

# *Organizational Knowledge, Learning and Capabilities 2003*

**Practitioner track**

## **BRIDGING THE EFFICIENT AND FLEXIBLE KNOWLEDGE COMPANY**

*– A practical example from a major Danish pump producer*

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# **BRIDGING THE EFFICIENT AND FLEXIBLE KNOWLEDGE COMPANY**

*– A practical example from a major Danish pump producer*

## **1. ABSTRACT**

*With an annual production of 10 million pump units, Grundfos is the second leading pump manufacturer in the world. Circulation pumps, submersible pumps, and centrifugal pumps are the three major product groups. Today, Grundfos is the world's largest manufacturer of circulation pumps, covering approximately 50 per cent of the world market for these pumps. The corporation employs today over 11.000 employees worldwide.*

*As many organizations Grundfos are thorn in the dilemma of both serving a need to both be exploiting current resources and exploring new opportunities, a concept that conceptually is appealing but which in practice have proven to be difficult to implement.*

*In attempt to practically review and implement an approach that bridges the gap between the two concepts we have through a series of projects, developed a practical approach that attempt to bridge the two concepts. The outcome has been two developed approaches for the use in Grundfos in future creation of new knowledge wholes in the organization. The first approach focuses on the development of a structural transition of the organization, whereas the second seek to create new wholes within developed business processes.*

## **2. BACKGROUND**

Organizations have to be efficient, exploiting current knowledge to be able to deliver products and services to a market on a day-to-day basis (March, 1991). As competition becomes more fierce on prices, speed of delivery and quality of products, the need for exploiting and refining current practices increases. However, at the same time organizations in a dynamic market are challenged with the need for constantly developing new innovations in products and services in a constant increasing pace, a task that are highly focused on the development of new insights and thus innovation. In this role knowledge creation and exploring new opportunities plays a paramount role.

Opportunities and threats that potentially can lead to the development of new innovations will constantly arise for the organization. However, as these opportunities and threats as by definition will be largely unknown to the organization the organizations will organize it self around gaining efficiency for known tasks. An organization structure that stem from seeking to create a necessary environment of exploitation of the innovations that have been created through the exploring activities of the organization. The nature of new opportunities will inherently call for the synthesis of the dispersed knowledge in the organization, as innovations will depart from the current thinking and operating mode in the organization. The knowledge will therefore be contained in individuals that will be dispersed in the organization.

The dilemma is that in order for the organization to create innovations we therefore need to be

able to construct new “Wholes” in the organization, new wholes constructed from the current organizational knowledge. However attempts to construct new knowledge are obstructed by the corporations organizing for exploitation of the historic certainties in the organization. As experience shows that current knowledge tends to pull the organization into path-dependency (Teece et al, 1997; Tripas and Gavetti, 2000). Hence, two problems arise, first thinking out of the box, and second the coordination between various streams of activity in the organization.

For larger corporations as Grundfos, this dilemma is further strengthened. As path dependency of larger and old corporations increases, the competencies in performing current practices also induces inertia for organizational development and thereby reduces risk taking by the organizational members.

This increasingly calls for new ways of bridging the two paradigms, which on one hand accepts the necessity for organizations to exploit old certainties, while providing possibilities for constructing new knowledge for the exploration of new opportunities. Conceptually the understanding of the need to serve both paradigms is easy, but in practice bridging the two concepts offer significant challenges for the industrial company.

At Grundfos we have engaged the organization in a series of attempts to bridge the two paradigms. Building on the foundation of large group interventions and appreciative inquiry to create organizational opportunities and rooms for facilitating explorative behavior for operations and New Product Introduction (NPI).

### **3. THE FUNDAMENTAL QUESTION**

By many occasions we have seen and met difficulties when trying to be innovative in the traditional paradigm that is held by the organization. It is believed that the main reason is founded in our organizational structure, which is structured around the exploitation of the organizations current innovations. As the demands of producing innovations in the organization have increased, the polarization of the two paradigms has increased. Due to this increased polarization the demand of using the fragmented knowledge in the company for innovation has also come into greater demand.

The practice view is another perspective on strategy that has recently been brought forward. This view can be seen through a practice perspective, where the formation of strategy (operations strategy) cannot only be seen as a single level activity of relating the organization to its environment, but must also give due attention to the practice level and thus the practical operational reality (Jorgensen and Sorensen, 2002). It claims that strategizing is embedded in the daily activities (Hendry 2000), and therefore focuses on tapping into the embedded and dispersed knowledge of practitioners, thereby making non-management individuals responsible for a large sum of the development of strategies. Thus proposing that the organizations constantly develop its strategy as new knowledge is brought to bear.

The creation of new innovative strategies is, by its very nature, outputs of what can be seen as autonomous initiatives. As Burgelman (1991) puts it: *“Autonomous initiatives can originate at all levels of management. But they are most likely to occur where managers are directly in contact with new technological developments and changes in market conditions, and have some budgetary discretion.”* The organizational windows for enhancing the possibility of establishing events (agoras) for the reflective creation of innovative operations strategies can

through this view be exemplified by:

- Introduction of new products
- Development of new facilities for operations
- Implementation of new practices for operations

In general the practice perspective is, however, highly underdeveloped (Whittington 2002), and therefore we aim to make our contribution by asking the following question:

- *How can we, as a knowledge company, practically bridge exploitation and exploration, when the organization wants to create new knowledge that will feed the company with innovations in strategies and products for the future?*
- *How can these be developed into methods for the future use in the company?*

### **3.1 Action research for the development of an approach**

To bridge the two paradigms we have aimed at establishing two approaches for inducing innovation in the organizational and operations strategy development. The developed approaches were grounded in two examples where innovations in the organization were needed on both a temporal and on a longer-term basis. The two examples were a) The development of a method to start a change process in the Danish production company towards a more business process orientated view and b) seeking to establish a more innovative behavior and dynamically development of operations strategies in the new products introduction for operations.

The two approaches must be seen in conjunction as they complement each other, as the first approach focuses on the development on a structural transition of the organization, whereas the second seek to create new wholes within developed business processes.

## **4. IMPLEMENTING MANAGEMENT BY PROCESSES – CHANGE THROUGH INVOLVEMENT**

Since 1996 Grundfos has being working with the philosophy of Total Quality Management (TQM) and as a natural cause the focus on business processes has been increased. This can be seen as the introduction of a practice and activity driven approach to strategy development, where there is an emphasis on a more continual formation of the strategies. A view that especially is prevalent for the introductions of innovations in operations strategy, as operations strategy are highly bounded by structural decisions. However, the prevalent organizational structure of the company has its roots in the common function orientated structure, which fundamentally offer challenges of this view.

The top management was aware of this fact and that this change required a new mindset for the employees on all organizational levels, and therefore a decision was made for making a move against working with the disciplines of the learning organization in parallel with TQM. Hereby the focus was set to support the development of all employees to ensure their qualification and maturity so they would be able to deliver innovations and continual improvements on daily basis. The move therefore were made against a more practice oriented view on strategy development

To be able to respond more quickly to market change and to ensure sustainable competitiveness the top management in 2000 initiated a change process toward the implementation of Business Process Management across the existing functions.

Many clarifying meetings were held and many sketches of the new organizational structure were drawn. However there was no clear picture in the organization of how the transformation process would be achieved, including the methods for the change process. The end result of the transformation is illustrated in Figure 4-1.

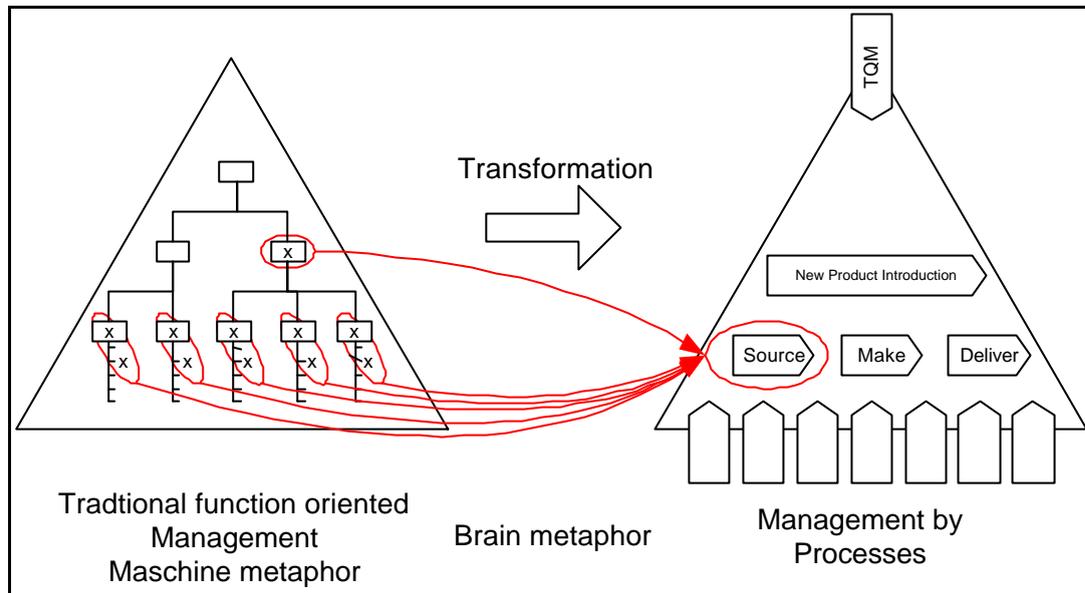


Figure 4-1 The transformation process at Grundfos A/S

For each of the main processes a process leader was selected. His responsibility was to obtain performance according to the targets, which was defined for the process, and likewise his was responsible for establishing a process improvement team and to make sure that the team had good working conditions.

For a change project of this size Grundfos historically would use a top-down method and focus on driving the process forth through using of the cascade effect down through the levels of the organization. Clearly the journey towards management by processes required a new paradigm.

In cooperation with the process leader for the Source process we asked ourselves:

*How can we develop a method that successfully would implement Management by Processes in the Source process at Grundfos, by securing the highest degree imaginable for the utilization of every employee's knowledge and competencies?*

#### 4.1 Tools and models

The question above gave us the opportunity to loosen the traditional paradigm and introduce some new methods and models from which the organization could gain interesting insights. The chosen approach would likewise challenge the traditional top-down change processes.

##### *The Transformational paradigm*

From the start it was clear that this type of change process, which would have influence on all employees in the organization, best was initiated by the introduction of a new mindset or paradigm. We also believed that the key causative element in the creation, maintenance and change of organizations is the invisible agreement in the consciousness (the collective paradigm) of the organization's members.

The new mindset represented by the transformational paradigm (Banner & Gagné, 1995) is quite different from the traditional paradigm; see Table 4-1:

Traditional	Transformational
<ul style="list-style-type: none"> <li>• Everything is separate from everything else</li> </ul>	<ul style="list-style-type: none"> <li>• Everything is part of one large, seamless whole, and everything is connected to everything else</li> </ul>
<ul style="list-style-type: none"> <li>• The parts influence the whole</li> </ul>	<ul style="list-style-type: none"> <li>• The whole organizes the parts</li> </ul>
<ul style="list-style-type: none"> <li>• Our external world is just “out there” for us to perceive</li> </ul>	<ul style="list-style-type: none"> <li>• We are designed to be co creators with life</li> </ul>
<ul style="list-style-type: none"> <li>• Life is essentially hostile to human life</li> </ul>	<ul style="list-style-type: none"> <li>• Harmony and integration follow alignment with life</li> </ul>
<ul style="list-style-type: none"> <li>• We are not in a paradigm shift</li> </ul>	<ul style="list-style-type: none"> <li>• The paradigm shift is now</li> </ul>

**Table 4-1 Some differences between the two paradigms (Banner & Gagné, 1995)**

At the start of the process Grundfos as many other large industrial companies in Europe had its thinking grounded in the traditional paradigm. The focus was set on achieving the goals set by management and to reduce the numbers of faults to a minimum. The Process leader did not just accept the new paradigm introduced to him, but after a while he understood the potential of seeing the change process from this perspective. At first he was eager to get on with the work but he had no ideas to which tools and methods to use. However his interest for trying something new was quite clear and we, as facilitators would support him in the transition process.

#### 5. INSTALLING REFLECTIVE PRACTICES FOR NEW PRODUCTS INTRODUCTION

The second example we engaged in was focused around the need for inducing innovation and strategic thinking into New Products Introduction. The engineers from Grundfos take part in product development initiated and traditionally driven by a Business Development Center organized in the main company. A stage gate model for New Product Introduction had been used for several years and served as a major driver for managing the cooperation between

various functions and departments. However, in Grundfos it had for some time being felt that the stage gate model, despite its important coordinating role, had a tendency to drive out creativity and support a development process that favored well-known solutions and working modes. This initiated the establishment of a series of Timeouts during the execution of the stage gate process that sought to break the inertia of the current working mode and establish a more business oriented and creative solutions.

### **5.1 New Products Introduction**

In an attempt to induce a more dynamic view on developing operations strategy we proposed to use the NPI business process as the point of departure for a dynamic development of the operations strategy. We participated as action researchers and facilitators in the product development process from the perspective of operations, in the concept development phase of NPI's stage gate model (the Decision Point model). The proposed approach aimed at engaging us in the project as facilitators was divided into the two stages of designing the intervention seminars and a second stage of running and facilitating the seminars. The action research therefore sought to take advantage of events in the life cycle of the company that opens for the inducement of strategic reflection into daily activities. The focus thus became to demonstrate the possibility and usability of inducing strategic reflection during the flow of operational practices. These reflective practices were introduced as interventions or TimeOuts in the efficiency driven business process.

In the seminars participated the core project group of 5 employees representing different professional areas within the operations function, such as manufacturing technology, supply chain management and information technology. The design of the seminars was inspired by large group interventions (Bunker and Alban, 1992) and appreciative inquiry (Cooperrider, 1987). Focusing on the engagement of the whole system for the intervention process, while taking the departure from discrepancies in the current operations system as well as the positive energy stored in the organization into account.

The aims of the interventions were from this perspective to:

- Introduce a strategic mindset in the operations development
- Using the opportunity of the NPI project to dynamically develop the operations strategy
- Put the operations function into a more proactive role in the product development
- Inducing creativity into the operations development process

As an outcome of the TimeOut the participants acknowledged the need for positioning the operations function in a more proactive role in the NPI project and the need to explicate the role in relation to the product development project.

### **5.2 Inducing strategy through interventions**

As the NPI projects not traditionally had had a focus on the strategic aspects of the projects, the participants were largely unequipped to engage in these kinds of activities during the operations projects. Therefore, the planned TimeOuts for the operations project aimed at lifting the project away from a focus where the details of the project would govern the participants' work. Rather, it was aimed at lifting the work to a level where it was made possible for the participants to work from the assumptions of a holistic concept for the project.

Indicated in the “unequipped participants” was also the fact that in order to engage in the process of inducing creativity and resulting innovation, it would mean that the process would have to move slowly towards the introduction of new concept for thinking about operations. From these assumptions the interventions were designed to shift away from the development of new accepted realities for the participants and then challenging the reality of the participants’ mindset within these new realities. In these shifting modes, the facilitators introduced new realities to the participants in the intervention seminars by presenting new ways of thinking about operations.

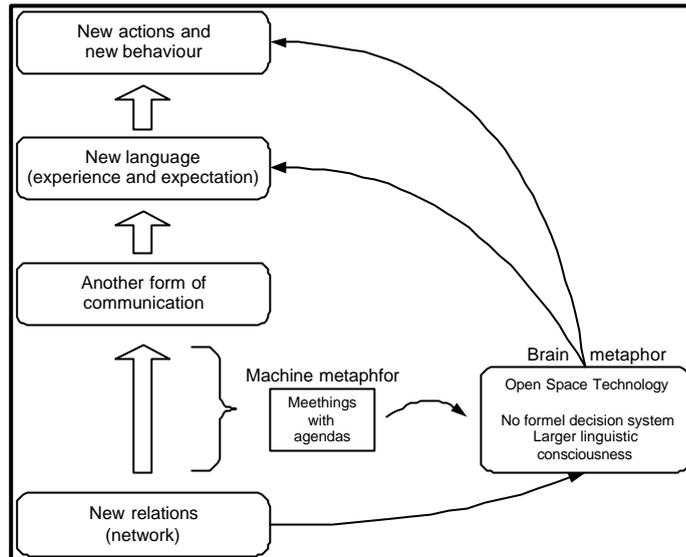
### **5.3 Installing reflective operations strategy management in NPI**

As a result of the inducement of strategic thinking in the NPI process the project was seen in a more strategic sense, and it was acknowledged by the participants that there through the NPI project was a potential way of inducing change into the operations system. Change to what more then earlier, could be seen as proactive when seen from operations contribution to the business strategy. The decisions affecting operations strategy had from this perspective changed from being strictly emergent and not reflected upon in a strategic sense, to being operations decisions connecting operations to the business strategy. The manager and responsible of the NPI business process acknowledged that much of the strategic content of the operations strategy were formed during the NPI projects. An acknowledgement that has led to the agreement on the inclusion of strategic frameworks in future methods for operations decisions in NPI, strengthening the project participants’ communication with management and the internal strategic positioning of the NPI in the company.

The approach established a series of workshops that brought together individuals in the organization to the creation of new creative ideas for the project. Aiming at establishing new “wholes” in the organization, challenging the current thinking, establishing and facilitating structures for creating a dialogue between the engineering experts and utilizing the events for a dynamic way of developing the operations strategy.

## **6. OUR APPROACH ON ORGANIZATIONAL CHANGE**

Throughout the development of organizational theory different approaches on how to change the organization has been introduced. For example Kurt Lewin contributed with his 3 stage model and more recent another contribution was made by John Kotter (1996) through his 8 step model. From our opinion both models have their sources in the traditional paradigm and therefore not suited for our change process. Furthermore we wanted to develop a model, which easily could be communicated to the involved employees and which would make sense for them. From this the model in Figure 6-1 emerged.



**Figure 6-1 Our thesis on organizational change**

The model takes its rise from the transformational paradigm and puts tools like metaphors, Enabling Knowledge Creation and Open Space Technology into interaction.

For getting the organization to change you have to alter its members behavior by getting them to use new actions. New actions can emerge because a new form of language based on exploitations of exciting experience and expectations are created. In this phase the experience and expectations are made tangible and perhaps put together in new ways. For this to happen the organization needs to take advantage for another communication form. By using the benefits of the brain metaphor (instead of the typical machine metaphor) and through an Open Space workshop it was possible to make it operational. The foundation for the process is new relations between the involved employees, which are a natural cause under an Open Space workshop.

## **7. A PRACTICAL APPROACH FOR ORGANIZATIONAL TRANSITION THROUGH NEW KNOWLEDGE CREATION**

All of the above described tools and models were brought together in a one-day workshop. The day was designed based on the principles of Open Space Technology. Approximately 30 employees representing the main stakeholders of the Source process were invited to join the workshop. The invitation was formed around the theme “New Rules and New Methods” focused on a positive wording according to the energy giving approach of Appreciative Inquiry (Cooperrider et al, 2000). This created the right context and the necessary care in the knowledge creation process, giving the possibility for dialogues to develop and where the participants gained new understand of the new whole. For documentation purposes through the day every group used a Gameplan as template, which were shown to the other groups in plenum.

## **7.1 The process Step-by-Step**

The following describes the process of developing the method that was used to start the implementation of management by processes at Grundfos A/S. The single steps are not sequential but are to be looked at as iterative, overlapping and some can be performed in parallel.

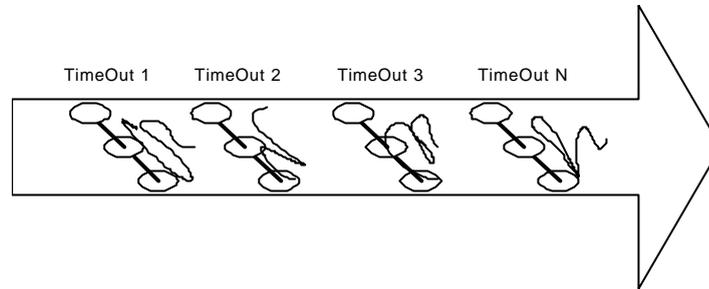
- Establish a change team of the selected process leader, 1 or 2 major stakeholders (key resource managers) and the process facilitator. The function of this team is to design and drive the change process through facilitation. Make sure that every body understands the goal for the change process by sharing your mental models.
- Introduce and anchor an understanding of the new paradigm, the organizational change model and other tools (example metaphors, Open Space Technology, Appreciative Inquiry) in the change team. Make sure that everybody understands the difference between a top-down-process and this type of process. Especially the managers have to let go and not try to influence the Open Space workshops.
- Identify the all stakeholders in the change process including the members, which everyday lives are in focus for the change process. This group should be of at least 15 participants.
- Prepare the invitation for the Open Space (in writing) in the change team. Use a positive wording according to the philosophy of Appreciative Inquiry. Try to make the participants as interested as possible. They have to feel that they are missing something when they don't participate.
- Send out the invitation well in advance of the workshop so the participants can plan their time.
- Carry the Open Space workshops through and stick to the recommendations for this type of large group interventions
- Record the outcome of the workshop through the day by using, video, tape or paper (example the Gameplan method we used). Dedicate one or two from the change team as observers. They have to record the process under the actual workshop so adjustments and learning for other workshop can be gathered.
- Keep the change process moving! The participants will expect that their contributions are taken seriously or they will not be motivated to changes in the futures if this fails.

## **8. AN APPROACH FOR DYNAMICALLY DEVELOPMENT OF OPERATIONS STRATEGY**

The second approach of dynamic developing operations strategy focuses on the three elements that offer possibilities of the timeout, Detachment and risk minimization, Innovation and Integration. The timeouts needs to support these outcomes, while incorporating the participation of the different roles and levels in the concept development process. A proposed way of establishing the detachment, while focusing on innovation and integration, are by organizing a series of TimeOuts that focuses on moving the process away from the current thinking of the company. As the process goes through a number of iterations in detail levels we can more talk about staging a development process then organizing it. At Grundfos we have developed a script for the staging of TimeOuts with different characteristics and

outcomes.

One of the important characteristics of the work is establishing means of interaction between the different concept layers in the process, supporting the process of dialogue between levels in the organization.



**Figure 8-1 A TimeOut supported business process, where the TimeOut allows for the creating of new wholes from knowledge gathered from different levels<sup>2</sup>**

The seminars are the main pillars in the seminars supporting the business process, and here illustrated through the example of the business process New Product Development (NPI). Even though that the business process has a specific purpose the actual content of the process will vary significantly and only key characteristics will be replicated. For example the scope of the NPI projects will vary on many dimensions, not allowing for an exact process to be described and directly supported.

Therefore the establishment of seminars for the operations has been made into a catalogue of possible seminars that are aimed at being used for creating new wholes of knowledge for a variety of different purposes. For the NPI the three earlier described characteristics of the possibilities offered through the TimeOuts have resulted in eight seminars, which are included in the script. Examples of the seminars are:

- Establishment of a Theme for the development project
- Challenging of the current content
- Idea generation seminar
- Establishment of connections for the development project's different layers and elements

The seminar needed certain characteristics to be fulfilled in order to have the required effect. Experimenting with ideas rather than theoretical discussions, in the line of the three-fold perspective proposed by Mintzberg and Westley (2001) of Thinking, Seeing and Acting for problem solving and decision-making, are essential. This notion is furthered for the TimeOut seminars by the following guidelines<sup>3</sup>.

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<sup>2</sup> The layer model, or elevator model, is inspired by Nielsen and Riis (2000).

<sup>3</sup> More on the background in Riis and Jorgensen (2002)

### *Constructing and challenging different concepts*

It is beneficial as an enabler for breaking the current way of working, to construct opposing proposals in a dialectic manner. This can possibly produce a new level of knowledge formed from specific ideas in the opposing proposals. An external facilitator can with advantage be included posing as neutral part in the process.

### *Choose a trigger*

Dreaming up ideas for a situation in which everything is possible stimulates creativity, this may be done by removing imaginary constraints or assuming that they do not exist by presenting new ways of working in operations.

### *Using a strategic framework*

Strategic frameworks have proven to be able to open the mind of participants to include new dimensions. For example, Hill's order winner and order qualifier or Fine's 3D Concurrent Engineering framework to give participants a common understanding of the interplay between product development, operations and logistics. Neutrality of the strategic frameworks makes the use less dependent on the individual facilitator.

### *Facilitator as pro-active (devils advocate)*

Latent assumptions constraint the formulation of a problem and the search for solutions. Questioning such assumptions open the eyes of participants to see new possibilities. This is achieved by identifying and presenting hard data on the subjects that earlier have been assumed as general knowledge in the organization.

### *Virtual and real benchmark visits*

By presenting other companies business systems from own or other industries new paradigms are introduced, making it acceptable for the participants to think in a new direction for the design for new operations decisions. This can with benefit also be achieved, with even stronger effect, by visiting other companies where the facilitators have developed a focused agenda before the visits.

### *Collecting specific ideas and establishing coherence in concepts for operations*

It is our general experience that employees, when triggered, are able to propose many relevant ideas for improvements, some are incremental and some are radical changes. A brainstorming activity may collect a large number of ideas. However, it is important to structure them into a coherent pattern.

It is important that the facilitator is knowledgeable of operations principles and can work at a higher level of abstraction.

## **9. LEARNING AND IMPLICATIONS**

The practical examples that we have been engaged in, indicates the possibilities for bridging the two paradigms that are paramount for the future industrial organizations. Using the notions of Appreciative Inquiry and large group interventions a series of approaches were designed to establish events that would break out, yet still function, in an efficient seeking organization.

Therefore the practical implication is a proposal of the establishment of different designs of organizational agoras for the practical implementation of the bridge between the two paradoxes. The further practical implication points to the fact that knowledge activist should be found among the grassroots in the organization, and not through, which supplement to the governing thinking of the manager as the established knowledge activist.

Of the current theoretical work we see that the work currently focusing on an evolutionary and coevolutionary perspective on strategy holds promise in leveraging in the understanding of the bridging of the two paradigms especially when focusing on an event-driven approach to the research. However, the prescriptive effects of the view are though unclear. Here, we find the practice perspective on strategy hold more promise on deliver impact on practice.

## **10. THE GRUNDFOS CORPORATION**

The late Poul Due Jensen established Grundfos in 1945 under the name “Bjerringbro Die-Casting and Machine Factory”. Not until 1967, after several changes of names, did the company get its present name – Grundfos. Today, the Grundfos Corporation employs approximately 11,000 employees.

### *Products and Applications*

Production and sales companies (58 in total) in all parts of the world represent the Grundfos Group. In addition, distributors in a large number of countries merchandise Grundfos products.

With an annual production of 10 million pump units, Grundfos second leading pump manufacturers in the world. Circulation pumps, submersible pumps, and centrifugal pumps are the three major product groups. Today, Grundfos is the world's largest manufacturer of circulation pumps, covering approximately 50 per cent of the world market for these pumps.

In addition to pumps, Grundfos manufactures electric motors for the pumps and has a considerable production of electric motors for separate merchandising. Furthermore, Grundfos develops and sells state-of-the-art electronics for controls of pumps and other systems.

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