MANAGING ACROSS LOGICS - A COMPARATIVE CASE STUDY

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ABSTRACT

In this article it is argued that in order for companies to prosper and stay on top of the complex and dynamic context of today, it is vital to manage and balance the different logics within the organizational network. We will argue that the main barrier to change is often not that of resources, but that of path dependent minds. The article builds on two longitudinal case studies. The first case discusses a toy company's effort to implement a new mass customized product into a global network. The second case explores a medium sized software company's effort to make new innovative and market driven products, while establishing a professional system. The article argues that none of the two companies succeeded in building effective organizational networks, because they both neglected or even tried to bypass an open organizational dialogue. A key reason for this seems to be that they did not know how to work around the present logics and their ambiguity. It is argued that organizational dialogue could have levered change by allowing diverse logics to come into play from which common learning could have been facilitated. This article therefore suggests that researchers need to study the dynamics of logic and develop the understanding managers need to achieve desired end-goals within the organizational network.

Keywords: logic, change, organizational network, learning, and dialogue

STUDYING ORGANIZATIONS AS DYNAMIC NETWORKS OF LOGIC

In the course of time the theory of organizational change has developed many concepts and terms to describe how and why organizations change the way they do. This paper will make the case that change, innovation and learning is made difficult by various organizational issues, but none seem as assertive as that of existing logics, which tend to institutionalize organizations into path of dependency (Barley & Tolbert 1997). We will analyze the events that occurred as two organizations struggled to stay on top of the complexity and dynamics facing them. The analysis will show that main barrier to change was not that of resources, but path dependency of minds.

Continually, as we struggle our way towards a better understanding of organizations and their transformation, we make new contributions in the form of models or concepts to frame the overall development. What give these different contributions argument can be found in their underpinning assumptions (Burrel & Morgan 1979). We will not argue for or against different ontological assumptions but just postulate that in this article organizations are understood *as dynamic networks of logics*.

Logic is conceptualized as a: *"rational element inherent in our ability to calculate and reason in a clear and self-evident manner. Mathematics, statistics, formal logic and the like are recognized disciplines based purely on formal logical principles and play a specific role in the methodology of sciences. <u>Logic is also a question of reasoning with symbols or concepts, defining and developing concepts, not only in science but also in practical life</u>"* (Israelsen, Nørreklit, & Nørreklit 2001, p. 4).

Organizational action is therefore considered a matter of dynamic logical-deduction of possibilities on the factual world around us. Logic forms an understanding of the world that surrounds us. One can say that it is our frame of reference. An analogue can be drawn to children playing and using different moulds to create models in the sand. The shape of the moulds and the amount of sand will decide what can be made. Much the same way, situation and logic will decide relevant and possible action.

Israelsen *et al.* (2001) combines logic and possibilities:

"If we cannot recognize possibilities, we cannot act and plan for the future. And if there is no possibility left for a person to do or for a company to do, then they die. A person with no possibility is dead. A company with no possibility is finished and

broke (…) Possibilities are not facts. Since possibilities are not factual, they are constructs only (…) thus the movement from fact to possibility is not wishful imagination, but systematic reflection, i.e. by logical procedures in analyzing what are the more or less realistic alternatives to the facts" (Israelsen, Nørreklit, & Nørreklit 2001, p. 4).

Logic gives us possibilities and answers to guide us through the situations we are faced with, but there will be incidences, where our logical procedures do not fit. When this happens there are two ways to go, namely either to follow inductive intuition or to fall back on a defensive logical mode dismissing the factual world. A conscious action therefore depends on our ability to conceptualize, what we sense out of the incident. If we cannot put relevant argument and term to our action, we can hardly argue that the action is based on conscious thinking. We will come back to this later on in the article.

The speculation about logics and their importance in organizations is not too recent. Several terms have been used to describe the phenomenon, e.g. scheme, paradigm, routine, knowledge systems, and rules March (1996), March (1981), March (1991), Pettigrew (1987), Prahalad & Bettis (1986), Bartunek (1984), Barley & Tolbert (1997). The problem is that none of these terms have been conceptualized for managers to use in their daily operations (Argyris 2001). This leads to two key questions:

1. What is logic in a dynamic organizational network, how does it come into action and how can we uncover it?
2. What concepts can managers use to guide and change the dynamic network of logic in a desired direction?

Recognizing that it is hardly possible to be prescriptive about a phenomenon (question 2) without understanding that phenomenon (question 1), this article focuses on the first question.

THE LOGIC IN ACTION AND THE ACTION IN LOGIC

Logic – no matter what we call it – is omnipresent in organizational contexts. When logic is shared it produces an action capacity that builds on social integration, the strength of which depends on its acceptance in the organizational setting (Barley & Tolbert 1997, p 96). Logic is, however, not viewed as external to human endeavor and therefore changes with the actions that we engage in. Our actions are in other words both "constituted by" and "constitutive of" our logic. In our quest to tie logic together with action in organizations we need to look into organizational life. In organizational life problem solving is the key activity through which actors express and activate the various logics that exist in the organization. In every situation there is always a number of possibilities to choose from. The action we take is a product of the selection we make of the possibilities our attention is drawn to. Therefore it is interesting to look into the process through which meaning is constructed to form the basis of why we approach certain problems, rather than others.

Problem solving is often reduced to rational decision making and understood as an instrumental process, where actors gather information about a particular problem and transform this into coherent action (Schön 1983). If we look into some of the resent research on decisions making, we often have to realize that this is more of an illusion than a fact (Flyvbjerg 1991). Selection of action is rather a form of bounded rationality or even a negotiated process of choosing between perceived possibilities. The key problem seems to be that we tend to forget to ask how problems are solved in real life. Problem solving, however, is only part of the process and it mainly deals with allocating the right resources and doing the things specified. It is therefore important to move one step back from problem solving to problem setting, by looking at how the process was initiated and asking how actors make sense of an uncertain and ambiguous situation that initiated action in the first place.

Schön (1983) introduces problem setting in his discussion of decision-making. He contends that this process has been totally ignored in the academic discussion, as decisions have traditionally been seen as fixed points in time, rather than process-based activities that gradually emerge to the attentive and competent observer. "*From the perspective of Technical Rationality, professional practice is a process of problem <u>solving</u>. Problems of choice or decision are solved through the selection, from available means, of the one best suited to established ends. But with this emphasis on problem solving, we ignore problem <u>setting</u>, the process by which we define the decision to be made, the ends to be achieved, the means, which may be chosen. In real-world practice, problems do not present themselves to the practitioner as givens. They must be constructed from the materials of problematic situations, which are puzzling, troubling, and uncertain. <u>In order to convert a problematic situation to a problem, a practitioner must do a certain kind of work. He</u>*

must make sense of an uncertain situation that initially makes no sense" (Schön 1983, pp. 39-40 emphasis added).

Schön continues his argument by introducing uncertainty and complexity to problem setting, indicating that it is not only difficult to make sense of, but also to talk about, a problem as it is. "*Technical Rationality depends on agreement about ends. When ends are fixed and clear, then the decision to act can present itself as an instrumental problem. But when ends are confused and conflicting, there is as yet no "problem" to solve*" (Schön 1983, p. 41).

So, we need to discover what problems to solve and how. According to Schön (1983), "*[t]he practitioner must do a certain kind of work*" to make sense of a senseless situation and his argument goes that they do so through a reflective dialogue with the situation and the context. Plato also dealt with this basic problem of searching for meaning. He argued that, if one looks for wisdom, one can only find it if one already knows what to look for. If not, one cannot recognize it even if one would stumble over it. This paradox shows how we need structure in order to make sense of things. This structure is produced in the interplay between logic and situational factors, and helps us to grasp some of the complexity and thereby make our knowledge actionable. Hence problems become problems because they appear in a specific context, where actors recognize them and start to think of them as problems.

Both Plato and Schön take their outset in the individual and pay little attention to the social process of problem setting. Organizational activity is a social enterprise by definition, requiring the commitment and coordination of a network of actors. Consequently problem setting becomes a process of negotiation in which diverse horizons of meaning are confronted (Habermas 1996; Wenger 1998). According to Wenger, negotiation is an ongoing process of reification, which embodies participation in conjunction with the production of objectivations of how we do things around here. Furthermore, "*[b]y living in the world we do not just make meanings up independently of the world, but neither does the world simply impose meanings on us. The negotiation of meaning is a productive process, but negotiating meaning is not constructing it from scratch…. Negotiation of meaning is at once both historical and dynamic, contextual and unique*" (Wenger 1998, p. 54).

In other words, actors experience particular activities as being part of a larger network of activities, which helps to shape their understanding of the situation. New situations initiate a new process of negotiation to fit the particulars of that situation. Negotiation is often seen as a process of reaching an agreement, which should be seen as the process of establishing a dialogue through which actors continuously shape and reshape their constructs of meaning. Hence negotiation is a social process, yet it need not necessarily involve actors directly in conversation. It is rather the recognition of the other and their bearing on the subject matter that counts.

As actors we engage in many types of situations with varying degrees of novelty. Wenger does not explicitly distinguish between different situations of negotiation as he sees these as integral of the context. Yet it could be argued that different situations require different means of negotiation. Nørreklit (1991) argues that we need to distinguish between three modes of problem recognition:

- **Routine based recognition** in which we consult our repertoire of existing knowledge and more often than not try to fit the situation to this stock of knowledge rather than initiating a search for new ways of problem solving. In this mode, we manage our world by establishing manageable categories of rules.
- **Logical-rational recognition** is the work of logical deduction and reasoning. This mode places much emphasis on accessing and processing ideally perfect information.
- **Intuitive recognition** builds on actors' engagement, creativity and competence that enable them to sense things that others might not. Competent actors build certain sensitivity towards the world they engage in and see things that the external observer does not.

Each of these modes seems to make rather different demands on the resources committed to the process and have their own advantages. How well each of the modes unfolds and manages to complement each other depends very much upon the setting in which they take place. The problem is that, even though organizations are best understood as processes in action, academics tend to model them as timeless vats. The integration of logics into action does not happen in a vacuum. It is a constructive process that happens all the time through our actions and interaction. Therefore we generally go through the motions of everyday life using our schemas of action, and it is only when these do not support what we see or expect that we (may) try to change the moulds of our action. Logic is used to find solutions and

possibilities, to structure and frame problems, and bring forward rational procedures and structures so actions will not be the case of coincidence or a twist of fate (Nørreklit 1997, p. 80). This is a situational, ongoing and dynamic process of logic producing our actions and our actions producing logic. Organizational logics can never be in a state of static equilibrium and there may continually be frictions that give rise to misunderstandings and conflicts, but also to new unexplored opportunities.

The use of logic is so to speak a matter of deduction by using "models of understanding" of the world around us. Logic comes in play when an actor is faced with a specific situation. What the actor does depend on the possibilities, produced by logic, and their attractiveness to the actor. Logic becomes social when it is communicated to other actors in the organizational setting. Hence problem setting and problem solving must be seen as processes in which the actors gradually build more knowledge about the issue at hand, and therefore also gradually shape the result through the perspective they take. In the following section we will use two case studies to show how logics work in organizational practice.

METHODS

We have pursued this research inductively, by applying case studies from two companies in which the authors have worked as action researchers. This method was chosen, based on the belief that participation would enable us to get beneath the bright surface of these organizations. The studies have used multiple sources ranging from observations of daily practices, participation in meetings, to interviewing and second hand documentation of various sorts. The two companies may seem very different, and they do indeed have their own problems and contingencies, but we experienced that some problems relate to the same domain – the interaction between logic and action. The important issues to be aware of in the following cases are therefore:

- What is argued to be the essentials to various actors and groups in different situations?
- What are the specific actions taken by these actors or groups?
- What are the characteristics for the interaction between the essentials and the actions? And what influence do they have on each other?
- What is characteristic for the interaction between the various domains of logic in the organization?

THE ALPHA CASE - COMMUNITIES OF SENSE MAKING

The setting

This case concerns a medium sized IT company, in this paper called Alpha, which was followed through daily participation by one of the authors during a period of seven months. The company produced software products for maneuvering in complex information systems it was established in 1996 and had nearly 100 employees when it went bankrupt in the summer of 2001. However, Alpha had little problems in convincing potential investors and other stakeholders of its potential. Hitherto it had lived on its ability to come up with new ideas, as it was positioned in a greenhouse where it had to a great extent been sheltered from the competitive environment. The company had primarily focussed on the development of a technological platform, which should provide them a strong position in the market. However in this process there was much confusion as to what position the company should focus on and how it should do it. Yet according to the management this drifting focus of activities was a normal consequence of maneuvering in uncharted waters. However, the company slowly but surely approached a maturity stage, which meant that the demands from internal as well as external stakeholders increased as well. The new demands started to rotate around such terms as 100% completion of products, maintenance, service etc.. This highlighted the need to establish professional practices, which became a dominant force as Alpha approached what could be called a "new reality".

The general logic in the firm was that of an urgent need to grow, and the company did so by hiring about 20 new employees every year. In the fall of 2000 the company had nearly 80 employees and suffered severely from a lack of physical space while it at the same time it began to experience some problems with communication and coordination. Furthermore, Alpha had a strong development tradition. The core belief was that the firm should and could produce the world's best product. Although it was more than difficult to live up to this ambition, management continuously confirmed this belief by telling success

stories. These success stories were produced in interaction with customers, investors and by small bench marking exercises and sometimes seemed to be of a dubious nature. They however served to justify work and cost incurred and therefore helped to legitimize staff as well as management.

The belief in "pursuing the best" had both advantages and disadvantages. On the one hand, it served as a strong motivator to staff, who felt special and felt that they here had the chance to achieve some of their personal ambitions. One employee said: "*Here I have the chance to be part of something great, I am not going to let this opportunity pass me by*". On the other hand, this belief proved to be a trap as projects became ongoing activities, which were difficult to stop, because there was always room for improvement from a technical point of view, whereas added consumer value was not taken into account. One manager noted "*this whole company is development oriented. Even Sales are more occupied with what will come next than with selling what they have to offer now*". Everyone was always chasing new projects and it was therefore very difficult to finish ongoing projects, as priorities seemed to shift continuously.

At this point management realized that there was a need to develop towards a more professional organization as it was termed. This was initiated through a range of different initiatives. First it was decided that there was a need for a new organizational structure, which introduced a layer of middle management (see Figure 1) and aimed to build an effective delivery system. Second it was decided to establish a process improvement team consisting of a middle manager, a secretary and a researcher. The team reported to a steering group, consisting of top management and an external consultant. Although the company had already worked with taken steps in this direction, as it had worked with the Capability Maturity Model, a software development and improvement approach since 1999, it had by its own account failed to integrate these practices effectively. This case will have these two transitions as its point of departure and they will be discussed in conjunction with one another.
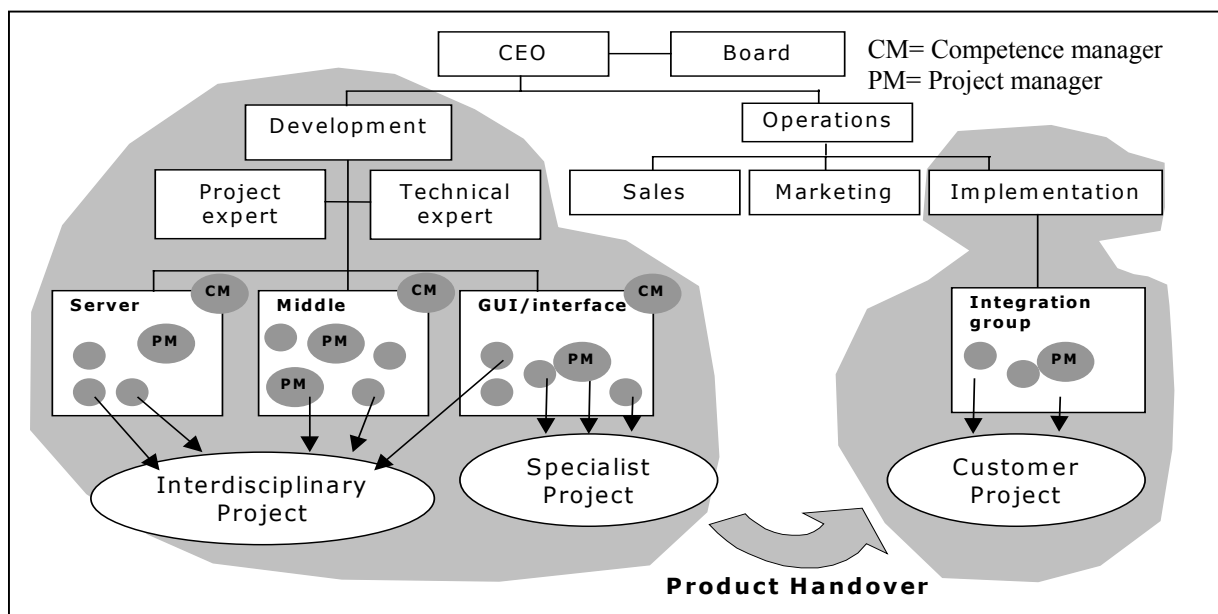

Figure 1 – Alpha's organizational structure

The professional organization and its structural measures – reorganization and process improvement

Due to rapid growth in staff it became difficult to overlook all activities. With the growth of the firm a larger diversity in terms of functions and types of people had been introduced. Whereas the firm used to be a highly integrated entity it slowly became a multifaceted working environment. This started to put heavy strains on the culture and the shared understanding of what the company was doing. The management group discussed these issues during an external two-day seminar. The conclusion was that there was a need for co-ordination and communication as well as an increased awareness of the mutual dependencies between and across various functions and activities. It was decided to restructure the company and to divide Alpha into two major departments, development and operations. The main reason

for doing this was an experienced pressure to establish an effective delivery system, which could take care of the customer interface, but was starting to cause major frustrations for developers. It was therefore in addition decided to also establish an effective development system with clear lines of authority and task responsibility. The interaction between the two was envisioned as a trapdoor that would open and close whenever a new product was available. This, however, later proved to be impossible to execute in practice, as there in effect was a continuous conflict about when a product was finished and how and by whom it should be serviced when it had been handed over. Often it also proved to be difficult for sales to understand the products, which meant that developers often had to hand carry the products to the customer.

The other main consequence of the reorganization included the construction of three competence groups based on the modules in the software development, the server layer, the middle layer and the user interface layer, respectively. The groups were constructed on the basis of intentions such as improving the uptake of new employees, establishing a learning and problem solving community and developing a middle management system.

The groups were very different and used different modes of organizing. The server layer was a small and integrated group and mainly consisted of established members of staff, who had a long educational background and worked with a high degree of autonomy. This group was considered as the research and development section of the company and was placed in an office in another part of the town. The middle layer on the other hand consisted mainly of relatively new members of staff, with short to medium long educational backgrounds. This group was led by two established members of staff, who had been appointed project managers recently. The group was considered as the finishers who should make developments functional to the customer and did so to a large extend by developing standardized frameworks. The user interface level was thought of as a support function to the two other layers. Most of the newcomers (in the middle layer) complained that they did not have enough work and that they felt rather stressed by this fact, because they could see that the established actors were more than fully booked, and therefore felt that they were not able to make a contribution. Newcomers were activated through small insignificant projects meant for them to learn about the technologies and methods of the company. However, most of these projects never amounted to anything and they were often abandoned at a relatively early stage. The newcomers were never integrated in the core processes and therefore remained peripheral participants although a structure had been established which had integration as its main purpose. As a consequence people got stressed because there was not enough work.

The groups only seemed to work on paper. In real life they seemed to be empty shells, and their only function seemed to be that a clearer line of authority had been established. Although this still was a constant source of confusion as most of the projects were cross-functional and therefore involved several managers. The organization seemed to forget that communities take some effort to establish and was in particular unaware of the interface problems between layers in the software development process that the new construction had created. This came as a surprise to everyone who thought that problems had been taken care of with the structural measures taken, yet it was realized that something had to be done.

Management soon became aware of the problems and initiated a range of structural measures to deal with them. The main initiative was the construction of a project office, which initiated process improvement initiatives to establish what was termed professional practices in projects. This included a range of different tools and methods that should help project groups overcome some of the coordination and communication problems. Project review meetings took place on a weekly basis as did meetings of the so-called development group, which consisted of senior and middle management, a group of 6 people, which was meant to focus and direct development activities. The Intranet and other forms of ICT were used intensively as a communications platform. Each project had its own homepage, which was used by project members as a working platform and also to keep others informed about developments. And finally a development plan was written up with demand specifications for each project. Yet the process improvement group soon had to realize that staff members mainly saw these initiatives as needless administrative overhead and generally failed to see how the initiatives would help them in their daily work. They still experienced a chaotic working day with lots of new issues to grasp and new priorities for their work.

An argument that often came up in the discussion was the complexity of the work and the environmental

uncertainty that the company continuously faced and which made it impossible to plan more than 14 days ahead. "*We need to keep our options open and be able to act according the contingencies we meet*", senior management argued. To the staff this often looked like a bad excuse for not taking the time to manage. Staff continuously looked for a logic to guide them through their work but continuously found that priorities had changed and often experienced that their work had been wasted effort, or that it did not live up to the requirements of modules produced by other project groups. This search for logic rendered the creation of a development plan. The plan aimed to deal with the problem of the interface between the three layers in the development process and in particular sought to create some level of certainty and order in the development department. Yet it was soon realized that neither management nor staff were about to change their ad hoc based working methods. Priorities continued to shift as people met in the hallways at lunch etc., rather than in the formal meetings that had been set up to deal with development planning. In fact staff had even invented a word "binary management" to describe management commitment and attention at Alpha, which was experienced as either 110% or 0%. The management group carried the image that staff would like strong and ever visible management that was able to guide them through all the trouble they had. Soon this, however, developed into a relation based on fear, because the perceived distance between the management group and staff increased as the company grew while management kept doing what they had always done – solving problems.

Alpha did in fact have a strong community feeling, which had its foundation in a profound technology fascination. There generally was a strong sense of helping each other and there always seemed to be someone to turn to and help solve a specific problem. The problem, however, seemed to be knowing what others were doing and figuring out what implications this had to one's own work. This often meant that groups had to make several versions of the same module to fit the specifications of a product and this was not discovered until the product had been handed over to the next level. In other words, there was a constant flow of problems on the interface between modules of the software product, produced by misunderstandings between groups. Therefore there seemed to be a tendency that members felt that they belonged to fractions of the organization rather than to one large family. In particular, this was obvious in the relationship between the server group and the rest of the organization. This group was convinced of its own abilities and did not really believe that anyone else could make a significant contribution. Although coordination seemed vital due to the interconnections between deliveries, this was seldom taken seriously or thought to be much simpler than it proved to be in practice. Priorities constantly shifted and project groups were often told to drop everything they were doing in order to put their full attention into something new, while other groups that were dependent on the module were put on hold until the first project group could resume their work. In effect, deadlines were still exceeded by many lengths.

Company Alpha never really managed to establish an effective organizational network. Only weeks before it went bankrupt the company managed to generate an integrative focus and to mobilize actors in the quest for actualizing this – all too late, unfortunately.

THE BETA CASE – A NEW PRODUCT IN A COMPLEX SETTING

This is a case story about a toy company and its attempt to launch a mass customized product in a newly established e-business field. The business objective was to give the consumer the possibility, never offered by the company before, to influence the final product and order directly from the company a customized train, which could not be bought in any retail shop. The study will illustrate the problems that occur if the organizational network does not get the information needed and the managers involved do not give themselves time to understand the different logics that come into play in a growing global business.

The setting

Around summer/fall 1999, the toy company called LEBA Inc. decided to get seriously into the Internet business. Previously only sporadic initiatives had been launched with relatively small budgets and limited organizational and managerial support. This time a new strategic organizational unit named ABEL was established, supported by an executive vice president and the CEO.

ABEL was originally established to nurture and further develop the relationship between LEBA Inc. and the core consumer community. A relationship, which had suffered increasingly as LEBA inc. had moved their sales focus away from small or medium sized European Toy Shops toward the big retail chains as Wall Mart, K-mart, Target etc. in the US. ABEL also had to generate significant in sales over a five-year period. The CEO argued: "*We are dedicated to revolutionizing our relationships with our consumers making them a part of LEBA in a way we have never done before. Cutting edge technology gives us the opportunity to listen to and directly involve the creative powers of our consumers to design new and one-of-a-kind products from the ground up*". To be innovative and extremely agile a concept from the vice president was to create a business, which should more or less "orbit" around the rest of the organization. This perpetual orbit was introduced as he felt that there was not enough innovative power and freedom in LEBA Inc. As he states: "*You cannot make innovation in mainstream. Not because they are stupid or something, it simply cannot be done. It is similar to a circus horse. If it smells sawdust it turns left - so do large systems - and it is no good if you want it to go right*".

ABEL would be organized as a global triangle of three locations in Denmark (DK), the United States (US), and the United Kingdom (UK) to be developed out of four former business areas. The activities/units involved were a marketing/information internet site in DK, an Internet shop in DK, a catalogue business in the US and customer services operations located in the UK and the US. LEBA Inc. would provide financial, supply chain management, legal & law, and production support.

The complex organizational setting meant that close cooperation with LEBA Inc. was needed and that existing procedures, routines, politics etc. were implemented into the new structure of ABEL. In this case, we primarily discuss involved business units and actors from DK and the US. Customer service was not a part of this project.

The product development process

To accomplish the strategic intentions of nurturing the company-consumer relationship, ABEL's newly appointed executive manager John, located in the US, got into a dialogue with the core community of toy enthusiasts already present on the Internet. During these discussions, John realized that there was a significant community aged from 10 to 50+ having enormous interest in trains. This segment was particular interesting for three reasons. First, most of their work was handcrafted trains made of LEBA Inc. technology. Second, past and current products from the company were designed to kids in the age from 6-10 and the company designers were still lowering their target group. ABEL could therefore use its current successful technology and with a relative small PR effort reach an already present market segment without disturbing the ongoing activities in LEBA Inc. thirdly this community was very active on the Internet and therefore had a great potential to be reached using this medium.

Executive manager John therefore asked product manager Eric, working from DK, to find out what could be done to reach the segment with a train product. In the initial phase of the project John and Eric decided to go for a customized train with the color of the train being the variant. With this frame of reference Erik contacted the design department of LEBA Inc. in DK and got designer resources to develop a physical product. In this process Eric was very lucky, as he got hold of an old train designer called Robert, who was quite interested in the product. John and Eric had an "old western train" in mind to reach the US market, where the train segment primarily contained "elderly" people, but the product should also appeal to the German market of teenagers. Finally, it should be able to reach parts of the global market. During this process pricing became a considerable element. It was known that the US buyers would be ready to pay more or less whatever "it takes" as long as they got the "real" stuff, i.e. realistic copies of normal trains. The German segment would not be able to pay so much.

The segment therefore demanded high variety and to have something to choose in-between Robert designed four different trains: a small train, a small train with a coal-wagon, a big train and a big train with a coal wagon. It was then up to John and Eric to decide which one to pick. All four products were interesting and had sales capacity. When Eric saw the four trains, he quickly realized that a lot of the same components were used through all the designs. Eric therefore suggested that instead of only getting one customized train with different colors, it would probably be possible to offer four trains based on a platform of similar modules. These could then be further customized into different colors. John agreed with that and Robert went back to design a platform and basic modules for each configuration. In this process Robert and Eric met daily to solve the problems occurring during the product development. Eric argues: "*I have to be available when needed. It might only be a small matter or question concerning what element to use, but*

in order not to waste too much time we continued like this until we finally got the product approved". The result was with four different models, a big train with and without tender, and a small train with and without tender. The train was designed to come in five colors, blue, green, black, brown, and dark gray.

Eric realized that to bring the product on the Internet, he would need a front-end configurator to handle the online construction of the trains as well as a back-end database solution to handle payment etc. To carry out the back-end solution Eric used two IT-specialists of ABEL's IT-group in DK, who had the necessary competence. Chris, one of the US staff, made the front-end solution with experience from an earlier similar product. Chris was originally engaged by another business unit in LEBA Inc., but was transferred to the US IT-group in ABEL to handle the front-end configuration and front-end database requirements. In this period, it also became a question how ABEL in cooperation with LEBA Inc. should produce and fulfill the customized train products. As the original idea was primarily rooted in the strategic initiative to create mass customized products in ABEL, Eric brought in two Danish engineers, Hans and Mark, who were to find out how ABEL could fulfill mass customized products. Hans and Mark were involved in different project in both LEBA Inc. and ALBA, but primarily concerned with fulfillment and product development of mass customized products at ABEL.

All communication in this period of the project goes through Eric. Eric had meetings with the DK actors, but there seemed to be no meetings with people from the US. This had two reasons: Robert did not speak English and the cross-functional involvement had to be timed so that Chris did not affect the work of Robert. Eric did not want Chris to affect the product development, as he wanted the best train and not the best "configurator train". The configurator had to be accommodated to the trains and not vice versa. Soon Eric acknowledged that due to the complexity of the product and the speed by which it had to be ready for the front-end Internet sales, he had to " hand carry" the product through the value chain. Eric had found solutions with all the actors involved about what to do and how to do it. This meant that Eric became in charge of the total coordination with external vendors and LEBA Inc., who had to produce the modules. Eric made the final train concept as he went along, but the product became totally dependent on him and his abilities to lead and follow to the total process. During the process Eric did not make any documentation about the project and how it was supposed to run. This was different from the routine as most projects at LEBA Inc. were normally controlled and to some extent also led by plans and procedures. However, nothing was considered wrong in that, as it followed the original thoughts of the "orbit" business.

Following an advice from Mark and Hans who had worked out a "Internet consumer request concept", it was decided that the modules would be produced in small bags each containing a module. The bags would then be brought to the Fulfillment Center for further picking and packing into special vendor designed boxes, matching the request of the Internet consumer. Hence, it was not until this final stage of picking and packing that the building manual for the train was brought together with the physical product. In LEBA inc. the production lines was therefore not running a total product, but *bags of modules* with a four digit product codes. This was an entirely new way of coding products in LEBA Inc. where each *total products* had a four digit codes.

Even though the process was running smoothly and Eric tried to inform all the actors involved, he forgot about the quality control in LEBA Inc. The normal procedure is that employees check the quality of parts by taking a product and trying to assemble it. In this case, however, the quality department was not informed about the new module design of the train product. So, the normal procedure for *total products* was followed. As the employee involved could not make any sense of the bag containing a single module, he stopped production as instructed. This happened a Monday morning. As the production area was close to Eric's office, he could easily drive over to explain what was going on and the production was not blocked for a longer period. This would have been substantially more costly and problematic, if the production of the modules had been in one of the facilities geographically placed far away and even more problematic, if it had occurred during the weekend.

At the same time, Eric's original planning started to suffer, as the front-end configurator was not ready. It had been given less priority during the last months, mainly due to campaigns in ABEL's normal internet business, where several countries and new payments methods were added for e-commerce. The ABEL IT resources in US, which Chris was a part off, were therefore behind schedule handling the configurator. The back-end software was more or less ready for operations, but became quite problematic as the

application required some redesign in the shop database administered by the US front-end people. Even though a project management tool to handle the running projects had been developed, defined and discussed by the management group in ABEL, some sort of anarchy was ruling as the "higher ranked" people in the US seemed to push their projects up, thus overruling the project management tool.

To create ownership and commitment to the project Eric was very much concerned with the importance of early communication between DK and the US. This is primarily based on unpleasant experience from an earlier project. The Danish approach to project management, i.e. early communication, spreading of information and differentiated ownership differed significantly from the dominant, more centralized approach in the US, where managers "owned" the project and decided on work breakdown and scheduling. To push the development process and ensure a smooth product launch, Eric, Mark, Hans and one of the IT specialists therefore traveled to the US in February 2000, to hold a kick off meeting involving all relevant business units from sales to supply and IT tool support. Unfortunately, the kick-off meeting ended in a "no show" due to bad weather. The only ones present were the four Danes, with their plans and overheads. To get something out of it, they tried to gather people at two locations. Mark and Hans made a presentation primarily concerning supply chain issues, and Eric and the IT-specialist did another one focussing on product, marketing and IT issues. Eric though felt that it was never a real success.

During the following summer Eric realized that the configurator and the changes in the front-end database would not be ready for the planned launch of the train product in fall 2000. At the same time the rumor went that LEBA Inc.'s sales was far off the 2000 budget. The management team in ABEL was therefore focusing even more intensively on opening new markets to meet the budget. Between summer and fall Eric therefore decided manually to calculate the prices of the 20 possible products. Eric named each of these products KIT, which all had fixed prices. If the configurator had been ready as planned this would not have been necessary, as the configurator software would have calculated the prices.

In the US catalogue business, the term KIT was used differently, namely as a collection of products or series of products. To give customers an incitement to buy a series of product instead of just one, they discounted a KIT to raise sales. Eric was not aware of this language difference. The employees who made the catalogues had therefore only had the short briefing in February about the new product structure. Their manager did not pay any attention to the new product, as he was first and foremost concerned with high volume sales and not small-customized forecasts. Consequently, they acted as usual and discounted all the 20 KITs. Eric came to realize this when he saw the fall catalogue, which had already been distributed in the US and Europe. This obliviously meant that ABEL could no longer use the configurator, as the fixed and discounted prices are sums of the modules. Further development of the concept was therefore useless.

The product of mass customized trains was a pilot project in ABEL and produced with small forecast. The loss for ABEL was therefore not extensive and problematic in the first place, but it was a huge sales success, as the trains were out sold after just a few weeks. The big and problematic question therefore became what price setting ABEL wanted to go for next time? How would customers reacting to higher prices of future releases? There is no solution to this question yet.

ANALYSIS

In terms of industry, size and history the two cases seem to have very little in common. They are written with different perspectives. The first case is about an organization, the second about a project. But when we look more closely, from an organizational transformation and new product development point of view, there are distinctive common features represented in both of them. Both organizations operate in a high velocity context, aim to create the best new products, and move from a protected environment to a market driven context. The cases illustrate the problems of coordination and communication in the process of creating effective organizations while developing new products. As we have seen in the theoretical discussion logic is often seen as an action generator. Yet, in the cases we see an opposite tendency where logics block possible actions and vise versa. This seems to be due to the lack of established dialogical networks where logics can meet to generate social understandings of what to do. We will return to in the next section.

In the mean time to get closer to a description of logics in dynamic organizational networks and thereby get closer to an understanding of logics in action. We will look at the following three areas in our analysis:

- The first area of interest is the problems occurring when we try to fit new product development with current or missing logics of professional managerial systems. We propose to call this **the internal counteract of logics**.
- The second area of interest is the problems occurring when we seem to think that the systems we establish can solve problems by themselves. We will call this **the control of historical logics**.
- The third area of interest is the problems occurring when we have conflicting logics. Conflicting logics in the two cases can be found in many levels and categories, but we have chosen to focus on, what we call, the barriers of **organizational and professional logics**.

The categories listed above do not directly refer to the processes of problem setting or problem solving, but they are all three to be found in both processes.

The internal counteract of logics

The first and most predominant feature of the two cases is the problems related to the reconciliation of counteractive logics. We see this phenomenon especially, when we compare the new product development logic of product freedom, speed and uniqueness with existing professional managerial systems.

Let us first look at the Alpha case. During the period described in the case, the company builds up a considerable managerial system to support the interactions between individual projects and overall performance. These initiatives are materialized through a new functional organization structure of development and operations as well as the implementation of advanced IT tools. Organization and tools are primarily designed to help projects to be passed on to new internal business units. Therefore the functional separation between development and operations has been implemented. The logics that come into play are functional responsibility and long term product planning with huge communication.

What makes the new context (organization and tools) problematic is not its intentions, but first of all the fact that the company develops complex products requiring cross-functional collaboration in a functional context. Second, the strategic choice of keeping all options open with 14 days of planning interferes with the logic of long term product planning. Most employees have problems understanding why they have to spend a huge amount of time in such systems doing, what they call administrative over-head, while the company is rushing into something totally new.

The problems occurring in the Beta case are to some extent similar. In the production facility transparent logical procedures of how to check for quality, what quality is and what a product consists of are at hand. The new logic, of mass customized multi-number products interferes with the existing one-number product line. The semi-fabricate with a "normal" product number is impossible to assemble into something meaningful and following the described procedure the quality control stops the production.

The control of historical logic

Historical logic is best characterized as managers and staff thinking: "what was best, still is".

In the Alpha case the historical logic of creating the "world best product" seemed the factor controlling most of the actions inside the organization. The continuous influx of money from investors into the firm reduced their feeling for the competitive environment and product closure. Products were under constant development due to personal ambitions as well as the company striving to be the best by closely following technological trends. Certain groups of employees acted highly autonomously rather than passing on critical product information to other parts of the organization.

In the Beta case many of the actors involved in the ALBA organization came from LEBA Inc. into the network. There are many incidences showing the role of history. A very strong example concerns the delayed involvement of the US-based IT-people in the train project. The logics are simple. Designers make the best products. Internet people make the best Internet solutions. However, the best integral solution could well have been one that required early involvement and collaboration between these functions, for example in cross-functional teams presenting the best from each area of expertise. The established way of working in LEBA did not allow this to happen.

The barriers of organizational and professional logics

The third feature is about barrier of logics. Organizational and professional logics in the two cases are narrowed down to focus or what are the important elements to the business. Both cases discuss a situation, were sales and product development are both trying to become the strategic focus of the company.

The Alpha Company never fully develops and implements a running sales and service logic, due to the fact that is has no rooted professional interest. The company is build by engineers to follow their established interests. Even when the company went bankrupt the staff continued to work there for free. There are factions inside the company who try to get focus on sales, but even in the management team, there is no real support for this. Therefore Alpha does not manage to establish a well-balanced company. The professional and organizational barriers of logics were hindering this.

In the Beta case the limited amount of IT resources available to handle the front-end configurations inside ABEL highlights the difference between both organizational and professional logics. The DK product development group see their product as an important element in the company to nurture the development between the LEBA Inc. and the consumer. The product seems one of the most appropriate tools to integrate the consumer into the company. To the Danish team the product therefore has significant strategic importance. However, in ABEL management team, which is primarily located in the US, the train product is one of many strategic projects going on. The project is consider important and needs attention, but it is not crucial for the survival of ABEL. It is seen as supportive, and to a certain extent as a pilot project, to finding out the effects and demand for customized products. Inside the corporation rumors have started to evolve that the overall sales in the corporation are behind budget. ABEL's sales are not far behind budget, but are hanging on especially the US sales. As toy sales peaks during the Christmas period, the marketing and sales people begin to put pressure on the IT resources to support as many markets and payment methods as possible. Their primary focus is therefore not on "nurturing", but to get the sales channels growing to get most of the Christmas period. Two logics are therefore meeting, that of increased sales and that of new customized products. The logics of sales and opening of new markets get the highest priority and most resources, and the train product has to rely on the second best solution.

In relation to the discount of the 20 train KITs, we see a clash of logics in regard to how a product is called. There are counteractive logics present in the language. Looking deeper into this we also find that it is to some extent also a matter of management logic. There is no doubt that communications failed during this part of the project. This may have been due to factors such as weather, focus etc. Still, why did not the catalogue makers no question the fact that all of the 20 train KITs had to be discounted? There seems to be evidence that the US sales people and generally the employees in the ABEL US organization have a tradition to act as ordered. When the procedure is to discount KIT, you do so until you are told otherwise specifically by your senior manager. Eric argues: "*In the US the employees do not want to know about such thing. They not want to have the responsibility. If you write too much to an American employee, they start to fear something is wrong, asking themselves: why do I have to know that?* ". It is not that he blames them for that, for him it is simply a fact. The point here is that a different management logic of sharing and ownership probably would have led to another outcome.

From this analysis, we find that we have made a descriptive contribution to the understanding of logics in action. We will therefore in the following be more prescriptive about how to manage these

SYNTHESIS - MANAGING ACROSS LOGICS

We will now return to the dialectic tension between logic and action. We have shown how the two can both facilitate and hinder each other, but how does this change our perspective on organizations and management? Managing across domains of logic carries in it a paradox concerning diversity and coherent organizational action. All too often principles of organizing have the managerial prerogative at their core. This notion holds that managers strive for control and impose their interpretations on the employees. This is known as the unitarian school, which has given rise to notions like dominant managerial logic (Prahalad C.K. & Bettis 1986) and organizational culture (Schein 1994). The primary problem of this school lies in its one-sided conception of how sense making happens in dynamic systems. On the other

hand, the pluralistic school builds on the notion of interplay between several provinces of meaning, with actors establishing their own interpretive systems through the myriad of interactions they are engaged in. Organizations can therefore not be conceived of as coherent and stable entities. The problem of the pluralistic school is that it lacks a sense of the inequalities of power dividing management and employees. More interestingly, however, it also divides diverse groups of employees, as we have seen in the cases.

To get beyond this dichotomy we are particularly interested in the processual view of the firm, because it is believed that dynamic organizations constantly aim to fit their interpretive and problem-solving logics to emergent contingencies. The dynamic organization has to maneuver in uncharted waters, which means that it needs to develop a receptive system that can help it steer clear of the icebergs lurking beneath the surface. This while it at the same time maintains a clear conception of its own identity and hereby aims to put its capabilities to the best possible use. This conception of an organization easily ends up in the dichotomy between integration and differentiation, but our central argument is that both dimensions need to be developed concurrently.

So what do organizations do in order to manage this dual pursuit? Dynamic systems exist because of their ability to recognize and transform possibilities into meaningful action or products. Yet, possibilities are not facts. They have not materialized and only emerge to the competent and attentive actor. What seems to be important for organizations is that they are able to establish such a receptive system that recognizes possibilities and mobilizes the organization to engage in the production of meaningful and coherent action. As Nørreklit (1989, p. 164) notes: "*The social task of leaders and managers is to guide the construction of possibilities for the enterprise, its employees and interested parties*".

Guiding the construction of possibilities in a dynamic system as we have seen it in the two cases is not a simple task as it is difficult to distinguish between right and wrong and further because various constructs of logic seem to interfere with one another. Therefore the process of guiding must take its outset in the dialectic between the local logic and systems thinking and must aim to facilitate the linking of the two. It is important to remember that everyone basically wants to make an effort that matters, but the individual actors carry their own values and if these do not correspond to the actions that the organization would like them to undertake the drive and commitment necessary cannot be allocated.

Organizational action can therefore be seen as unfolding processes of logic. The processes of the firm are the media by which organizations produce coherent patterns of sense making, because they force decision-makers to take a stand. The following quote puts this very poetically: "*Processes are the media by which an organization creates future acts out of its past experiences. Yesterday surges in and tomorrow gushes out*" (Hedberg, Nystrom & Starbuck 1976, p. 41). The problem however seems to be that organizations often seem to function in such a way that yesterday's practices carry so much weight in the quest for efficiency that they suppress receptiveness and sensitivity. The problem that occurs from this is that people enter into a degrading learning spiral although they are in fact highly successful at their immediate actions.

We deal with process-oriented organizing, rather than structural-oriented organization. Communication is key to the organizing process because it works as an integrating factor as actors produce a mutual understanding of themselves and their situation. This communicative sense making process is therefore central to the activating of multiple logics and to reducing uncertainty through the production of common understanding. Weick (1979) sees organizations as systems taking in ambiguous information from their environment, trying to make sense of that information, and using what has been learned in future situations. As such, organizations evolve as they make sense out of themselves and their environment.

Successful organizations seem to be able to make good sense of the future in spite of its non-linear properties and do not rely on existing patterns of behavior but aim to maintain their openness. We argue that these organizations are likely to operate in a participatory, collaborative manner, in which staff communicates intensively, support each other, and work together, and these systems are therefore likely to have a, what could be termed, receptive organizational cultures. Further they tend to readily share information and decision-making power with the staff. Such organizations come to resemble ships with radar systems. The radar detects the iceberg and steers clear of it. This process of sense making arguably derives from the actors' competence, as it creates alertness for seeing and interpreting the signals in the environment. Hence the actors use their frames of reference as a source of sense making. Decisions should be seen as processes of competency based action. The problem with competency based decision

making could be that creativity becomes locked into a specific path because actors tend to do as they usually do, as these options are readily available to the actor and easily gain support in the organization. Hence the central factor blocking a receptive culture seems to be the actors themselves and the logic in the organization. The huge task for organizations is to activate this diversity in creating meaningful and coherent action, and therefore letting neither conformity nor chaos determine its development.

Our perspective on management makes a clear break with the procedural management terminology and instead aims to develop processual means of managing. A cornerstone in this is that managers should provide people with a sense of direction, rather than telling them how to get there. Managers need to trust that competent actors are capable and willing to govern their own roles. The role of management thus becomes one of showing people how they can relate their contribution to the organization as a whole and further to enable act accordingly. Johnsen (1998) argues that actors practice leadership when they seek common goals through the use of common means. Yet, the ultimate goal for management must be to make leadership an inherent capacity of every member of an organization, to enable everyone to act responsibly and in accordance with the organization as a whole. This renders that the individual actor is able to apply a system thinking, which builds on an engagement in the whole and a sense of responsibility for its well being. This demands motivation, which means that we need to turn the focus from individual abilities towards the actor's willingness to participate. The motivation to do so is nurtured when there is correspondence between the actor's values and the action and strategies that the company adheres to. The key factor for any dynamic system must therefore be to place the individual actor in a context where this correlation of interest is fulfilled as much as possible. An important function of management is to guide and clarify. But before that is possible one needs to be empathic to and understand one's environment and how it is working.

Dialogical architecture and alertness

If we agree with the argument in the above discussion, then sense making in organizations is a constant process of reflective inquiring and communication in which management has the role of offering references among possibilities. Hence the traditional role of management seems to have surpassed itself, and we might find that management is an activity of participating, liaisoning, maneuvering and facilitating, rather than one of instruction and control. In the Alpha and Beta cases management failed as a source of reflection and reference, because they were so busy taking care of everyday business affairs, which meant that staff was desperately seeking some sort of logic to cling on to. Management thought that establishing the frame through structures would suffice to make a professional and focused organization. They neglected the organizational dialog about what the company should be and how. Like the case companies most organizations are today highly concerned with establishing systems that facilitate communication. However, what they seem to forget is that it is not enough just to establish the frame for dialogue. It is not even enough that they actually sit down and have a conversation with and between employees. The dialogical space is clouded by various logics, personal ambitions and even by the systems that we establish to convey communication and dialogue.

The concept of dialogue is central to our understanding of managing across logics. Dialogue comes from the Greek "dialogos" where *dia* means "between" and *logos* "reason". This reverts our attention to the interaction of logics and means that dialogue is formed in the interaction between people and the context within which they exist. Dialogue is in other words a process through which diverse horizons of meaning are confronted, we inquire into our own frame of reference as well as into that of the other. This means that a good dialogue is more that a simple transaction mechanism. Its key potential lies in the learning that actors obtain from the process. The role of organizational dialogue is not fusing horizons of meaning, but to create an environment in which knowledge can be put into play.

It is believed that dialogical consciousness plays a major role in the development of a receptive organization, because it is only when we make things explicit and are able to conceptualize things that we are able to do anything about it. In everyday life we often think that we have a dialogue when we do in fact not. All too often competent actors become preachers of their own perspective, and often we see dialogue as a form of classical negotiation with a winner and a looser. Basically this builds on the unfortunate belief that some actors are better than others and therefore should teach others, this belief is often self-reinforcing because actors who are told this often enough start to live by it. The essence of dialogue is completely contrary to this belief as its primary focus is on mutual evolvement and should

therefore be thought of as a learning process that evolves in the dialogical space between actors. In organizations today there is a need for dialogical consciousness, for an architecture to support this, and for actors having the ability, the willingness and the opportunity. Last but not least there needs to be respect for others, and a belief that others will be able to make a contribution.

A constructive dialogue does help the construction of connectedness between domains of logic. However, dialogue as more than this; in fact we need to see it as a productive process. This has been discussed as reification and objectivation above, and refers to the transformation of knowledge into physical or meta-physical constructs. This could be in the form of concepts, prototypes etc. that can facilitate the creation of shared meaning. The challenge for firms thus seems to be how they can organize in order to gain learning effects from all interactions. It is argued in this paper that it does so by producing and maintaining structures of relevance and to facilitate an ongoing organizational dialogue. Managers need to focus their attention on content, communities and connectedness in order to manage the dualism between integration and differentiation. As for *content* we need to recognize that actors need not know what others know. They need to know what is relevant and necessary to do the job well and for that they need clear interfaces to the work of others. With *communities* we recognize that people do not want to be the only one of their kind and therefore form groups with other people to whom they feel related. *Connectedness* is about enabling the interaction of diverse communities and suggests that organizations should aim to organize for cross-functional dialogue and co-operation, and to facilitate systems thinking.

On a final summarizing note it can be said that as we have argued that the role of management is to help actors relate to their environment. This relating is driven by values and we need to recognize that actors cannot be told what to devote themselves to, hence devotion is not an object of control. What can be done is to provide them with the tools to discover how their devotion can be transformed into meaningful action to themselves and to the company. This is where the organizational dialogue comes into play as it enables the organization to maintain a dual pursuit of integration and differentiation. How we establish these dialogical architectures and alertness in an organization is the subject of a forthcoming paper.

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