Redesign, Development and Organizational Learning

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The organizational paradigm of maximal division of labor is loosing ground. From business process redesign and sociotechnical systems theory, methods have been suggested to redesign organizations. Many redesign projects, however, do not yield the desired outcomes. This paper shows that the progression of fundamental change is related to the management of the change process. Research in forty-eight major organizational change project indicates five barriers impeding the change process: the way decision-making is organized during the process, a limited consideration of the learning capability of organizations, the culture and the style of management, the power and political processes directed at the retainment of positions, and the way the entire change process itself is managed. The paper proposes that the ability to change can be increased by paying dedicated attention to the process of change and the development and learning capacities of the organization by integrating.top-down design strategies with participative development strategies.

Influenced by rapid environmental changes and higher market demands, organizations increasingly strive to enhance their flexibility and ability to innovate. Many businesses are engaged in a process of redesigning their organization and endeavouring to realize its implementation. A suitable organization form is established by considering the characteristics of the organization's environment and the nature of the production process. From the perspective of sociotechnical systems theory and business process redesign, it is argued that the functional structuring of organizations should be abandoned. For the enhancement of flexibility and customer orientation, attempts are made to design the organization on the basis of customer or product flows. Within these flows teams are formed. The realization of new organization forms is a complex change process. Many projects aimed at the redesign of businesses do not attain the desired outcome. An explanation for the laborious course of fundamental organizational changes can be found in the approach of the change process. Business process redesign and a design-oriented approach to sociotechnical systems theory are characterized by a focus limited to the design of the formal organization structure. What is often passed over is the developmental aspect of change: set ways of work and methods of problem-solving, norms and values, power relations and the need for personal development and control of one's own situation.

In this paper the design of organizations will be discussed first. The emphasis will be on the organizational science schools that underscore the departure of the division of

labor in functionally structured organizations. Along with the current views on organization design, the way in which the redesign is achieved will be considered. In the second section possible explanations for the failure of fundamental change processes will be discussed. Results from a recent research project regarding the impeding factors to change processes is presented. The empirical data will be explained by means of social scientific views on decision-making, learning processes, cultural issues and power processes. The section ends with a system-theoretical perspective on the management of change. The third section renders an approach to change in which a balanced consideration is given to the design and the development of organizations so that the self-learning ability of organizations will gradually be enhanced.

The end of the division of labor

The organization paradigm of the maximal division of labor is slowly being abandoned. Influenced by technological innovations, the economies of scale and market demands, organizations endeavour to increase flexibility and innovativeness. The contemporary sociotechnical systems theory and the redesign of business processes, in particular, offer methods of design which break with the functional structuring of organizations. In this section the principles of design from the contemporary sociotechnical systems theory will be examined first. Then the redesign of business processes will be discussed according to the popular methods of business process redesign or business process redesign (BPR). Of both approaches, the background, the designing principles and the way in which the redesign is achieved will be discussed. The section concludes with a comparison of both approaches.

Sociotechnical Redesign

The sociotechnical organization model is based on the experiences in the British mining-industry in the fifties. The events led to the insight that labor, technology and organization are inextricably bound up with each other. The sociotechnical systems theory was initially preoccupied with the criteria for the design of tasks on an individual or group level. The purpose of this redesign was an improvement of organizational effectiveness, an improvement of the quality of work life, and the levelling of power. In the seventies and eighties the sociotechnical design principles were further developed into an integral redesign of organizations. In this integral redesign, attention is paid to the relation between corporate strategy, organization form, the nature of the transformation process, the technology and labor.

The central design-principle of the contemporary sociotechnical systems theory can been summarized to the formation of complex tasks within simple structures, in stead of the performance of simple tasks within complex structures. What is central is the shift from the maximal division of work in classically structured organizations to minimal division of work as the leading principle of design for flexible and modern organizations (Kuipers & Van Amelsvoort, 1990). According to sociotechnical views, the team is the smallest unit of organizing. In the organization, groups are always

interdependent. It would benefit the flexibility, the effectiveness and the quality of work life, if groups can regulate their own tasks, can shape their own work organization, have a high measure of control and the ability to solve problems independently. From a sociotechnical perspective it is therefore argued that we should break with the vertical and horizontal segmentation of tasks and develop self-managing teams. The teams work on relatively whole tasks or complete assignments of which they carry out the preparatory, operational, controlling and supporting tasks. The teams are to a certain extent autonomous and are expected to improve the execution of assignments while learning.

For the formation of the teams it is imperative that the organization's functional construction or classical line structure is abandoned. This can be realized by creating parallel substreams in business processes. Streams could be parallellized on the basis of product streams, customer streams, patterns of input, quality standards, geographical position, requisite technology and information requirements. In the parallellizing process, the complexity is reduced in the exchange between the organization and its environment. The business processes are directed at the manufacturing of a product or service for a customer. The service ability and flexibility of the business process increases, because all tasks related to the product or service are coupled in one stream. This reduces the exchange of information and transfer of tasks, and the coordination of work is done by immediate adjustment.

If the business processes in one substream are too complex to combine all the knowledge and expertise necessary for the execution of a certain process in one team, the stream is segmented. The purpose of segmenting is to create substreams where the tasks are clearly defined, meaningful and highly coherent. These segments encompass directly interdependent operational and supportive tasks where the execution of the business processes is concerned. The aim is also to incorporate the preparatory and controlling tasks within the segments. Besides the tasks necessary for the execution of a business process, steering and regulatory tasks are distinguished in the sociotechnical redesign. These tasks are directed at the observation and assessment of, and, where necessary, the intervention in business processes in order to achieve set goals. Steering and regulatory tasks are placed as low as possible in the organization. In practice, this means: decentralize where possible so that teams can steer and regulate their own business processes, readjust standards, and maintain relations with the environment. Teams are provided with all the tasks necessary for the execution and improvement of a certain business process. Activities are geared for one another by means of horizontal consultation and contractual agreements. The hierarchical alignment is aimed at the realization of a unity of perspective, synchronized action and the maintenance of a common goal orientation.

The sociotechnical systems theory is rooted in a long tradition of practical research and a theoretical reflection on the practical experiences. The theory is partly underpinned by existing organizational, sociological and psychological theories. The design-methodology is strongly anchored in the system-theoretical approach and

through the years has been further developed into a concrete tool for shaping and designing the production structure and the management structure (Kuipers & Van Amelsvoort, 1990). The science of change rests on experience in the practice of the classical organization-development and is theoretically founded on theories of group-dynamics, learning processes, process intervention, and systemic change (Schein, 1969; Beer & Walton, 1987; Kolb, 1987; Beckhard, 1987; Argyris, 1990). Practical experience have led to the conclusion that insufficient results are achieved with the sociotechnical designs when a fundamental change process is based exclusively on the sociotechnical design principles.

Van Beinum (1990) states that the change process will inevitably result in some form of 'social engineering' when organizational redesign is shaped by external experts who, solely on the basis of a sociotechnical system-analysis, prescribe how the new organization must be shaped. The members of the organization are then insufficiently involved by fundamental decisions and little opportunity is left for organizational learning and the incorporation and acceptance of the change process. The designing of organizations which is characterized by autonomy, self-regulation, and participation can, according to Beinum, only genuinely take place when all members are actively involved in the shaping of their own work situation and are allowed to experience a learning-process during the change process that enhances their understanding of their own situation. The sociotechnical design methodology has seen a shift from organizational redesign by experts using general and standard solutions to a redesign rendered by the knowledge and experience of the organization's members and managers, and a supportive role played by experts. A participative approach usually employs search-conferences, group-discussions, workshops, and the experience gained through team-based work in a democratic structure to redesign the work organization (Van Beinum, 1990).

Business process redesign

Business process redesign has arisen in a situation of increasing global competition, higher customer demands, shortening product life-cycles, and the rapid developments in the area of information technology. In past years, businesses have primarily focused on technological innovation. Although technological innovations have been enforced on a large scale, in most cases it has not lead to a genuine increase in productivity, the added value of a product, or an increase of the innovation ability of the organization. One reason for this is that, when the technology is changed, the organization form is not changed simultaneously (Child & Loveridge, 1990). As a consequence, the application of new technology and the development of organizations has been reconsidered. In the service sector, the term business process redesign is often used where the reshaping of corporate strategy, the relation with suppliers, product development, the technology and the organization form is concerned (Hammer & Champy, 1993; Davenport, 1993). In essence, redesign is a fundamental rearrangement of business processes for the purpose of cost reduction, the increase of profitability and the enhancement of performance in quality, service and speed (Davenport, 1993). To

accomplish this, a good alignment must be realized between the product design and the production process, with a just-in-time delivery of good and inexpensive parts by the suppliers, and an efficient work organization. Business process redesign pays close attention to the strategy formulation process and the accomplishment of cost-reduction by analysing the possibility of cost-control throughout the entire value chain. In many cases, the result is that pressure is exerted on suppliers, producers and distributors to deliver high quality products for low prices on tight delivery conditions. Furthermore, in business process redesign much consideration is given to the application of information technology for modelling and automating the production and service processes.

The design philosophy of business process redesign concerns the radical redesign of business processes. Business processes are rearranged on a customer or product basis. In the customer- or product-oriented process design, process segments are placed in a natural sequence. Teams bear the responsibility for the execution of tasks within a segment and are held accountable for measurable results. Frequently, separate teams are formed for innovation, planning and preparation, and execution of tasks. The operational teams are confronted with an elaborately modelled and automized production method. The technological governance of the work process results in a situation in which people have little influence over their own actions and in which they face considerably increased expectations with respect to their work pace and output. Teams are expected to continuously contribute to the enhancement of a more efficient production method.

The essence of business process redesign is that a loose collection of ideas and techniques on corporate strategy, product innovation, quality requirements, technology, management and organization are combined. Business process redesign is mainly based on experiences in the service sector (Davenport, 1993). In the application of redesign in the service sector, a distinction is often made between a front office for a direct interaction with the customer, and a back office for administrative processing. In the front office, the team members' task is to quickly and adequately inform the customer. Information technology enables decision-making while the customer is served. In the back office all activities which are suitable for automization and an increase in productivity are subsumed.

The organization of the redesign process is primarily a task of the management. The CEO serves as a pioneer. He contributes to the motivation for change and is responsible for the designation of goals and the allocation of means. Teams of line managers are responsible for the design of subprocesses. A steering committee of managers develop the strategy for the change process and coordinate the course of events. Consultants support the entire process with techniques and resources (Harrison & Pratt, 1993).

In the design methodology a number of stages are distinguished. Teams of managers analyse business processes and circumscribe performance criteria for the redesign. With the consultant's assistance, a perspective is developed on the organization of business

processes. The analysis of the teams are combined into a blueprint for the organization form, the appropriate technological architecture and information systems. The new organization form is implemented by the line management. Communication about the importance of the new design is seen as a success factor for change. Pilot projects and training programs could illustrate the significance of change. Finally, team-based activities are build in to the entire organization in order to replace conventional management methods (Harrison & Pratt, 1993; Guha, Kettinger & Tang, 1993).

Redesign: A Comparison

Both business process redesign and sociotechnical redesign facilitate the breach with the paradigm of maximal subdivision of tasks. The new organization paradigm that gathers more and more support is founded on team-based work. Both approaches pay attention to the strategic objectives of the organization and the relation between organization and technology. More than business process redesign, sociotechnical redesign has an eye for the constitution of jobs and the task structure within teams. The sociotechnical redesign endeavours to class operational, steering and regulating tasks within self-managing teams. Business process redesign, in practice, mainly approaches the horizontal subdivision of labor. The vertical subdivision of labor is disregarded when innovation, planning, and preparation is placed in separate teams. Business process redesign regularly has negative effects on the quality of work life. Working pressure increases, a social pressure arises to make suggestions for efficiency improvements, and reward systems have a one-sided emphasis on results. When steering and regulating tasks are not delegated to teams it is difficult to influence their own work situation, and thus tension may ensue from the ability and the need to regulate.

There is a fundamental difference between both approaches in the practice of redesign. Business process redesign does indeed strive to implement teamwork, but focuses on the redundancy of parts. The redundancy of parts implies task segmentation such that the remaining simple task can be performed by low-skilled workers who are easily replaced when necessary. In business process redesign operational tasks are combined to produce a product or service for the customer. By failing to integrate the steering and regulating tasks with the operational tasks, steering and control of the production process takes place outside of the teams. The operational teams, then, become parts of the transformation process which can be urged to increase production. At the same time, parts of the production process are separated and allocated to suppliers. Flexibility is achieved by setting higher demands on suppliers. Sociotechnical redesign focuses on the realization of a redundancy of functions. The central point is that the adaptability and decisiveness of the organization is based on the variety of abilities of people to learn, to adjust and to develop. Organizations based on a redundancy of functions consist of a number of teams performing, where possible, complete tasks, for which they hold the authority to regulate and steer operations. In this way, autonomy, self-regulation, localized decision-making and learning are

facilitated. The organization, consequently, has a built in capability to actively adjust to environmental changes.

Limits to Redesign

Many projects aimed at a redesign of organizations do not yield the desired outcomes. It is estimated that 50 to 70% of the redesign projects in the United States fail (Davenport, 1993). In The Netherlands experiences with reorganization directed at the redesign of tasks and business processes have also been less favourable (Marx, 1987). An explanation for the failure of many fundamental organizational changes can be found in the approach of the change process. In this section, an explanation will be given from a perspective of the change processes. Research data is presented from a recently conducted research project regarding the impediments to change.

Designing and Developing

The design approach considers organizations to be systems in which ad hoc problem solving and adjustment have gradually lead to a source of shortcomings. The problems of the organization are believed to be known and the approach is solution oriented. The emphasis lies on the designing of a new organization, and prevailing designing rules and methods are employed; for instance, business process redesign. The design starts with the designation of abstract objectives, and particular attention is paid to the desired output of the organization, the formal transformation process and the related information process. The change process is singular and linear, there are clear-cut targets and the number of alternatives is restricted. If the new organization is implemented and a stable final situation is attained, the change process is concluded. Changes are often initiated, coordinated and controlled by the top of the organization. The decision making process is highly structured and formalized. There is hardly any opportunity for a discussion of possible differences in opinion, and if they arise, they are denied or disregarded. The approach is normally supported by an consultant who, as the expert, primarily focuses on the design of the new technology and work organization. There is a strict separation between the design of the new organization and the implementation of it. The implementation is aimed at creating acceptance for the new organization afterwards and finding solutions for different forms of resistance to change during the implementation process. Participation during the design or implementation phase is problematic, because a distance has been created from the existing procedures in the organization. The problems of the design approach lie in the management's limited steering possibilities, an insufficient consideration of the cultural and structural impediments, and the rise of resistance to change with line managers and other members of the organization. Presently, it is argued that resistance could be averted by propagating a vision, elaborate communication about the changes, and the installation of a project organization in which line managers participate.

The develop-approach does not consider the organization to be a source of shortcomings, but a reverberation of knowledge, insight and experience which should

be optimally utilized. In the change process of the organization the problems and shortcomings are analysed first. The organization's ability to change is enhanced by involving members of the organization in the problem analysis and teaching them gradually to shape changes themselves. During the process, attention is given to the organization's culture and capability of the people to solve problems. The decision-making process concentrates on attaining shared objectives by consultation and negotiation. There is a phased and progressive change in which ideas from the basis of the organization play an important role. The change process is characterized by rough planning, a great extent of flexibility, and opportunities for intervening adjustments. There is no completed organization model which shapes the change process in advance. Work procedures and methods are dependent on the advancements in the process. Problem analysis, the designation of objectives, and change smoothly shade off in one another and progress iteratively. Members of the organization are involved in all phases of the process. Participation is very possible, because the starting-point is the existing organization, objectives are established gradually and deliberation and adjustment are facilitated. The classical organization development has always underscored cultural change. By participation of all organization members a change in behavior and an enhancement of the self-learning ability of all members is attempted. In the contemporary develop-approach, a joint problem-diagnosis and a joint search for solutions still plays a central role. Much consideration is given to group dynamics during the change process. Improvements are realized step by step. Unlike the classical develop-approach, the contemporary variant does emphatically address structural changes. It is guided by the concept of team-based work on a product or service. The outcome of the development process is, however, not determined in advance. A problem with the develop-approach is that it is difficult to achieve fundamental. Furthermore, the approach demands a lot of time (see Figure 1).

Figure 1 Design approach and development approach

Design approach	**Development approach**
- Organization as source of shortcomings	- Organization as source of experience
- New organization design as blueprint	- Improvements based on the existing organization
- Top-down	- Utilization of knowledge and insight of personnel
- Solution-oriented	- Problem-oriented
- Stable end situation	- Improving ability to change
- Single linear process	- Continuous and iterative process
- Techno-economical process rationality	- Social-political process rationality
- Strict norms and planning	- Regard for ability to change
- Abstract models ö concrete working methods	- Concrete working methods ö abstract models
- Emphasis on expert knowledge	- Application of operational knowledge
- Separation of design and implementation	- Smooth transition between phases

The design-approach seems suitable when the problem is known, not too complex, and a solution is within reach. The approach is mandatory when the organization is in a

crisis and rapid action is needed. Also, when no reasonable degree of consensus about the nature of the proposed change can be reached, or a sizable reduction in personnel is expected, a design-approach seems more appropriate. The develop-approach appears more suitable with complex issues where the solution is not directly evident. The develop-approach is preferable when improvements and innovations can be effectuated gradually and incrementally, and value is set on an enhancement of the organization's ability to innovate (Boonstra, 1991). Both approaches could, if necessary, be alternated during the change process. The management steers on the main lines, but further completion is done via a develop-approach. As the change advances the concept of self-steering teams, the approach will include more elements of development. Search-conferences, participative design, and democratic dialogue are methods which are used in the contemporary organization-development approach.

In the redesign tradition, the redesign process shows virtually all signs of a design-approach. The design, in which abstract models are used to come to a blueprint for the new organization, is solution-oriented. The management of change is in the hands of the top management and the consultants. A top-down expert-driven sociotechnical redesign also corresponds to this design-approach.

By now, experiences with sociotechnical redesign have shown that a top-down employed design strategy does not agree with the sociotechnical principles of self-organization. The expert approach does not properly induce a learning process in which problems of the organization are analyzed and solutions are examined. The design-approach, therefore, does hardly contribute to the enhancement of the ability to change on lower levels in the organization. In the design-approach, cultural and political aspects are easily left outside of consideration. There is a great danger that collective norms and values will not develop, power-structures are not influenced, and that, therefore, fundamental change can not be achieved.

Impediments to Fundamental Changes

In the preceding section is argued that a design-oriented approach can be a reason for the limited success of business process redesign. In this section, research data regarding the impeding factors to fundamental change processes is presented. The research is part of a larger research programme studying impediments to organizational change and power dynamics in change processes. The question addressed in this research is: which impeding and promoting factors to organizational changes are found in social and organizational scientific theories and research, and to what extent can empirical support for these factors be found in the organizational change processes. After the research methods are outlined, impediments originating from, subsequently, the way decision-making is organized, the limited organizational learning ability, the organization culture, the existing balance of power and the management process of change will be discussed.

Research Methods

Based on a literary study, impediments to organizational change have been categorized. Aided by an automized database of research literature, over 400 books and articles on organizational psychology, organizational sociology and organizational sciences were initially selected. A pilot study lead to more that 120 usable publications. These were analysed on impeding and promoting factors to change.

To come to clear descriptions, these factors were made operational. In the empirical research was then verified that factors do, in fact, play an important role with change. In this research, three methods were used for the collection of data:

1. Forty-eight case studies were conducted and analysed by the research group with respect to the factors. Each researcher marked the factors that were found in the cases independently. When there appeared to be differences in markings between the two researchers, the cases were reanalysed jointly in order to disclose the reason for these differences and to come to a shared final rating. This part of the research generated a list with the most and least distinguished factors in ordered rank.
2. By means of action-research a single in-depth case study was conducted. It concerned an organization in the financial service sector. The organization was involved in a merger and, influenced by changing market demands, a transformation of the organization form and the implementation of new technology. The in-depth case is based on: (a) interviews with key persons on the more and less positive aspects with respect to the progression of the changes. (b) meetings of all managers in which barriers of change were analysed and discussed. (c) questionnaire-research with all 900 members of the company. In this questionnaire, by means of two open-ended questions, the members were asked to name the success-prerequisites and the impediments to change. The response to the questionnaire was 87%. All answers to the open-ended questions have been processed literally and categorized with respect to the factors. When there appeared to be differences in markings between the two researchers, the cases were reanalysed jointly, in order to disclose the reason for these differences and to come to a shared final rating.
3. Ten interviews were held with key persons in different organizations. They were all involved in change processes by virtue of their profession. It concerned semi-structured interviews with respect to the items.. The interviews were recorded and processed afterwards by two researchers. This part of the research lead to a third list with the ranking of factors.

The lists with the ranked factors of the three parts of the research project showed sufficient resemblance. On account of this resemblance the lists were added and averaged into a ranked list of the factors influential to change processes. This list provides an initial illustration of the factual impediments to changes in organizations. To enable an interpretation of the research data, social-scientific models were utilized to categorize the factors into five barriers to change. The most important barriers are related to the way decision-making is organized, the structural constraints to

organizational learning, the organization culture and style of management, the power and political processes directed at the retainment of positions, and the management of the change process.

The decision making process

The most apparent barrier contributing to the success of changes is related to the way decision-making is organized with respect to organizational innovations (Swan & Clark, 1992). In the decision-making process a number of phases are distinguished: (1) the designation of objectives (2) the search for alternatives, (3) the comparison and evaluation of alternatives, (4) the decision-making, (5) the implementation of decisions and (6) the follow up and evaluation. These six phases of the decision-making process are closely related to each other (Harrison, 1987).

The respondents in the research attached much value to the participation of the members of the organization in the problem-analysis, the designation of the objectives of change, and the choices for innovation. Making a clear and informed decision for innovation and the communication thereof are essential. The research shows that the way decision-making is organized appears to be an important success factors. The decision-making items are presented in the table 1.

Tabel 1 Success factors for change in the decision making process

Open communication to exchange ideas, information, data and results
The presence of clear, explicit change objectives
Commitment that enhances insight and leads to active participation with the implementation
Facilitating problem-analysis and application of ideas of the operating personnel
General and open consultation about solutions and alternatives
Regard for knowledge and the way the problem is experienced by organizational members
Localized problem solving and co-operation in the finding of solutions

It is apparent that an in-depth problem analysis will take much time and effort. The question arises whether this investment is really necessary when there is a clear idea of the problems and the possible solutions among the members of the design-team. From the perspective of business process redesign, it is considered obvious that, for the design of the future organization, it is not necessary to have an in-depth diagnosis with all the members involved. Experiences with the develop-approach show that participation of all the members of the organization in the decision-making process can contribute positively to the change process (French & Bell, 1990; Mohrman & Cummings, 1989, Beer, 1988). Broad participation in the problem analysis and the decision-making process yields better solutions. The reasons for this are that the problem is better analysed, latent knowledge, experience and ideas for the solution of the problem surface, alternatives are more clearly considered and better assessed on their consequences, that the choice for a particular solution is more easily accepted, and the decision is implemented with more commitment. Through participation in the decision-making phase, conflicts of interest and different perspectives are discovered at

an earlier stage, and notice is given to the interests and objectives of coalitions in order to reach consensus on the changes more easily. Furthermore, by gaining experience with problem-solving, change processes, and organizational development, organization members gradually learn to shape changes and react flexibly and independently to changing circumstances

A top-down approach of business process redesign runs the risk of providing insufficient insight into the real problems of the organization caused by a limited diagnosis. Furthermore, incomplete understanding of the problems is developed, solutions are insufficiently contemplated, and insufficient support for change is realized. The result may be that the proposed solutions are ultimately not implemented.

The capacity for organizational learning

Judging from the research, there is an important barrier concerning the organizational structure which impede the learning ability of organizations. An organization as a whole can learn when the members collectively examine in what way the organization could be improved. Organizational learning takes place when the organization is continuously supplied with adequate information from the environment, and information on product or service quality, the organization of work and the execution of tasks is shared throughout the organization (Mohrman & Cummings, 1989). Organizational learning takes place in two ways: single-loop learning and double-loop learning. Single-loop learning concerns the improvement of the execution of tasks. Double-loop learning is directed at the configuration of the organization and the instruments that are employed to optimally execute tasks and to attain strategic objectives (Argyris & Sch`n, 1978).

The research has shown that the existing organization impedes the organizational ability to learn and to innovate (See tabel 2).

Tabel 2 Impeding factors to change from a perspective of organizational learning

Differentiation and overly detailed regulations and procedures as co-ordination mechanisms
A functional organization form inhibits the conception of the organization as a whole
Absence of the opportunity to examine, evaluate and improve actions
Shortage of localized steer and regulatory possibilities suppresses initiative and motivation
Insufficient knowledge of the results of actions because of scattered information
Existing structures impede the development of a long-term vision

In a functionally-structured organization, the division of labor inhibits the division's and teams' ability to learn, because they do not possess all the information necessary to solve problems. The subdivision of labor makes it difficult to see and analyze the entire problem. As a result, solutions are made on an ad hoc basis and are directed at the realization of sub-tasks of a single department. Within departments, a short-term orientation is developed, because of the subdivision of labor and short-cycled tasks. The fragmented problem analysis usually leads to solutions according to approved

measures, procedures and patterns of expertise, such as a further subdivision of tasks and the tightening up of standardization and control. In the past, many organizations have been successful in pursuing organizational efficiency by work segmentation and control. For this reason it is difficult to handle other principles of organization. The result of functionally-segmented labor is that people within the organization do not see the entire production process and can hardly imagine methods of work which question the existing segmentation. If people have worked on sub-tasks individually for years, a discussion and consideration of team-based work requires a whole new perspective on work.

Business process redesign aims to break with the horizontal segmentation of labor by forming operational teams where all tasks related to a customer or product are placed. The teams are expected to contribute continuously to the improvement of their performance. If steering and regulating tasks are not integrated in the team-work, the learning ability is restricted to that of a single-loop learning process. Fundamental learning processes, therefore, do not get started in the new organization. This is very unfortunate, because particularly in the future a lot will be demanded of the teams' steering and regulating capacity. The change process itself does not contribute to the enhancement of the organizational learning capacity either, because, based on a blueprint for the future organization, changes are implemented top-down.

Organization Culture

Behavior in organizations is closely related to the norms and values. The norms and values originate from the socialization process, education and conventions of the organization. The norms and values limit people's choice of behavioral alternatives and, hence, people's ability to change. Managers in particular have difficulties with changes in the norms and values, because they have come to think of their position and behavior as suitable. What matters in the change process is to make members aware of the relation between norms and values and their behavior by means of a new socialization process. Cultural change is usually seen as a fundamental prerequisite for substantial changes in the external adaption and the internal integration of organizations (Schein, 1989; Watson, 1968; Kubre, 1992).

What appears from the research is that cultural aspects and management's behavior are closely related and can yield serious impediments to change. Realizing the necessity of the indispensability of external readjustment contributes to the ability to change. A shared vision on objectives of the organization and collective norms and values are prerequisites to the success of change. The management plays an important role in the generation of an external orientation of the organization and in the internal correlation by both what they communicate and how they behave (See table 3).

Table 3 Impeding factors to change related to organization culture

The comprehension that customers and clients set higher standards for products and services
The managers as bearers and diffusers of the necessary changes
A clear and shared vision on the organization's strategy and the objectives
A pioneering role and exemplary conduct of top-management-
Changes in the style of management through specific support and training
Willingness to co-operate and a collective responsibility for results
Breaking through the cultural differences between departments
An external orientation and a shared knowledge of environmental developments

The presence of shared norms and values on the necessity for change, the willingness to co-operate and a clear understanding of direction of change are important for a successful change process. This usually means that a radical cultural change is needed. Resistance to cultural changes can primarily be expected with the management. Managers, then, are the cultural defenders because the existing culture serves as an instrument to give meaning to incidents and events in a way consistent with their conception of the work organization, the work situation, and the people employed. Understanding of the organization's environmental changes could help to broaden the perspective, to transcend a strong internal orientation, and to develop an external orientation. Based on the acquired understanding of the market and the product, the organization's objectives and mission could be developed and specified so that a shared value-system can emanate from the organization. The top management's role is to disseminate new norms and values concerning the manners of behavior, desired and undesired actions, communication, important activities and events, the way operations should be conducted, and the style of management. The development of a common language and frame of reference, reiteration of the message, just as frequent model-behavior of managers are essential for the development of a new pattern of norms and values.

In business process redesign it appears to be necessary to pay a lot of attention to cultural change during the implementation. With the implementation, procedures and patterns of behavior are focused on and in management trainings the appropriate behavior should be learned. The development of the manager's confidence regarding the capacities of employees and the actual delegation of responsibility and authority to lower levels in the hierarchy is not considered in the redesign process. The develop- approach, by virtue of its broad diagnosis, highlights cultural differences. Consequently, the opportunity to discuss norms and values is advanced. During the development process, employees and managers work together in teams on the new organization form. Owing to this, people learn to work in teams, mutual confidence in each other's capacities is enhanced, new norms and values are developed, and team members can attempt new patterns of behavior.

Power dynamics

Organizations are networks of interdependent groups. The relations they have can be characterized by co-operation and competition. People are dependent on each other and have their own interests. Organizational processes are influenced by mutual harmonization of parts of the system on the one hand, and by the way power is structured and used, on the other. In organizations, the distribution of power is characterized by stability. This stability contradicts the dynamics necessary for organizational change. In change processes, the work organization and the existing balance of power are brought up for discussion. The forces in the organization to preserve the existing balance can hinder the change process. In the process, different coalitions will direct their attention to securing their interests, objectives, and power positions (Kanter, 1993). It is, therefore, imperative to consider the power processes during change processes (Pfeffer, 1992). Usually a pressure to change arises from the environment. This pressure highlights questions about the stability and the institutionalization of power. Stability results from a commitment to decisions concerning the completion of the organization's strategy, the structuring of the organization, and the distribution of power made in the past. The existing procedures concerning tasks and the distribution of power are believed to be reality. In addition, the owners of power have the opportunity to expand their power by supporting certain actions, appointing managers and other employees, and gathering resources with which they can accumulate even more power with which they can influence decision-making in the future. As the research suggests, power processes play an important role during change processes especially where disturbing elements of change and the position of managers are concerned (See table 4).

Table 4 Impeding factors to change form a perspective on power dynamics

Contest of competence between departments concerning the security of positions
Insufficient confidence in the appointment of new managers
Discord with the management with respect to the organization's strategy
Differences in status, power, and influence between departments
Discord with coalitions about goals and the approach to the change process
One-sided concentration on the preservation of status and power of managers
Insufficient concern for the social and political feasibility of the proposed changes

In functionally structured organizations, interests of the coalitions can differ considerably. The detailed subdivision of tasks often results in competition, misunderstandings, and conflicts between departments because people in different departments have a limited understanding of what goes on in the organization. Different patterns of behavior and expectations develop while the specialized and confined operations do not encourage the co-operation of the organization's members. In fundamental changes, these contrasts surface significantly because the status-quo is brought up for discussion, and it becomes clear that there is barely any joint objective or a common corporate culture.

Another impediment to the political system of organizations is that the top management often neglects to translate general objectives into concrete measures. The middle management, uncertain as they are about their new position in the organization, are enabled to pursue their own objectives and may hinder concrete changes. If the line management were allowed to appoint managers themselves, then loyal people and those with similar ideas about employees and the organization would be selected more often. In the middle levels of the organization, groups or coalitions, which do not really contribute to fundamental changes in the culture and the organization, are likely to develop. The management usually shows resistance to fundamental changes. The existence of power processes requires that attention is paid to conflicting objectives, needs, and interests (Mohrman & Cummings, 1989; Boonstra, 1995). The power aspects are related to questions concerning the organization of decision-making, the allocation of resources, and the positioning of managers. In business process redesign, the emphasis is on technical and economical process-rationality where decision-making and the allocation of resources comes from the top management. This means that power processes are not explicitly considered, and during the implementation of the new organization form they can develop into impediments to the change process. Enabling the middle management to take charge of the factual change process can impede the change process because of their tendency to reduce uncertainty and secure their position. For change processes to succeed, consideration of the socio-political rationality of the process is mandatory. Attention must be paid to different coalitions, their interests and the possibilities to exert their power. A full understanding of the power processes just as the ability to manage them is imperative. With respect to the power and political processes, an important prerequisite for a successful change process is that in the earliest stage possible the largest support possible should be generated. Because business process redesign involves the higher management in particular, the approach generates an important impediment to the successful ending of an organizational change process.

Managing the process of change

Organizational change deals with concretizing and realizing a new organization form. In the above section, it is argued that during the change process consideration must be given to the structure, the culture, and the power relations in the organization, and that participation of the members of the organization contributes to a successful change. There is no standard approach for change processes. Each and every change process has its own characteristics. Therefore, a reflection of the change objectives and the way the change process can be approached is required: managing the process of change. In change processes, interventions are made to ensure that the change process progresses smoothly. Because change processes often develop unpredictably, it is required to monitor the course of events and to intervene when necessary: by regulating and correcting the change process (Beer, Eisenstat & Spector, 1990).

Judging from the research, good management of the change process is essential to the success of the process. Clearness about the objectives and the approach to change, and the evaluation and adjustment of the process are the main subjects (See table 5).

Table 5 Success factors in managing the process of change

Clearly communicated frameworks and objectives for the change process
Availability of clear information about the procedures and the developments
Availability of evaluation instruments with respect to time, money, and means
Agreement about the organization of the change process
Sensitivity for signals of resistance and power processes
Regular alignment of activities
Feedback of information and achievements to further learning
Regular evaluation and reconsideration of goals and working procedures
Implementation and anchoring of the proposed changes

A proper Information flow during the process is essential for a good development of the changes. This means that those steering and attending the change process must facilitate a proper exchange of information about the developments. Resistance to change does not solely stem from the attempt to keep the situation stable and secure, but originates principally from the lack of clearness about the change objectives and the approach to change process (Davenport, 1993). Communication with the members of the organization during the change process is of essential importance for the reduction of uncertainty, and the visualization of advancements in the process (Beer, Eisenstat & Spector, 1990). It is meaningful to thoroughly premeditate the approach to the change process in advance, and make an inventory of the possibilities and impediments to the change process. This concerns the existing views on change, interests, power relations, the support for change, and impediments within the organization's structure, culture and style of management. Subsequently, the most suitable strategy for the change process can be contemplated. In general, it is argued that with drastic changes only interventions based on commitment are really suitable; for instance, inspiring, consulting, informing, and rational convincing (Falbe & Yukl, 1992). Other methods which can be used are: negotiation, clarification of the consequences of existing behavior, teaching new behavior, and the enhancement of people's understanding with the use of theories and models (Boonstra, 1991).

In the past, change processes have been thought of as linear. In the linear approach, attempts are made to manage the process by means of planning and control. In advance changes are maximally specified and meticulously programmed in systematic phases of implementation. The execution of the change process is left to the management and consultants (Guha, Kettinger & teng, 1993; Harrison & Pratt, 1993). This approach mirrors the traditional norms and values of the organization with respect to the possibility of reducing uncertainty by standardization, specification and control. The danger of this top-down approach is that only the formal structure is altered, but old methods of working and conventions persist in practice. Furthermore, insufficient

possibilities exist to gradually adjust the change objectives or the approach to the change process. Especially with complex changes, the linear approach of steering will rarely be effective (Mohrman & Cummings, 1989; Beer, 1988). The linear approach does not yield a learning process in which changes are positively faced and attempts are made to develop a new organization. Fundamental changes are not realized by memos, manuals, formal instruction, or plans specifying which steps to take. With fundamental changes it is necessary that members of the organization develop new knowledge, insight, and experience with which they can design changes themselves. Preferably, members of self-steering teams are enabled to assess, alter, and implement the organizational form themselves. This demands an expansion of the teams's ability to solve problems, team-building activities, and leadership which encourages and facilitates learning. By means of the evaluation of the change process, teams can develop the understanding necessary to accomplish improvements and make changes. The steering and regulation of changes lies within the teams; there is a kind of intrinsic management.

Business process redesign tends to underestimate the importance of learning processes in organizations. The design-approach endeavours to accomplish fundamental changes by means of a linear expert approach. This method may work when innovations are lucid and transparent, extreme specification is possible, and the organization's members understand and embrace the proposed changes. This is, however, hardly ever the case with fundamental changes. A similar approach is therefore very risky for a successful completion of the change process, and certainly does not contribute to the enhancement of the organization's ability to change.

Improving the ability of organizational learning: Designing and Developing

Reconsidering the results of the research, competence and self-learning appear to be crucial elements of major organizational change. By now, there seems to be a dilemma when changing organizations fundamentally. The top-down redesign approach offers possibilities for radically redesigning the organization and drastic and revolutionary change. Business process redesign claims to achieve dramatic performance improvements by using a design approach with linear steering from the top, tasks forces of management and contributions of business consultants. At the same time, many projects aimed at redesign of organizations do not yield the desired outcomes. With the top down redesign approach it becomes difficult to contribute to the realization of self-managing teams and the enhancement of the organizational learning ability. A participative development approach can initiate learning processes, but to be successful, common values, willingness to cooperate, a clear vision on the business processes and clarity as to the reasons for changes are necessary. Functionally structured organizations with a strong division of labor cannot meet these conditions for learning and development. These organizations are unable to follow development and learning processes independently because the learning approach is contrary to the methods that have been used for years to analyze and solve problems. It often appears

to be difficult to break with traditionally shaped organizations when only a development strategy is used. This dilemma can possibly be solved by integrating both approaches during the change process (Boonstra, 1991; Shani & Sena, 1994). The management steers on the main lines, but further completion is done via a development approach. As the change advances the concept of self-steering teams, the approach will include more elements of development. Search-conferences, participative design, and democratic dialogue are methods which are used in the contemporary development approach (Mohrman & Cummings, 1989; Axelrod, 1992; Weisbord, 1992).

To start the change process, basic assumptions for innovation and change can be formulated in work conferences and discussed between top management, line management, employees and members of the work council. After sanctioning the basic assumptions by top management, the analysis of the organization can be executed by a facilitating team with the co-operation of all the members involved. Line managers can participate in work conferences for diagnosing problems in leadership and business processes and employees can get involved by questionnaires and group discussions to diagnose problems in the work organization, and to investigate the barriers for change. During the diagnoses the knowledge of an expert is often necessary to ensure an integral diagnosis and to prohibit signalized problems from being immediately solved according to the existing principles, patterns and procedures. The interpretation of data can take place in a participative learning process, but a contribution of a change agent is necessary to establish procedures, guide meetings and discussions, and to clarify the relationships in the data. After the diagnosis, it often appears to be difficult to develop a new work organization in co-operation with all the organization members, because there is often a divided culture, distrust, different objectives, and conflicts of interest. The division of labor has alienated the organization's members from their product, the market, and the mission of the organization, and they do not see the entire transformation process. New organization forms are difficult to envision, and the willingness to jointly develop this understanding is often insufficiently present. A new set of cultural values is needed to encourage cooperation and teamwork. Also, new visions on business processes and work organization have to be developed. To realize these objectives a series of conferences can be executed to examine issues about strategy, organization, culture and leadership form a variety of viewpoints, to learn from each other and to develop common ground for change, that is, what ideas and values do we share to fulfill fundamental organizational change. During the conferences the participants can analyze the data from diagnoses from a variety of perspectives and develop new visions on strategy, culture and business processes. Introspection on leadership styles can lead to intense discussions about the hindrances to fundamental change. As a result of the conferences, energy is directed towards resolving the issues at hand. Based on the results of the conferences design teams of employees and supervisors can discuss and develop new constellations of work organization and teamwork. For the implementation, conferences can be conducted for each of the newly identified organizational departments and for all the newly formed teams. During these conferences the task of the teams can be clarified for all team members and the

structure of the department can be defined. Each team defines its goals, develops its team structure, identifies a set of behaviors and values the team will abide by, and establishes a line for implementation.

Concluding remarks

Impediments to major organizational change are seldom related to the technological system. Research indicates five barriers to change: a linear and formal process of decision making on redesign; the existing division of labor and poor inter-functional teamwork; the existing culture, norms and values limiting people's ability to change; the existing power configuration; top-down management of the change process and poor vertical communication. Successful change needs a process of learning to analyze market demands and organizational problems and to design information systems, business processes and work organization by self-designing teams and dedicated management of the change process.

Business process redesign tends to underestimate the importance of learning processes in organizations. The top-down design approach endeavours to accomplish fundamental changes by means of a linear top-down approach. This method may work when innovations are lucid and transparent, extreme specification is possible, and the organization's members understand and embrace the proposed changes. This is, however, hardly ever the case with fundamental changes. A top-down approach is therefore very risky for a successful completion of the change process, and certainly does not contribute to the enhancement of the organization's ability to change. The participative development approach initiates and stimulates these learning processes, but at the same time it interferes with the change process because people find it difficult to be objective towards the existing situation and to form an idea of a complete new situation. This dilemma between designing and developing organizations can be solved by alternating between a top-down formulation of goals and coordination of the change process, the use of conferences and bottom-up self-designing activities in which organizational members manage the change process themselves.

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