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Generating Visions: Future Workshops and Metaphorical Design

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In this chapter we are especially concerned with supporting the generation of visions for the future use of computers. A critical problem here seems to be that user-designer cooperation is poorly supported by current methods. Empirical research shows that while a lot of resources might be used on interviewing users about their current work, few or no resources are used in helping users and designers generate alternative ideas about how they would like their work situations to be in the future (Andersen, Kensing, Lundin, Mathiassen, Munk-Madsen, Rasbech, & Sørgaard, 1990). Kalle Lyytinen has surveyed the relevant literature and presents eleven problem classes regarding development and use of computers in organizations (Lyytinen, 1986). A few of those classes which relate to the theme of this chapter are:

- development activities pay only slim attention to changes of job-content, autonomy, work-load and so forth introduced by the new system
- system goals are ambiguous and often poorly defined, and if defined too narrow, because they concern mostly technical and economic issues
- system goals motivate mainly systems-analysts and management and not the end-users. The result of this is that the devel-

opment process seldom solves the "right" user-problems, because these are insufficient incentives for the user to participate and contribute his know-how

- process is a specialist driven activity and it tends to focus on the average user instead of a unique individual and his needs
- methods and tools employed are orientated toward improving the work of the systems-analyst and programmers; they do not help much users to take part in the process and build systems they really need
- in general conceptual problems result in solving the wrong problems instead of the right ones
- negative attitudes or reactions toward the built system which find their expression in a multitude of ways from Luddism and sabotage to a lack of motivation to use the information system as appropriately as possible. (pp. 4-9)

These problems relate to cooperation between designers and users when generating visions, or, as Kalle Lyytinen says, when defining system goals. We advocate that the process of creating visions about future work situations should be explicitly supported and derive from an interplay between the competence of users and designers. For that purpose, the toolbox of most designers would benefit from being supplemented with approaches less formal than those currently used.

We suggest Future Workshops and metaphorical design as examples of new approaches. In this chapter we demonstrate how the combination of Future Workshops as an organizational frame and metaphor as a linguistic tool can stimulate creative visions of the future use of computers in organizations. In the conclusion we address how this approach to design helps designers by taking into account Lyytinen's problem classes.

Background

Robert Jungk and Norbert Müllert have developed a technique called Future Workshops (Jungk & Müllert, 1987). The technique was originally developed for citizen groups with limited resources who wanted a say in the decision making processes of public planning authorities (town planning, environmental projection, energy crisis, etc.). Finn Kensing has proposed its use in system development (Kensing, 1987). It is a technique meant to shed light on a common problematic situation, to generate visions about the future, and to discuss how these visions can be realized. Those participating should share the same problematic situation, they should share a

desire to change the situation according to their visions, and they should share a set of means for that change. The technique is described briefly and its use is shown in the scenario presented in this chapter. The reader wanting to practice the technique is strongly encouraged to read Jungk and Müllert's book, which has been translated into several languages.

As a way to broaden the perspective of the participants, we encourage the facilitators to intervene at the content level by introducing metaphors. The use of metaphors is helpful if the participants get stuck or develop their critique or visions in too narrow a way. Generally, a Future Workshop is run by one or two facilitators, with no more than twenty participants. The facilitators attempt to ensure an equal distribution of speaking time and they should also ensure that all participants can follow the discussion, by letting the participants write their ideas as short statements on wall charts (a large sheet of paper taped to the wall). The form and content of the phases are described later in the scenario.



A Future Workshop is divided into three phases: the Critique, the Fantasy, and the Implementation phase. Essentially the Critique phase is designed to draw out specific issues about current work practice; the Fantasy phase allows participants the freedom to imagine "what if" the workplace could be different; and the Implementation phase focuses on what resources would be needed to make realistic changes. These phases are surrounded by preparation and follow-up periods.

We find that metaphors stimulate seeing things in new ways. They are perhaps most well-known from poetry, for example, "Thou blind fool, love, what dost thou to my eyes," from Shakespeare's Sonnet 137. In this kind of metaphorical personification, attributes normally assigned to human beings are assigned to an abstract concept like love. The essence of metaphors is to talk

about one thing in terms of another, the two things being different in some way (Lakoff & Johnson, 1980). But metaphors are not reserved for poets—they pervade our entire life. For example at a library, workers understood the computer system in terms of a physical space: “I am in the circulation control system” and “Now I have to go to the ALIS-base,” (Andersen & Madsen, 1988). Hence, metaphors, in contrast to formal system description tools, are a natural part of everyday language.

Donald Schön has discussed the relevance and usefulness of metaphors in the area of design in its broad sense (Schön, 1979). Giovan Francesco Lanzara has pointed out their specific relevance to the design of computer systems (Lanzara, 1983), and Kim Halskov Madsen has given concrete guidelines for the use of metaphors in the design of computer applications (Madsen, 1989). As we will see, metaphors can be used as a tool for reflection as well as for action; thus, metaphors support workers’ reflection on their current view of their own work and stimulate their visions of alternative future ways to work.

In the following we describe a combination of Future Workshops and metaphorical design, currently being developed through experimentation. For several years we have arranged Future Workshops, developed metaphorical design in the context of system development, and carried out the “initial actions” mentioned below. We present our approach to design as a scenario, in the sense that the actual course of actions described has not taken place. Instead, the scenario is constructed from our experiences as consultants and teachers for various groups of users and designers in a variety of cases. The setting, the characters and the context of the scenario are taken from a technology assessment project at the Danish research libraries (Etzerodt & Madsen, 1985; Etzerodt & Madsen, 1988). Metaphorical design was applied in the project; however, we did not conduct a Future Workshop in that project. In the scenario of this chapter we have incorporated experiences from Future Workshops as well as experiences from applying metaphorical design in other cases. The idea behind merging our experiences into one scenario is to help the reader imagine a blending of these techniques.

The Overall Scenario

The Danish public library system consists of a number of county libraries, each with a smaller number of branches. Each library is made up of two departments, the Accession department and the Circulation department. In the Accession department, books are chosen at book selection meetings; later the books are ordered, received, and registered. In the Circulation department the bor-

rowers, perhaps assisted by the librarians, choose books to read. At the counter, clerical workers handle lending and returning of books and send out overdue notices.

Although each county library and its associated branches are independent, the libraries have a long tradition of close cooperation. A number of central institutions provide various services to the libraries, such as bookbinding and materials for book selection meetings.

Twelve years ago these institutions, together with the main software supplier for public institutions (DMK), initiated a large development project called The Library Data Project. As a result, DMK is in a position to deliver computer support for information retrieval, circulation control, and cataloguing. The core of these systems is a central database, called BASIS, which is shared by all libraries. At the library where we were consulting, the information retrieval system had been in use for a couple of years. It was fairly advanced and required extensive training to use. Borrowers couldn't use the system on their own.

The circulation control system and cataloguing systems were under consideration by the chief librarian. She felt a need to demonstrate efficiency in order to deal with coming government spending cuts, and considered computerization as a way of increasing efficiency. In this way time would be made available for improving the service. For example, by computerizing cataloguing, librarians from the Accession department could be moved to the Circulation department where they could assist borrowers.

The librarians had a fairly hostile attitude toward the use of computers. They believed that a computer couldn't do anything better than they could do it themselves. The clerical workers were ready to discuss efficiency, but only together with improved quality of service. They feared that computerization of the library would eventually lead to a loss of jobs. None of the groups believed in the chief librarian's idea of moving librarians to the Circulations department. They felt that it was unrealistic at a time when the libraries were facing government cuts.

Although management, DMK, and the government originally argued that circulation control should have top priority, the library staff had managed to argue for a need for improved quality of service through the information retrieval systems. But now the staff realized that the quality of service had not improved radically. Hence, the library staff was unsatisfied with the concept of the DMK systems, although they couldn't find alternatives. We will imagine that they have asked us, as outside consultants, to assist in generating alternative suggestions challenging the concept of DMK. The following is an outline of what could have happened.

Initial Actions of the Scenario

After a few meetings with the librarian who had contacted us, we advocated the formation of a project group consisting of three librarians, three clerical workers, and the two of us. This group promised to deliver a proposal of future use of computers at the library in four months.

The group started out by developing a common background against which the work was to be done. We worked at the library as "apprentices" for one week. During that week we paid special attention to the patterns of interaction among the staff and between the staff and borrowers, to the work language, and to the physical surroundings. Because only the librarians had computers and because they had been using only the information retrieval system, we found it important to stimulate the awareness and the fantasy of the staff by demonstrating hardware and software and by arranging visits to other workplaces. We visited libraries already using the full-scale DMK system, and similar workplaces such as a store, a museum, and a local community and activity center. At the various places we arranged meetings with the staff to discuss their experiences regarding development and use of computers in their work. The aim of these activities, however, was not to "sell" the idea of using computers, but to generate ideas about the implication of possible uses of computer.

Our visits to workplaces other than libraries were particularly important because we got ideas for metaphors that stimulated alternative views of how computers could be used at a library. We created the initial metaphors without involving the staff from the library because we have found that it is hard for people to come up with metaphors about their own work. But people learn by example—it is much easier to create additional metaphors after hearing two or three plausible examples.

The common background established by these initial actions could have been supplemented by an analysis of the organizational culture as proposed by Keld Bødker and Jesper Strandgaard Pedersen in Chapter 6, or by an analysis of the work language as proposed by Berit Holmqvist and Peter Bøgh Andersen in Chapter 5.

In addition to forming the picture of the situation at the public libraries, our analysis led to the idea of three different metaphors for how to interpret what goes on in a library: a *warehouse*, a *store* and a *meeting place*. The metaphors often grew out of one or two concepts that were "translated" into concepts normally used about a library. For instance, the goods-books relation led to a warehouse metaphor and the customer-borrower relation led to a store metaphor. Seen as a warehouse, the library is a place where books are

stored. Seen as a store, focus is on the service toward the borrowers. Seen as a meeting place, the focus is on relations among borrowers and staff.

For the library staff the most important effect of the initial actions of the group was the stimulation of their technical and social fantasy. For example, we had visited workplaces where high-resolution work stations were used as well as workplaces where just terminals were used. We had visited workplaces with a very sharp division of labor between librarians and clerical workers, as well as others with a more flexible division of labor. The staff learned about some of the possibilities and hindrances regarding the use of computers in their work; indeed we noticed that "technology and work" appeared in daily gossip.

Metaphorical Design at the Future Workshop

The project group decided to set up a one-day Future Workshop. The project group worked out an invitation announcing the theme of the workshop: "Computer technology on our terms." In addition, the invitation briefly presented the overall idea, the phases of the workshop, and a program for the day. The invitation was sent to all employees at the county library and its seven branches. Though the main conflict had been between local government and DMK on the one hand, and library employees, regardless of rank, on the other, the employees decided not to invite the library heads. The main argument for this was that the employees did not share the chief librarians' ideas about how to increase efficiency.

The project group then found a suitable place and provided the needed materials, which included tape, markers, and large sheets of paper to be used as wall charts. However, the actual setting up of the room was done in cooperation with the participants in order to create a relaxed atmosphere and to emphasize that it was not just another meeting they were attending.

The Critique Phase

At the beginning of the Future Workshop the facilitators introduced the technique to the participants, and the plan for the day was discussed and adjusted. Basically the Critique phase is like a structured brain-storming that focuses on current problems at work. The Critique phase opened with criticism of DMK's plans as well as criticism of the staff's own work practices. The facilitators explained that as the participants suggested their critiques, they were to be formulated as short statements and written as a few keywords on the wall chart. Speaking time was restricted to 30 seconds to make

it easier for all participants to speak (Jungk & Müllert, 1987). The facilitator also explained that participants did not need to defend or offer arguments for their ideas, thus enabling less verbal workers to jump into the process.

At one point the facilitators intervened and pointed out that the library staff talked about the library as if it was a warehouse; they suggested that the library alternatively could be seen as a store. For example, seeing the library as a warehouse made people think about the way books were kept there, whereas seeing the library as a store brought the focus more toward serving "customers" in the library. Often, the metaphors led to the critique being formulated as a caricature: "The library is like a supermarket"; thus, the critique was stated more clearly. In the discussions the specific metaphors were used, but the concept of a metaphor was not. These metaphors are discussed more fully in the next section on the Fantasy phase.

Here are some of the short statements as they appeared on the wall chart:

too slow throughput
poor knowledge about ordered books
no support for loss of books
all we do is inventory control
the library is like a supermarket
DMK has no support for revision
never talk to the borrowers
efficiency instead of service
DMK favours centralization
fear of centralization
the demarcation is the obstacle
the library is just a museum today
librarians are just attendants
we buy computer equipment instead of books
fear of loss of jobs
we only provide self-service
poor marketing
no computer support for better service

Figure 1. Statements from the Critique phase.

To get an impression of the general drift of the critique, the participants together with the facilitators grouped the short statements under the following headings:

- The library as a warehouse

- Relation to the borrowers
- The organization of the library
- The library as a store
- The role of DMK

The participants were divided into small groups of four or five people. Each group chose a set of short statements and through discussion reformulated these into a concise critique of the current use of technology and the plans of DMK. The discussions in the groups were outside the control of the facilitators. In the subsequent plenary session the critiques of the groups were presented and discussed.

The Fantasy Phase

To stimulate the imagination of the participants, the Fantasy phase started with two warm-up activities. One was simply to invert the short statements from the Critique phase into positive statements. The other was to draw pictures of the library as the participants would like it to be in five years. The drawings were hung and a brainstorming session was started. Again, long speeches were prohibited, and the facilitators cut off "killer formulations" like: "This is completely unrealistic!" No statement about future working situations and future computer applications was considered too extreme. Again the participants were encouraged to write short statements on the wall chart, some of which are:

tear down the walls an electronic bulletin board arrange small reading groups a review database overview of most popular books re-use of other peoples synonym lists better support for self-service borrowers direct contact with the authors create connections among borrows from different libraries access to the library from home no division of labour

Figure 2. Statements from the Fantasy phase.

As in the former phase, we wanted an impression of the general drift of the statements. But in this case, we employed a ranking system

where each of the participants had five votes to cast on the statements they favored. The seven short statements getting the highest score were summed up in a "utopian outline" under the heading "The library seen as a meeting place." In the small groups, the outline was discussed and further developed, while still ignoring possible drawbacks, which were to be discussed in the next phase.

But before the group discussions, the participants were introduced to the idea of metaphorical design in order to stimulate their talk (Madsen, 1989).

We used the warehouse metaphor as an example. We pointed out to the participants that when we had talked about the library as though it were a warehouse, we didn't mean the library literally was a warehouse. The point was that certain aspects of a library could be highlighted by comparing it with a warehouse. We could do that more systematically by comparing aspects of the warehouse with similar aspects of the library, such as "stock in trade" with "book stock," "orders" with "requisitions," "stock taking" with "revision," "purchase of goods" with "accession," "delivery of goods" with "lending of books." More similarities like these could be generated by focusing on the characteristic aspects of a warehouse and by identifying similar aspects of a library. The intention was not only to be aware of the similarities between a warehouse and a library, but just as importantly to clarify the differences between the two. "Stock in trade" is quite similar to "book stock," whereas "purchase of goods" is rather different from "accession," because almost any purchase of a book is a unique case.

We encouraged the participants to be aware of the part of the library that was highlighted, and also the part that was hidden, by the warehouse metaphor or warehouse view, as we also called it. Those parts of the library that were left out or hidden would be likely candidates for other useful metaphors. In the case of the warehouse metaphor, the borrowers were left out. Borrowers could give rise to a store metaphor, because a store is like a warehouse but with customers.

We pointed out that, seen as a warehouse, the most important tasks of the library are to find the goods quickly, to have precise knowledge of the stock, and to avoid loss. A good computer system is one that makes it possible to keep track of the goods, and it seems that the existing computer systems offered by DMK—the accession system, the information retrieval system, and the circulation control system—are usable for this purpose.

The Implementation Phase

The Implementation phase started by having each group present their version of a utopian outline. Inspired by a meeting place metaphor, one of the groups had considered how the library could be seen as a place for conversations about books and other book-related subjects. They had noted that the conversations are not solely about books, but also about reviews of books relevant to cultural events in the city. Conversations take place among the borrowers, among the staff, and between the staff and the borrowers. Among the suggestions for computer systems was a new book catalogue and an electronic bulletin board to support conversations among the borrowers.

During the discussion of the outline it became clear that when the library is seen as a meeting place, the most important task of the library is to create better conditions for communication. In this context a good computer system is one that can be used as a medium for conversations, or one that can establish contact between people and thereby create possibilities for conversations.

Later in the Implementation phase, the outlines were evaluated in a plenary session to see whether it was possible to realize them under current conditions. In addition, it was discussed whether it was necessary or possible to establish new conditions under which the utopian outline could be realized. The discussion was carried out briefly in the plenary session and more thoroughly in smaller groups, where suggestions were worked out for how the visions could be brought about as well. The suggestions were discussed and coordinated in a plenary session, where they were turned into a common strategy for the library staff.

The Future Workshop closed with the participants making a detailed plan for how the first steps in the strategy should be taken. The plan consisted of a list of tasks to be carried out within a given period and the names of the people who had signed up for each of them. The following is part of the plan dealing with a scheme for realizing the meeting place metaphor, including the idea of an electronic bulletin board.

- Susan, Peter, and Albert. Within two weeks: Contact the consultants of DMK to interest them in developing a prototype of the bulletin board.
- Lars, Hans, and Lone. Within two weeks: Contact some of the other county libraries to get their support or acceptance of DMK giving high priority to the development of a prototype.
- Jesper and Lea. Start next week: Develop a set of criteria, based on the short statements from the Critique and the Fantasy Phases,

for evaluation of the prototype. Arrange a meeting for discussion of the criteria.

Workshops like the one described have often formed a good basis for further work of project groups. Plans for specific actions are an important outcome of future workshops, and the wall charts can provide crucial documentation of the workshop itself. A future workshop is actually an ongoing activity or, as Jungk and Müllert (1987) point out, if the group starts implementing the plan, a "permanent" workshop arises and the future workshop techniques may be reapplied when obstacles occur. But, of course, other techniques are also needed and we suggest that readers turn their attention to the other chapters in Part II.

Discussion

We have suggested the idea of using Future Workshops and metaphorical design as an approach to generating visions, a neglected part of system design. How does this approach help designers handle the examples we selected from Lyytinen's survey of problems mentioned in the literature (Lyytinen, 1986)?

It is our experience that Future Workshops and metaphorical design helps define system goals by focusing on issues related to how to get the job done, rather than on technical and economic issues. The approach makes it possible for the users to take an active part in contributing their knowledge, thereby helping the "right" problems to be solved.

Future Workshops and metaphorical design, though facilitated by the designers, represent techniques that are more user-driven than traditional methods. The orientation is toward helping users take part in the design process. This is made possible mainly by communicating in everyday language and by focusing on the actual users and their needs, rather than on the average user.

Future Workshops and metaphorical design provide a framework for paying attention to changes in the working environment and in the organization. Playing with metaphors in the Critique phase and in the Fantasy phase makes it easy for the users to express their relevant likes and dislikes.

In our experience, being facilitators of Future Workshops and playing with metaphors gives us an idea of the "soul" of the organization in question. Like the ideas about workplace culture discussed in Chapter 6, we find that this helps us better understand how users envision their work environment. This is crucial for our further conceptualization of the system, and it is a kind of understanding that we have not been able to acquire using traditional methods.

Future Workshops and metaphorical design do not, of course, preclude negative attitudes. However, since the very idea is to make it possible for users to develop their ideas of more desirable systems based on a critique of the current ones, it decreases the chances of finding negative reactions later in the development process.

In the scenario described we have assumed that the workshop went smoothly, in order to illustrate the main points of the approach. But we have experienced some practical problems applying this approach to design; for instance, time pressure during the Future Workshops; ensuring that the plans are actually carried out; selecting a coherent group of participants; and ensuring that the facilitators inspire without manipulating. How to handle such problems is, of course, crucial to the success of the approach. However, we see such problems as not being limited to our approach, as all workplace centered methods require a lot of time. Instead, we hope to have illustrated how the approach applied here seriously takes into consideration the competence and knowledge of the users about their workplace. The whole idea of Future Workshops and metaphorical design is to allow people to enlighten their common problem situation, to generate visions for the future, and to discuss how these visions can be realized. The aim is to support users playing an active role in the design process.

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References

- Andersen, N. E., Kensing, F., Lundin, J., Mathiassen, L., Munk-Madsen, A., Rasbech, M., & Sørgaard, P. (1990). *Professional systems development: experience, ideas and action*. London: Prentice-Hall.
- Andersen, P. B. & Madsen, K. H. (1988). *Design and professional languages*. (DAIMI PB-244). Aarhus, Denmark: Aarhus University, Computer Science Department.
- Etzerodt, P. & Madsen, K. H. (1985). Methodological choices when evolving user's understanding of computers. In M. Lassen & L. Mathiassen (Eds.), *Report of the Eighth Scandinavian Research Seminar on Systemeering* (pp. 88-99). Aarhus, Denmark: Aarhus University.

- Etzerodt, P. & Madsen, K. H. (1988). Information systems assessment as a learning process. In N. Bjørn-Andersen & G. B. Davis (Eds.), *Information systems assessment: issues and challenges* (pp. 333-350). Amsterdam: North-Holland.
- Jungk, R. & Müllert, N. (1987). *Future workshops: How to create desirable futures*. London: Institute for Social Inventions.
- Kensing, F. (1987). Generation of visions in systems development. In P. Docherty, K. Fuchs-Kittowski, P. Kolm, & L. Mathiasen (Eds.), *Systems design for human and productivity—Participation and beyond* (pp. 285-301). Amsterdam: North-Holland.
- Madsen, K. H. (1989). Breakthrough by breakdown: Metaphors and structured domains: In H. Klein & K. Kumar (Eds.), *Systems development for human progress* (pp. 41-55). Amsterdam: North-Holland.
- Lakoff, G. & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Lanzara, G. F. (1983). The design process: Games, frames and metaphors. In U. Briefs, C. Ciborra, & L. Schneider (Eds.), *Systems design for, with, and by the users* (pp. 29-40). Amsterdam: North-Holland.
- Lyytinen, K. (1986). *Information systems development as social action: Framework and critical implications*. Jyväskylä, Finland: Jyväskylä Studies in Computer Science, Economics & Statistics.
- Schön, D. (1979). Generative metaphor: A perspective on problem setting in social policy. In A. Ortony (Ed.), *Metaphor and thought* (pp. 254-283). Cambridge, UK: Cambridge University Press.