

STRATEGY AS GUIDED EVOLUTION

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STRATEGY AS GUIDED EVOLUTION

Abstract

In this paper, we build on a detailed case study and the theories of evolution in social and cultural systems (Campbell, 1969; Boyd and Richerson, 1985) and intra-organizational ecology (Burgelman, 1991,1994; Miner, 1994) to develop a model of strategy as guided evolution. Its primary distinctions from earlier models of organizational and intra-organizational ecology lie in (i) the incorporation of an important - yet realistic - role of top management in shaping the direction and outcomes of the evolutionary processes within firms, and (ii) the incorporation of human and social capital as a critical unit of selection within such processes. We argue that the model has several advantages over existing alternatives, both as a robust framework for theorizing about strategic processes and as a practical approach to management that can help firms successfully adapt to changes in the external environment.

1. INTRODUCTION

In the past few years we have seen an increasing interest in using evolutionary and ecological perspectives in the domains of strategy and organization theory. Important intellectual foundations for this work include the seminal contributions of Nelson and Winter (1982) and Hannan and Freeman (1977), who were among the first to systematically use evolutionary and ecological perspectives to theorize about formal organizations. Their work, in turn, owed much to the contributions of Hawley (1986) and Campbell (1969), who were the pioneers in applying evolutionary and ecological perspectives to social science.

Evolutionary and ecological perspectives have been applied at many levels of analysis, including intra-organizational evolution, organizational evolution, population evolution, and community evolution (see Baum and Singh, 1994 for an overview). In this paper our focus is on intra-organizational and organizational evolutionary and ecological processes (e.g. Burgelman, 1994; Miner, 1994; Noda and Bower, 1996; Barnett and Hansen, 1996). More specifically, we aim to contribute to this perspective by building on a grounded case study to develop a model of strategy as guided evolution. In this model, we conceptualize an organization as an ecological system purposefully designed to guide the evolution of strategy.

The proposed model of strategy as guided evolution has five main elements (see figure 1). First, there are two units of selection in the model; strategic initiatives and human and social capital. Second, the firm's strategic intent defines the objective function in the model. As such it is an exogenous variable which reflects top management preferences of the future direction of the firm. Third, administrative systems - which include formal structures and organizational routines - serve to replicate a natural selection environment inside the firm, thus enabling and guiding the strategy process without traditional, hierarchical mechanisms of command and control. Administrative

systems are also exogenous to the model. Fourth, the sources of variation in the strategic processes in principle include everyone who may have relevant knowledge of the issues in question. Fifth, the agents of selection and retention are multiple, and effectively include everyone who works on a strategic initiative. The sources of variation and the agents of selection and retention are endogenous variables in the model.

- Figure 1 about here -

The proposed model posits a more active and important role of top management than is implied in organizational ecology (Hannan and Freeman, 1977, 1989), which assumes that organizations are highly inert, and that attempting strategic change is damaging to firm survival and performance. It does so by including a role for management in creating and guiding evolutionary and ecological processes within the organization, which in turn help the firm adapt to, or enact, changes in the external environment. At the same time, it also proposes a role of top management that is more realistic than in strategic adaptation theory (e.g. Child, 1972), which assumes that "... organizations change at will, and that strategic change is frequent." It does so by explicitly accounting for the important role of inertial forces and evolutionary and ecological processes in shaping the strategy and performance of firms.

The proposed model of strategic management as guided evolution is, in certain ways, similar to Burgelman's (1991, 1994) model of strategy making as intraorganizational ecology. Nevertheless, it differs from that model in one important way. In Burgelman's (1991, 1994) model, the intraorganizational ecological processes operate outside and in addition to the formal mechanisms of the firm. In contrast, our theorizing is grounded in the findings from a field study of a firm that actively tries to leverage evolutionary and ecological forces to manage the processes of formulating and

implementing strategy. Hence, in the proposed model, evolutionary and ecological forces do not operate outside and in addition to the formal strategies, structures, and systems of the firm, but rather as an integral and important part of these. As we will argue throughout this paper, this difference has several fundamental consequences for how we understand the role of evolutionary and ecological forces in shaping the strategy and performance of firms.

The idea that the evolution of an organization can be guided through indirect intervention in natural evolutionary processes is not new. March (1994:45), for example, has explicitly discussed this possibility: “The idea is not that any imaginable organization can be designed and built but that natural developmental processes ... can be affected significantly by relatively small, timely interventions. The engineering of evolution involves understanding those processes well enough to intervene in history and produce organizational effects”. In our model of guided evolution, it is precisely such interventions that define the role of top management in shaping the strategy and performance of firms.

We will proceed to develop our arguments as follows. In the next section, we will describe the company in which we carried out our field study, and explain the research methodology we adopted. In section three we will build on the findings from the study and on the literature on social and organizational evolution (e.g. Campbell, 1969; Nelson and Winter, 1982; Boyd and Richerson, 1985; Burgelman 1991, 1994) to develop our model of strategy as guided evolution. This model, we believe, has several advantages over existing alternatives, both as a robust yet rigorous framework for theorizing about strategic processes and as a practical approach to management that can help firms successfully adapt to changes in the external environment. In section four, we will conclude by describing these theoretical and practical merits of our proposal and discussing their implications for strategy research and practice.

2. METHODS

We pursued our research in two stages, combining inductive and deductive methods to develop the proposed model. In the first stage of the research we studied the processes of strategic decision making and resource allocation in a Denmark-based multinational firm, which relies on projects as the main way of organizing work. A qualitative method was chosen as the best way to arrive at an encompassing model of strategy making in project-based organizations. Thus, concerns of external validity were traded off against the opportunity to gain insight into an as yet incompletely documented phenomena (Yin, 1989; Eisenhardt, 1989).

In the second stage of our research - after a descriptive model had been developed - we relied on existing theories of both strategic processes (e.g. Bower, 1970; Burgelman, 1991, 1994) and evolution in social systems (e.g. Campbell, 1969; Nelson and Winter, 1982; Boyd and Richerson, 1985) to inform the development of a theoretical model of strategy as guided evolution. By building on strategy process theory, we sought to go beyond the descriptive logic of the grounded model, and develop a theoretical model based on existing concepts from the literature. At the same time, by explicitly framing the model within an ecological and evolutionary perspective, we hoped to benefit from both the internal consistency and the demonstrated explanatory power of this perspective (Van de Ven, 1992).

Research Setting

This research is the result of an 8 month study of the interrelationship between strategic decision making and administrative systems at Oticon, a Danish hearing aid company. In the following paragraphs we present some historical information as well as the most relevant company and industry characteristics at the time of the field work.

Company and industry background. Since its founding in 1904, Oticon has played a leading role in the hearing aid industry world-wide. Over this time period, the growth and development of Oticon has progressed through five distinct phases. From 1904 to 1946 the company was a small family-run business which sold U.S.-produced hearing aids in Scandinavia and parts of Russia

In 1946 Oticon entered the second stage of its development and started its own production of hearing aids in Denmark. This stage was characterized by high growth in demand for hearing aids, and between 1951 and 1958 sales had increased by a factor of 20.

The third stage - which lasted from 1959 to 1974 - was characterized by global growth and expansion. In this period, Oticon established subsidiaries in the Netherlands, the USA, Switzerland, Norway, West-Germany, Denmark, Great Britain, Japan, Italy, New Zealand, and France, and was represented by agents or its own subsidiaries in nearly 100 countries world wide. During most of this time period, Oticon enjoyed about 15% share of the world-wide market for hearing aids.

In the fourth stage - which lasted from 1975 to 1986 - Oticon focused on consolidating the results of the growth in the previous period, and on streamlining its R&D activities and manufacturing operations. During this time period, engineering and financial control were the dominant concerns of the company, and the organization became increasingly professionalized in a functional-hierarchical structure.

The fifth stage was triggered by the successful introduction in 1987 of a new dominant design (Tushman and Anderson, 1986) by Starkey, an American producer of hearing aids. In an 18 month period, Oticon's share of the world-wide market for hearing aids was reduced from 14% to 9%, and the company lost more than half of its equity.

In 1989, Oticon entered the fifth stage of its development, which was characterized by radical change and restructuring. The four senior managers of the company - who had been in charge since 1958 - were replaced by Lars Kolind, a much younger executive brought in from the outside. In the first 2 years of his tenure, Oticon became profitable again through massive cost cutting and accelerated development of a few selected products already in the pipeline. Market share, however, remained at 9%, and it was not obvious that the company would be able to remain competitive after this short period of intense streamlining and cost-cutting. In the second phase of change, Lars Kolind initiated some radical changes in Oticon's market coverage, strategy, organizational structure, and value systems, which collectively amounted to what Anderson and Tushman (1990) have described as an attempt to "recreate" a company. In addition, during this period, the company also changed its office location in Copenhagen, and moved into new headquarters with a new, and different organization of offices and work places.

Company and industry situation at the time of the field study. At the end of 1993, when the field study was carried out, the world-wide market for hearing aids was estimated to be DKK (Danish Krone) 6 Billion, of which Oticon held a 10.5 % market share, which equated to a net turnover of DKK 661 Million. In 1993 net turnover grew by 23%, up from 13% the year before. In that year, the company employed an average of 1073 people.

Three main strategic goals characterized Oticon from the recreation in 1991 and throughout 1993. First, the company's explicitly articulated strategic intent (Prahalad and Doz, 1987) was global dominance, both in terms of market share and geographical coverage. Second, Oticon had decided to focus its efforts on sales to the hearing clinics which served the higher ends of the market. This was believed to create efficiencies in terms of the cost of operations, and in terms of better exploitation of the sophisticated, but expensive, technical solutions of the company. Third, Oticon was

determined to combine its traditional strengths in the technical dimensions of R&D and manufacturing with a better understanding of the needs of the market segments it served.

In the recreation of Oticon which took place in April 1991, the administrative systems of the company had changed significantly. As mentioned above, as a part of the change process Oticon had moved into new offices, specifically designed to support an organizational structure which relied almost entirely on the use of projects. Except for the top management group, all work was organized in temporary project groups, with their own staff and budget. Any strategic initiative of Oticon - for example a decision to develop and launch a new product targeted at Japanese children and teenagers - would be the responsibility of such a project group. Functional expertise was organized in interest groups, and each employee was expected to have a working knowledge of two functional disciplines. There were no departments, and there were only three levels of formal hierarchy: top management, project leaders, and regular employees.

Advantages of studying the strategy process at Oticon. While our initial contact with Oticon was serendipitous, we elected to carry out a detailed field study in this company because of three features that made the company attractive from both a theoretical and a practical perspective. First, the company relied almost entirely on the use of temporary projects for the organization of work. This allowed us to observe the strategy process in project-based organizations in a "pure" form. Second, Oticon was involved in all the activities normally associated with a large manufacturing company (research, product development, manufacturing, marketing and sales). This introduced activities and levels of complexity in our data that are typically not available in studies of traditional service organizations (consulting, investment banking and so on), which rely on projects for the organization of work. Third, although headquartered in Denmark, the company was global in that it had subsidiaries in most developed

markets in the world. This introduced another element of complexity, with the resulting possibility that the findings from the study could be more relevant for other large, complex firms.

Data collection

Data were collected both from primary and secondary sources. The primary sources included 32 semi-structured individual interviews with 25 different people at all levels and areas of the organization, as well as with several external consultants and researchers who were believed (by people working at Oticon) to know the company very well (see table 1 for a list of people interviewed, and their associations with Oticon).

- Table 1 about here -

The data collection process started in April, 1993 with a three hour interview of CEO Lars Kolind in Oticon's headquarters in Copenhagen. On this occasion, one project leader and two regular employees were also interviewed. Over four subsequent visits to the headquarters in the next 8 months, additional interviews were conducted with 4 more members of the top management group, 2 project leaders, as well as 3 employees. Later, in the course of a visit to the company's main manufacturing facility in Thisted, Gotland, the vice president of manufacturing and the vice president of purchasing and logistics were interviewed, together with 3 employees working at the plant. We also interviewed the CEO of the Swedish subsidiary, who had earlier led several important projects at headquarters, together with two employees in the company's office in Stockholm. Finally, the CEO of the Norwegian subsidiary, who had been with the company for more than 20 years, was interviewed by telephone.

Some people not employed by Oticon at the time of the research also provided valuable information about the company. A former project leader at Oticon's headquarters in Copenhagen, and later the CEO of the American subsidiary, had

subsequently joined a major management consulting firm. He was interviewed in France three times in 1994 and 1995. A doctoral student at Copenhagen Business School who had studied the company on a previous occasion directed our attention to some issues the dominant coalition at Oticon were not likely to bring to our notice. We also interviewed a manager of a major IT and management consulting firm who was in charge of a project advising Oticon on the design and implementation of a new IT system supporting its project structure.

In the first stages of the research, the interviews helped us to develop an understanding of the strategy process at Oticon, and how this process influenced - and was influenced by - the company's strategic goals and administrative systems. At the later stages, little new information was obtained, and the interviews gradually became a way of testing for the validity of the data, as well as testing for the internal validity of our conclusions and the model which we were developing. Repeated interviews and discussions in France with the former CEO of the American subsidiary was particularly useful in this regard.

Secondary sources were also used to collect background information about Oticon. Such sources included: Annual reports and news clippings; internal documents written by Lars Kolind describing the formal strategy, the expected functioning, and the administrative systems of Oticon after the recreation effort in 1991; a book about the "new" Oticon written (in Danish) by Per Thygesen Poulsen (1993); and two teaching cases written at INSEAD and IMD about the "new" Oticon.

Data analysis

Data analysis consisted of two different processes, which were carried out in two different time periods. In the first period - which lasted from April 1993 to May 1994 - the first author iteratively collected and analyzed data necessary to develop a descriptive model of the strategy process at Oticon. During this stage, the interview notes were first transcribed, and then arranged and systematized according to topics by a research assistant working with the first author. The descriptive model was then developed in cooperation between this assistant and the first author. The research associated with this first part of the data analysis, as well as the collection of data, was done as part of a research project supported by the Norwegian Fulbright Foundation and the Association of Norwegian Business and Industry.

The second part of the data analysis started in January 1996, and was done by the first and second authors. The purpose of this stage was to use evolutionary theory to develop the descriptive model into a theoretical model of resource allocation in project based organizations. This analyses proceeded in a process of iterating between the descriptive model and the literature on organizational ecology (e.g. Campbell, 1969, 1994; Nelson and Winter, 1982; McKelvey, 1982; Boyd and Richerson, 1985; Baum and Singh, 1994; March, 1994; Miner 1994; Meyer, 1994). This iterative process made it possible to develop the purely descriptive model into a theoretical model compatible with the variation, selection, retention framework, as it has been applied to evolution in social and cultural systems (Campbell, 1969; Boyd and Richerson, 1985).

3. A MODEL OF STRATEGIC MANAGEMENT AS GUIDED EVOLUTION

In this section we present our model of strategic management as guided evolution. As described in the introductory section, the model consists of five main elements, viz., (1) strategic initiatives and human and social capital, which are the units of selection; (2) strategic intent which defines the objective function; (3) administrative systems, which facilitate the evolutionary process; (4) sources of variation, and (5) agents of selection and retention in the evolutionary process, both of which potentially include every employee of the company. We will develop the model by first defining and discussing each of the five elements, and then describing how these elements are linked together by a process of guided evolution. To help guide the reader through the discussion, our arguments are summarized in table 2.

- Table 2 about here -

Strategic initiatives and human and social capital: The units of selection

There are two units of selection in the model; strategic initiatives and human and social capital. We will discuss each in turn.

Strategic initiatives. The first unit of selection in the model is "strategic initiatives". By a "strategic initiative" we mean a deliberate effort by a firm at creating or appropriating economic value from the environment, which is organized as an independent project with its own profit and loss responsibility.

A key strategic initiative at Oticon was the development, production, and marketing of "Multifocus". As an early attempt at commercializing the use of a microprocessor to automatically control the sound level and tone of a hearing aid, Multifocus represented an attempt at introducing a new dominant design in the hearing aid industry (Andersen and Tushman, 1990). Until then, adjustment of the sound level and tone on all hearing

aids had been controlled manually by the user. The technological principles needed to develop such a design had been invented by engineers working at Oticon's centre for psycho-acoustic research 13 years earlier, but had not been pursued further due to anticipated problems in product development and manufacturing.

In the early 1990's, Oticon was being left behind in the competition for introducing new products in the hearing aid industry. While their competitors were introducing new products which made use of computer-controlled programming, Oticon had nothing new to offer. To address this problem, Lars Kolind, CEO at Oticon, decided that he wanted to sponsor a strategic initiative aimed at developing and commercializing the technology invented in the research laboratory 13 years earlier. His very first act was to recruit Jes Olsen as project leader responsible for the day-to-day management of the initiative, and together they recruited a group of people interested in working on it. After the initiative was defined with a clear goal and business plan - including financial targets - and had attracted its own staff, the top management group agreed to finance it. The strategic initiative was then established as an independent project with its own profit and loss responsibility. From an early stage the group working actively on the strategic initiative included two product development engineers, one employee working in manufacturing, and one employee with marketing expertise. As the strategic initiative progressed - and the tasks and problems associated with it evolved - the different employees who became involved in the project included people with engineering, manufacturing, and marketing expertise. Even after the successful launch of Multifocus, the strategic initiative remained as an independent profit centre which sourced resources from manufacturing and marketing.

It should be noted that not all strategic initiatives survived the initial stages to become a part of the firm's product line. A strategic initiative could be cancelled during, or after, product development, during attempts to establish a commercially viable manufacturing system, or even after market introduction, due to a lack of customer

interest. Multifocus is an illustrative example because it helps illuminate all the different stages of the development of a strategic initiative, and because it demonstrates how various tasks and functions normally organized and implemented by different departments are co-ordinated and considered the responsibility of the group working on the strategic initiative.

There are two main advantages of considering strategic initiatives as an unit of selection. First, strategic initiatives are typically (though, as we will discuss, not always) defined in terms of a firm's relationships with the external environment. They represent the means by which the firm expects to justify its existence and create and appropriate economic value from the environment. Whereas "routines" (Nelson and Winter, 1982), or "comps" (McKelvey, 1982), or even "resources" (Wernerfelt, 1984) are rather general constructs and are likely to direct attention only to the internal functioning of the firm, strategic initiatives direct attention to the relationship between the firm and its environment. Second, strategic initiatives reflect a level of organizing that is becoming increasingly common. Under labels such as "self-managing teams", "project groups" and "profit centres", large complex companies appear to be creating small, relatively autonomous entities responsible for one or more strategic initiatives. As a result, strategic initiatives are likely to be easily identifiable and empirically observable.

Human and social capital. The second unit of selection is "human and social capital". We define human capital as "...knowledge, skills, health, and values ..." which are embodied in people (Becker, 1993:16). We define social capital as "relations among people which have the potential to facilitate productive activity" (Coleman, 1990). Both Becker and Coleman emphasize that human and social capital serve a similar function as physical and financial capital in facilitating economic activity.

Although human capital and social capital are separate concepts, we refer to them as one unit of selection because in the context of variation, selection, and retention they are both embodied in people, and cannot be separated from one another, or from the person in which they are embodied¹. Also, as a unit selection, human and social capital complements the unit of strategic initiative. Whereas strategic initiatives refer to what the firm plans to do to justify its existence, social and human capital represent the resources that will define how the firm plans to do those things.

When Lars Kolind "recruited" Jes Olsen to take responsibility for managing the day-to-day operations of the Multifocus project, he tried to anticipate some of the difficulties that were likely to be associated with this strategic initiative. Resistance from engineers and people working in manufacturing - who shared the conception that it would not be possible to develop and manufacture a product like Multifocus - would require a certain degree of persistence and stubbornness to overcome. Motivating and coordinating a group of people under these circumstances would require some leadership skills. Finally, the technical sophistication of the desired product would favour someone with a technical background. Lars Kolind believed that Jes Olsen had all of these qualities, and that his human capital therefore would help him do a good job after taking charge of the strategic initiative.

To what extent Kolind considered Jes Olsen's social capital when he decided to ask him to take responsibility for the Multifocus project, we do not know. As it turned out, however, Jes Olsen's social relations proved to be important: One critical problem in the development of a prototype of Multifocus was to find a microprocessor which would be small and powerful enough to fit inside a hearing aid. One evening - while drinking beer with some of his engineering friends working at Microtronic, a Danish company specializing in micro-mechanics - Jes Olsen mentioned this problem. One of his friends knew of such a microprocessor, which was subsequently used in the Multifocus product line.

The purpose of discussing Jes Olsen's role as a project leader in Oticon is to illustrate two points. First, human and social capital are important in facilitating productive activity (Becker, 1964, Coleman, 1990). Second, both human and social capital are embodied in people, which means that the processes of variation, selection, and retention of these two forms of capital will have to take place at the individual level (Campbell, 1994). As a consequence, when you select one, you automatically also select the other.

Possible problems with evolution in social systems. For the evolutionary process to function satisfactorily in social systems, there are certain requirements to the properties of the units of selection. First, there must be enough variance for the selective forces to operate on (Campbell, 1969). Unless there is variance, no new forms of the unit of selection will be selected. If this is the case, the previously selected forms will be retained from period to period, in which case it does not make sense to refer to the process as *evolution*.

Second, in order to make it possible for the selective process to operate at the specified level of analysis, the units of selection must be independent from one another, or the process of selection will be "bumped" up to a higher level (Campbell, 1994). For example, it does not make sense to say that the finance department of a firm was selected against, as departments in a functional-hierarchical structure are not operating independent from one another, but are specialized units in a larger system. In other words, in a firm where all work is organized in functional departments, selection cannot take place at the level of the individual department, but will have to take place at the level of the whole firm.

Third, in organizations - which are social systems where the evolutionary process is guided by actors in the same system (Boyd and Richerson, 1985; Van de Ven, 1992) -

the units of selection must be important enough to warrant the attention of the actors who comprise the sources of variation and the agents of selection and retention, yet not so important that the units of selection cannot possibly be selected against.

As units of selection, strategic initiatives and human and social capital are well suited for enabling natural evolutionary processes to take place. First, they are important enough to warrant attention, yet not so important that their destiny cannot be left to be decided by evolutionary forces, because it is likely (in a large organization) that a large number of strategic initiatives will be conceptualized, selected, and discontinued in any given year. In the case of human and social capital, the people employed by large organizations represent important, but not indispensable resources. Second, as defined above, both strategic initiatives and human and social capital are relatively independent units, which will allow the evolutionary process to operate at the specified level. Third, given the diversity and scope of large organizations, there will be enough variance for the internal selective system to operate on.

Strategic intent: The objective function

By "strategic intent" we mean those long term goals which reflect the preferred future position of the firm, as articulated by its top management (Prahalad and Doz, 1987). In the early 1990s, Oticon's strategic intent was to "...become the favoured partner of the world's leading hearing clinics, by excelling at both technological leadership and the development of customized solutions to the most demanding segments of the market" (Kolind, 1991). This strategic intent was ambitious, in that it aimed not only to build on Oticon's traditional strengths in engineering and technical solutions, but also reflected the need to make the firm more attuned to the specific preferences of the various segments of the market.

The role of strategic intent in guided evolution. In the context of a model of strategic management as guided evolution, the strategic intent of the firm defines the objective

function of the strategy process. As March (1994) has noted, a key problem in attempting to "engineer" or guide evolutionary processes in social systems is to specify what part of the system one is to optimize. This is a problem because social systems are nested in space; i.e. they consist of many different parts, which are interrelated with one another. Because what might be best for one part of the system (e.g. the engineering department) may not be what is in the best interest of another part of the system (e.g. the marketing department), it is necessary to specify clearly what part of the system one wants to optimize on. In addition, because social systems are also nested in time (March, 1994), there may exist a conflict between optimizing for the immediate future, and optimizing for the long term future of the firm. In the context of a model of strategic management as guided evolution, the purpose - and thus the objective function - of the strategy process is to optimize the long term performance of the firm.

The strategic intent serves two important functions in our model. First, it gives the evolutionary processes inside the firm something to "aim" for. As Winter (1994:261) puts it, in the absence of clearly articulated strategic goals, "...decision making about rival claims on resources has no legitimate basis." Guided evolution refers to intervening in evolutionary processes in an attempt to shape organizational outcomes, and an important part of this intervention is to define the preferred direction of the strategy process. Through a clearly articulated strategic intent, top management communicates what they see as the preferred future position of the firm, and this preference is assumed to guide the actions by the sources of variation and the agents of selection and retention. Second, in social and cultural systems, variation is at the expense of the already achieved adaptive system (Campbell, 1969). In other words, the suggestion of new ideas, and considering them for selection, is costly to the firm. By concentrating the variation of new forms of the units of selection on a single objective function (the strategic intent), this cost can be reduced. This is the case because much

"unnecessary" variation can be weeded out at an early stage by the sources of variation themselves.

The development of strategic intent in guided evolution. As the objective function in the model, the strategic intent of the firm is exogenous to the ecological process associated with the two units of selection in the model (strategic initiatives and human and social capital). It is developed and articulated by top management, and reflects their vision of what is in the best interest for the long term performance of the firm. Hence, deciding and developing a strategic intent is essentially a top-down process.

This is where the concept of strategic intent differs from the concept of strategic context in what Noda and Bower (1996) have described as the Bower-Burgelman (B-B) model of the strategy process. In the B-B model, strategic change is conceptualized "as retroactive rationalization of strategic initiatives"² in which the top manager's role is limited to being "willing enough to recognize strategically bottom-up initiatives and capitalize on them rather than pass the by" (Noda and Bower, 1996: 188). Even this limited top management role in shaping the strategic context is constrained because of political considerations: "... successful leaders, who know that influence for any manager is based on the success of his interventions, are very cautious in their public position Deferring the announcement of public commitments until learning reduces uncertainty in new business development can be a wise choice for top managers who are concerned to preserve and enhance their 'power' within the organization" (Noda and Bower, 1996: 188).

In contrast, when Lars Kolind developed and articulated Oticon's ambitious new strategic intent in 1991, the company was still recovering from having lost half its equity and nearly 30% of its market share over a few years in the late 1980s. At that time, Oticon had no new businesses that could justify this intent. As such, it was clearly not an interpretation of a strategic initiative emerging from the front-line of the

company. Furthermore, the new intent of Oticon was articulated and communicated by Kolind despite serious misgivings and concerns by several managers at different levels. As described by one of them ‘...many people believed that Kolind was out of his mind, and that he finally had lost control of the situation. This perception didn’t really change before the success with the MultiFocus line”.

Although not emerging from the front-line of the firm, Kolind’s development and articulation of a new strategic intent for Oticon was partly informed by learning from the strategic activities of Oticon and its competitors. More specifically, during 1990 Kolind had invested much time and energy into learning more about the different market segments in the industry, and how Oticon and its competitors were serving those segments. During this period he had visited several of the competitors, a large number of hearing clinics which were perhaps the most important outlet for the product, and attended all the key conferences where the different players in the industry presented their latest offerings. The findings were not encouraging. As Kolind put it: ‘Whereas several of our most important competitors were pioneering the new technologies (hearing aids to be placed in the ear, and hearing aids with automatic volume and tone control), Oticon had nothing new to offer’. Thus, Kolind’s articulation of a new strategic intent was clearly based on an ex ante determination of what he believed to be the best future position of the company.

Potential problems with the role of strategic intent in guided evolution. Two potential problems associated with such guided evolution in social systems should be noted. First, the strategic intent guides the direction of the evolutionary process, and must remain unchanged over several time periods for the process to function effectively (Campbell, 1969). If the strategic intent changes too frequently, there will not be enough time for the evolutionary system to adapt to these changes.

The second problem relates to the possibility of maladaptation. The purpose of guided evolution is to improve the long term position / performance of the firm. As March (1994) has noted, there is no guarantee that the evolutionary process will be adaptive. This is so because the strategic intent which defines the objective function of the process may not necessarily be adaptive for the firm. If the positions associated with the intent are not beneficial in the long run, the evolutionary process will be maladaptive. As we will argue in the concluding section of this paper, while the possibility of maladaptation represents potential problems that should be taken very seriously, we believe that the process of guided evolution is likely to reduce this possibility, compared to alternative strategic approaches.

Administrative systems: Support structure

By "administrative systems" we mean the basic way in which tasks are divided and work is organized in the firm (Chakravarty and Doz, 1992). Administrative systems are configurations of structures, systems, culture, and leadership practices. Here we will discuss the three most important characteristics of the administrative systems in Oticon: (1) The kinds of hierarchical positions and their associated responsibilities; (2) The use of projects to organize work; and (3) The organization of functional expertise.

Hierarchical positions and their responsibilities. At Oticon, the only permanent allocation of employees were to one of two groups; people were either a member of the top management group, or they were "associates". The members of the top management group had five main responsibilities: (1) To develop and articulate strategic goals which defined the strategic intent of the organization; (2) To sponsor strategic initiatives; (3) To allocate financial capital to strategic initiatives; (4) To recruit people to the organization; (5) To take responsibility for the development of one area of functional expertise and knowledge in the organization.

All employees who were not members of the top management group had two main responsibilities: (1) To work on at least two strategic initiatives at any given point of time; and (2) To have experience in two or more functional areas, in at least one of which he or she had to be an expert. In addition, some employees served as project managers, but then only as a temporary role for the duration of the project.

The use of projects to organize work. All work was organized in project groups. There were basically two kinds of project groups. First, a project group could be responsible for a strategic initiative, similar to that of the Multifocus example discussed earlier. In this case, the group would be responsible for a project which was directly engaged in creating and/or appropriating economic rents for the company, within the guidelines defined by the strategic intent of the firm. Second, a project group might be responsible for more internally focused tasks. Examples of these kinds of projects included a group of engineers, computer programmers, accountants, and some external consultants working to develop a new and better system for project management and control. A somewhat special case of such projects was represented by a group which was responsible for the yearly consolidation of accounts. In this case, the distinction between a project group and a department became somewhat blurred, as account consolidation was a highly specialized, functional task.

Although computer programmers and associates with accounting/finance expertise frequently contributed to and worked on cross-functional project groups, computer support and finance/accounting were areas of expertise which Oticon found difficult to integrate fully into a project structure. This problem had been "solved" by accepting that it might not be possible to have an organization where all activities were organized in "true" project groups. Although important to the overall functioning and performance of the firm, the work on these projects differed from that of those which were responsible for a strategic initiative, in that they were not directly engaged in

improving the firm's exchange relationship with the environment, but rather served as a support function for this process.

The organization of functional expertise. By organizing all work in projects, Oticon had to do without functional departments as a mean to organize and develop functional expertise. This posed a potentially serious problem, in that the firm could fail to develop and accumulate the functional expertise needed to stay competitive. Oticon had chosen to deal with this problem by creating "functional expertise groups", which were led by a member of the top management group, who had the requisite training and experience in that area. In addition, each "associate" was required to have expertise in one functional area, and most associates were active members of two expertise groups.

Two issues related to this way of organizing functional expertise should be noted. First, it is a way that is very similar to how functional expertise is organized in some "knowledge-intensive" industries such as management consulting and investment banking (Eccles and Crane, 1988). This is not to say that it is without problems, only that it is a way of organizing functional expertise which has been developed and tested over several decades by firms in these industries.

Second, the organization of work in projects, and organization of functional expertise in "functional expertise groups", may appear to be identical to what is known as the "matrix organization". This is not the case. In a matrix organization, all employees report to two superiors, one from the market side of the business, and one from the functional side of the business. Each superior is supposed to have equal (or, at least, shared) power and influence over the activities of the employee. The way Oticon was organized, the primary building block of the organization, and the primary responsibility of the people working in it, was to contribute to the projects they worked on. Developing and retaining functional expertise was also important, but was

clearly secondary to contribution to the projects. To the extent people reported to two or more "bosses", it was because they were required to work on at least two projects in any given time period. Another difference existed in the permanence of the structures. In a matrix organization, the matrix of functional and market responsibilities is assumed to remain fixed. At Oticon, the project groups only remained fixed for the duration of the project.

Administrative systems vis-a-vis "structural context": It is useful at this stage to clarify the differences in the role of administrative systems in our model of guided evolution and the role of "structural context" in the Bower-Burgelman model. In the B-B model, structural context essentially serves as a control mechanism (Bower, 1970:71) - as a retention device for existing strategic goals which are developed (variation) and planned (selection) by the top management group (see discussions in Miner, 1994). In other words, it represents an effort on the part of top management to incorporate a rational planning approach to management. At the same time, it is viewed as highly ineffective: as Noda and Bower (1996: 186) noted, "structural context, once designed and institutionalized as part of a firm's administrative systems and processes, seem to present a strong source of a firm's inertia ... and continuously exercises strong selecting forces regardless of possible subsequent changes in top managers' intentions.." (emphasis added).

In the guided evolution model, the administrative systems (together with the other elements of the model) serve a very different role. Its purpose is not to control the retention of pre-defined strategies, but to help manage the co-evolution of strategic initiatives and human and social capital on a distributed basis. More specifically, the intention is to ensure that the variation, selection and retention of strategic initiatives and human and social capital are informed by the local knowledge of people within the firm.

A potential problem of such an administrative system relates to the importance of aligning the self-interests of the employees with the best interest of the organization. As Meyer (1994) has argued convincingly, most people in organizations adapt to organizational cues (which represents the internal environment), rather than to the external environment. Simon's (1957) discussion of the importance of inducements in shaping action in organizations also reflects this concern.

In the kind of administrative system adopted by Oticon, managing the relationship between the self interest of the employees and the best interest of the organization is more difficult than in the functional-bureaucratic organization. There are two reasons for this. First, the system is relatively more complex, and relies on a higher level of initiative and motivation on the part of the employees. Second, the system lacks the command-and-control mechanisms associated with the functional-bureaucratic organization, which makes control more subtle and indirect. This is an issue to which we will return in the concluding section where we will discuss the theoretical and practical implications of our model.

Sources of variation and agents of selection and retention

We can now describe how the different elements of the model operate together in a process of guided evolution by showing how the sources of variation, the agents of selection, and the agents of retention function within the strategy process. By sources of variation we mean those who come up with and suggest new ways of doing things. By agents of selection we mean those who decide which of these suggestions will be acted on. By agents of retention we mean those who decide which of the existing ways will be continued, and which will be discontinued. These definitions are based on the suggestions of Campbell (1969). They are also in line with the analyses in Boyd and Richerson (1985) and Miner (1994).

Variation, selection, and retention of strategic initiatives . At Oticon, there was a special emphasis on expanding the pool of ideas and suggestions about new strategic initiatives. In principle, this was done by encouraging everyone working in the organization to contribute such ideas and suggestions. In practice such contributions were motivated and facilitated by encouraging all employees to start a project. About half the projects that were started at Oticon were based on suggestions from individual members of the top management group, the other half from the rest of the employees.

For a suggestion to be selected, and become a strategic initiative organized as a project, the person suggesting it had to get support from three groups of people, which represented the three selection agents in the strategy process. First, the suggestion had to be sponsored by one member of the top management group. Second, the suggestion had to be supported by a group of employees through their commitment to join the project team. This included finding someone who would agree to be the project manager. Third, the suggestion had to be funded by the top management group.

The way in which a project was discontinued was exactly an inversion of the way in which it was started. The people working on the project, the sponsor, or the top management group all had the right to stop supporting the initiative. When a project was discontinued, the work unit was disbanded and the remaining resources of any sort were "re-distributed" to the organization, where it could be used to support other projects.

Variation, selection, and retention of human and social capital. The way in which variation, selection, and retention of social and human capital took place was partly determined by the variation, selection, and retention of strategic initiatives. For example, when Lars Kolind suggested that Jes Olsen become the leader for the Multifocus project, this represented variation in that it suggested a new way to allocate

Jes Olsen's human and social capital. When the Multifocus project was started, this was not only a selection on the project by Jes Olsen and the other selective agents (Lars Kolind, the top management group who financed it, and the employees who volunteered to work on it), but also a selection on the use of Jes Olsen's human and social capital on that same project. To complicate matters further, in order to be able to lead the project, Jes Olsen had to discontinue working on another project, which as a consequence was discontinued. This represented a decision to not retain a project which had been selected in a previous period.

This example illustrates how Oticon had created a system where variation, selection, and retention of projects were largely determined by where people wanted to invest their human and social capital. This was true for the member of the top management group sponsoring the initiative, for the project leader, as well as for the people working on it. The exception was the commitment of resources by the top management group, which decided whether or not to finance the project.

A central problem of evolution in cultural and social systems is the tension between the creation of new variants (strategic initiatives) versus the retention of previously selected variants (strategic initiatives). This is a problem because both are needed for continued survival, and because investing in one is often at the expense of the other (Campbell, 1969). At Oticon, an effort was made to balance this tension by linking peoples' self-interest with the outcomes of how they managed this tension. More specifically, once a strategic initiative was selected, the people who agreed to work on it were likely to continue working on it, unless they became convinced that it had no future. Their reputation - both in terms their ability to make good decisions, and their ability to make things work - was invested in the project. The purpose of the mechanisms which allowed people to leave a project if they did not believe in it, was not to enable people to join and quit projects as they liked. Rather, the purpose was to give people an opportunity to "vote" with their human and social capital, and to send a

signal if they became convinced that continued investment in the project was a waste of resources. In addition, it provided a legitimate way in which people could test their ideas, and possibly act on their entrepreneurial capabilities.

4. IMPLICATIONS FOR STRATEGY RESEARCH AND PRACTICE

As we indicated in the introductory section, we believe that the model of guided evolution has several merits, both as a positive theory of the strategy process and as a normative framework for strategic management of firms. In this concluding section, we describe these merits in comparison to alternative formulations of the strategy process.

A General Model for Strategy Process Research

Based on their review of three decades of strategy process research, Chakravarthy and Doz (1992) came to the conclusion that this line of inquiry has yet to develop into a coherent literature stream, with its own strong and easily identifiable paradigm. Even more damning for this sub-field of strategy is the recent lament of Joseph L. Bower - one of the pioneering contributors and the shaper of the resource allocation model that, in some ways, gave the sub-field its academic identity - that "... process research has only had a limited impact on research in strategic management" (Bower, 1996). Perhaps we could also add that its influence on practice has also not been as significant as could have been hoped. Indeed, in the world of practice, the last decade has witnessed a "process revolution", but it has been influenced far more by those who have worked outside of the so-called "process school", and of academia, in general (e.g., Hammer and Champney, 1993).

As identified by Bower (1996), perhaps a key reason behind the limited progress of strategy process research within the academic domain has been the absence of careful modelling based on standard concepts. In the absence of a rigorous yet robust underlying model, strategy process research has been neither focused nor cumulative.

A robust underlying model to build on. By explicitly adopting an evolutionary perspective, the guided evolution model we have presented in this paper builds on a long tradition within the strategy process school. Mintzberg's (1980) discussion of emergent strategy, Quinn's (1980) description of strategy as logical incrementalism, and Bower's (1970) model of the resource allocation process, for instance, were clearly evolutionary in their underlying logic. Guided evolution shares the spirit of these contributions by sharing the understanding of strategy as emerging gradually from the day-to-day actions and decisions made by a firm.

However, while these contributions were largely descriptive, without any grounding in an established theory, where we go beyond these studies is by explicitly grounding our model in the evolutionary framework of variation, selection and retention. As argued by several scholars from diverse disciplines (e.g. Alchian, 1950; Campbell, 1969; Nelson and Winter, 1982; March, 1994; Van de Ven, 1992), this is a logically consistent, standard model that is well suited for studying social and cultural systems. Both Burgelman (1994) and Miner (1994) have shown that this ecological model can serve as a robust and general framework for strategy process research. It is more general than just the emergent, evolutionary view of strategy: as Miner (1994) has argued, it can also be applied to a rational planning approach and is robust irrespective of whether one conceptualizes an organization as a "natural" or an "artificial" selection environment (see Levinthal, 1994: 174).

A realistic role of leadership. However, where ecological models of the strategy process have tended to suffer from some deep-seated ambiguities is with regard to

their treatment of the role of leadership. After all, the roots of the ecological perspective lie in the models of biological evolution which emerged from a challenge mounted by science to the need for an unexplained source of guidance and normative authority in explaining the existence of mankind. When applied to social systems, it has tended to similarly find deterministic explanations of their evolution and outcomes, devoid of any role of voluntary choice and leadership (e.g. Hannan and Freeman, 1977). While recent extensions have considerably diluted this deterministic flavour (e.g., in March's (1994) discussion of the evolution of evolution and in Burgelman's (1991) conceptualization of intra-organizational ecology), most ecological models can still only admit to a very indirect and relatively passive role of leadership. This is also perhaps the reason why managers have tended to ignore these models.

We believe that the model of guided evolution provides for a much more realistic role of management than is available in most extant models. The distinction is perhaps best explained by contrasting our model with that of Burgelman's (1983, 1991, 1994), which is both the closest in spirit to our conceptualization and also the model that our work directly builds on.

In Burgelman's view, autonomous and induced strategic initiatives operate together to create the variation that the selective system operates on. Whereas the induced strategic initiatives represent the formal strategy and reflects existing organizational learning, the autonomous strategic initiatives challenge existing strategy and represent bottom-up experimentation. Selection - which consists of deciding what autonomous initiatives to formally support and which induced initiatives to keep supporting - is ultimately the responsibility of top management.

In contrast to this view in which autonomous strategic initiatives serve to challenge the formal strategy of the firm, guided evolution is based on the experiences of a firm which has attempted to replicate a natural selection environment within itself. As a

consequence, the distinction between induced and autonomous strategic initiatives is not as salient or as useful here as in Burgelman's model. For example, in a process of guided evolution, all strategic initiatives are autonomous in the sense that they are initiated by someone in the organization. Yet, they are all induced, in the sense that the process of variation-selection-retention is guided by a strategic intent which is defined by top management. Over time, of course, this intent will be influenced by strategic initiatives and their outcomes, and as such the strategic intent is also partly autonomous.

As a result of this difference, guided evolution posits a role of top management that is very different from the role one can infer from Burgelman's model. In Burgelman's model, the key task of top management is to resolve the tension between the autonomous and induced strategy processes by acting as the selection filter - i.e., through resource allocation. Yet, as the work of March and Simon (1958), Quinn (1980), Lindbloom (1959) and others have shown, in practice, this role of top management is severely constrained. These constraints are clearly acknowledged by researchers within the Bower-Burgelman tradition: as we have described earlier, top management's role in shaping the strategic context is seen only as retroactive rationalization and their influence on structural context is believed to be severely constrained because of inertial forces. Paradoxically, the reasons for most of these constraints are to be found in the institutionalized administrative systems and processes (Noda and Bower, 1996:86). In other words, the control systems developed to ensure efficient implementation of past strategies end up constraining top management's discretion in later time periods.

In the model of guided evolution, in contrast, the role of top management is primarily twofold: (i) to create a set of administrative systems that would replicate the processes of natural selection within the organization, and (ii) to guide those processes by defining the strategic intent and the units of selection in the evolutionary process. In

other words, top management has traded off direct control through the structural context (i.e., the implementation of pre-defined product-market strategies) against greater control of the strategic intent.

While we have induced this view of the role of top management based on our observations in a single company, we believe that such a view is reflective of wider practice. Based on their research in twenty companies headquartered in Europe, the United States and Japan, Bartlett and Ghoshal (1995) have described the role of top management as the creators of purpose (“strategic intent”), shapers of processes (“administrative systems”), and developers of people (“human and social capital”). A similar view of the role of top management is also manifest in Collins and Porras (1994) and de Geus (1997).

A link to the resource based view. Beyond the inclusion of what we consider to be a more realistic role of leadership, the model of guided evolution also focuses attention on the role of human and social capital in the strategic processes of a firm. There is a growing recognition, in the fields of both strategy and human resource management, of the central importance of these resources in influencing the strategy and performance of firms (see, for example, Pfeffer, 1994). Beyond reflecting this importance, the use of human and social capital as an unit of selection in the model of guided evolution has the added advantage of linking this model of the strategy process with the resource based view that has now come to dominate the literature on strategy content.

While the resource based view of strategy initially shifted the focus of analysis from factors external to the firm (such as industry structure) to factors internal to the firm (i.e., resources), the initial conceptualization of resources was abstract (see Conner, 1991). Increasingly, however, there is a recognition that many of the “dynamic capabilities” (Teece, Pisano and Schuen, 1994) that underlie a firm’s competitive

advantage are grounded in people and their relationships - i.e., in the firm's human and social capital (see Itami, 1987).

Just as strategy emerges from the day-to-day actions of the firm, so is human and social capital created and reproduced as a consequence of the day-to-day activities of the firm (Lucas, 1993). Although one should not discount the important role of recruitment and formal education and training for the acquisition of new knowledge and skills, the most important way in which a firm develops its human capital is as a by-product of the work people do, in the normal course of their day-to-day activities. This is equally true of social capital. As Coleman (1990:317) wrote, “.. because many of the benefits of actions that bring social capital into being are experienced by persons other than the person so acting, it is not to that person's interest to bring it into being. The result is that most forms of social capital are created or destroyed as a by-product of other activities”. Put differently, the creation and destruction of human and social capital of a firm is a by-product of its use of existing human and social capital and this recursive process of deployment and development of human and social capital lies at the heart of a firm's competitive advantage, as conceptualized within the resource based view.

The model of guided evolution provides a link between strategy content and strategy process because of its focus on the co-evolution of human and social capital and strategic initiatives. At the start of a time period, a firm's capabilities are represented by a certain configuration of human and social capital. This human and social capital is invested or reinvested in one or more strategic initiatives. Over time, the activities associated with these strategic initiatives have two important effects. First, the strategy of the firm at the end of that time period is shaped by the outcomes of these strategic initiatives. This can be seen as the “exploitation effect” of the firm's activities - i.e., its exploitation of its ideosyncratic stock of human and social capital. Second, the ways in which these resources are employed will influence how (if at all) the firm's

human and social capital changes over this time period. This is the “creation effect” of the firm’s activities.

What emerges from the model of guided evolution, therefore, is the hypothesis that firms that are able to choose strategic initiatives which effectively exploit its existing human and social capital while, at the same time, facilitating the development of new, valuable human and social capital, will perform better in the long run than those that are not able to achieve this synergy between exploitation and creation. Note that this hypothesis is entirely consistent with the “stepping stone logic” of Wernerfelt (1984) and the distinction between “resource stocks” and “resource flows” made by Dierickx and Cool (1989) within the literature on the resource based view.

A Normative Model for Strategic Management of Firms

For managers of firms, an important concern is to ensure a good fit between the firm’s strategy and the industry-level basis for competitive advantage (Porter, 1990; Burgelman, 1994). We believe that the process of guided evolution can facilitate such a fit at two different levels.

The first level is that of the strategic initiatives. There are several characteristics of the model that are likely to create such a fit at this level. First, the administrative systems we have described facilitate easy investments and divestments, which makes the organization more flexible. Second, the large and diverse group of people that serve as the sources of variation and as the agents of selection and retention facilitate the development and use of local knowledge in the strategy process of the firm. This is likely to shorten the time the firm needs to respond to changes in the external environment and to disengage from unprofitable (i.e., “unfit”) strategic initiatives.

Third, the governance system supporting the process of guided evolution requires people to choose where to invest their human and social capital. In addition, rewards - both financial and social - are linked to their performance on the projects they elect to invest their time and energy in. As a result, people are likely to be motivated to make sure that the projects they work on are successful within the external selection environment. For these three reasons, we believe, organizations that would rely on guided evolution to manage their investment and resource allocation decisions are likely to achieve a fit between their strategic initiatives and the industry-level basis for competitive advantage.

The strategic intent of the organization - which defines the objective function of the evolutionary model - is the second level at which a fit with the external selection environment is important. We believe that firms that rely on guided evolution are relatively more likely to achieve this fit also. There are two main reasons for this. First, given the nature of the administrative systems in such a model - in particular, the reliance on decisions made on a distributed basis - top-level managers are likely to be less involved in the day-to-day decision-making of the company. Therefore, they are likely to have more time to focus on the external environment, such as changes in the industry-level basis of competitive advantage. As a result, the strategic intent of the company is relatively more likely to reflect the demands of the external selection environment.

Further, while all strategic initiatives do require a top management sponsor, and members of the top management group may initiate strategic initiatives, the different initiatives are not explicitly "owned" by the top management group. As such they are likely to be emotionally less attached to the strategic position of the firm, as represented by its existing strategic intent and portfolio of strategic initiatives. Therefore, they can be expected to be less susceptible to groupthink (Janis, 1972) and escalation of commitment (Staw, 1976), and be more willing to consider important

changes to the strategic intent that may be necessary to achieve a fit with the industry-level sources of competitive advantage.

It is important to emphasise that the focal issue is not about the possibility of achieving such an external fit, in absolute terms, but about the relative likelihood of maladaptation, in comparison to other ways of managing the strategy process. The main alternative, in practical terms, is the rational planning approach that is typical of bureaucratic organizations. In such a rational planning approach, variation and selection occurs in the planning phase, reflecting the preferences of top management, while retention is attempted through various control systems (Miner, 1994). Our argument is that guided evolution is likely to be less susceptible to maladaptation, in comparison to this rational planning alternative.

The major disadvantage of the rational planning model stems from its failure to match decision making responsibilities with the use of local knowledge. This failure leads to two negative consequences. First, it reduces the extent to which it is possible for the firm to obtain regular feedback from the environment. If management is occupied making sure that the organization is adapting to their preferred set of options, and the people working in the organization are occupied making sure that they do so in ways that benefit them the most, there is necessarily less time and energy left for observing and making sense of the external environment (see Meyer, 1994). By increasing the number and diversity of people responsible for suggesting new strategic initiatives and new ways to allocate human and social capital, the process of guided evolution is likely to make the firm better able to adapt to its changing environment. By being expected to contribute with suggestions and alternatives, people may not only be more focused on the external environment, they may also be able to contribute valuable local knowledge in interpreting the environmental feedback.

At the same time, given both the freedom to choose (and exit) the strategic initiatives in which they invest their time and effort, and the incentives to make a success of their chosen initiatives, the quality of implementation of these initiatives is also likely to be higher. This is so because people are likely to work more effectively under such circumstances (Ajzen and Fishbein, 1977; Strickland, 1958) and also because they are likely to share information and resources with others so as to make them more effective (Barker, 1993).

Suggestions for further research

In presenting the model of guided evolution and in discussing its implications for research and practice, we have emphasized how our conceptualization differs from what exists in the literature and, more particularly, from the Bower-Burgelman model. This focus on differences should not, however, obscure the similarities. We see the model of guided evolution as an incremental extension of the accumulating research on the strategy process. It builds directly off the Bower-Burgelman model, and incorporates much of the insights that have accrued from past work in this tradition.

The incremental extension, at the same time, focuses on what both Porter (1991) and Schendel (1996) have posited as a key issue for strategy research, viz., the relative weights of initial conditions and managerial choices in explaining the performance differences across firms. While fully grounded in the Bower-Burgelman view of the strategy process, the grounded evolution model aims to slightly shift the view towards acknowledging a relatively stronger role of learning and of managerial action.

In process research, the choice a researcher makes on which company to study and what particular window to look at the company through matters a great deal. Bower (1970) studied relatively routine resource allocation decisions in a company in a relatively stable state. Perhaps, that is why the role of top management was so muted

in his model. Similarly, new venture units may well represent an effort on the part of top managers to buy some options against the established strategic intent, thus explaining the tension between what Burgelman (1983) described as the induced and autonomous strategic initiatives. Noda and Bower (1996) looked at broad strategic change; perhaps that is why the role of top management was relatively more direct and salient in their analysis, as it is in ours.

What this possibility suggests is the need to move along the path of “direct research” (Mintzberg, 1979), looking at specific and different kinds of processes in depth at different companies. Each analysis will lead to a somewhat different model, reflecting the ideosyncracies of each case. But, over time, what Glaser and Strauss (1967) described as the process of “saturation” within a single enquiry may occur across those different studies. Given the nature of process research, perhaps this is the only way a relatively general model can be built, not through the efforts of a single scholar, but through the collective effort of a small community.

It is also not unlikely that the strategy process will be different in different kinds of firms. Despite the forces of mimetic and normative isomorphism (DiMaggio and Powell, 1983), it is not unreasonable to expect some variance in the organizational forms and processes developed and adopted by firms (Hannan and Freeman, 1977). This possibility too emphasizes the need for more in-depth studies of individual companies - a kind of research whose share within the strategy field has so far been too small, perhaps because of practical and institutional constraints.

Turning to the specific model we have presented, we believe that it raises two issues of immediate research interest. The first relates to the creation and evolution of strategic intent. How does such an intent emerge? How and to what extent is it shaped by ongoing learning? What antecedent organizational and managerial features influence the existence and role of a strategic intent in specific companies? Detailed,

longitudinal studies on questions such as these are of manifest academic and managerial interest.

The second area relates to the dynamic process of deployment and development of social and human capital that we observed at Oticon. Over the last decade, the concept of strategy has evolved from a sharp focus on value appropriation (e.g., Porter, 1980) to a broader conceptualization as the simultaneous process of creating new rent producing resources and appropriating, even if temporarily, the benefits that accrue from those resources (Conner, 1991; Winter, 1995). There is also a recognition that the processes of creation and appropriation may be symbiotic in the sense that creation of new resources may largely be a by-product of how existing resources are deployed (Itami, 1987).

Human and social resources are indisputably among the more important resources of a firm. We believe that both practitioners and academics can benefit from a richer understanding of the symbiotic process of creation and appropriation of these resources we have described in this paper. Longitudinal studies showing how deployment into specific strategic initiatives change the human and social capital of people, and how these changes, in turn, enable other strategic initiatives will be particularly useful in this regard.

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¹ More precisely, social capital is embodied in the relations among people, not in the individual person. However, for practical purposes one cannot select on these relations, but has to select on people as they are embedded in certain relationships, and thus give access to the social capital defined by these relationships. If, however, selection was understood to operate at the group level, it would make sense to talk about selection operating at the level of the relationships among these people. This, however, would fail to take into account the relationships between members of the group and those who were not members of the group. Only by understanding selection as operating on the social capital possessed by an individual is it possible to take into account the larger network, which also defines the social capital. What we lose by understanding selection to operate at the level of the individual employee is the extent to which recruiting someone to a strategic initiative changes the patterns of relations in which this person is embedded, and that we therefore change an individual's social capital by recruiting him or her to a specific project.

² See Burgelman's (1994) description of the role Andy Grove and the top management group played in transforming Intel from a "memory company" to a "microprocessor company" for an example of how retroactive rationalization is used in the Bower-Burgelman model.

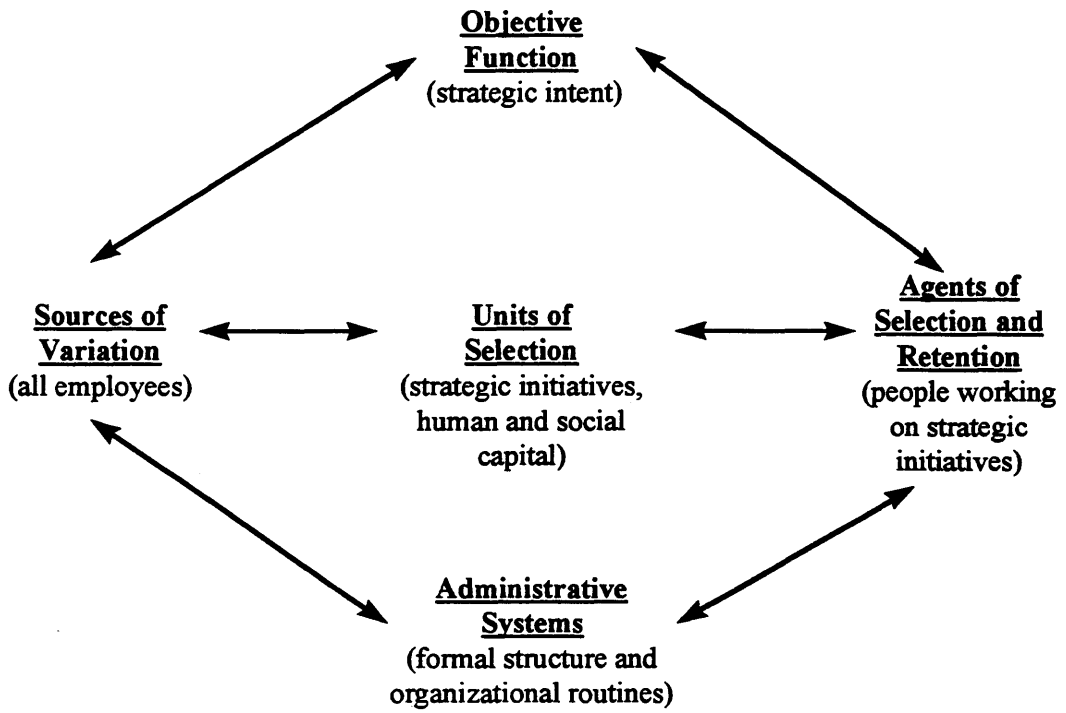


Figure 1
The Five Elements of Guided Evolution

Interviewees	
Association with Oticon in 1993 (except as stated)	Number of Interviews
1. Chief Executive Officer	1
2. Chief Financial and Operating Officer	1
3. VP Finance	1
4. VP Information technology	1
5. VP Purchasing and Logistics	1
6. VP Manufacturing	1
7. VP Operations	3
8. Head, Norwegian subsidiary and former VP	1
9. Head, Swedish subsidiary	2
10. Project leader responsible for the development of Multifocus	2
11. Project leader of a strategic initiative aimed at the American market	1
12. Project leader who worked at the Multifocus project and managed other strategic initiatives	1
13. Employee at headquarters with secretarial training	2
14. Employee at headquarters with background and training in engineering	1
15. Employee at headquarters with and background training in marketing	1
16. Employee at headquarters with training in engineering and background in logistics	1
17. Employee at headquarters with secretarial training and background as executive assistant	1
18. Employee at Swedish subsidiary with background in marketing	1
19. Employee at Swedish subsidiary with background as technician	1
20. Employee at main plant in Thisted with background in logistics	1
21. Employee at main plant in Thisted with background in production	1
22. Associate with background in manufacturing	1
23. Doctoral student at Copenhagen Business School who spent several months observing Oticon	1
24. Manager with a large IT and management consulting firm responsible for designing and implementing the IT system supporting Oticon's project structure	1
25. Former head of American subsidiary and project leader, now with a major management consulting firm	3

Table 1
Interviewees and their association with Oticon

	Exogenous Independent Variables		Endogenous Independent Variables		Dependent Variables
	Strategic Intent	Administrative systems	Sources of Variation	Agents of Selection and Retention	Units of Selection
Definition of variable	<p>Those long term goals which reflect the preferred future direction of the firm, as envisioned by top management (Prahalad and Doz, 1987).</p> <p>In this model: The strategic intent is global dominance based on the ability to innovate better and faster</p>	<p>The basic way in which tasks are divided and work is organized in the firm (Chakravarty and Doz, 1992).</p> <p>In this model: The organization of all work in relatively independent projects, and the use of practice groups to retain and develop functional expertise.</p>	<p>Those who identify / suggest new variants of the units of selection</p> <p>In this model: Everyone working in the organization</p>	<p>Those who decide which suggestions will be acted on, and those who decide which of the existing ways will be continued.</p> <p>In this model: Everyone (veto-principle) working on a strategic initiative</p>	<p>The units the selective system is operating on.</p> <p>In this model: "Strategic initiatives" and "human and social capital".</p>
Role of Variable in the Model	Defines the objective function - and thus the preferred outcome - of the strategy process.	Enable and facilitate resource allocation according to a logic of guided evolution.	Provide variance which the selective-retentive system may operate on.	Determine which new variants (of the units of selection) to select, and which previously selected variants to retain.	Focus the strategy process on those variables considered most important to the strategic adaptation of the firm.
Why Important in the Model	<p>Necessary to define direction and legitimate claims on resources in the strategy process (Nelson, 1994)</p> <p>Helps focus variation; reduces disturbances to the existing adaptive system.</p>	The administrative system is necessary to make it in peoples' self interest to contribute to the organizations adaptation, and to give them guidelines for how to do so.	Serves to elicit a broad / diverse set of suggestions.	Serves to enable selection and retention based on the knowledge of a large group of people.	The main way (strategic initiatives) and the main resources (human and social capital) the firm rely on to create and appropriate economic value.
Important issues related to the variable	<p>Must remain stable over time periods for the evolutionary process to function effectively (Campbell, 1969).</p> <p>Possible problems with nestedness and maladaptation (March, 1994).</p>	Most people adapt to organizational cues as opposed to the environment (Meyer, 1994).	<p>The diversity and general "quality" of the variation.</p> <p>There must be enough variation for the selective systems to operate on (Campbell, 1969)</p>	Variation-selection is at the expense of the already achieved adaptive system (Campbell, 1969)	For the evolutionary process to function satisfactorily in social systems, there are certain requirements to the frequency, independence, and importance of the units of selection (Campbell, 1969; 1994)

Table 2. A model of strategic management as guided evolution