

Meaningful Organizing with Structural Complexity

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In this paper, we look upon meaningful organizing as a question of creating and using structural complexity, and present an approach to meaningful organizing based on so-called social systems theory. It follows from social systems theory that the main objective of meaningful organizing in complex environments is to deal effectively with environmental complexity and uncertainty to secure coordination of collective efforts. In the paper, we present a set of research questions and a research strategy for planning and implementing a set of structuring interventions. Following the presentation of our interventions, we then discuss the results, and conclude with some remarks on the extent to which we can generalize our results to be valid for other types of organizations.

INTRODUCTION

In this paper, we look upon meaningful organizing as a question of creating and using structural complexity. Our starting point is that organization theory, as part of a modernist and functionalist approach to organization theory (which include general systems theory and traditional organization design theory) today will have to be contrasted with symbolic -interpretative theories. These are theories focusing on reality as socially constructed, and post- modernist approaches (including communities of meaning, poststructuralist linguistics, and other approaches). Symbolic-interpretative theories challenge the objective science of modernism. The logic of symbolic-interpretivist is based on the belief that organizational realities are socially produced as members interact, negotiate and make sense of their experience. They emphasize that symbolism (as in language and conversation) creates and maintain social reality because it forms the domain within which intersubjective meaning is constructed. For their part, postmodernists argue that organizations are not characterized by order and unity, as modernists claim, but by uncertainty, image, complexity and contradiction (Hatch, 2006). However, neither of these types of theories discuss explicitly how to deal with complexity in any detail. In this paper, we present an approach to meaningful organizing based on so-called social systems theory (Luhmann, 1995, 2012) as an integrating perspective including both the modernist and a symbolic-interpretative approach to organizing.

It follows from social systems theory (Luhmann, 1995) that the main objective of meaningful organizing in complex environments is to deal effectively with environmental complexity and uncertainty to secure coordination of collective efforts, including the development of a sustainable competitive advantage. This implies organization as an evolving configuration of a basic organizational structure, supplemented by structuring interventions to create structural complexity and achieve meaningful collective coordination in the face of increasing environmental complexity and conflicting interests.

In the following, we first discuss how to define and deal with complexity in a meaningful way. Then we present a set of research questions and a research strategy for planning and implementing a set of structuring interventions. Our research project is based on the development and reorganization of a town center organization, as part of a program for regional development. Following the presentation of our interventions, we then discuss the results, and conclude with some remarks on the extent to which we can generalize our results to be valid for other types of organizations.

DEALING WITH COMPLEXITY MEANINGFULLY

In our opinion, dealing with organizational (structural) complexity is the key issue in organization design theory, and in how to make organizations meaningful. However, both the concepts of complexity and of meaning are often used without a proper definition (Burton, Obel & Håkansson, 2015). An organization, action or experience is meaningful when it represents an actual alternative or selected order from a universe or horizon of structurally related alternatives or possibilities (Luhmann, 1995). This indicates that meaning is closely related to the concept of complexity. We will call an interconnected collection of elements or tasks complex when, because of constraints in the elements connective capacity, it is no longer possible at any moment to connect every element with every other element. Organized complexity means nothing more than complexity with selective or structured relations among its elements. Hence, it is not the number of elements in isolation, which are decisive, but the number of relations, which are related to each other through some kind of selection or selecting order (Luhmann 2012, pp. 73-87).

Consequently, following Luhmann (1995:60), we will contend that the phenomenon of meaning in a communication system or organizing process appears as a surplus of references to other, structurally constrained possibilities of experiences and action. Nevertheless, the totality of the references or alternatives presented by a meaningful process of organizing or situation offers more to hand than can be actualized at any moment. Thus the form of meaning, through its references to structured possibilities, forces the next step, selection. In other words, something is not meaningful in itself, but in relation to a surplus of other possibilities represented by a horizon of possibilities. As a preliminary conclusion, we could say that a search for meaningful organization is a search for how to manage and deal with complexity meaningfully, as indicated above.

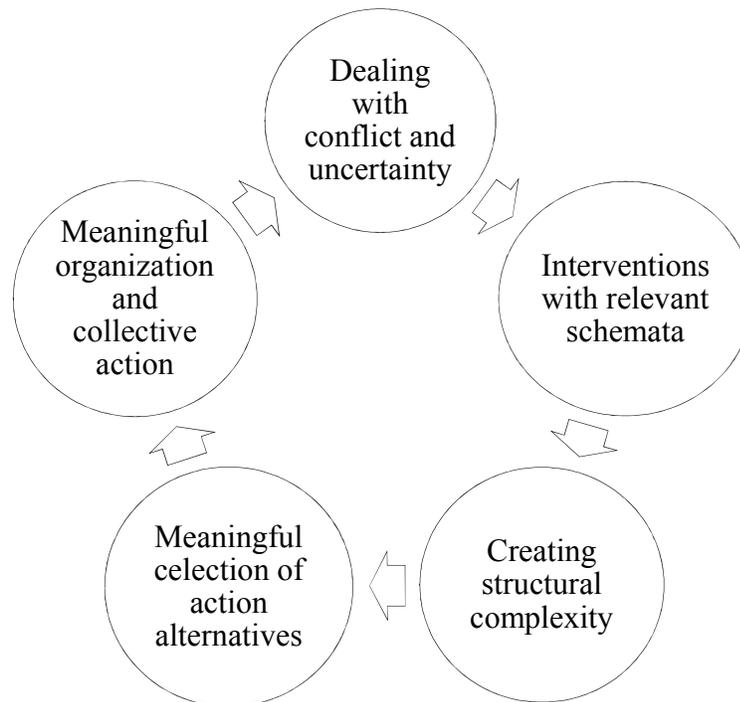
The concepts of complexity and meaning can help to clarify the relation between an organization and its environment (Lawrence & Lorch, 1967). Dealing with this relation is the main problem of organization design, because for each organization the environment is more complex than the organization itself. Organizations lack the “requisite variety” (Ashby, 1956) that would enable them to react to every state of the environment. The organization’s inferiority in complexity must be counter-balanced by making a selection, because an organization becomes structurally complex only by selecting a structural order, usually based on some kind of functional differentiation. As mentioned, making organizations meaningful consists in how permissible relations are constrained within the universe or horizon of possibilities and actual alternatives for selection. Hence, complexity is also an expression for uncertainty (indicating a range of possible connections), risk and lack of information. Viewed in this way, complexity is the information that the organization lacks fully to grasp and to describe its environment.

Complexities are usually incomprehensible and meaningless unless they are transformed into more structural and meaningful complexity. An important base for such transformations is the availability of various schemata and other cultural and symbolic resources, which structure possibilities for organizing and increase the information processing capacity of the organization (Luhmann, 1995). Research reviewed by DiMaggio (1997) suggests that culture works through the interaction of three forms: information, distributed across persons; mental structures, especially schematic representations of complex social phenomenon; and culture as a symbol system external to the persons. Hence, a symbolic-interpretative approach to making organization meaningful inheres not in the information, nor in the schemata, nor in the symbolic universe, but in the interaction among them. Understanding this kind of interaction is a central challenge. In particular, we lack an understanding of how schemata aggregate to

more complex symbolic structures or “logics”. A particular challenge is to understand the cognitive and communicative aspects of major collective events in which large number of persons rapidly adopt orientations that might have appeared culturally alien to the majority of them a short time before.

The basic idea underlying our research can then be depicted as in figure 1.

**FIGURE 1
USING STRUCTURAL COMPLEXITY MEANINGFULLY**



To sum it up, meaning is created, when structuring interventions, using relevant schemata, indicate a horizon of relevant and structurally constrained possibilities for action or development, from which selections or choices of action can be made, and used as a basis for meaningful organization. In the following, we will present some research propositions and explain our research strategy to identify the underlying mechanisms, which contribute to making organization meaningful.

RESEARCH PROPOSITIONS AND RESEARCH STRATEGY

Our basic contention is that meaningful organization, in situations with increasing environmental complexity and internal conflict, require the use of structural complexity to create the necessary cognitive and information processing capacity to secure collective cooperation. Our theoretical framework is based on a symbolic-interpretative approach, combining various theoretical perspectives, including action research. As mentioned, this framework indicates that making organizations meaningful inheres not in the information, nor in schemata, nor in a symbolic universe, but in the interaction among them (DiMaggio 1997). This gives rise to the following research propositions:

Proposition 1: Making organizations meaningful requires relevant schemata and symbolic resources to increase structural complexity and create the necessary information processing capacity to deal with prevailing organizational conflict and interdependencies.

Proposition 2: Making organizations meaningful requires the organization to focus on organization/environment differences as a basis for acquiring information to further deal with interdependencies and motivate investments for organizational development.

Proposition 3: Making organizations meaningful requires aggregation of the effects of interventions into forms of symbolic generalization and understanding that constitute a basis for meaningful collective action.

Our research case is the organization of the retail system of a Norwegian town, Porsgrunn, population 35.000, where the retail system can be studied as an organization constituted by functional groups of stakeholders, including the municipal political/administrative system, the local association of retailers, retail center organizations including shopping centers, independent retailers, property owners, and customers. As such, the town center organization may be described as a loosely coupled hybrid organization, characterized by functional differentiation, and formally and loosely coordinated by the political/administrative system.

As a functional organization, it is dominated by several conflicting functional systems with different operational logics:

- Public administration, municipal planning and regulation, focusing on democratic participation and appropriate rule following.
- Multiple chain retailers and shopping center organizations, focusing on economies of scale and scope.
- Independent, private retailers, focusing on market oriented and specialized operations.
- Property developers and owners, focusing on return on investments.
- Customers, focusing on convenience and comparison-shopping.

Development of such organizations often face increasing complexity of the external environment that confronts the local actors with multiple and contradictory constraints, making the need for coordination acute. Consequently, as postulated by our research questions, the town retail organization as an organizational unity has to develop the necessary capacity for observing its environment, constituting system/environment differences as a basis for a meaningful design of the center organization or center structure, which in turn can provide the necessary motivation for collective action and stakeholder investments.

Our research strategy for revitalizing and stimulating meaningful organizational development in the local retail organization has been action research. We view action research as a way of working in the field, utilizing multiple research techniques aimed at enhancing change and generating data for self-organizing. Action research rests on processes of collaborative knowledge development and action design, involving local stakeholders as full partners in mutual learning processes. As it turns out, this kind of action research, dealing with multiple sources of complexity and uncertainty, will need to orchestrate a variety of analytical methods and interventions to create the necessary structural complexity for meaningful organizing, including a preliminary diagnosis.

In the following, we present the results from our main interventions:

- Diagnosis: Mapping the failure to deal with complexity.
- Intervention 1: Attempting dialogue and participation as a basis for collective action and reorganization.
- Intervention 2: Presenting a strategic narrative and learning from others.
- Intervention 3: Strategic analysis and constitution of organization/environment differences.

DIAGNOSIS: MAPPING THE FAILURE TO DEAL WITH COMPLEXITY

In a preliminary diagnosis, we analyzed the town center social communication system as it was presented in various conversations, texts, documents, plans, physical and material appearances, or was

recalled in interviews with town center stakeholders. Our diagnosis revealed that the stakeholders had limited ability to observe and reflect upon themselves and their environment. Because of this, there was limited ability to see new possibilities for innovative action and more meaningful organization of the town center as a competitive destination:

- The public planning system was based on simple schemata for area use without the necessary functional differentiation as regards retail formats.
- New retail formats and organizational forms were considered examples of unfair competition and a favoring of new developers by the municipal authorities, who were looking for new opportunities for job creation.
- There were no systematic survey of regional competition and shopping behavior, and consequently no registration of organization/environment differences having informational value.
- The local culture had no schemata for dealing with and integrating different operating or institutional logics. On the contrary, the stakeholders were experiencing uncertainties in the form of systemic contradictions (Giddens, 1979) and dilemmas. Examples of such dilemmas are:
- Should independent retailers compete or collaborate with shopping malls? Most independent retailers felt the competition from the new shopping mall “Down Town” at the end of the High Street and fought its plans for extension, but realized that they needed the mall to attract regional customers, which eventually also might end up shopping in the High Street.
- Should the town retailers compete with the other regional towns, or consider themselves as part of a greater regional system (stretching the system boundary and providing opportunities for further functional differentiation)?
- Should the municipal authorities participate in strategic business project development, or limit their participation to land use regulation (which in effect results in town center fragmentation)?

Consequently, the retail organization as an organizational unity was not able to describe itself as a collective action system and structurally interdependent network in a meaningful way, and there was little motivation for collaboration.

INTERVENTION 1: ATTEMPTING DIALOGUE FOR MAKING ORGANIZATION MEANINGFUL

Based on this diagnosis, we planned and implemented our first intervention, which was a so-called democratic dialogue conference (Gustavsen & Engelstad, 1986), planned and done in cooperation with the Work Research Institute (AFI) in Oslo. The main objectives of such conferences has generally been to bring people into a new setting allowing for interpersonal processes which are different from those taking place in the ordinary hierarchical organization. The underlying belief is that the best, or most rational, solutions are most likely to appear in open discussion where all participants are seen as having equal right (Habermas, 1984, Gustavsen & Engelstad, 1986: 105).

The conference was a one-day conference with 114 participants, representing all the major town functional systems and groups, including the political leadership with the mayor. The conference worked on three major tasks: a) Developing a vision for the town as a regional center; b) Solving the structural problems facing the center; and c) Propose a collaborative development organization for implementation of the solutions resulting from b). On each task, the conference worked in groups of 8-10 people, structured along various principles to maximize communicative efficiency, and finished with plenary reporting and action suggestions. The results showed broad consensus regarding the future of the town as a leading regional center, but produced little or no consensus regarding functional and spatial differentiation of the town center, and no suggestions on how to organize any development work, and realize the vision. In many ways, we had expected the dialogue conference to develop an effective strategy for producing a meaningful horizon of possible development alternatives, given the broad,

competent, and democratic participation. As mentioned, it turned out differently, and we asked ourselves the reason for this.

The overall logic of a symbolic/interpretative approach is based on the belief that organizational realities and possibilities are socially produced as participants interact, negotiate, and make sense of their situation (Berger & Luckman, 1967). The dialogue conference was organized to allow for this. It did not do this. The result was rather a considerable lack of relevant schemata for integrating the operations of various stakeholders and deal with uncertainties and dilemmas, and the conference did not produce any relevant information about the environment, competitor operations, and customer behavior. This should probably not come as a surprise, as it mostly seems to reflect problems, which we registered during our diagnosis.

INTERVENTION 2: PRESENTING A STRATEGIC NARRATIVE AND LEARNING FROM OTHERS

Looking for ways to solve problems related to town center structuring and organization, we happened to encounter a Scottish town; Falkirk, during a search for information about UK town center management schemes. We visited Falkirk and documented the successful work with town center revival, which had taken place, and used this as a basis for our second intervention with a narrative presentation, telling the story of the revitalization of the Falkirk town center.

There are various opinions about the function of a narrative, but most commentators seem to agree that a narrative can largely be viewed as a tool or mechanism for producing some sense of coherence in the participant's consciousness. As maintained by Dunford & Jones (2000: 1209), a narrative can be looked upon as a textual form in which a story is told: events and happenings are configured into a temporal unity by means of a plot. This process of configuration gives a narrative meaning to events: they are drawn together by thematic threads. In our intervention, we used various schemata and symbolic generalization as a basis for thematization. Thus, our narrative presentation illustrated how the development of a town center can be based on a strategic structure plan for integrating different and competing retail formats. In Falkirk, this had resulted in the development of what we may interpret as a collective consciousness or identity, where the individual stakeholders representing various retail formats, observed themselves as a collective system of interdependent actors, functionally differentiated and spatially integrated. Furthermore, based on interviews with Falkirk center stakeholders, it became clear to us that this kind of collective consciousness functioned as a basis for developing individual projects, representing selections from a horizon of possible projects, which followed from the strategic structure plan as a structuring device, creating structural complexity and a framework for acceptable solutions. In addition, the private and public sectors started other collaborative efforts, including the establishment of a town center management scheme, based on cooperation between the private and public sector.

The narrative presentation took place during a second dialogue conference, and created considerable interest in Porsgrunn. Because of this presentation, the public authorities and the retailers association subsequently agreed upon establishing a similar town center management organization in Porsgrunn, as the one in Falkirk. In addition, independent retailers located in the High Street of Porsgrunn, started to differentiate themselves functionally, relative to the new shopping center at the edge of the town center, following the example of Falkirk retailers.

The public authorities obviously saw this as an opportunity to give private sector actors a joint responsibility for development of public areas in the center, while the individual retailers saw the partnership with the public sector as a guarantee against out of town competition and further shopping center development. As such, the town center management scheme functioned as a hybrid and meaningful coupling mechanism between the two sectors. However, there was no explicit constitution of overall system/environment differences, and further development and large investments, in our opinion, were needed if the town center was to reach its objective of becoming a leading regional center. This consideration constituted the basis for our last intervention.

INTERVENTION 3: STRATEGIC ANALYSIS AND CONSTITUTION OF ORGANIZATION/ENVIRONMENT DIFFERENCES

The town center was still facing considerable environmental uncertainty due to lack of information and constitution of center/environment differences. We therefore constructed and implemented a scheme for strategic analysis, representing an application of our thinking about organization/environment differences as a basis for acquiring information and information processing capacity. In the strategic analysis, we used the trade balance for the town center as an expression of the overall organization/environment difference. The trade balance, which is calculated as the relationship between the total retail sales of the town retail center and the corresponding consumption by the town population, indicates the degree to which the town has a surplus or deficit of retail trade. We define the trade balance for a municipality or region as the retail sales figure divided by the estimated purchases or consumption for the municipal population, and the whole thing multiplied by 100. An index of 100 indicates that there is a trade balance; the retail sales for the area equal the consumption for the area.

In addition to the statistical analysis, we conducted a survey of customer behavior, sampling about 1000 persons in the region. Using this kind of information, differences or gaps in the attractiveness of a regional town center can be related to shopper's choice of shopping places for various commodities and services, and the expressed reasons for these preferences, in addition to other shopper characteristics. An analysis of the regional market shares of the three competing municipalities in the region: Skien, Porsgrunn and Bamble, and their town centers, showed a sharp decline in the market share for Porsgrunn in the years before our interventions. The analysis of trade balances indicated, however, that Porsgrunn still had a certain competitive advantage and trade surplus in apparel, and could possibly develop into a leading regional apparel center if the decline could be halted.

Furthermore, we started to look at the spatial ordering of the network of retail formats in Porsgrunn, town center and made several recommendations, in particular sufficient functional differentiation of the network related to retail formats and commodity groups to fulfill the role as a regional destination. This in effect resulted in or implied a considerable extension or stretching of the retail center boundary, as the local participants, including the municipal authorities, increasingly saw themselves not as competitors, but differentiated and interdependent participants in a town center organization. This in turn formed a basis for a collective and meaningful town center organizational structure, since it provided meaningful development opportunities for both the independent retailers and other center formats.

The recommendations were presented at several town conferences and meetings following our third intervention, resulting in the initiation of several major development projects by public and private investors. This subsequently produced the necessary functional and spatial differentiation and order (requisite variety) for a more sustainable competitive advantage. Interviews with local retailers and city officials confirmed the development of a collective center identity, where the separate actors conceived themselves as participants in an interdependent social and economic organization, similarly to the Falkirk case.

The municipal authorities adopted the recommendations, including the recommendation for stretching the retail district boundary, and major property investors came forward with plans for new investment projects. Several of these projects have been completed, contributing to Porsgrunn's revival. In the course of five years after our interventions ended, the regional retail market share of Porsgrunn had increased around 10 %, and the town center had regained its position as a leading regional retail center.

DISCUSSION OF RESULTS

To what extent did our interventions produce results that answer our research questions?

Research Proposition 1 Results: Dialogue and the Role of Schemata based Discourse

The preliminary diagnosis and our first intervention had revealed a local culture that had a limited supply of relevant schemata and other symbolic resources to deal with increasing incomprehensible

external and internal complexity. We had expected that this could be dealt with, using a dialogue conference as a mechanism for a change process, since the conversations taking place in a dialogue conference can be said to represent a strategic discourse as a basis for meaningful reorganization. However, as pointed out by Alvesson & Karreman (2000), discourse is too frequently used in a vague and incoherent way and functions as a smokescreen for an unclear and ambivalent view on language, and the literature is vague as regards the production of meaning in such processes. Hence, in planning our next interventions, it became increasingly clear to us that, as change agents, we had to introduce relevant schemata and symbolic resources to facilitate meaningful organization. This was done in our next two interventions. In particular our second intervention, as pointed out, featuring a narrative that introduced several schemata dealing with how to structure a center with different, conflicting retail formats, and how to integrate the operations of the participants, using the structural complexity produced by the various schemata, had a dramatic effect on the reorganization of the town center, and stakeholder collaboration. This verifies research proposition 1.

Research Proposition 2 Results: Organization/Environment Differences and the Need for Information

The results from our first intervention definitely confirmed the need for focusing on the organization/environment difference. The town center's position as a regional retail center had been steadily deteriorating when we started our research project. Previous analyses and discussions among the stakeholders had not produced any relevant information for dealing with competition and taking constructive action. Lack of environmental information also characterized the conversations during the dialogue conference. Our second intervention produced a schematic understanding of town center structuring and reorganization of the town center, based on meaningful organization/environment differences. As mentioned, the information produced was used by several retailers to successfully relocate and reposition their operations. In addition, both private and public stakeholders started to commit resources to large development projects. These results confirm our second proposition.

Research proposition 3 results: Illustrating the aggregated effect of the interventions

Our third research proposition, centering on the aggregated effects of schemata concerns a central requirement for making organizations meaningful. This, however, is a requirement and characteristic of organizational change efforts, which is hard to demonstrate in practice. Nevertheless, we will contend that the combined effects of our interventions produced a collective orientation, and indicate an aggregated effect. One way of illustrating this, is to argue that organizations, following Camagni (1999), are typically faced with several basic kinds of uncertainties, representing the factual, social, and temporal dimensions of meaning (Luhmann, 1995: 75), as indicated in table 1, in their ongoing adjustment to their environment and internal restructuring. It is not realistic to expect that one single type of intervention will simultaneously be able to deal with all these types of uncertainties. It takes several interventions in combination in order to apply the various types of schemata and mechanisms for the required and meaningful information processing. In table 1, we illustrate how our interventions have reduced the various types of uncertainties facing the town center, and, as our interviews with the local stakeholders clearly indicated, resulted in a meaningful organization of collective cooperation and town center revival.

TABLE 1
CONTRIBUTIONS FROM INTERVENTIONS TO REDUCE BASIC UNCERTAINTIES

Basic uncertainties facing the town center regarding:	Dialogue conference	Strategic narrative presentation	Strategic environmental analysis
Environment			√
Organization/environment difference			√
Town center structure and meaningful integration		√	√
Stakeholder mutual trust	(√)	√	√
Stakeholder commitment and self-organization		√	√
Future directions for development	(√)		√

√ = Contribution judged to be significant

In addition, the combined effect of the interventions not only reduced the basic types of uncertainties facing the town center stakeholders, but also provided motivation for collective cooperation in a way that can be said to represent an organizational mind (Asch, 1952, Weick & Roberts, 1993) as a symbolic generalization of a meaningful collective organization. It is meaningful, because it provides the stakeholders and participants with selective options from a horizon of alternatives, structured by the schemata that reduces the incomprehensible complexity that the organization is facing, and in turn facilitates more structured forms of complexity.

These results confirm our research proposition 3.

Further Reflection on the Intervention Results

In the aftermath of our discussion of the results above, it has also become clear to us that interventions may have different functions, which influence how we interpret the results. Although we regard the dialogue conference as having been less effective with regard to meaningful reorganization, it nevertheless produced a consensus regarding a vision for further development of the town center. It also contributed to an atmosphere of mutual trust, which had been lacking until then, not the least because of a conflict regarding the authorities' permission for the establishment and localization of a new shopping center. This shows that the presence of conflict not necessarily implies social conflict and that an existing organization is dissolving; it merely signifies that the stakeholders retain heterogeneous responses and preferences (Weick 1969), reflecting what we may call systemic contradictions due to operating with different logics (Giddens, 1979). Action research often emphasizes participation and power equalization as the means to gain greater acceptance of decisions that affect organizational members. In this way, compromise responses are more apt to be selected, since they give the appearance of being acceptable to competing interests. However, in effecting the compromise solution, important adaptive responses may have been selected against, and non-adaptive, moderate responses preserved (Campbell, 1965; Weick, 1969). The problem with participative decision-making is that gaining acceptance through participation may destroy the polarized responses that aid adaptation and meaningful reorganization.

This underscores the advantages of having interventions that introduce structural complexity, as they create a room for collective action that permits and encourages the participants to express and pursue individual interests, but within an overall, structural framework, that secures coherence and profitable exploitation of interdependencies. Our experience is that greater involvement occur in such situations where participants are helped equally to compete and to cooperate.

CONCLUDING REMARKS

Let us finally comment upon the extent to which we can generalize our results to be valid for other, similar hybrid organizations as the one we have discussed in this paper.

Our approach has been applied to change efforts and interventions in other town centers with equal success as in Porsgrunn. In several of these centers, the local stakeholders had initiated a series of change efforts and projects, including analyses, seminars and conferences with broad participation and assistance from various experts and consulting agencies, but with no significant results. In each of these cases, representatives for the public and private sector stakeholders came to us for help, having heard about our success with the Porsgrunn reorganization. Moreover, in each of these cases, our general approach can be judged as successful. The reasons for this may vary, but in most of these cases, a recurrent problem was the lack of environmental information, and a need for functional differentiation and spatially integration of the respective centers, with the necessary structural complexity or requisite variety, to put it that way.

Is our approach applicable to other types of organizations, other than these kind of hybrid organizations? We think so. Our general model suggests structuring interventions as a way of supplementing any organizational structure with the necessary room for collective action, creating information processing capacity and structural complexity to deal with opposing and conflicting interests, as for instance, is often experienced in multinational corporations, operating in several differing cultures and environments.

Our results also indicate the need for action research approaches other than the traditional approaches, which often focus too much on participative decision-making, as we have commented upon earlier in the paper. There obviously is a need for approaches to action research that focus on other critical functions than achieving consensus and compromises, and that to larger degree encourage and make room for opposing interests in a constructive and meaningful way. This also implies a more extended role for the typical change agent, now having to take responsibility for securing the necessary flexibility to deal with environmental changes. Orchestrating structuring interventions that create structural complexity is an effective strategy for doing this, as our research has shown.

Nevertheless, there is need for more research regarding the functions of various types of interventions and the orchestration of such change programs.

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