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## **Systems as Intermediaries Political Frameworks of Design & Participation**

# Systems As Intermediaries

## Political Frameworks of Design & Participation

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### ABSTRACT

Drawing upon material from two case-studies in Germany and Austria, we analyse the political and cultural regimes into which design and participation are embedded. Three arenas for participation are distinguished: Designing work - designing systems; Designing organisational frameworks for action; Designing the industrial relations context. Our case analysis focuses on the evolving network of actors and intermediaries who in various ways contribute to work and systems design; on the influence of the political culture and the legal framework on how legitimate agenda are created and the arenas for action are defined; and on the relations between systems design and other agenda (such as organisational development, collective bargaining).

Our case studies point at the limitations to participation in fragmented political cultures. They call attention to the importance of understanding agenda setting. Each arena of action has its own set of legitimate agenda, from questions of user interface design to quality of working life and privacy issues. Participation in design needs powerful agenda which can be established in all arenas and, notably, be translated into work and design questions whose relevance for everyday work with a computer system are obvious to users.

**KEYWORDS:** Participative Design, Arenas for Participation, Industrial Relations, Political Frameworks of Design, Culture and Systems Design

### INTRODUCTION

Discussion on user participation has been inspired by a variety of projects in which systems designers closely worked with users and both engaged in a process of discussion and mutual learning. In particular the "Scandinavian" versions of participatory design, seem to have been supported by a

strong tradition of workplace democracy as well as a whole range of political conditions favourable to the involvement of users from the early stages of systems design. However, experience with participation in design is much broader than the present discussion would suggest.

Recent attempts at assessing participation in design and at forming a historically based understanding of participatory design show that participation manifests itself in various ways. Clement and Van den Besselaar [5] point at a wide array of foci such as creating technology assessment criteria and guidelines, developing new organisational forms, designing a specific computer system. Systems developers may use participative techniques without necessarily defining a participatory design project or framework. Conversely, participation in design-related issues may develop outside a specific systems design project. Participation is practised in a variety of political arenas. Participative design covers a variety of themes and agenda and differ widely in scope and "radicalism".

Drawing upon material from two case-studies in Germany and Austria, we analyse the political and cultural regimes into which design and participation are embedded. For the German case report we make use of an extensive documentation as well as structured interviews and case evaluations with one of the consultants who worked on the case [15, 9]. The Austrian case description is based on the personal experience of one of the authors who worked on the case as an external consultant, constructing a careful documentation of the political as well as the technical redesign process.

Our goal is to develop a more in-depth understanding of the political and social forces that shape the practice of design and participation. Though, we strongly feel that our discussion would benefit from a wider perspective, stimulated by a diversity of experiences from other cultures.

### **ARENAS FOR PARTICIPATION**

One way of conceptualising this diversity is by distinguishing between arenas for participation. An arena denotes a location - the geographical and cultural terrain actors occupy, use and shape. It refers simultaneously to the physically distributed locus of an actors' or community's actions and to what these actors do in it, what it is a space for, at which times it is available and used, and how it is furnished [1]. An arena may not be homogeneous. It may contain a variety of zones that are separated by visible and invisible closures; like a private house which serves as a locale for a large array of social interactions; but the various rooms are zoned for different uses at different times [7].

We base our analysis of cultural and political regimes on a description of the cultural and organisational "mapping" of actors, the arenas in which they move, their distribution, zoning, and connections. We propose to distinguish three arenas for participation:

- A. Designing work - designing systems
- B. Designing organisational frameworks for action
- C. Designing the industrial relations context.

While there may be a high commonality of themes and agenda across these arenas, the dynamics of action as well as the networks of actors seem to differ substantially.

#### **A. Designing Work - Designing Systems**

This is the arena where specific systems are designed and new organisational forms are created. What might be a general commitment to enhancing workplace skills and improving working conditions has to be concretised. The task of (re)designing work and technical systems shapes the leading agenda in this arena which range from skills, procedures, communication and cooperation, to dependency and automation issues.

As the focus is on the use situation of a computer system, a variety of techniques for making this use imaginable and liveable - from future workshops to cardboard computers and prototypes - have been developed. As a consequence, we will find the most direct and unmediated partnership between designers and the users of systems. Approaches may vary widely, from "situated design" [8] to management-centred approaches such as Joint Application Design [4].

To solve the tensions and demands that result from the enmeshing of the local with larger organisational issues, projects in the work and systems design arena are often explicitly defined as "pilots" that are limited to a specific terrain. It may happen that for some time some of the general rules of the organisation are suspended. However, acting competently and responsibly with respect to the internal politics of a work site requires understanding the agenda, pressures and commitments that derive from the surrounding environment - both immediate and global.

Conflict regulation in this arena will be most of the times direct and personal, on the basis of discussion and a high level of information. But as there is a limit to which conflicts can be made visible and debatable within an organisation, participation in itself does not guarantee that issues of dissent are addressed at all and that solutions are feasible. When a conflict explodes or a seemingly limited terrain or theme overflows and extends to other organisational issues or to some fundamental constituents of the organisation, action is partly transferred to another arena and will possibly involve additional or even different actors.

#### **B. Designing Organisational Frameworks for Action**

In a study of systems design in a large industrial company, Seltz builds upon the idea of the organisation as resting upon some set of "productivity and social agreements" - a context of limited cooperation, partial commonality, and mutual interdependence of different groups of actors (with different power) [12]. Similarly Burawoy has argued that most organisations today are subject to hegemonic regimes in which consent prevails (although never to the exclusion of coercion) [2]. Many of the norms and procedures on which these actors base their decisions are tacitly and implicitly enacted and only some are encoded. Participation in this arena is more indirect and patterns of conflict regulation much more institutionalised.

Often an unresolved and repeated pattern of conflict in arena A occasions action in arena B; or serves as an opportunity for taking such action. Arena B then is the location in which "breakdowns" or violations of agreements are diagnosed and hitherto stable patterns of organisational functioning questioned and redesigned. The agenda then is to redefine the general conditions for systems development within the organisation; in terms of information and consultation rights, due process, specific issues that need to be addressed, roles and rights of different actors in the process etc.

#### **C. Designing the Industrial Relations Context**

This is the arena in which the general legal and political framework is negotiated which defines the relations between the various industrial partners and sets norms for a whole range of work-related issues.

The Norwegian Work Environment Act or the German and Austrian legislation on "Mitbestimmung" may be mentioned as examples of such agreements. Each defines participation in work-related issues in a culture specific way. In the German and Austrian case, for example, participation in systems design is legally limited to the introduction of a computer system in a real work environment with "real data". This notion builds upon a traditional stage model of software development. Consulting and intervention during earlier stages of the design process are difficult to establish.

The collective games which develop in arena C as well as the agenda that are addressed and become subject to regulation more directly reflect the general constitution of a specific culture and society. Affairs are managed by a complex, stable system of groups and institutions. In some cultures this arena is more receptive to conflict, initiative and experience in arenas A and B than in others. Arena C may also be the location where new political agenda are initiated in the hope of diffusing them to other arenas.

To distinguish between those three arenas might be helpful in discussing participation; for various reasons: Many interesting approaches to participation outside the Nordic countries focus on arena B. In some of these cases the design of a specific system serves as an occasion for wider political action concerning more general issues of worker participation. Conversely, stimulating projects in arena A often do not cross the line to arena B, thereby limiting their influence within an organisation. Action in arenas A and B may remain temporary and local, without prompting larger and more permanent change. Similarly, political initiative in arena C may remain ineffective, as the numerous examples of seemingly innovative but unused legislation show.

While it is obvious that the relations between the three arenas are highly relevant for the future of participative design, the apparent difficulties of strengthening and redefining these relations are now part of PD's problem: "While PD has always been concerned to try to exercise 'good will' in design, the decline of trade union power even in Scandinavia means that it is a good will which PD has increasingly to define for itself" [13].

### **SITUATING THE CASES**

We selected the two cases as illustrations of approaches to design and participation which are primarily located in arena B. The projects are not directly concerned with the

development of a specific computer system in more or less close cooperation with selected end users. Participation is defined in a much less immediate way as facilitating and supporting the work of shop stewards, facing the (re)design of work and technical systems in their company. This is mainly done through making extensive and professionalised use of existing regulation mechanisms and intervention possibilities. With this more general goal in focus, both projects extend beyond a specific case of systems development. They rather aim at preparing some procedural grounds for participation as well as for dealing with sensitive political issues that may arise in a systems development project.

The following case descriptions focus on two perspectives:

- \* The network of actors who in various ways contribute to design and participation - setting the agenda, defining constraints, controlling the distribution of resources.
- \* The collective games that these actors use or develop to push certain agenda, to place their interests, to hide, explode or exploit a conflict; as well as the relations between formal and informal games which are played at different operational levels and between different arenas for action (as defined in the previous paragraph).

### **A. The German Case**

This is the case of a large insurance company employing roughly 1700 people, most of them located in the company's headquarters. In 1989 the firm had a high level of computerisation, with many different systems in use, including a huge personnel information system (SAP/RP), and more systems in a redesign or development phase. The firm's shop stewards had accumulated some experience in dealing with systems design issues through work on data protection and "control systems" and had successfully bargained a series of agreements on the company level ("Betriebsvereinbarungen"). Although of high political visibility, issues of privacy and control did not rouse employees' attention and concern.

Our story begins when the shop stewards started taking initiatives towards developing more direct forms of worker participation, hoping that this would help them to get employees more actively involved in the company's politics of work and systems design and to deal with the organisational and work design issues at stake.

At the centre of action was the firm's elected council of shop stewards, consisting of members of two different trade unions. These people had acquired considerable skill in making use of the legal framework as defined by the "Mitbestimmungs-gesetzgebung". According to this law, participation is largely limited to elected representatives. Conflictual issues are settled in the form of specific agree-

ments according to more or less well defined rules. There is also a more or less tacit consensus on what are legitimate issues for participation, among them privacy and working time arrangements. Shop stewards in this case were clearly interested in enlarging this list of accepted agenda for negotiation and bargaining and in extending the network of actors to normal employees.

Independent forms of financing consultant work - in our case funding through the "Hans Boeckler Stiftung" as well as direct payment of external expertise by the company in support of shop stewards' participation rights - made it possible to hire external consultants. In our case consultants were guided by a "Hilfe zur Selbsthilfe" strategy: they gave strong professional support to shop stewards in planning the social process of participation, without intervening directly in the working groups that were installed.

In a first phase, a rather comprehensive survey on employees' view of their work situation singled out one particular organisational unit as the main focus for action. Employees of this unit (about 350) had expressed a high level of discontent. Pressing problems were: high work loads and a shortage of personnel, a strict division of labour, much low skilled routine work, few opportunities for learning and development, numerous problems with IT systems. Employees from this unit formed the core of the working group that was installed as an experiment in direct participation.

Given more space, it would be interesting to analyse in detail the role played by non-human actors - in particular the numerous technical artefacts in use, the texts that were produced, crossing lines, defining positions and the relations of actors.

When studying the strategies that were used in this case, one observation stands out: Shop stewards and top management (as the principal actors) played two parallel games. The company's management from the start developed their own counter-strategy, thus creating high pressure from the top. In some way the personal outlook and attitude of two leading managers set the tone as one of non-cooperation and firm resistance.

Shop stewards' main strategy was to explode a latent conflict in order to be able to set new agenda, in particular more direct forms of participation and more emphasis on the interrelations between systems and work design issues. This is a case of what Crozier and Thoenig discuss as "regulation by exceptions" [6]. There is a prevalent game which means "that the really powerful are always those who can escape the rule of the system and can therefore exert pressure more directly on its nodal points where the

decisions have to be taken" (1976: 566). The game of the exception in our case is used to extend areas of participation. Shop stewards used a variety of strategies to further their goals. They made effective use of their external consultants' expertise, conducted a future workshop together with the newly installed working group of employees and initiated further externally funded research on participation.

An external political event (the reunification of Germany) simultaneously created economic pressure and an additional bargaining resource for the council of shop stewards. Management had to seek shop steward's consent for a considerable amount of regular overtime. In this tight situation, the working group pressurised for more time for their developmental work within regular working hours. This twofold pressure helped settle an official agreement concerning a) extra personnel and a long term personnel plan, b) a qualification program, and c) a clear commission for the working group to develop guidelines for work and systems design. This group held 30 meetings, set up an exhaustive list of work and system related problems (from complaints over special IT features to the division of labour) and in the end presented a highly developed program for change for their own organisational unit.

Management used its own strategies and pressures. It created a constant top down flow of in-house and external systems adaptations and developments (and at some point was forced to explain its general IT strategy). An attempt was made to introduce management oriented forms of participation with a focus on knowledge acquisition and acceptability issues. After having had to consent to the working group, management partly ignored the change program this group developed; partly it introduced its own working group which concentrated on information flows, proposing a set of restrictive work design methods which were massively opposed. Shop stewards at this point felt that their effort had failed.

In the end the organisational unit which had served as a pilot was substantially reorganised. Some new managers came in and a combined work and systems design approach was adopted with strong elements of teamwork and job enrichment. Shop stewards seem to have successfully broadened the terrain for action in arenas B and A, both in terms of legitimate agenda for change and in terms of more direct forms of user participation.

## **B. The Austrian Case**

The management of a huge Austrian service company with 4000 employees (administrative as well as highly qualified technical personnel) planned to change the software in use in its personnel department as well as personnel-related

software modules in a large number of organisational units. At this point, shop stewards felt that it was necessary to thematise data protection and participation issues.

In Austria, the legal framework for ensuring participation is rather ill-defined. It enforces the consent and early information of shop stewards in several questions concerning data protection before a system is used in a real work environment on the basis of real data. Consent usually takes the form of negotiating a specific agreement ("Betriebsvereinbarung"). In practice, the lack of clear definitions often occasions principled debates on crucial issues such as: At which point has a system been "introduced"? What are sensitive data? What is the due form for giving consent? These ambiguities open up terrain for both sides - worker representatives and management who both try to interpret the legal framework to their advantage.

In our case, shop stewards acted as agents of principles that had been set in arena C, backed up by a long-term public discussion. Even though employees had little interest in the issue and there was no pressure to act, shop stewards felt that they had to serve as foresightful guardians of an important collective good - privacy.

The council of shop stewards in this company consists of two autonomous councils for different groups of employees and one joint committee. The system of representation is deeply enmeshed with the union structure. It reflects its organisational logic as well as its political spectrum (which in turn mirrors the more general political landscape in Austria).

External consultants with a clear trade union background were hired. As there are no independent resources for this type of external support in Austria, they had to be financed out of union funds. The set up then was a quite homogeneous and traditionally grown liaison of shop stewards, union representatives and union-related research capacity. Consultants in this case intervened much more directly in all arenas than in the German case. They were also more clearly used as catalysts in a difficult process.

Participation in this case was mostly limited to arena B. A small working group of council members and external consultants was set up and worked for almost two years. This has to be considered a major innovation in itself, given the lack of tradition in a process-view of participation in Austrian companies (and the trade-unions themselves).

On the other hand, systems design formed a stronger focus than in the German case. In a first phase, several agreements concerning smaller, but highly sensitive system ap-

plications were successfully negotiated; among them a system monitoring and controlling contacts with clients and a telephone-based system for monitoring and surveying people's presence at their desk as well as their movements during working hours (a cousin of active badges). This was done to clear the grounds for defining a more comprehensive, process-oriented framework for the "big" personnel information system as well as for future systems development projects (whose number was expected to increase considerably).

Conflicts in this project passed through three stages, each of which focused on different agenda and strategies. The game in stage one was to locate the specific data protection agenda at stake within the general framework of co-determination. It was important to settle the legitimacy of negotiations on the company level. This was mainly done through a hectic and dense exchange of legal assessments, with strong intervention by external consultants.

Once this issue was settled, consultants succeeded to shift the arena for action. At this stage, intense bargaining between the working group and members of the company's edp-department over technical details started. Several hundred subprograms were examined. The idea was to translate social norms into technical features, both in order to show that privacy was technically feasible and to guarantee that the technical design of the systems would support the political aim of protecting privacy. This was highly successful. Difficult technical questions could be solved in cooperation with the edp-department. A general agreement was drafted to which management finally consented (under high time pressure and a publicity campaign of the council).

Also, an additional actor in the network - a data safety commissioner with a specifically defined profile of competencies and tasks - was created. This person was thought to act as a buffer between management, the edp-department and the council of shop stewards. He should perform services such as watching over the data protection aspects of systems in use, forwarding information and coordinating activities.

The last stage was triggered by external events: Serious economic difficulties forced the management to change its priorities, a new management was established, and shop stewards had to concentrate their attention on saving working places. At the same time new political coalitions in the council itself developed. Privacy issues moved out of focus. In the end systems had been implemented which made a real difference with respect to the protection of sensitive data. Still, for most employees this seems to have hardly

mattered at all since these are not features of systems they feel directly affected by.

### **UNDERSTANDING THE "CULTURE OF PARTICIPATION"**

When analysing these two cases, three issues stand out:

- \* How systems design is situated in the dynamics which unfold in the various arenas involved;
- \* the emergence of new or additional agents in networks of actors which collectively participate in work and systems design;
- \* the influence of the political culture on how legitimate agenda are created and the arenas for action are defined.

### **Positioning Systems Design**

Systems design in our cases is enmeshed with a variety of other agenda; such as organisational development, collective bargaining, negotiating regulation mechanisms and procedures. Often, a specific systems development project offers the chance to (re)define the more general framework for participation and design. Conversely, bargaining issues (such as working time regulations, data protection, control) influence the agenda around which participation in systems design is organised. Even though these agenda have some common focus, they only partially overlap or even pull into different directions for some time, depending on the relations between the actor networks involved.

In the Austrian case, shop stewards and consultants made efficient strategic use of conflict around one specific surveillance and control system for pushing through a set of particularly strong constraints which were defined on a social and technical level. Specific design issues served as general markers of sensitive agenda and helped to establish clear limits as regards the acceptability of control, also for future systems developments. Action took place in arena A and B simultaneously.

Shop stewards' main strategy in the German example was to establish more direct forms of participation as a new game in both arenas. Rather than getting involved with the details of one specific IT systems, they used the working group's catalogue of complaints for developing guidelines and procedures. Such an agreement consists of information rights and duties in relation to a set of defined agenda, regulations concerning the overall organisation of work and systems design projects and decision-making procedures in particular; but no specific systems development model (in terms of methods and techniques).

Finally, some issues at stake in arenas A and B may be transported to the industrial relations level where a new general framework has to be negotiated. The most prominent example in both countries are privacy issues. Their political visibility derived from some specific system cases in which personnel data were clearly misused. Ironically, privacy remained an "abstract good" for most employees and did not help to foster direct concern and participation in arena A. At the same time, we can see from both examples, it serves as a legitimate agenda for transporting other work design issues.

### **Evolving Actor Networks**

Michel Callon [3] introduces the term techno-economic networks (TEN) to account for the web of connections of heterogeneous actors who participate collectively in the development of technologies. Networks are made not only of human beings (and the skills they incorporate), but as well of texts, technical artefacts and money. Callon stresses the dynamic aspects of technology development, whereby "the technical object is continually being reinserted into various socio-economic contexts, which constitute different possible network configurations" (1992: 77). This network of actors and artefacts may be stable, or under constant transformation. It may be more or less successful in creating a common, unified space between heterogeneous poles.

Network analysis requires looking into the content of the intermediaries that circulate, into the identity of the actors involved, and into the morphology of their relationships, the mutual definitions they create. Figure 1 is a simplified visualisation of the actor networks in the German case. It contains the various human actors and the intermediaries through which they define and develop their relations: namely texts (such as legal documents), financial resources, technical artefacts (in our case the IT systems). The graph also points out the procedures that are used, activated or created for communicating, cooperating and managing conflict. Procedures may be highly routinised or innovative. They reach from soliciting legal expertise to conducting a future workshop, consulting, rapid prototyping, or drafting an agreement. The space in which these actors move is divided into the three arenas, whereby each arena constitutes an heterogeneous, zoned space. Boundary crossings are regulated by strong rules; including "regulation by exceptions" which intervene in the many formal and informal games actors play. The dynamics of such an actor network is created by introducing new actors and by activating or transforming intermediaries or by developing new ones.

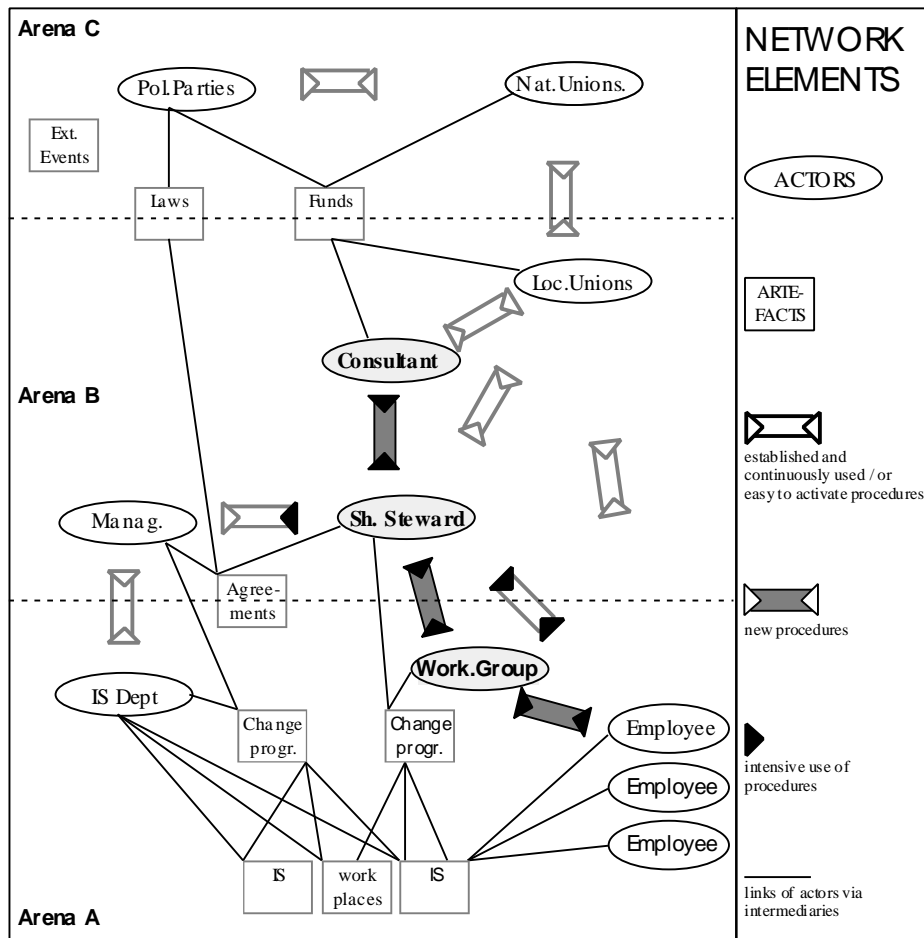


Figure 1: The German Case: A Simplified Visualisation of the Actor Networks

In both cases, additional actors were introduced into existing networks in order to push some specific action: external consultants, working groups, a data safety commissioner, external or in-house edp-specialists. Problem resolution through the intervention of outsiders, as is the case when external consultants are called in, is a typical strategy employed in organisations with a low information flow between implicated parties and little direct cooperation. Often they are more suitable catalysts in processes of political change within a company than implicated parties. Conflict can be projected onto or transported by persons who are not stakeholders in the system itself. External consultants may mobilize resources which otherwise would not have been available.

Labour legislation in Germany fostered the development of a new type of consulting which is strongly directed towards supporting the participation rights of employee representatives. Some of these consulting firms have developed a highly professionalised subculture, focusing on the importance of technical expertise, of long-term projects, and of consulting as process-centred and intense. Although their

main loyalties are on employees' side, but their management knowledge may create a "double role" and some ambiguity. In our case consultants were clearly committed to empowering shop stewards in the area of participation and design (management could fall back on its own company-based expertise). They acted in a non-interventionist way, limiting their roles to planning and moderating functions. Other forms of consulting may be defined as a more integrated part of union-related political work based on a relatively unambiguous political commitment to furthering workers' interests (and still carry some of its "pioneering" flair). This was the case in the Austrian example where consultants simultaneously acted as technical experts and assumed active roles as tough negotiators.

Participatory structures such as the formation of working groups intervene more directly in the power relations within an organisation. In the German case the group collaborated with the council of shop stewards, so that agenda could be taken up jointly or in a complementary way, the pressure on management be doubled, the

legitimacy of some complaint or demand be grounded in both arenas etc. In other political frameworks, participatory structures may be situated outside grown institutions of worker representation and even get in conflict with them.

In his discussion of network trajectories Callon stresses their internal dynamics along a reversibility and a convergence axis. Strong convergence means high stability of actors and the intermediaries through which they define their agenda and strategies. It implies "formalised coordination - that is to say, the existence of numerous conventions and local procedures which create that strange situation in which human actors and technical objects evolve predictably, as if acted on by rules to which they conform". (1992: 94) From this perspective, additional network actors can be seen as helping move a convergent situation towards new strategies, variable and negotiated aims, revisable projects, changing coalitions. An arena then may, as Anselm Strauss et al note, extend far beyond the boundaries of an organisation or any of its subunits and the debates held in this arena "will reflect more than (intra)organisational dynamics, since the debaters will be representative of professional, occupational, ethnic, gender, and other social worlds" [14](p.158).

### **The Political Culture**

The political culture can be defined as those "deeply layered structures that recursively organise everyday life and practices" [10] Analysing a political culture helps understand (a) the coding systems (including symbols and metaphors) actors employ, (b) the ways dependencies and power relations are created, interpreted and handled, (c) what is held as a legitimate standard, value, interest, or procedure. In part the political culture is encoded in the legal framework a society develops. It not only sets standards of due process but also defines the legitimate agenda for participation and intervention. Whereas in the Scandinavian context participation in design can build upon a broad spectrum of work environment issues and the right of employees to participate in the evaluation of their workplace as well as in the design of improvements (and supporting technical systems), action in other cultures is much more limited. Often only a few sensitive issues such as the control features of a system or working time arrangements can be used as a point of entry into one of the arenas of action.

A political culture may be characterised as "integrated" or as "fragmented" [11]. An integrated view of an organisation stresses those values, practices and goals which are expected to be shared by all actors and groups. The flow of information between actors and organisational units is relatively high and there are functioning structures

of cooperation. The emphasis is on conflict resolution. This often requires that those perceptions and interests which cannot be integrated are marginalised. In contrast to this, Crozier and Thoenig stress the fragmented character of many organisations, with a low information flow and little direct cooperation. A fragmented approach builds upon ambiguity and recognition of the multiplicity of organisational realities. It seeks a careful balancing out of interests. Conflicts are negotiated, without necessarily seeking to solve the underlying basic dissent. The collective games actors play build upon complicity, shared experiences and complementary interests (rather than on integration).

The German case is an example of acting in fragmented arenas. Management and the small network of external consultants, shop stewards and working group proceeded in parallel, only loosely coupled worlds. However, they succeeded in creating some common space between heterogeneous poles. They did this through different means. Common ground was "enforced" by an external event and resulting economic pressure which activates management's dependency of shop stewards' consent. A new intermediary is created in the form of an agreement which redefines the relations between actors and sets a new framework for work and systems design. In the Austrian example consultants partly succeeded in practising an integrated approach through establishing a strong work relationship with the company's edp-department.

### **PERSPECTIVES FOR SYSTEMS DESIGN**

In his analysis of "leading edge systems philosophies", Dan Shapiro points at the problem "that the character and the consequences of what is done in systems design, in both the broad and the narrow context, are extremely complex and largely unknowable". [13](p.10) We hope that analysing the political frameworks in which systems design is located also gives some direction as how to connect the development of technical detail and the technological regimes into which it is embedded to larger social and political issues. We do this in extracting some "core conclusions" from our two cases and the subsequent analysis:

\* What is politically and ethically legitimate and desirable cannot be simply solved by establishing participatory structures. The kind of close partnership between designers and users at which e.g. situated design aspires is not a sufficient answer to the core question of what makes a "good system". Our case analysis points at the importance of understanding agenda setting. Each arena has its own set of legitimate agenda, from questions of user interface design to quality of working life and privacy issues. The communities of practice which develop and push these

agenda have their own moral and practical criteria for doing so. As we saw, privacy is an issue whose general legitimacy is hardly contested. But translations into work and design questions have largely failed since their relevance for everyday work with a computer system are often not obvious to users. What we can learn from this is that for participation in design to happen, powerful agenda are needed that can be established in all arenas. Negotiating an action framework for internationally relevant and extensively used norms such as ISO 9000 could be such an agenda.

\* This leads to questions of power. Crozier and Thoenig argue that the kind of fragmented organisations we have used as cases mainly use cross-regulations and partitioning as strategies, avoiding direct confrontations or constraining conflict regulations to well defined games: "Formally, relationships are easy and friendly, but no one speaks to anyone and all cope by themselves. The result is isolation or atomisation of the political fabric. Such a system favours and even demands a strong concentration of power and privileges." (1976: 555) Processes of power and decision-making in such political cultures are neither clearly hierarchical nor democratic nor contractual. Initiative and influence are limited to a few groups and individuals who control key positions in their respective actor networks.

It is important to recognise that systems design (at least in countries like Austria and Germany) is situated in networks that are dominated by paired relationships between a few key partners, from different fractions of management, union-based shop stewards, and different types of expert cultures (to the exclusion of non-institutionalised actors such as ordinary employees and other fringe persons). Complicity makes these established relationships extremely stable. They to a large extent play a game of defense and protection. In our cases, extraordinary effort together with some favourable circumstances supported a temporary transformation of these dominant patterns. Continuous struggling would be needed to keep participatory structures alive and to stabilise the actor networks that support them.

\* Given the power of established networks to reintegrate experiments in participation into existing patterns, it seems necessary to conceptualise IT systems not as "stand-alone" projects, but as intermediaries which have the potential of changing the actor networks in all three arenas. A design project can be strategically used to a) introduce new actors, b) define new legitimate agenda, c) establish new procedures or techniques of participation. This perspective emphasises the strategic position of an IT project within a larger framework.

The message which we take from our analysis is ambiguous. Taking politics seriously in systems design would require to help design political strategies, collective games and, ultimately, actor networks that have the power to establish and maintain participative structures.

## REFERENCES

1. Beardon, C. and Hales, M. *Whose Risk? Whose Challenge? Questions of Power and Vulnerability in a Designed World*. In *IFIP WG9.2 Working Conference: Facing the Challenge of Risk and Vulnerability in an Information Society*, Namur, North-Holland, 1993.
2. Burawoy, M. *Between the Labour Process and the State: The Changing Face of Factory Regimes Under Advanced Capitalism*. *American Sociological Review*, 1983, 48(October), pp. 587-605.
3. Callon, M. *The Dynamics of Techno-Economic Networks*. In *Technological Change and Company Strategies*. Coombs, R., Saviotti, P. and Walsh, V. (Editors). *Harcourt Brace Jovanovich*, London, 1992, pp. 72-102.
4. Carmel, E., Whitaker, R.D. and George, J.F. *PD and Joint Application Design: A Transatlantic Comparison*. *Communications of the ACM*, 1993, 36(4), pp. 40-48.
5. Clement, A. and Van den Besselaar, P. *A Retrospective Look at PD Projects*. *Communications of the ACM*, 1993, 36(6), pp. 29-38.
6. Crozier, M. and Thoenig, J.-C. *The Regulation of Complex Organized Systems*. *Administrative Science Quarterly*, 1976, 21, pp. 547-570.
7. Giddens, A. *The Constitution of Society: Outline of the Theory of Structuration..* Polity Press, Cambridge, 1984.
8. Greenbaum, J. and Kyng, M. (Editors). *Design at Work: Cooperative Design of Computer Work*. *Lawrence Erlbaum Associates*, Hillsdale NJ, 1991.
9. Köhler, J. *Beteiligung oder Mitverschulden? Erfahrungsbericht aus einer Versicherung*. In *Praxisbeispiele der Arbeits- und Technologiegestaltung*. Richter, B., Schwitalla, U. and Wicke, W. (Editors). *Düsseldorf*, in preparation.
10. Riley, P. *A Structurationist Account of Political Culture*. *Administrative Science Quarterly*, 1983, 28, pp. 414-437.
11. Schneider, K. and Wagner, I. *Constructing the "Dossier Représentatif". Information-Sharing in French Hospitals*. In *Computer-Supported Cooperative Work*. *An International Journal*, 1993, pp. 229-253.

12. Seltz, R. *Re-Organisation von Kontrolle in Industriebetrieben*. In *Organisation als soziales System. Kontrolle und Kommunikationstechnologie in Arbeitsorganisationen*. Seltz, R., Mill, U. and Hildebrandt, E. (Editors). edition sigma, Berlin, 1986, pp. 13-32.
13. Shapiro, D. *The Limits of Ethnography: Combining Social Sciences for CSCW*, in preparation.
14. Strauss, A. *et al.*, *Social Organization of Medical Work*. The University of Chicago Press, Chicago, 1985.
15. Wicke, W. *Partizipation, Mitbestimmung, demokratische Technikentwicklung - Ansatzpunkte zur sozialen Gestaltung von Arbeit und Technik durch beteiligungsorientierte Systementwicklung*. BAIT, Dortmund, 1991.