifest during a project. At a meeting with the president, e.g. when he had become so used to discussing various matters with us, he "invited" us to engage in a conflict he had with a middle manager. Since in our interpretation this conflict was related to different opinions on management style and charge rather than to technical and related organizational matters (which was our commission in the design study), we chose to stay out of the actual conflict. Instead we chose the role of "therapist", challenging the way the president dealt with the conflict and discussed alternative ways of handling it. The point is not to take the stand of those you like best or those you in some sense are dependent on. The point is to make explicit the conflicts you see when it involves your responsibilities, i.e. in the case that the design of a system either supports one side of the involved interests or the other. To bring up a conflict and make it explicit, involves describing to the parties how the conflicts influence the design choices under consideration. Thus, bringing up a conflict and playing a part is not equivalent to making the choice. (See also Blomberg, Suchman, and Trigg. in this proceedings).

Effects and Conditions from Taking a Closer Look

The immediate learning experience from this research project was that our "taking a closer look" did result in specific changes of our first design proposal. This was, to some extent, even a surprising result, as both we and the users found the first design proposal very appropriate. Thus, it serves as a concrete example of how developing knowledge by observation and videorecordings may challenge an immediate knowledge achieved mainly through interviewing users. (See also Bødker and Kensing (1994)). The first design proposal, mainly based on the secretaries descriptions of their present work, did not directly support the editors: and the editors did not have any ideas as to which kind of IS support they needed. Also the public access to the financial data in the first design proposal could have led to a situation where parts of the system would not have been used as intended, as the editors would have kept their personal calculations private during initial considerations and negotiations.

Though we have learned that applying ethnographic techniques contributed to this result, it is impossible to

specify more precisely which techniques gave which kind of insight. For instance, we believed for some time that we became aware of the importance of keeping financial data confidential for the editors, when analyzing a videorecording from a meeting. Later, though, we found that this issue had also been touched upon and discussed during interviews performed before we analyzed this video.

The overall insight into the editors work was developed by a combination of observations and interviews. Time was also an issue. Observations, in general, had the effect of generating immediate questions for later interviews and provided us with an experience of their work which formed a qualitative input to succeeding interviews. The point is to be present when things happen and not only to have it referred. The observations unveiled and illuminated the amount and complexity of the work performed by the editors, i.e. before an idea for a production reaches the process of negotiation the contract and their struggles with fund-raising. Such concrete experiences with their work provided a substance and richness which developed the interviews from a rather questioning form into mutual dialogues and discussions. It was through such additional and substantial discussions that e.g. the conflict with the production manager was conceptualized. The fact that the second part of the design project was performed during a period of approximately three months is also significant: this gave time for developing the insight into the editors work, thinking through different design possibilities, and discussing and reflecting design proposals against current work practices.

Since the design was conducted as part of an action research project, a relevant question is what the conditions are considering applying ethnographic techniques in commercial design projects in similar contexts. Would a consultant in a similar context but in a commercial situation be provided with the possibility, time, and resources to conduct such type of studies and analysis? Ethnographic approaches are rather unknown within IS design in industrial settings. For an organization to invest a relatively large amount of time and resources doing observations of current work practices, requires preconditions like:

- the designers and the user organization must have a positive *attitude* towards investing needed resources, and these resources must be available. When using ethnographic techniques, you may not know in advance what effects this will have on the final design. Investing resources in such an approach thus requires that the organization has their own positive experiences with this, is provided with experiences from others e.g. in the form of convincing examples, and/or has the resources to do it as an experiment.
- the designers must have the *competencies* to conduct such an approach and to handle the situations that such an approach may imply. Alternatively, external help is needed.
- the designers and the user organization must be able to *identify potential domains* in terms of work practices,

where applying "expensive" ethnographic techniques seems appropriate in relation to systems design.

The latter, of the above stated preconditions, raises the question whether it is possible to "economize" the use of ethnographic techniques. This is what Gougen and Linde (1993) refer to as "zooming", i.e. pointing out specific parts of the overall work context as candidates for "taking a closer look".

We did in fact use zooming. Taking a closer look at the editors work was to test whether our first design, mainly supporting the administrative staff, in fact supported the editors work. In this way, we tested our results from the first part of the design project asking the question "what is the overall intention (or purpose) of the Editorial Board?". Hence, taking a closer look at the editors work was argued by the need to test that our first design supported the overall function of the Editorial Board, thus avoiding "sub-optimization".

POSTSCRIPT

Having delivered the design report and conducted the associated meetings, we left the organization - actually we left the country. A technical employee was hired by the organization (as part of our recommendations). However, he did not manage to carry out the intentions and was subsequently terminated. A new technical employee was then hired. He has, up until now, managed to create the necessary infrastructure including a local area network, a connection to the organizations central database, workstations for all employees in the Editorial Board, and portable computers for the editors and the production manager. In addition he has bought standard systems for electronic mail, word-processing, and spreadsheet systems. Currently the organization is implementing the rest of the visions and design proposals from our design report.

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