

# Take Users Serious, but Take a Deeper Look:

- Organizational and Technical Effects from Designing with an Intervention and Ethnographically Inspired Approach

Jesper Simonsen and Finn Kensing  
Computer Science Department  
Roskilde University  
Denmark

## 0. Abstract

In this paper we reflect upon part of an action oriented research project carried out over a period of 1 1/2 year in a public organization in Northern Europe. We were called upon to conduct what ended up as 3 *design*<sup>1</sup> 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. Also we sat up participatory analysis and design workshops.

We present 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. We conclude by discussing some of the organizational and technical effects the approach had on our design proposal, as well as political dilemmas we got involved in.

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<sup>1</sup> 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. This is in accordance with authors like Pelle Ehn (Ehn, 88) and Donald Schön (Schön, 90) and the international design research journal, *Design Studies*.

The setting presented here represents a description of the *application area* of the design methods we are developing: computer support for complex work, cooperative work, administrative, managerial, and professional work. It is probably important for the relations we seek to establish with the individuals and the organization that management has stated that the purpose of the design project, where our methods are applied, is supporting the existing workforce rather than headcount reduction.

## 1. Introduction

One of our goals in involving ourselves in this action oriented research is to develop an understanding of the conditions for and effects of applying ethnographically inspired approaches in systems design projects. This is part of our research on *theories of and methods for* early systems design processes. Our research also comprises case studies of designers carrying out these early stages of systems design 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, however we have found that in combination 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 activities are important to consider in relation to the fact that often individuals' and organizations' experience that they don't get the computer support they (thought they) asked for (Lyytinen & Hirschheim, 1987; Bullen & Bennett, 1990). The part of our research reported on here is not sufficient to (dis)confirm this hypothesis. Part of our ongoing work is to relate results from our own design projects, results from others using our methods, and results from studies of designers working in industrial settings. Another motivation is that we agree with Kling (1993) that many designers - academics as well as practitioners - need to broaden their perception of and approach to design of usable computer systems.

We see organizations as frameworks for co-operation as well as for conflicts. Therefore groups and individuals participating in design should be expected to have common, as well as 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 formulate each their visions, and leave it to themselves to solve conflicts in relevant fora. In relation to Kling's categorisation we therefore rely on social web models rather than discrete-entity models (Kling & Scacchi, 1982) and we find that what they call human factor analysis should be carried out

as part of design and 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 which they refer to as *ethnographically informed* design. The ethnographers provides information which deepens the understanding of the application domain in question (air traffic control) (Bentley et al, 92; Hughes et al, 92; Sommerville et al, 93). We have a background in computer sciences but tries to study, adopt, and use ethnographic approaches in our own design practice - hence the term *intervention and ethnographically inspired* approach to systems design.

## 2. The Organization<sup>2</sup>

The Film Board is a public organization in Northern Europe under a Ministry of Cultural Affairs. The organization has approximately 50 employees.

The Film Board has two main functions as specified by law:

- To promote information, education, and artistic and cultural activities by producing<sup>3</sup> film and buying film.
- To promote information, education, and artistic and cultural activities by lending (on request from consumers) such film for educational institutions, associations, and individuals.

On the one hand The Film Board produces film, and on the other hand it distributes film, thus mediating the needs of both 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:

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<sup>2</sup> At the same time being a description of the organization where the project took place the this section is a demonstration of parts of the shared understanding developed 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.

<sup>3</sup> Producing film means funding and supporting directors and producers and to some extent managing the production.

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

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

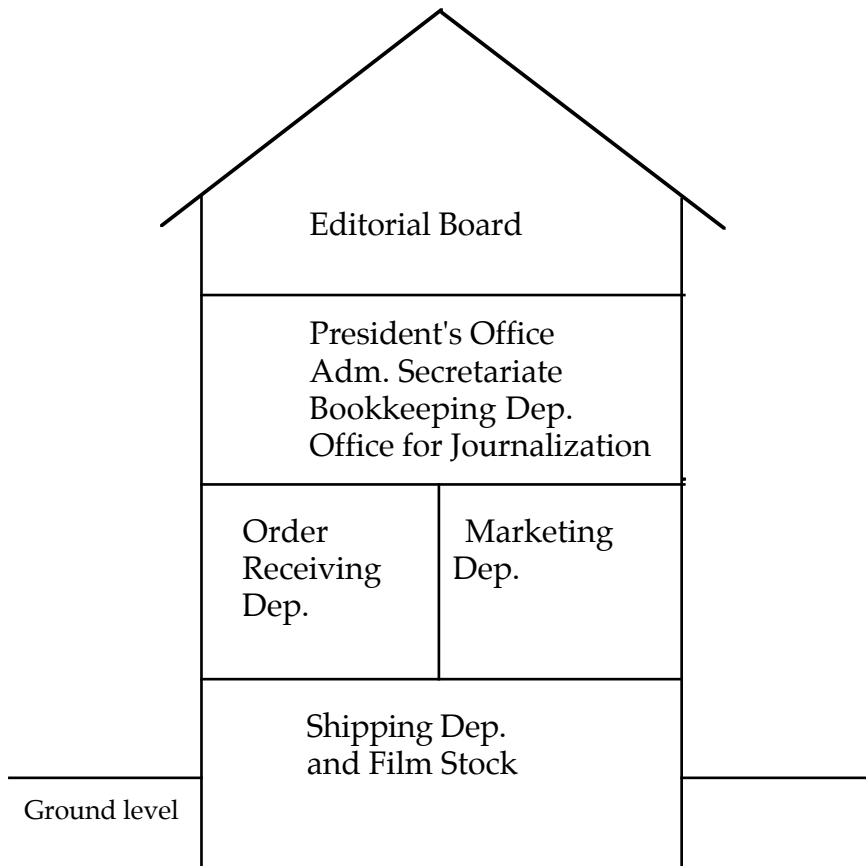
The Editorial Board is located at the very top of the house. Here you find 3 editors who consider applications and decide which productions should be funded; 1 production manager who is in charge of the financing of all productions; and 3 secretaries.

On the second floor are located the President's Office, as well as secretariat, bookkeeping, and journalization.

The first floor houses the Order Receiving Department which receive orders, book films, and counsel borrowers; and the Marketing Department which takes care of marketing, press, festivals, premières, etc.

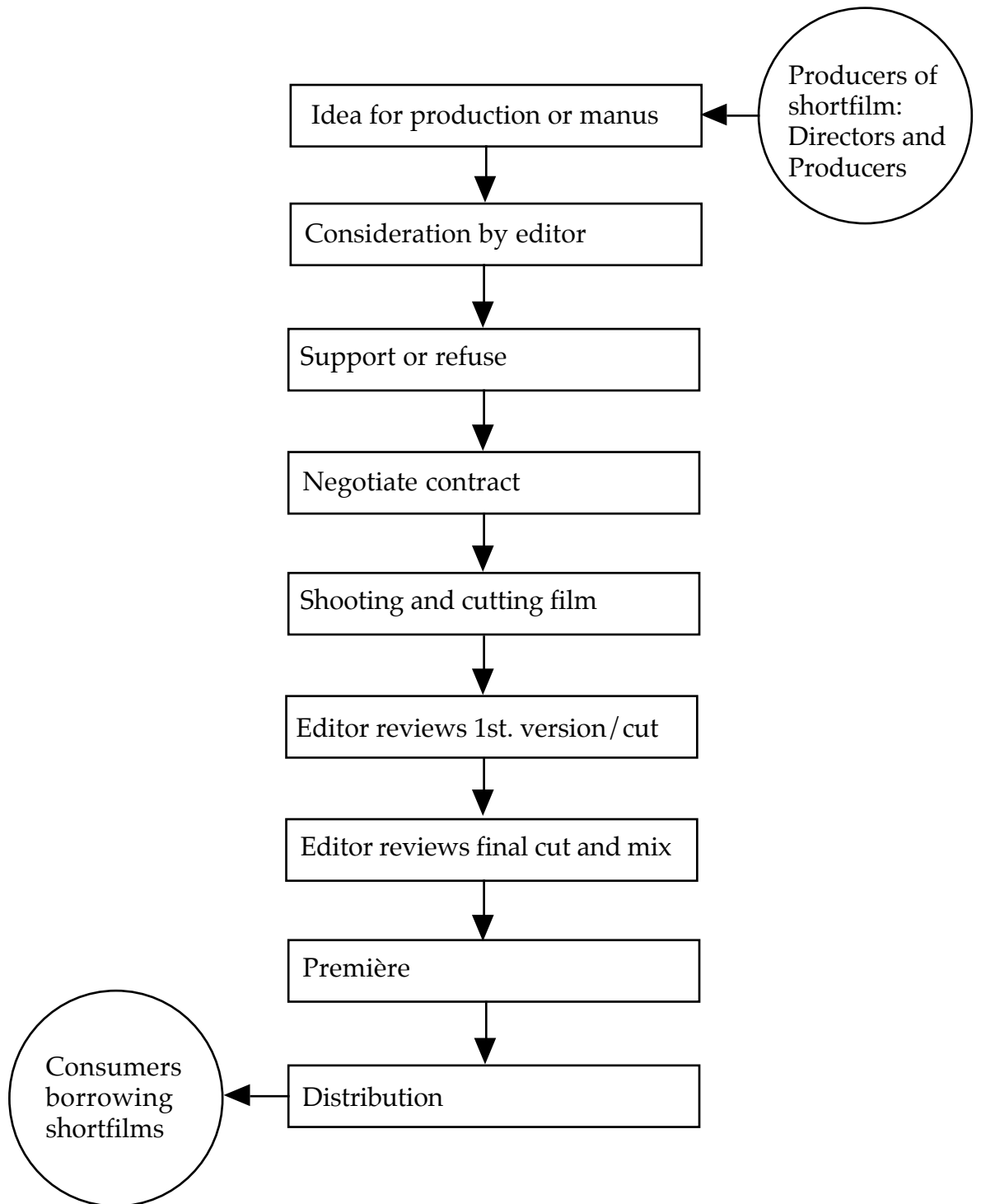
In the basement half below ground level is the Shipping Department and a large film stock for distributing.

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 fig. 2.



*Fig. 1: The house of The Film Board.*

Directors, producers or manuscript writers send applications for a production or just a manuscript which later can turn into a production. The application is considered by one of the editors who decides to support or refuse it. If support is given, a contract is negotiated and the film is subsequently shot and cut. The editor may review the production at certain phases e.g. when the first cutting is done and when the final cut is near and the images and sound is mixed. Then the Marketing Department takes over and manages the première of the film. After the première distribution is handled by the Order Receiving Department and the physical shipping and receiving of copies of the films (to and from the consumers borrowing the films) is managed by the Shipping Department.



*Fig. 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" and involves nearly all employees.

The organization of the production process is mainly paperbased. The two top floors of the house are only supported by terminals for word processing<sup>4</sup>. The Marketing Department has its own network with Macintosh equipment supporting the production of text and layout. The Order Receiving Department has a central booking system but handles the booking to the Shipping Department by paper forms as the Shipping Department has no computer support at all.

The overall organization was going through four major changes:

- The organization had traditionally been managed in a strongly hierarchical way and had troubles in keeping the budget. A few years ago the old president had retired, and a new one was employed with the purpose of organizational and managerial restructuring and refreshing of the entire organization. He did that by redefining most of the jobs, thereby replacing half of the employees.
- At the same time the organization is trying to achieve a change in its image:
  - From "the old dusty house with film for schools," which is the way they believe most of their customers see them.
  - To "the house for film and video art" (as a dynamic and cultural centre for film and video art).
- The organization faces a demand for income from government: it must earn (back) about one fifth of its overall budget. This by charging from lending films - and at the same time it experienced a decrease in the number of requests for films, among other things due to a competition on the market for distributing films.
- The organization experience the introduction of video into the film concept (from 16 mm to video): in a few years this has raised the number of productions from about 25 productions a year to more than 100 - out of 700 to 800 applications for support. The whole organization is not geared for this.

Especially the introduction of the video into the film concept puts a large burden on the secretaries in the Editorial Board. The video media

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<sup>4</sup> The Bookkeeping Department has a terminal connected to a Central Account System outside the organization.

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 administrative and paperbased work for each production<sup>5</sup>. From having an idea of and feeling for each production their job has gone more into 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 as well as supporting the financial management.

As they did not know how to proceed with their ideas we were invited for a seminar in spring 1991. At the seminar we proposed 3 different approaches for them to proceed - one was to buy and implement a standard system (a well-known system within the public organizations) right away, another was to start up a prototyping approach in a more careful way but still resulting in small running prototypes in a relatively short time, and finally one approach was to make a broad-scaled design project.

Management who were struggling with the overall changes mentioned above liked the idea of a broad-scaled design project which could provide the basis for deciding what to implement and how to do it. This initiated the joint project between our research group and the organization.

### 3. 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.

It was from the start 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 for that reason to establish a first overview of the entire organization besides making the project charter

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<sup>5</sup> Fielding calls, informing relevant parties, receiving and filing applications and all succeeding data that concerns the productions (budget, funds, expenditures, technical data, correspondence, etc.)



and a plan<sup>6</sup> for the 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<sup>7</sup>.
- 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:

- 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?

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

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<sup>6</sup> Planning was made using the technique "Project Management with Baselines" (Andersen, Kensing et. al., 90).

<sup>7</sup> The project group is here considered as our own research group from Roskilde University. As "techniques" we used having dinners, drinking wine, and making a trip with a sailboat.

- Mapping of existing work organization.
- Mapping of existing technology.
- Recommendations for changes in work practices and organization as well as 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.

#### 4. The Design Project

As the secretaries from the Editorial Board initiated the whole project it was natural to make a design project here.

During the first two months (November and December 1991) we did interviews<sup>8</sup>, thinking aloud experiments<sup>9</sup>, document analysis, drawing rich pictures<sup>10</sup>, and observations - including videorecordings - (Suchman, 1987; Suchman & Trigg, 1991; Luff et al, 1993) of the weekly meeting in the Editorial Board, where all current productions and applications were discussed. Part of the developed shared understanding is documented in section 2.

We then presented the preliminary results. 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.
- A financial part of the production-management system, supporting

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<sup>8</sup> We used unstructured interviews organized as a dialogue around questions like "What are you doing?", "What do you like/dislike about your job?", "Encountered problems?", "Ideas for improvements?", from which the rest of the interview then followed.

<sup>9</sup> We observe and ask them to think aloud while working.

<sup>10</sup> A version of Checklands idea (Checkland and Scholes, 90).

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 and the production manager. The function of the secretaries and the production manager is 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 neglecting the overall function of the department: the qualitative work of the editors towards the producers of films? In order to investigate this we claimed that we had to get a thorough understanding of the editors work. This turned out to have important consequences on the final design.

In the spring 1992 we tried to obtain this thorough understanding of the editors work mainly by:

- Interviewing all employees in the Editorial Board. 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 industry.
- Continuing our observations (including the video recordings) of the meetings where the editors participated (negotiations with directors and producers, meetings with the production manager etc.), content logging the videos<sup>11</sup>.
- Observing and videorecording<sup>12</sup> the editors during their daily work, e.g. at their office doing their daily routines, having meeting with applicants, and when they went to review 1st. version/cut and final cut/mix with the directors, producers, and sometimes the photographer and the cutter.
- Organizing what we call "wall-graph sessions." Here we gathered different participants in the life cycle of a production (the secretaries, the editors, and the production manager), and made

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<sup>11</sup> This by using a HyperCard-tool developed at our department at Roskilde University.

<sup>12</sup> Some of the videorecordings had to be given up since the house were under reconstruction and at that time the roof was being replaced, which was a rather noisy process (Yes, it's cumbersome to be a quasi-ethnographer).

them write down all activities, functions, and data and information needed and/or recorded through the life cycle of a production. All was written on one large 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 is discharged and taken out of the distribution). The wall-graph sessions were important for all to realise the complex cooperative work involved in the life span of a production (and to anchor the vision of the design of the sketched systems including the consequences for the design).

In parallel with these activities we revised our design proposals by having design sessions discussing the data in the system, screen-layout, etc., visiting an institution with a similar kind of systems and a computer company which offered a standard system.

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

As technical design recommendations the report described:

- A revised version of the production-management system (a specific standard system).
- A revised version of the financial part of the production-management system (this was to be done 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 realised that there was a difference in how a production was viewed by the secretaries and the editors:

- To the secretaries the production starts when the editor decides to fund it. Besides correspondence they (mainly) take care of a production from the point where the contract was made. And 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 did not even pay attention to her 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:

- Involve the office for journalization (the place where The Film Board receives mail and files all its stuff) allowing the production (or application as is its status at this time) to be recorded when the first mail is received.
- Allow many more applications to be recorded with important information about their early lifetime providing direct support for the editors, e.g. allowing a new editor to check if a similar application has 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."

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 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. She 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.

## 5. Take Users Serious, but Take a Deeper Look

*Users' multiple viewpoints on the current work as well as on future use of computers might be harmonious or problematic in terms of the possibilities of integrating them in a coherent system. In case of the latter designers should not avoid playing a part in organizational conflicts.*

Various employees hold various views on organizational issues partly due to the work they perform. 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 (contrary to the editors, hired just for two or four years), 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 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.

While the secretaries had rather precise ideas of what they wanted in system support, the production manager and the editors couldn't imagine computers to be of any help to them apart from word processing. As the editors were the main actors in the organizations' function towards producers and directors of film, we found it relevant to investigate their work in more detail. This was done to clarify both whether they could benefit from computer support and to confirm that our preliminary design recommendations (mainly supporting the

secretaries) did actually support the function towards the producers and directors of film.

Our succeeding observations told us that the production manager and the editors too, would benefit from computer support - and even more important - they agreed when we presented our ideas. The ideas aimed at facilitating communication, establishing and maintaining an overview of the economy and the progress of ongoing projects, and support for fund-raising. We also suggested portable computers that would free them from rewriting a lot of material, when for instance while away from their office they reviewed applications 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. 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 these 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 realised that this contradiction was crucial. E.g. one of our video tapes shows the production manager, apparently trying to ensure that a production in question was sufficiently funded, was eager to increase the support, while the editor was reluctant to do so, apparently because it would make it problematic for her to support another project application currently under consideration.

Making the conflict explicit we ended up recommending a system that allowed the editors to keep these data private until they deliberately wanted them to be public. In our earlier design, sketched before our detailed analysis of their work, these data were considered public. By raising this issue we intervened in a conflict we, it could be argued, ought to have stayed out of. However, based upon our understanding of their work we choose the stand of the editors, which in fact also was supported by the rules given by Parliament to the organization which states that it is the responsibility of the editors, based upon artistic evaluation, to suggest to the governing body which applications to support. 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. It provided the editors with the power of deciding when their personal calculations - about which productions they were considering to fund and how much - should be public, thereby potentially reducing 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 lead the production manager to suggest to the president that our detailed analysis of their work was brought to an end.

We are not suggesting that designers should play a part in all types of conflicts that becomes manifest during a project. At a meeting with the president, when he had become very confident in discussing all kinds of 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 project, we choose to stay out of the this conflict. In stead we choose the role of "therapist" challenging the way he dealt with the conflict and discussed alternative ways of handling it. The point is not to take the stand of those you like best, are paid by, or those you in some sense otherwise are dependant on. The point is to make explicit the conflicts you see relevant within your commission and describe to the parties how the conflicts influence design choices under consideration. Thus playing a part is not equivalent to making the choice.

## 6. 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 sacked. 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 and word-processing as well as spreadsheet systems. Finally money has been set aside for in-house and contract-development of the other applications we had recommended.



## 7. Acknowledgements

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