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Evolution- management

Von der Natur lernen:
Unternehmen entwickeln
und langfristig steuern

HANSER

1 What Is Evolutionary Management? An introduction

1.1 How Does Evolution Deal with the Management of Companies?

Millions of years ago, when a meteorite destroyed the big and powerful dinosaurs, small, seemingly insignificant mammals were the ones that survived the impact. Millennia later, those survivors gave rise to the lineages from which human beings would develop, together with all the cultural and economic diversity of our time. This process and other developments of life on our planet are described by the Theory of Evolution - but what does this have to do with the management of companies?

Traditionally, managerial explanation models are derived from physics and engineering, not from biology. Technical-mechanical models resolve complex connections into clear subsets to explain causalities in an assumed self-contained environment. Everyone is familiar with the image of set screws, which, if handled correctly, allow for the adjustment of companies. In this book, we wish to demonstrate that in the management of organizations, more can be learned from nature than from technical images.

Nature self-manages. For millennia it has invented highly intelligent models of life, an unbelievable diversity of shapes and multifarious solutions to “technical” problems. These interactions between organisms offer a complex body of rules, which can teach us a great deal. It is time for us to recognize that we, including all our economic activities, are part of our planet’s natural development, even if many things we do in business today give the contrary impression. For an imaginary scientist from another planet observing the earth from the moon, the movements on an ant trail would be equivalent to those of cars and trucks on a motorway. As humans, we tend to believe that we differ from nature completely, but, perceived from an upper vantage point, we are a part of nature. It is time for us not only to recognize the resultant responsibilities, but also to seize our opportunities, particularly in business life.

In the course of this book we will demonstrate how the views of evolutionary management apply to the work of management in organizations, and how concrete support as well as many precise instructions result in practical activities.

How did evolution on earth occur? Initially, it all started on the physical level. According to the big bang theory, elementary particles emerged in the early universe. From these, over a lengthy period, the atoms of various chemical elements evolved. Throughout the following chemical evolution, organic molecules emerged from these elements, which were necessary for the genesis of the first living organisms. The emergence of the first protozoan from organic and inorganic

matter initiated biological evolution. Later, several cells joined together and created multi-cellular organisms. Along with the organisms' increasing complexity, the human being developed a particular awareness of cultural evolution. Any form of civilized development, whether from an economic, social or artistic point of view, is ranked among cultural evolution.

Thus, organizations and companies are also the result of cultural evolution. A company is composed of a group of people who work jointly to achieve a particular target. Examine the behavior of people in the surroundings of your work, in a train or at a concert: organisms act and emerge differently than machines, not by means of plans and measurements from the outside, but by and out of themselves. The operating logic of machines always remains the same. In contrast, an organism's course of action that was once very successful, may fail the next time utilized. If a ball at a slope is pushed, it rolls down. If a mouse is pushed, you cannot predetermine the direction this organism will take. While most physical actions can be predicted with mathematical laws, biological events cannot. The biological situation – complex combinations and an important role of fortuity - resembles the situations of companies and organizations. From biology, and especially from evolution, many rules, instructions and suggestions can be derived. We invite you to find answers to questions concerning the evolutionary development of your company or the enhancement of your people skills.

1.2 Basics of Evolutionary Management

On December 27th 1831, Charles Darwin set out from England on his five-year journey on board of the research vessel HMS Beagle. After several sojourns in South America, he finally reached the Galapagos Islands in September 1835. Impressed by the variety of finches there, he became engrossed in thought about the genesis of species. From his observations, he developed the famous Theory of Evolution.

Darwin observed that although the islands' finches were closely related, they differed in physical build and diet. These observations gave him the idea that all finches originated from a common ancestor. Over the course of time, these progenitors from the South American mainland, adapted themselves perfectly to the existing environmental conditions and food supply. On the islands, a total of 14 different finch species developed, all originating from the ancestral genus *Geospiza* and, furthermore, not found anywhere else on the planet – an indication of the finches migrating to the islands long ago and their subsequent development into a unique species by means of adaptation.

Generally speaking, evolution describes a continuously proceeding development. The term evolution originates from the Latin word *evolvere*, which means: to unroll, or unfold. More specifically, evolution is the continuous development of

new patterns and the growth of pre-existing ones toward increasing complexity and interacted integration. The Theory of Evolution, developed by Darwin, established a new paradigm. The famous biologist Ernst Mayr called it “the most powerful construct of ideas of the last 200 years.” Its findings resulted in a fundamentally new way of thinking, which can be transferred onto economic actions. What were these new findings?

- Species in nature are not static, they emerge, develop and perish. By this cognition, evolution is explained as a process. This explanation replaced the way of static thinking, which assumed everlasting species. The rational explanation of evolution raised the practical human opportunities to design nature.
- Evolution moves from simplicity to complexity, from the inanimate planet to protozoan, plants, animals and, finally, to the human being. Immense diversity results from constant differentiation. The description “from simple to complex” does not imply a valuation: neither one nor the other is better.
- One of the basic principles of evolution for Darwin is the “struggle for life” as a fundamental driving force of existence.
- The assumption of the “survival of the fittest” is frequently misinterpreted as the “survival of the strongest”. In truth, it is a matter of the survival of the best adapted. And small, inconsiderable creatures can be well adapted, too.
- Another principle is “natural selection”. This means, competition determines who perishes and who advances.

This new way of thinking about processes and developments was revolutionary, and many people had philosophical and scientific difficulties with it. When, in the middle of the 19th century, the biologist Thomas Huxley was asked by an Anglican bishop if he believed he was related to apes via his grandparents, the former answered: “I’d rather be descended from an ape than from a bishop not willing to accept the truth.” Even today in several American states - dominated by Christian fundamentalists - to teach evolutionary theory is forbidden in certain schools. In Germany as well, many people long for stability and durability and have difficulties believing and bearing the constant change.

Modern times of rapid change exemplify the importance of this way of thinking, especially for the development of companies and organizations. For us, the importance of evolutionary management in this book is the transfer of these biological principles to processes in organizations.

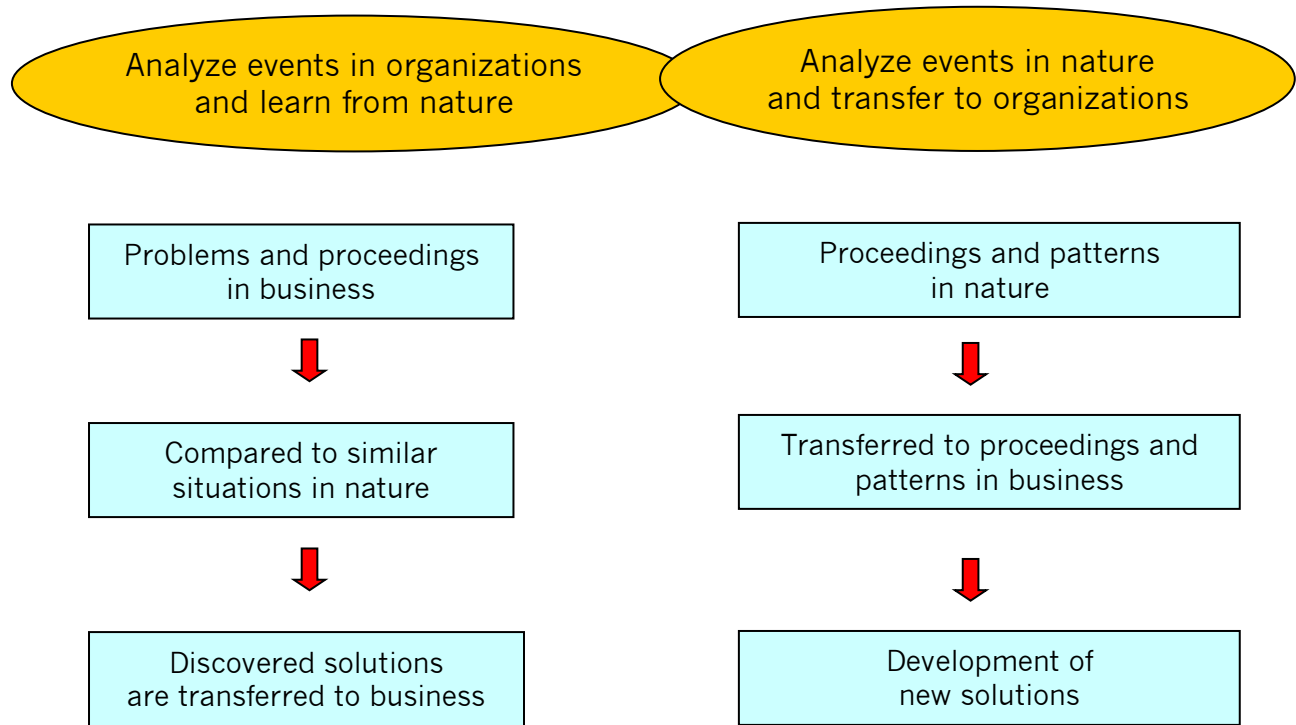
Evolutionary management is a concept for the management of organizations, considering processes in and between organizations as processes of life. They proceed according to the same or similar principles and laws as processes in nature. We can learn from these comparable natural processes for the manager's individual operational level and for the level of organizational processes.

In this transfer, we are guided by five fundamental mindsets, which are recognizable throughout the book:

- Evolutionary processes in and between organizations proceed comparably and according to similar patterns as observed in natural evolution.
- We learn from specific activities in nature for organizational processes, as bionics learns from nature's intelligent solutions for engineering.
- Evolution happens to human beings. At the same time, by means of the evolution of consciousness, there is the opportunity to adopt evolutionary processes and thereby to develop and enhance them.
- The evolutionary manager transfers knowledge from biology onto the individual level in organizations and can thereby learn for personal leadership behavior.
- Evolutionary management is eager to integrate the formative developments of business life into the biological events of evolution, e.g. by means of the principle of sustainability.

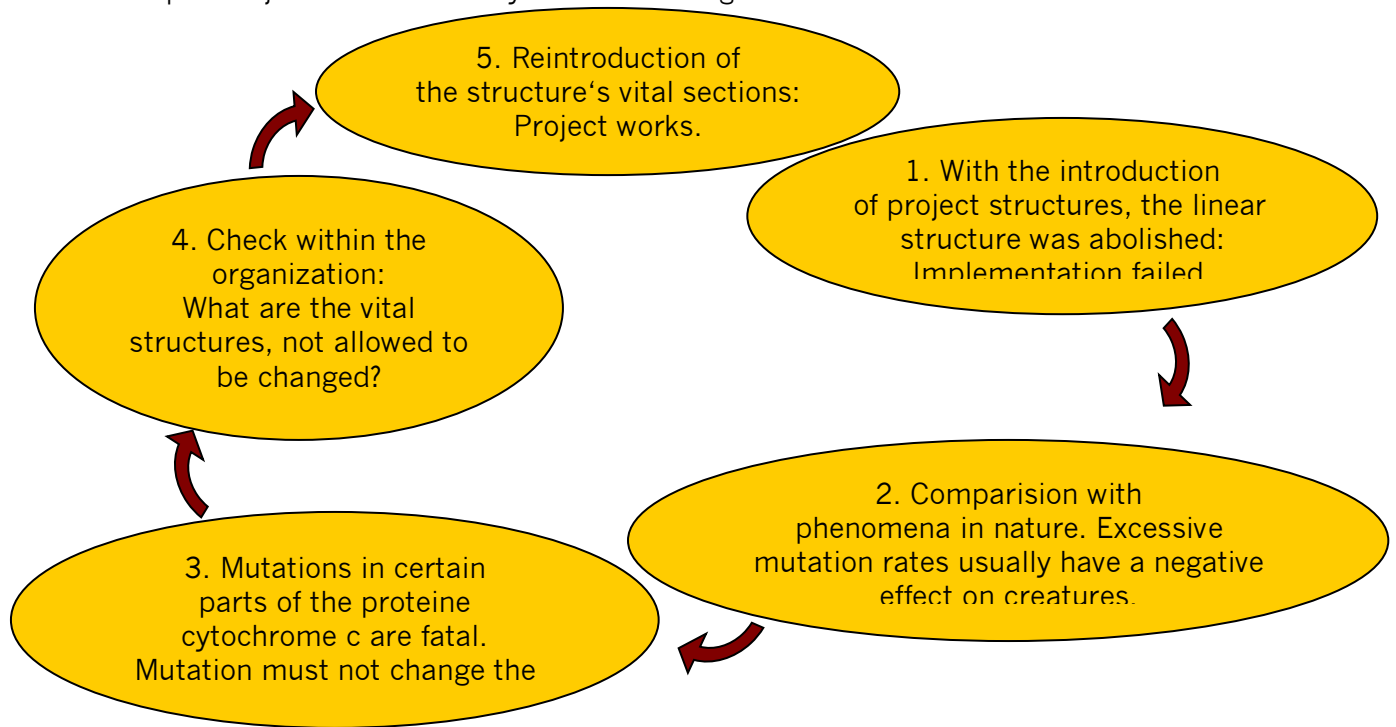
There are different approaches to learning from evolutionary processes in nature for management. Our starting point can be nature and we can transfer the discovered knowledge to organizational processes. Or we can begin by identifying problems in the organization, studying nature's solutions in comparable situations, and allowing them to inspire our work. Figure 1.1 shows these fundamental approaches.

Figure 1.1 Approaches of evolutionary management



We will explain this concept with the help of a practical example. We attended a furniture manufacturer’s introduction of team structures for the improvement of project management in the development department. The previous linear structure was abolished by the management, who wanted to implement the new project structures immediately. However, without essential parts of the old, linear structure, it did not continue to function. The missing parts were reintroduced, paralleling the project structure today. This situation can be interpreted on the meta-level in the following way: a fundamental and essential structure was abolished; since no attention was paid to this fact, the project failed in its first attempt (see Figure 1.2).

Figure 1.2 How to analyze organizational phenomena and learn from nature
 Example: Projects are doomed by too much change



The question of how much a project may or must change is exciting. To find a solution, we analyze nature's handling of comparable phenomena. Nature has a high rate of mutations. Biological mutation means a change of information, which is encoded in the DNA. In nature, we notice that the rate of mutation, thus the frequency of occurring mutations, varies according to its form and surrounding. The higher the rate of mutation, the higher the potential for change, but therewith a comparably higher danger for negative change which, as the case may be, can lead to death, thus bringing no positive long-term change for the species. This can be clarified by means of an example: the protein cytochrome c plays an important part in the respiratory chain and, as a necessity, interacts with other proteins in a specific way. More than a billion years ago this molecule seems to have achieved a functional structure that tolerates hardly any changes. There are differences in the organisms' progression of cytochrome c modules, but the molecule's steric, overall structure is almost identical in every creature. If the cytochrome c is changed, however, by an accidental mutation, the organism dies.

Starting from biological principles, the company's original problem can be viewed from a different angle. Is the considered structure vital for the organization or is it not? Which other fundamental processes interact with the structure under consideration? Process chains and structural elements, essential for the over-all functioning, have to remain to assure success.

1.3 A Debate on Social Darwinism

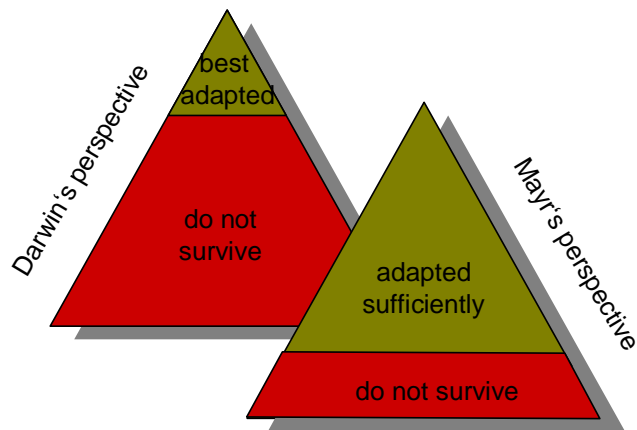
Critical individuals justifiably refer to the dangers when introduced to the idea of transferring approaches of evolution to human life and society. The achievements of the human being are due to differentiation from animality and the protection of the society's weakest. In history, the idea of "the survival of the fittest" was too often misinterpreted as "the survival of the strongest," thus, in accordance with Social Darwinism ideologies, this led to the atrocities under the rule of National Socialism. Our approach clearly distances itself from Social Darwinism. In this book, we rather focus on modern behavioral biology, which has discovered the importance of the positive social behavior of animals. While former biological research particularly looked for competition between animals, which led to the predator-prey image dominating our perception of nature, more recent research realizes the importance of symbiotic interactions in evolution. A common example of interaction is the behavior of insects that forage and pollinate plants at the same time. Nature even gives various examples of altruistic behavior. There are animals standing up for their group, in some cases even ready to die for them.

Organisms living in symbiotic relationships comprise the major part of the over-all biomass and have a wide range of interactions. The successful existence of many species utterly depends on cooperation. In a co-evolutionary and cooperative process, species have developed in interdependence to their mutual benefit. In the economy as well, the idea of joint businesses being more successful than hostile takeovers attains more and more followers. A good example for a functioning symbiosis is the Star Alliance network. In the early 1990's, Lufthansa found itself in a serious financial crisis. They were faced with possible cuts, but instead of shrinking, Lufthansa established a network with other airlines called the Star Alliance – today Star Alliance is the most successful aviation alliance worldwide. Its members hugely benefit from one another, but they still maintain their organizational independence. More and more, the degree of development a company attains by such networks determines its success or failure in the market.

Darwin's ideas were strongly shaped by 19th century consciousness, in which due to the French Revolution, hostile confrontation played a major role. During these turbulent times of conflict, Marx established his theories of class conflict as well. Despite of the brilliance of Darwin's theory, some elements of it are looked upon differently today. Opposed to Darwin's postulate, that only the best adapted survive, Mayr changed our view on the pyramid of life (Figure 1.3). In nature, it is only the least adapted who do not survive, i.e. most species just scrape through to outlive the others. No creature is adapted perfectly. Species develop certain attributes to get along in their specific ecological niches. Thus, it is not the best adapted who survive, but the sufficiently adapted. Of course this is a very comforting realization for business life: I do not have to be the best to survive, I just have to take care not to belong to the worst to stay in the marketplace. But

still, it is undisputed that belonging to the best is, most things considered, more comfortable.

Figure 1.3 *The survival of species in evolution*



In addition, the procedures of the selection process are restated today with other nuances than at Darwin's time. Darwin assumed that nature always produces more creatures than will actually survive, which emphasizes the importance of the selection process. To the contrary, the evolution of primates and also the human being, shows nature does not necessarily produce a great many individuals to ensure survival. In the case of primates, only few offspring are born, receiving the full attention of their parents. Obviously, nature does not only focus on quantity, but also on quality.

Still, to eat and to be eaten ("to do lunch or to be lunch") are major topics in nature. Ninety-nine percent of all species that ever lived on earth have died out. Many of them failed to adapt to the changing environmental conditions. This does not mean that these species vanished without a trace. Many of them were absorbed by more complex species. But evolution also teaches us that it is not only complex species who survive. The simplest organisms are often those who survive for millions of years. They are not big and powerful, per se, but are exceedingly well adapted.

The point is not to overestimate cooperation in contrast to competition. Both principles, competition on the one hand and cooperation on the other, are inherent parts of evolutionary events, in nature as well as inside and outside of organizations. Competition is not to be inhibited, but rather the form and the handling of it enhanced.

1.4 Organizations Are Living Organisms

Many organizational tasks can be compared to functions within organisms: for example, the internal material transport in an organization approximately compares with the cardiovascular system of mammals. Data processing compares to the nervous system, the stocking of materials and money can be likened with the functions of adipose or storage tissue, and central control resembles the brain. Later on, we will explain these parallels in more detail.

Living matter differs from non-living matter by the combination of the following attributes and processes:

- *Regularity*: All features of life result from a profoundly regular organization.
- *Growth and development*: The patterns of both are conducted by inherent programs in the form of DNA and thereby generate an organism.
- *Usage of energy*: Organisms absorb energy and transform it into new forms of energy.
- *Maintenance of a dynamic equilibrium (homeostasis)*: Within certain boundaries an organism's internal milieu is held constant by regulative mechanisms, irrespective of environmental fluctuations.
- *Reaction to the environment*: Organisms have the ability to react to their environment independently.
- *Evolutionary adaptation*: Life improves because of the interaction between organism and environment. A consequence of evolution is the adaptation of organisms to their environment.
- *Reproduction*: Organisms reproduce. Life simply emanates from life.

What is it that leads us to our understanding that organizations are living organisms? It is that both, organizations and organisms, have the following attributes in common:

- Both abide by a higher organizational degree within their borders than beyond them. Like organisms, organizations tend towards disorder. Life oscillates between regularity and chaos.
- Both grow, develop and change in the course of time. Therefore, the focus for organizations must be on the development processes. To know about the future developments of an organization, however, its previous development line has to be known.
- Both absorb substances from their environment before processing and emitting them. In addition to metabolism (transformation of substances), transformation of form and information are important characteristics of life.
- Both consist of various automated and self-organized processes. They respectively act and emerge differently than machines. They are not based on external plans and measures, but act and emerge by and out of themselves.

The progressing plan and its execution are one, where in mechanical manufacturing, or in a computer, they are two separate procedures.

- Both must react out of themselves when adapting to changes. For this reason, during the course of their evolution, organizations develop certain internal rules in the form of functions and structures. As in life organisms, the existence of organizations depends on the probation in the environment, that is, the internal rules are defined by the external requirements. Probation in the environment contributes to the future development of an organization and its endurance in changing surroundings. The possibility to change existing structures, as well as external requirements, plays an important role for potential developments.
- Both are highly complex, which only in segments allows for a clear coherence of causalities.
- Both are highly integrated internally with a large number of parallel processes, not completely escaping central control.
- Both are unique. The structures of every existing organism and organizations are unique, hence the one-to-one transfer of concepts from one company to another is not possible. Just as they resemble living organisms, a company's concept has to emerge from the inside of the organization and has to allow for individual circumstances.
- Both strive for survival. Like all organisms, the living company primarily exists for its own survival and its own progress. It aims to grow as much as possible and to make a profit. It does not solely exist to provide customers with services or to generate a return on investment for shareholders.

These approaches, geared toward living organisms, have laid the foundation for the modern theory of organizations and play a major role in practical organizational development. They include the surroundings and emphasize survival as a key goal of every organization. In this manner, they contradict the traditional concentration on purely operational targets and allow for a higher flexibility. Further, they inhibit financial objectives from becoming a solution in themselves. Interacting processes, which have to be balanced, both internally and in their relation to their environment, take center stage. These approaches encourage flexibility and emphasize the advantages of organism-related structures in innovations and in society, placing a greater emphasis on knowledge.

We all use certain images to describe and understand our surroundings. These images influence our way of thinking and acting, and they are reflected in our leadership behavior. For a diploma thesis, supervised by the Humboldt University and our company, 55 companies were questioned. Results showed that organism-related and mechanistic metaphors are perceived as reasonable, explanatory models for practical management. Depending on the situation, executives revert to different metaphors to reduce the environmental complexity. The mechanical metaphor emphasizes the importance of plan and control as well as the

improvement of internal processes. Further, it facilitates the standardization of processes. The organism metaphor, on the other hand, highlights a company's probation in its environment, its limited control and the need for sustainable development.

Table 1.1 summarizes the differences between the two approaches, alternatively viewing an organization as organism or machine.

Table 1.1: Organism or machine – different approaches

attributes	key sentences organism metaphor	key sentences machine metaphor
The organism metaphor compares organizations to living organisms, the machine metaphor compares organizations to machines.	Organizations resemble living organisms.	Organizations resemble complex machines.
While machines exist to serve a certain purpose, organisms have the primary target to survive.	Principal objective of an organization is to survive on the market.	An organization's principle objective is the enhancement of the shareholder value
While machines are completely controlled, the development of an organism cannot be totally predetermined.	The possibility to design the evolution of an organization is limited.	A capable and strong-minded executive can lead an organization in any desired direction.
In contrast to organisms, machines have clear causalities.	Organizational processes are also determined by fortuity.	Organizational processes are based on clear cause-effect-chains.
While for organisms the successful interaction with their surroundings is of major importance, machines most notably need the optimal internal guidance.	The influence of the environment on organizational success is substantial.	Organizational success mainly depends on the excellence of guidance.
For machines, there is an ideal functionality, barely differing for machines with equal functions, while there is no "one best way" for organisms.	Successful actions in one company, may fail in another.	Successful organizational concepts can be transferred from one company to another without major alterations or complications.
While machines are predictable and controllable, organisms are not.	Organizational control is limited.	The organizational development can be predetermined precisely by professional planning and wide data collection.

In transferring biological principles to economical contexts, our focus is on the following major levels:

Cell = employee

Organ = functional unit of an organization

Organism = organization

Species = industry

This classification allows for the analysis of an industry's or an organization's evolution, the internal evolution of a single company, and also for the analysis of personal employee and leadership behavior.

At times we will expand this scheme and compare different levels as well. Chaos physics theorizes that patterns and principles reappear on different levels. Therefore, when evolutionary strategies for products and companies have the same importance, they can be transferred to either one of these levels. Further, from a philosophical point of view, our approach generally is committed to heuristics. Certainly, the level of neurobiology and bionics contains universally valid laws. On the other hand, in management, it is more difficult to speak of universalities. Reasonably, management is characterized as more of an art than a science. To discover new fields of knowledge, we therefore use the “ars inveniendi”, Latin for “the art of finding”. Comparable problems in nature or in organizations are sought-after with metaphors to arrive at conclusions for the respective areas. Within evolutionary management we therefore offer feasible comparisons and logical conclusions.

1.5 If You Already Dealt with Approaches to Organizational Development...

The systemic approach provides us with important contributions for organizational development via the analysis of systemic functions. The rules of life originate in living systems themselves. The system alone determines the assimilation of certain environmental elements, thus, external concepts of development cannot be imposed on an organization. Processes of change have to evolve from the inside. Systemic approaches strongly place the system and its internal mechanism in the center, especially if they are derived from technical-oriented notions.

The evolution-oriented approach also follows a systemic way of thinking. But, in addition to a snapshot of the system's functioning, this approach primarily deals with the organization's long-term development in its environment and the meaning of a system in the evolutionary process. Evolutionary management encourages the organization to discover its purpose and to develop itself further. A geneticist and researcher of evolution, Theodosius Dobzhansky, once said: “Nothing makes sense, unless viewed in the light of evolution”. This idea underlines the importance of considering an issue within its evolutionary process, thus highlighting the inherent identity, and not just taking a superficial snapshot of a specific situation.

Another important approach of actively designing organizational change emerged with the notion of “Change Management”. We want to enhance this approach

deliberately with the views included in “Evolutionary Management”. Where is the difference? Change Management centers change. But from our point of view, change itself is not the focus. Even if, in today’s organizations, people have to learn to design ever-faster change, they should not be focused on change at any cost. It is crucial to analyze the process of evolution, to consider the position of the organization, and only then decide the direction of further development. Target changes should be subordinated to this process and incorporated into the normal evolutionary flow of developments in an organization. It might also be that in fast, slow or other specific times, no change is necessary. As long as there is no rain in the desert, plants hardly develop. But as soon as it begins to rain, incredible changes take place in an unbelievably fast way. There are various examples in nature of organisms existing millions of years without undergoing major changes. The leaves of the Ginkgo tree today look like their ancient fossils – the ginkgo has existed for some 150 million years. This “living fossil” defied bacterial and fungal disease, and outlived the nuclear radiation of Hiroshima as well as the smog in urban centers. Cockroaches have not changed over millions of years, and everyone who has ever tried to control them understands how successful they are as a species. In business, Leibniz’s cookies or Uhu’s glue reveal the possibility of success without too much “change”.

Thus, it is important to discover the evolutionary process of the company and to support this process of development instead of working against it. Further, it has to be decided which steps are required of an organization at a certain time, in a certain environment. This can indicate more change, or less change. The perspective of change is of great importance in the rapidly developing markets of our time, but it should not be the fundamental focal point.

We are part of the evolutionary process of nature, therefore we follow its rules. We have the opportunity to enhance the evolutionary process by interfering with evolution. This did not only begin with the development of genetic engineering, but began thousands of years ago with animal domestication and the production of seeds. Through the process of cultural evolution, the human being is able to shape and enhance joint existence. However, cultural evolution is also integrated in the laws of overall evolution.

1.6 A Brief Review of the Book

In the following, we will briefly review the book’s chapters. After the introductory chapter on evolutionary management, the second chapter discusses competition and cooperation, both of which are important forms of interaction in evolution. When we look at nature, we recognize a diversity of in-between forms of interactions between species: in symbiotic relationships, all involved parties benefit, while in the predator-prey relationship, only one benefits. However, there are more forms of interactions, which can quickly change. These variations of

interactions also apply to companies. In the later part of the second chapter, competition and cooperation within the company are explored in detail. In doing so, the exciting thesis is introduced: *competition skills presuppose high cooperation skills*.

The third chapter concerns a core piece of evolutionary management: the evolution of organizations. Processes of growth and shrinkage, the pace and rhythm of processes, the direction of developments, the adjustment to the environment, the trend of complexity development, as well as the question of gradual or erratic changes are all part of the fundamental criteria of evolution. At this, the main point is to be aware of the evolutionary line in the decision-making process of current and future challenges. Since evolution itself went through a long development period, evolutionary management can provide helpful tools for analysis and management. The developments of five organizations with their numerous differences are presented as examples, including the evolutionary line of the financial giant Allianz, of the SAP and of the Catholic Church.

In chapter four, the interconnecting glue of the organism is presented. Consequences for the inner life of organizations are derived from it. Part of the fundamental conditions which allow for life are the transformation of material, form and information. This process-related presentation of organisms and organizations makes sense due to the fact that both change constantly. Before regarding the similarities of cell and organization, the company with its functional units is depicted as a living organism.

The fifth chapter deals with the possibilities of learning from nature for the development of innovations in companies. In evolution, changes result from establishing diversity of mutation, the selection of favorable novelties and, finally, from the conservation of the affirmed and successful mutants. This concept of innovation, which has created the almost unlimited variety of shapes and colors in nature, is transferred onto innovational processes in companies by the VSP-model (**v**ariety, **s**election, **p**reservation). We describe other methods of innovation in nature as well, including the multifarious forms of natural innovation that companies can use. Further, we specify the need for an open failure culture, as well as the concept of pre-adaptation, which helps to extract from unrealized potentials.

In chapter six, processes of change in companies from the perspective of evolutionary management are explored in greater detail. This chapter deals with existing fears during processes of change, the leaders' part as drivers of change, advantages of a stake-oriented approach, and the question of how to warm up employees for change. Core elements of practical organization development from the perspective of evolutionary management follow, as well as scopes for design within the framework of biological and cultural evolution. Finally, tools for the

evolutionary design of organizations and a checklist for evolutionary processes of change are introduced.

Chapter seven deals with the principle of swarm intelligence. Swarm behavior is a form of self-organization that occurs, for example, in shoals. The intelligence of a swarm is integrated in the complete system and exceeds the abilities of any single individual. This leads to an increasing cognition of the environment, a higher flexibility and robustness and a high degree of self-organization. It results in interesting suggestions for the organization of a company. The swarm organization provides an alternative model that contradicts the classical central or peripheral organization of companies. In addition, the development of innovations can be enhanced by the interaction of many competencies.

Chapter eight deals with cognitions derived from neurobiology, utilized for evolutionary management. The CER-model (perceiving change, evaluation of this change, reaction to this change) offers a schematic progression for the perception of prospects and risks as a reaction to a constantly changing environment. Likewise, neurobiology shows that many processes of life run automatically in nature. Our body “thinks” faster than our mind. Emotions are critical to the ability to react fast. But in business life, these are regarded as disadvantageous relative to rational cerebration. Decisions are to be made with a “cool head”. But emotions enter almost every decision-making process anyway and offer, oftentimes by means of intuition, an important tool for successful management action. Different aspects of how cognitions derived from neurobiology can be used to alter management behavior and organizational processes are specified.

Chapter nine deals with the handling of the increasing complexity in business life. The starting point of the consideration is the increase of complexity, which can be observed in evolution as well. The abilities of “higher creatures” are too complex for the abilities of a computer, their behavior still cannot be completely duplicated. What are the core points leading to the evolution of complexity in nature? After answering this question, we demonstrate how to learn from nature for the management of complexity. Again, tangible suggestions are given for the management praxis as well as for the organization of companies.

Chapter ten deals with leadership. There are various forms of organization in nature. Leadership behavior, in its literal sense, first emerged by means of hierarchical alliances. By describing different facets of evolutionary leadership behavior, it is apparent that leading always implies being led as well. The framework of design and strategic activities in evolutionary management are specified. We then discuss diverse people skills, leadership with target agreements, as well as approaches for the motivation of employees.

The last topic deals with the practical enhancement of evolutionary management in the future. We perceive the emergence of a new way of thinking, resembling the ethical dimension of evolutionary management. The topic of sustainability thereby plays an important role.

At the end of most sub-chapters, highlighted summarizations encourage the transfer of knowledge into your specific business situation. Business examples, checklists, tools and practical field reports from our consultant projects are given throughout the book.

EVOCO GmbH

EVOCO GmbH is a training and consulting company which combines more than 30 years of experience in organizational development. EVOCO applies the management and consulting approach *Evolutionary Management* for its projects in large and medium-sized companies and non-profit organizations. EVOCO's customers and cooperation partners include Allianz, Audi, Sennheiser, Volkswagen as well as IG Metall and Deutscher Gewerkschaftsbund and Federal Office for Radiation Protection

EVOCO is a member of the international BLOKON biomimetics network.

EVOCO is based in Schöneiche/Berlin and has associated consultants in most major German cities such as Cologne, Hamburg, Munich and Stuttgart.

Evolutionary Management

Evolutionary Management describes a management model for organizations which considers processes in and between organizations as organic processes of life, which follow the laws and principles of nature. Therefore, EVOCO uses comparable processes from nature with its experience from millions of years - as a basis for creating organizational processes in the business world.

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