

**INNOVATION, UNCERTAINTY AND
MICRO-POLITICS IN ORGANIZATIONS**

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Summary

The paper is concerned with technical and organizational innovation in work organizations. It employs an 'internal politics' approach based on two central concepts: 'zones of uncertainty' and 'political arenas'. Control over four zones of uncertainty (problem definition, choice of means, process integration, integration into the organization) is regarded as a source of power in organizational micro-politics. Three major political arenas are distinguished: the relation between top and middle management, relations between factions of the middle management and the relation between management and workers. Empirical analysis on the basis of case studies of the introduction of new technologies into various firms in Austria yields the following main results: The absorption of uncertainty inherent to such innovation processes is influenced by organizational as well as environmental structures producing typical patterns of micro-politics. Innovation processes representing a 'project of consent' can be differentiated from the type of 'hegemonic compromise' and 'authoritarian enforcement'. Relations between these patterns and the way the organization and control of work is restructured can be identified.

Zusammenfassung

Der Beitrag befaßt sich mit technisch-organisatorischer Innovation in Unternehmen. Der theoretische Bezugsrahmen stellt auf interne Politikprozesse ab und stützt sich auf zwei zentrale Konzepte: "Ungewissheitszonen" und "Politikarenen". Die Kontrolle über vier Ungewissheitszonen (Problemdefinition, Mittelwahl, Prozeßintegration und Integration in die Gesamtorganisation) wird als Machtressource in mikropolitischen Prozessen betrachtet. Drei hauptsächliche Politikarenen - die Beziehung zwischen Spitzen- und mittlerem Management, die Beziehungen innerhalb des mittleren Managements und die Beziehung zwischen Management und Beschäftigten - werden unterschieden. Die empirische Untersuchung in Form von Fallstudien der Einführung neuer Technologien in österreichische Betriebe führt zu folgendem Hauptergebnis: Die Absorption der Innovationsprozessen innewohnenden Ungewißheit ist von strukturellen Bedingungen des Unternehmens und seiner Umweltbeziehung beeinflusst, unter denen sich typische Muster von Mikropolitik herausbilden. Neben Innovationsprozessen vom Charakter eines 'Konsensprojekts' lassen sich der Typ eines 'hegemonialen Kompromisses' und der einer 'autoritären Durchsetzung' unterscheiden. Darüberhinaus lassen sich Beziehungen zur Art und Weise der Reorganisation und Kontrolle der Arbeitsprozesse aufweisen.

Introduction

Traditional paradigms and perspectives have experienced both a considerable shift in industrial sociology and new accentuations in related disciplines concerned with the study of organizations. In the sociology and theory of organizations and in management science the concept of 'micro-politics' has gained new weight and theoretical significance in the attempt to integrate the action and system perspective (c.f. Küpper/Ortmann 1988). On the other hand, structuralist and determinist perspectives have been challenged in industrial sociology. Contradictory assessments of trends in the organization of work (c.f. Kern/Schumann 1984; Benz-Overhage et al. 1982; Shaiken 1980, Badham/Mathews 1989) have revealed the problematics of an adherence to a strict control paradigm and deskilling thesis based on an economic logic.

It has to be regarded as the central moment of the theoretical reorientation in industrial sociology that the political nature of actions within companies has entered the field of vision as a dimension in its own right. Some major lines in the emergence of the new perspective are:

- The rejection of a naive rational conception of the firm in favour of a model which recognizes contradictory requirements and a selective way of coping with them through the actions of a heterogeneous totality of actors. Uncertainty in decision-making, limited rationality, impossibility of optimal strategies and heterogeneity of interests turn out to be fundamental conditions of action (see Berger 1984, Hyman 1987, Streeck 1987, Weltz/Lullies 1983).
- The acknowledgement of a relative indeterminateness of the organization of labour processes, a relative autonomy from general characteristics of a society, directs the view on the emergence of different forms of organizing work (see Lutz 1987 Littler 1982, Sydow 1989).

- The turn to a micro-politics oriented analysis of company strategies and changes in the structure of work is expressed in focusing on power relations and political processes in a perspective acknowledging the importance of both conflict and consent (see Naschold 1985, Jürgens 1983, Burawoy 1979, Wilkinson 1983).

The premises just outlined also underly the approach and analysis which will be presented in this paper.

1. A micro-political approach to the analysis of computerization and reorganization on the firm-level

The approach which will be employed here to analyze innovation processes occurring in the form of introducing new technologies into various firms, takes up ideas from Crozier/Friedberg's (1979) strategic analysis of organizations and rests on two main concepts: "zones of uncertainty" and "political arenas". It is assumed that such innovation processes contain distinct zones of uncertainty which play a pivotal role for interest-based actions (c.f. Schienstock 1975). The 'occupation' of zones of uncertainty by individual or collective actors in an organization requires sufficient resources of power and at the same time opens up chances to influence the innovation process. The following zones of uncertainty are distinguished:

- *Uncertainty of problem definition*: It is uncertain who is able to define what at what time as a problem, to enforce the definition within the organization and to create a demand for innovation on the basis of this.
- *Uncertainty of means*: Which technical means, procedures and conceptions of reorganization are accepted as adequate problem solutions is largely indetermined.
- *Uncertainty of process integration*: The forms of cooperation, coordination and accomodation in the process of restructuring

itself are not predetermined but have to be developed before and in the course of the process.

- *Uncertainty of integration into the organization:* The adaptation of process requirements with those of the organization as a whole as well as the integration of the process results into the existing structure are uncertain.

The second key element of the analytic conception is represented by the differentiation of micro-political arenas. Three fundamental arenas are distinguished:

- *The relation between top and middle management:* The central object of this field of micro-politics is the control of innovation processes by the top of the organization. Instruments like corporate strategies, guidelines and target parameters are usually to a varying extent, open to interpretation, require refinement and are often negotiated between top and middle management. In this political arena the range of discretion which members of the middle management are able to exercise in the process of restructuring is determined.
- *The relation between different groups within the middle management:* Functional differentiation and division of labour lead to the emergence of different rationalities and logics of action within the management. They constitute a latent structure of conflict and consent which can reveal itself in computerization and reorganization projects in various forms of micro-political processes.
- *The relation between management and workers:* Although decisions over the restructuring of firms lie in the hands of owners and managers, workers and their collective representations can also be actors with a significant influence on such projects. Autonomous problem definitions are able to induce them and specialized knowledge and experience are to a variable extent required for the development of adequate

problem solutions. On the other hand, employees on the operating level can acquire a key position due to their potential refusal of cooperation and agreement with particular forms of reorganization. Therefore the influence in the design of labour processes and the conditions of cooperation with the management are the central topics in this arena.

This approach is employed in analyzing the introduction of information technologies (IT) in areas of white collar work. The empirical basis are fifteen case studies of computerization undertaken in Austrian firms from four different industries. The innovation processes studied comprise the introduction of IT in the form of computer aided design (CAD) and other functions in the pre-production area of industrial plants; office automation-, data base- and management information systems in banks; integrated ordering, distribution and stock control systems in retail firms, and both front- and back office computer systems in hotels. The firms also show considerable variation as regards for instance size, regional location, economic position and form of ownership. Information was gathered on the basis of structured interviews with representatives from different hierarchical levels by repeated visits over a period of three years.

In the following section we focus on each of the three political arenas separately. A typology of political processes is developed out of the empirical material. The different types result from an analysis of the modes in which organizational actors and groups of actors cope with as well as utilize the various zones of uncertainty. The rationale behind the construction of these typologies is more oriented towards making visible the differences which constitute the range of empirical cases than to dwell on transitions and minor deviations in particular cases.

In a second part the perspective is directed towards the discerning of typical micropolitical structures of innovation processes as a whole. In this endeavour we also proceed to look at the substantial change in the organisation of work and its relation with political characteristics of the innovation process as well

as with structural characteristics of the setting in which a particular firm operates.

2. Innovation out of control?

The relation between top and middle management

On which level of management the essential decisions over technical and organizational change are made is assessed controversially. To the top executives of a corporation some analysts ascribe a rather peripheral role. On this level of management, it is argued, the more general goals and strategies are formulated whereas the stimulation, planning and execution of particular innovation measures do not take place there. However, these general targets are said to have certain "knock-on effects" which trigger innovation projects on the level of middle management. According to this opinion the crucial decisions in technical and organizational restructuring of firms are also made on this hierarchical level (cf. Child 1985). It also pertains to this line of argument that disputes among middle managers are largely uninfluenced by the top of the organization and cannot really be effectively controlled (Berger 1984). In contrast to this other commentators point to the fact, that middle and junior managers are often subject to rigid forms of control and that such forms of control do have major implications for the organization of the labour process (Buchanan 1986).

What has to be conceded, however, is that top executives in their endeavour to control processes of organizational change are confronted with aspirations towards autonomy from managers and specialists on the middle level. Therefore established forms of control have often to be understood as the result of a more or less explicit process of negotiation. This is but one cause for the variety of patterns of control to be found in the reality of firms (Flecker/Volst 1988). In the attempt to develop a typology of control one can refer to the elements of control which are applied in labour processes on the operational level: They comprise the prestructuring of actions, the influencing of beha-

viour by incentives and sanctions as well as forms of normative and ideological control (c.f. Etzioni 1961, Herman 1982, Littler 1982, Czarniawska 1983)

Control exerted by the top of the organization in innovation processes refers to the zones of uncertainty outlined above. It includes the following dimensions:

- the authorization of specific problem-definitions;
- the control of the choice of technical and organizational means;
- the control of the work processes in innovation projects; and
- the control of the relation between project collaborators and users.

In our case studies one can distinguish two opposite types of control relations between top and middle management in innovation processes.

2.1. Innovation on the long lead

Central control of innovation activities by the top of the organization has by no means been the regular case among the firms investigated in our study. Often we observe only an indirect control via more general guidelines like economic target parameters and quantified expectations concerning personnel to be saved. More detailed objectives and premises of design guiding innovation projects are formulated on the level of middle management. Particular management factions try to realize their interests often in conflict with one another. The substantial indetermination of goals on top of the organization meets such strategic actions. Decisions by board members or other top level executives intervene into the process only when middle managers fail to come to an agreement on objectives and conceptions or when a particular group is able to secure assistance from the top.

Basic choices like the one between centralized and decentralized use of information technology is in most cases decided on the top of the firm. Dependence on the approval of investments and the allotment of budgets are means which facilitates the execution of toplevel decisions. The distribution of budgets for investments

into IT is usually decisive for the choice between the conception of a standardized and centralized EDP-system (which is mostly preferred by EDP-departments) and a decentralized system (which is more often an option preferred by user departments). While decisions over major technological paths and particular hard- and soft-ware suppliers are made by the board or the head of the company on the basis of preparations by specialists from hierarchical levels below, it is very rare that questions over the design of labour processes find their way into the higher echelons. Only in exceptional cases formal project proposals also include ideas concerning the planned work organization.

Top executives exert an influence on the project work by written regulations concerning the composition of teams, work plans, time schedules and project-budgets. In doing so they establish a frame for the project work but project leaders and members retain discretion in determining the form of cooperation and the mode of controlling the progress of the project. Career advancements associated with the acquisition of experience in project work, while largely being confined to male members, secure the required work involvement of project leaders. The top of the organization is hardly ever involved in enforcing the application of new means of work and it seldom takes the initiative in guaranteeing the cooperation between the project team and user departments. However, rather often project leaders demand the support of executives from the top of the hierarchy. This is done by integrating them into internal image campaigns in favour of particular projects or the extension of EDP-systems in general and by presenting them as exemplary users.

2.2. Rationalization by short reins

On the other hand there are forms of control in the investigated cases of technical and organizational change which are characterized by a much more direct "seizure" on the process of restructuring from the top of the organization. The definition of problems is predetermined centrally and offers practically no

latitude for interpretations and negotiations. In these cases the firm owners or boards rely on some specialists and avoid to involve the leaders of departments into the discussion of problems and objectives. This results in unequivocal but at the same time unilateral objectives of the innovation process which is directed towards an increasing centralization of decisions and a full utilization of control potentials offered by IT.

Close control in the choice of technical systems is advanced by relying on expert knowledge in the firm directorate or by delegating exclusive decision rights to external and internal specialists. These decisions refer primarily to the design of technical systems. As far as conceptions of change in work organization become a topic in the innovation process, they are shaped by the firm leaders interests in extended control over the labour process or they are directly derived from a particular technical design as a by-product.

The top of the organization creates high pressure in the project work by means of a tight time schedule. That even specialists on which the organization is largely dependent subordinate themselves to high work pressure, has ultimately an ideological basis: Already their involvement in important measures of restructuring which gives them a position distinguished from their normal work situation stimulates a special motivation. Moreover internal competition as well as the competition between internal and external specialists contributes to the situation that even targets which to fulfill seems to be quite unrealistic are accepted and finally reached by exceptional efforts.

The relation between project organizers and users is not left to the discretion of the middle management within this type of control. The top of the organization secures the cooperation of potential users and above all the application of new means of work more or less by coercion emanating from top directives. Those responsible for the realization of the innovation project are relieved of the effort of ensuring the acceptance of new technical means by the employees. Therefore project organizers are not

strongly inclined to take the interests of employees in account when designing the EDP-system and the associated work organization.

3. Conflict and consent within the middle management

On the level of middle management heads of project-teams, departments and divisions with different functional backgrounds and hierarchical positions are integrated into innovation activities. This heterogeneity goes back to the functional differentiation and hierarchical structure which has come to be typical for organizations with a certain size. Under these conditions the management cannot be regarded as a decision-making body with uniform interests. Rather one has to assume the institutionalization of contradictory logics of action or particular, function-specific rationalities and the occurrence of interest conflicts (see Teulings 1986, Hyman 1987, Hales 1988). This structural phenomenon also reveals itself in processes of organizational restructuring.

The indetermination and uncertainty of innovation processes on one hand mobilizes specific design options on part of different factions of management, on the other hand it opens up chances to realize function-specific, positional, professional and also personal interests (see Berger 1984, 121 pp.; Hirsch-Kreinsen/Wolf 1987, 186 pp.; Armstrong 1986, 25 pp.). The associated manifold forms of micropolitical processes are an inherent characteristic of restructuring-projects in firms. They well allow one to speak of the middle management as a political arena. Such processes comprise the formation of alliances, the avoidance of conflicts by means of persuasion, negotiation and compromise as well as the conflict-loaden enforcement of partial interests, may the conflicts be manifest or latent (c.f. Wilkinson 1983; Weltz/Lullies 1983, 193 pp.; Berger 1984, 121 pp.; Kolm/Volst/Wagner 1988, 97 pp.).

Among our empirical cases three typical patterns of micro-politics within middle management can be ascertained. They differ in the

mode in which anticipated and actual dissent over objectives, organization and results of technical and organizational innovation are articulated and treated. These three typical constellations result from an analysis which is oriented along the following reflections of zones of uncertainty:

- differences in problem definitions within management
- influence of particular management factions in choice and design of technical and organizational options
- involvement of different management groups in the organization of project work
- position of particular management factions regarding the connection of project work and regular work.

3.1. Cooperative optimization of heterogeneous interests

A specific constellation of power and interest relations among the middle management reveals itself as a politics of restructuring which is essentially supported by all factions and which allows for a "cooperative processing" of divergent perspectives and design options. This type of political processes is connected with a rather well balanced distribution of power among different management groups, especially between the managers responsible for organization and EDP and those of specialized business areas.

In these cases divergent views of what has to be regarded as an organizational problem are quite a frequent phenomenon. Staff departments in the area of organization and EDP enjoy a privileged power of definition due to their formal responsibility and expert position in organizational and technical matters as well as the associated control over EDP resources and external contacts to computer and consulting firms. This position enables them to influence the demand for technical change and reorganization of user departments. On the other hand, however, organization and EDP specialists are under strong pressure to agree to articulated and anticipated interests, wishes, views and objectives of other management groups because they are dependent on their willingness to cooperate, their specialized knowledge and their experience. This

dependence advances a pronounced cooperative style of proceeding on the part of project organizers. Special meetings with a brainstorming image, more or less formalized opinion surveys and various information activities are employed to find out perceptions of situations, problem views and expectations and to integrate them towards commonly shared objectives. Remaining divergent conceptions arise largely from tensions between function-specific rationalities and the rationality from the perspective of the organization as a whole, between market and internal cost considerations, and between short-term and long-term requirements. Such divergencies flow into a more broadly defined set of objectives which to a surprising extent even allows for the maintaining of conflicting paths of reorganization.

Which technical and organizational changes are realized in particular, can be determined by managers from user departments to a high degree. They often enforce course corrections in strategies of technology use or effect the parallel construction of centralized and decentralized computer systems. Specific requirements and aspirations for autonomy on the part of user departments are to a great extent taken into account by joint decision and development processes. In these arrangements central organizers attempt to mobilize support for their conceptions of reorganization from communication partners and allies among the members of user departments.

The intensive striving of the various groups among the middle management for ensuring a basis of cooperation is also reflected in the organization of the project work itself. The division or department heads jointly decide on the composition of project teams which consist of representatives from practically each functional area involved in the innovation process. Usually the heads jointly constitute a board for the coordination and supervision of the project progress. Organization and EDP managers attempt to guarantee the necessary cooperation among the project team by considering both professional and strategic aspects in the selection of members, by avoiding dominance and exclusive communication practices of EDP specialists, and by sharing responsibilities

among departments. Potential conflicts over alternative forms of work organization are avoided by conceding departmental autonomy or are circumvented by postponing questions of work organizations in favour of technical decisions and by externalizing them into separate projects.

Like in the development of the innovation process, the relatively balanced power distribution between the management groups also determines the transformation of the process results into a regular, everyday working basis. The realistic threat of refusing to cooperate, of which the line departments dispose, considerably restricts the possibility of EDP managers as project organizers to use the dependence on EDP resources as a means to exert pressure. Various exchange processes and efforts of persuasion are the dominant means by which organization and EDP managers seek to ensure the acceptance of new work structures among other management groups.

3.2 Achieving compromise by mutual adjustment of objectives

A second type of micro-political processes on the level of middle management is primarily characterized by the fact that divergent conceptions among different management groups are settled in a way which shows significant cuts of their initial positions.

Divergent assessments of organizational problems and of technical and organizational changes required cannot be maintained among particular factions over a longer period in these cases. The objectives of EDP-heads to subordinate line departments to company-wide EDP conceptions are just as much confronted with limits, as, on the other hand, neither can the objective of an autonomous use of new technology, solely determined by department-specific requirements, be maintained nor can a lack of interest on the part of line departments delay projects endlessly. Since no faction disposes of sufficient power to enforce its conception, the competing objectives finally must undergo reductions until the

management groups involved reach a compromise which is acceptable to them.

The decisions on choice and use of technological means are not based on the systematic involvement of the responsible managers of the affected functional areas. They lie primarily in the hands of managers in charge of EDP and organization who practise an involvement of directly concerned leaders of user departments in a rather selective and reactive way. EDP managers' conceptions of reorganization which aim at overarching technical integration gain weight to the extent that they can be presented as suitable instruments of rationalization to the top of the company. Line department leaders, admitting the existence of substantial economic and technical constraints ("Sachzwänge"), suffer loss of autonomy. On the other hand, they are able to limit the degree of standardization and automation which is often strived for on the part of EDP managers and to which it is objected that they would affect flexibility required in the relation to customers.

In this constellation of interests EDP departments preferably choose a way of organizing the project work which allows them to keep the work processes, supported by a limited number of specialists from the departments concerned, in their own hands. Representatives of these departments are only taken into consultation when design decisions cannot be made by common consent on the level of technical experts. If needed, the EDP management involves members of the top management to come to a decision. Additional strategies pursued by organization and EDP managers in order to guarantee that the innovation process takes a course according to their conceptions, are the preventive installation of allies and the use of peacemeal tactics as reactions to blockages and conflicts.

To harmonize the activities in the process of technical and organizational change with the everyday business tasks again requires compromises to be made between project organizers and line managers. Organizers are able to get specialists from user departments to their disposal only to a limited extent and the same time

depend on them the more the higher the degree of integration of computer support grows. On the other hand, department heads cannot completely deny to leave members best familiar with the department-specific tasks at the disposal of the EDP management. In the consolidation of the innovation results, reluctant line managers are rather brought to support the acceptance of new work structures by invoking hierarchical assistance from the top than by means of systematic efforts of persuasion.

3.3. Dominance of particular management factions

While the two patterns outlined so far largely share the elements of inclusion, negotiation and cooperation, a third type is contrasted more clearly. Its key characteristic is that a particular group of managers or individual managers impose their conception of reorganization on other managers.

To begin with, the cases underlying this pattern have in common that the demand for a specific innovation is defined exclusively and unilaterally. The managers from departments concerned by such conceptions do not share them because they run counter to the logic of action of their respective functional area or because they see their interests impaired. However, against the closer relation to the company directorate, the formal expert position and the control over EDP resources, the line managers who are put under pressure, cannot hold nearly as strong power resources. The project initiators, mostly belonging to a central staff department, are therefore able to pursue their intentions undisputedly even against potential resistance.

The unilaterally dictated definition of goals often extends also to strict implications for work organization and largely restricts the technical and organizational options. There is almost no influence on these matters from the side of other parts of the middle management. A precondition is that the faction initiating such a project is relatively independent from the cooperativeness and active contributions to system development on the part of the

line managers concerned, so that no specific efforts to gain cooperation are undertaken. Because the chances to alter the imposed restructuring plan are marginal, the line management remains more or less passively. As a consequence, the reorganization is mainly determined by the organization and EDP managers' endeavour to enhance control over departmental working processes and to achieve rationalization effects by far-reaching integration on the basis of IT.

Under these conditions the project initiators choose a restrictive form of project organization in order to guarantee that the development and installation of technological innovations proceed as frictionless as possible. The extremely centralized and small group of project organizers as well as the externalization of software development can be regarded as reactions to a lack of allies and promoters among the line departments and as a strategy employed to shield the project work from blocking influences. The departments concerned by the reorganization are confronted with *fait accompli*, after all. The exclusion from decisive stages of project work is only marginally compensated by involvement in the adjustment of details.

The heads of line departments dispose of almost no potentials of threat which would allow them to deny the agreement with new work structures established against their intentions by another management group. Rather the initiators, since they are sure of the directorate's support, are in a position to enforce the transformation of the innovation into a regular work structure upon them. Relatively low costs of substituting personnel in the departments concerned and material incentives producing acquiescence block the emergence of a willingness to enter into conflict. The managers of such departments quasi getting reorganized by external factions face practically no other chance than to accept the new technical system and organization and to care for training and conformity of employees as well.

4. Lack of countervailing strategies: Typical patterns in the relation between management and employees

In addition to the micro-political processes among various management groups it is above all the social relations between employees and works councils on one hand and management on the other which shape the dynamics of restructuring processes in firms. Expert knowledge and process-specific skills, as well as the capability of refusing to cooperate in the reorganization or to deny newly established work structures, represent the primary power resources of employees which lend them action capacity in innovation processes (c.f. Jürgens 1983). Such power resources enable them to define problems independently according to their interests, to influence the technical and organizational conceptions, forms of work organization and cooperation in projects and to shape the integration of innovation results into existing structures. That employees are able to determine zones of uncertainty and utilize them in their interests, constitutes a potential element of micro-political struggle in processes of restructuring.

However, it is a major finding of the underlying investigation that neither employees as a whole nor particular groups of workers or works councils have actively influenced reorganization processes in the sense of an interest oriented utilization of zones of uncertainty to a significant extent. The impairment of workers' interests in existing forms of work organization have in none of the cases investigated been raised as a problem to be reacted by technical and organizational change. Just as little have the employees pursued an autonomous counter strategy solely directed by their own interests. Insofar as there have been reorganization conceptions divergent from those of the managers at all, they have not been forwarded offensively or enforced in open conflicts. Even where it has been a declared objective to use innovation processes to save working places this has not stimulated individual or collective opposition. To use "natural" labour turnover as an instrument for reductions of personnel has been acknowledged as a

legitimate and necessary means to maintain the companies' competitive position.

Despite this general finding one cannot speak of a complete depolitization of firm-level labour relations, even under conditions of a neocorporatist arrangement like the so-called "social partnership" in Austria. Although the employees in general did not bring their potential power resources to action, these are nevertheless existent as a latent capacity and influence the behaviour of the management vis à vis the workers. From this perspective again typical patterns of relation and interaction between management and workers can be discerned which are interrelated with the course of reorganization processes. Oriented along the four distinct zones of uncertainty, our empirical findings suggest such a typology of micro-political patterns. They are structured according to the following dimensions:

- reference to employee interests in problem definitions
- consideration of employee interests in technical and organizational conceptions
- forms of participation in reorganization decisions and activities
- mode of securing adaptation to innovation results

4.1. Protection of assets in exchange for cooperation

In a number of cases in our investigation reduction of staff does play a clearly subordinate role in reorganization plans. Therefore worker interests are not always at the center of management's problem definitions. This does not mean, however, that they are not concerned by problem definitions which are stimulated from aside the market or the process technology. In the search for solutions to such problems the question of restructuring work organization is raised at least indirectly and becomes a derived problem.

In such cases the management usually accepts that the reorganization must not lead to a deterioration of working conditions. Defi-

ciencies in technical equipment from an ergonomic perspective as well as uncomfortable software are regarded as unimputable. Just so are claims to an interesting and responsible work acknowledged as targets of reorganization plans. The preservation of stable social relations in existing work groups is taken into account, too. In return, the management expects an active support of the innovation process.

It is almost self-evident on the part of project organizers that such an exchange model cannot work without full integration of the employees and their formal interest organizations into the change activities. The works council is therefore represented in all relevant decision-making bodies coordinating the innovation project. Technical and organizational options are hardly ever executed against its votum. At the same time, however, the management can trust in its cooperativeness and openmindedness towards technical innovations. The work council's right to pay attention to the observance of the various regulations concerning employment relations remains undisputed. The management seeks to involve the employees which will prospectively be concerned by the reorganization already in an early stage. Their integration into project groups strongly aims at utilizing professional qualifications but it is also a principle to have each concerned department represented. User participation is practised both in the choice of hardware and in developing and testing of computer programs.

Much effort is invested into the securing of the acceptance of innovation results in order to arrive at an unhampered transition to a new technical and organizational arrangement. Once introduced, jointly developed and realized conceptions of work organization cannot be questioned by employees without striking arguments. In case of upcoming problems not just the managers can be blamed for; they rather stimulate collective efforts to overcome them. Systematic training programs for all employees confronted with new work situations are a further essential component in the management's endeavour to minimize the burden of adaptation on the part of employees. Material, motivational and emotional problems of

adaptation are largely removed by overtaking costs and caring for various kinds of support.

4.2. Legitimizing principles as a substitute for active production of consent

In a number of cases problem definitions by managers are dominated by the pressure to reduce costs. This occurs sometimes in connection with a feeling of a lacking transparency and control of labour processes. Under such a framing of reorganization plans employees are concerned in their interest in employment security as well as in autonomous and responsible work. These concerns, however, do not get direct influence on the options of project initiators, since the endeavour to exhaust technical potentials effectively prevents them to design work roles too restrictively. On the other hand it turns out to be typical for these companies that they have cultivated, to an exceptional extent, legitimizing principles which are by and large acknowledged as a common basis of action orientation. Such forms of company culture are strongly shaped by technical and functional rationalities. With reference to "economic necessities", "technical constraints" and "technological leadership" as a basic "function requirement" a particular work structure can be defended by managers against employees even if it is of considerable disadvantage to them. This reference to generally accepted legitimizing principles relieves the management of a lengthy process of interest accommodation. To a limited extent, however, the legitimizing principles also contribute to the protection of employee interests. The adherence to technical functionalities do at least include adequate means of work and adherence to ergonomic standards as legitimate claims.

Unless micro-political tactics have to be taken into account by the management, participation in the innovation process is confined to those employees who are required in the project work because of their specific qualification. There is no extensive user participation and works councils are only integrated into the project to a limited degree. The collaboration of shop stewards in

project teams as experts of their respective functional area is usually regarded as equivalent to their comprehensive integration as an institution. As concerns the costs of adaptation, the management pursues a minimizing strategy. Only a minority of members of a department who obtain the status of experts receive a specific training. It is their task to train their colleagues subsequently. Most of the employees have to get acquainted with the new work structures by means of "training on the job" which often brings considerable problems of adaptation with it.

4.3. Subjection instead of cooperation

A third variant of the relation between management and workers is best described as representing a model of subjection. Within the general striving for a rationalization of the totality of work processes, it is also an explicit objective in these cases to enhance control over performance and working behaviour of the employees.

The problem definition itself includes a violation of employee interests. Moreover, these have no weight in choice and design of technical systems whereas economic criteria are taken into account exclusively. Since the employees do not dispose of inalienable professional knowledge from the perspective of project organizers, they dispense with any form of user participation in the conception of the innovation process. The management and its experts treat it almost as a secret matter from which employees and works council, if existent at all, are excluded. They get confronted with the completed system only immediately before its installation. It is but a slight exaggeration to circumscribe the management's attitude vis a vis the employees with the formula "take it or leave it". The employees' readiness to accept the new work structures is taken for granted. The top of the organization acts according to the device "who wants to quit should do so" and this holds even for department heads. To motivate work involvement by financial incentives is regarded as a sufficient means to bring the employees to utilize the new work instruments efficiently.

The immaterial costs of adaptation are completely imputed to the employees. A special training is not regarded as necessary. At best a short instruction is given, thereafter the employees have to help themselves. The physical and psychic strain is accordingly high, but the workers concerned cannot avoid to put up with this under certain conditions, otherwise they would have to go.

5. Micro-politics as structuration:

The micro-political shape of innovation processes and implications for the organization of work

While the focus of analysis has been on different political arenas separately in the foregoing sections, we now proceed to look at their interplay in shaping the innovation process as a whole. In doing so, the assumption will be ascertained that differences as to the micro-political shape of innovation processes primarily derive from the structural dynamics induced from a particular arena. Before elaborating this argument the relation between structural characteristics and micro-politics needs to be addressed.

By putting emphasis on internal politics in the analysis of computerization and reorganization projects, a direct determination of implications for the organization of labour processes is rejected. On the other hand, such a perspective is in danger to neglect structural conditions of a social and economic nature. In our conception the internal politics of organizations is at the same time regarded as a process whereby the elements of action and structure are mediated. The term of "structuration" (c.f. Giddens 1984) might be well suited to express the underlying double perspective on micro-political processes: On one hand, a synopsis of the events in different political arenas has to take into account organizational and environmental structures shaping them. On the other hand, the micro-political processes occurring along with computerization and reorganization projects have, to a variable degree, implications for structures both internally and

in the external relations of an organization. Of specific interest are such implications in our analysis as regards the organization of labour processes. We have therefore attempted to detect relations to structural conditions in both directions: on one hand, as shaping micro-political processes of computerization, and, on the other hand, as the organization of labour processes being shaped by internal politics. Turning to the overall micro-political shape of innovation projects in this section we present the results of this analysis in the form of a table (see table below).

Under a first pattern of restructuring processes we subsume those which can be said to represent to an exceptional extent a "project of consent". Since the top of the company practises rather loose control, its dynamics emanates primarily from the balanced power distribution and mutual dependencies within the middle management. The various factions in this arena manage to coordinate their interests effectively by cooperation. The relation between management and workers contains strong exchange elements and secures an influence of employees by direct participation in the innovation process. It does not seem to happen accidentally that such a micro-political pattern occurs in a constellation of large, economically prospering firms, where already the degree of internal differentiation impedes direct control from the top, where employees, bound to a system of bureaucratic control, are difficult to be substituted and are represented by strong collective interest organizations. Company-wide search for consent over the computerization strategy leads to a reorganization of labour processes which excludes radical change and brings also some improvements in the work-situation of employees, if only for those with higher qualifications.

In a second pattern circumscribed with "hegemonic compromise", the top of the organization exerts a more direct influence on computerization projects by defining target parameters etc. Practical decisions are still made among middle managers, but due to the restricted range of options these are forced to achieve compromises. The rather tight control from the top goes hand in hand with a precarious economic situation, intensive competition,

Table: Social shaping of innovation processes and relations to labour process organization

Type of micro-politics	Search for consent: Active achieving of consent over technology use among the middle management and between management and workers	Hegemonic compromise: Imperatives forcing the compromise among the middle management under conditions of strict targets set by top of organization	Authoritarian enforcement: Rationalization and increase of control by top of organization excluding influence of middle management.
Structural conditions	High degree of organizational differentiation. Balance of power within the management. Employees with high primary and secondary power resources. Cooperative labour relations. Latitude due to economic prosperity.	Strong power position of particular divisions/departments. Restricted domains of employees' collective representation of interests. Stable legitimizing power of technical/economic imperatives. High economic pressure.	Low degree of internal differentiation. Small or medium size. Direct control by firm owners. High degree of substitutability of personnel. Low or lacking collective representation of employees' interests. High competitive pressure.
Implications for labour process organization	High degree of departmental autonomy. Reproduction of existing work organization. Work improvements for skilled workers (access to information, less routine work, autonomy of work conduct). "Soft" reduction of staff. Use of enhanced control potentials not for individual control.	Departmental autonomy restricted. Partial fusion of departments with work intensification. Segmented change of work situations: maintenance of autonomy, improved access to information, increased strain for skilled workers; reduction of staff, loss of autonomy and reduced communication for routine workers. Minor use of IT for individual control, extensive use for control of the production process.	Work organization out of departmental control. Prestructured work conduct. Increased strain. Reduction of staff and flexibilisation of employment relations. Full utilization of IT control potentials both for individual control and control of the production process.

or targets strictly prescribed to the firm by group headquarters. Since the firms are of not more than medium size, top interventions into projects are facilitated. Both middle managers and workers acknowledge the existence of economic and technical imperatives ("Sachzwänge") necessitating rationalization. Such objectives are regarded to be legitimate even if they severely affect workers' interests. Works councils confine their demands to key elements of the employment relation like salary, working time and supervision where they can achieve relative success. Implications for the labour process resulting from reorganization show a segmented picture, with major disadvantages for workers with routine tasks. Control potentials are hardly utilized so as to enhance individual control, however, quite clearly to identify further potentials of rationalization.

Finally, a third type of micro-politics associated with computerization and reorganization projects represents 'authoritarian enforcement' by a dominant coalition of managers headed by the top of the company. Middle management does not play a role as a political arena and employees are not conceded any influence in this constellation. It is typically based on 'despotic' domination by owners as active top executives in small or medium sized companies, intensive price competition, low degree of internal differentiation, and labour relations characterized by high substitutability of employees and a weak position of the collective interest representation. Under these conditions the potentials of IT are fully utilized for rationalization and control objectives without making concessions to employee interests. As a consequence, employees cannot avoid to suffer a loss of autonomy, reduction of staff, use of increased transparency of labour processes for enhanced individual performance control and adaptation problems due to minimal training measures.

In sum, these results not only underline the inadequacy of a technological implications thesis but also reveal some of the factors promoting certain forms of micro-political patterns and impeding others.

6. Summary and discussion

This contribution to the analysis of organizational restructuring has been based on an approach which reflects both the paradigm shift circumscribed with the term "political turn" (Böhle 1985) in industrial sociology and the renaissance of interest in micro-political processes in a number of other disciplines and contexts concerned with organizations (c.f. Ortmann 1988, 19). More specifically, the approach reflects the rejection of a technical and organizational determinism in favour of a perspective which is focused on the social and political nature of computerization and reorganization projects in various companies. At the same time, the approach is characterized in its conception and empirical application by the endeavour to avoid a well-known trap into which action and process approaches are at risk to fall frequently, that is, to loose the influence of structural conditions out of sight.

At the center of our approach to the understanding of changes in the organization of labour processes stands the concentration on a relation which according to our opinion has not received sufficient recognition, at least in industrial sociology. It is the relation between uncertainty as a basic characteristic of innovation processes in organizations and micro-political processes associated with the actions of individuals and groups involved in these innovation projects or concerned by them. This conception stimulated by Crozier/Friedberg's (1979) theory of power in organizations goes beyond treating uncertainty as a source of "defective rationality" (c.f. Berger 1984) and beyond mere emphasis of a fundamental contingency of the organization of labour processes (Springer 1987, 34). Typical zones of uncertainty in firm-level innovation processes can be interpreted as mobilizing struggles which on one hand gain shape under particular structural conditions and which, on the other hand, bring forth certain structures of labour processes.

The empirical results suggest some necessary corrections of existing interpretations of processes of restructuring. One concerns the characterization of rationalization projects as

processes of negotiation between management and workers. This interpretation turns out to be unjustified as a generalization even if it is meant to be confined to the area of white collar workers. The micro-political processes in executing computerization and reorganization projects show a wider range of variation also in this sector. A significant participation of employees which allows one to speak of a negotiation of conceptions can only be observed in those cases, where employees are able to control crucial zones of uncertainty due to their disposal of sufficient power resources, e.g. indispensable expert knowledge. Another pattern of internal politics is characterized by the fact that consent to particular conceptions held on part of the management is primarily produced via generally accepted legitimizing principles, e.g. technical and economic imperatives ("Sachzwänge"). This pattern also reveals the important role of organizational cultures in the shaping of restructuring processes. In addition to that, the range of types of micro-political processes includes the authoritarian execution of a particular technical and organizational conception by managers.

In contrast to a position which derives internal politics or "action constellations" from conceptions of rationalization regarded as typical for certain categories of actors (Weltz/Lullies 1983), our findings underline the necessity of following differences up to structural variations. Only then it is understandable why a specific political arena gains a dominant influence over the course of restructuring. It has been shown that only in a specific context innovation processes do lie in the hands of the middle management. Under different conditions the top of the company itself has computerization and reorganization projects under direct control so that there is almost no latitude for influences from aside the middle management.

As regards implications for the organization of labour processes to be derived from the ongoing diffusion of information technologies, one cannot directly ascertain general or industry-specific trends. Just as little it seems to be sufficient to regard a "plurality of production concepts" (Schumann/Wittemann 1985), in the

sense of competing conceptions held by particular managers, as ultimately decisive for variations in the organization of labour processes. Our process analyses rather show, that reorganizations of work along with computerization are shaped by the interests and power relations of organizational actors which themselves are influenced in a specific way by internal and external structural conditions of the organization. Changes in the organization of labour processes, therefore, turn out to be more varied than the thesis of intentional production concepts or the thesis of a technological or economic logic of development suggest. At the same time is the openness of reorganization projects limited by structural conditions, among which one has to count the economic situation, the power relation between management and workers, as well as among managers in charge of different functions, and, not least, organization-specific cultural patterns. In sum it can be concluded that micro-political processes influenced by different structural constellations shape computerization and reorganization projects, and, though indirectly, also the structure of labour processes.

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