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Coping with the Dilemmas of Resource-Oriented Management

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ISBN 978-3-642-19164-0 e-ISBN 978-3-642-19165-7
DOI 10.1007/978-3-642-19165-7
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2011931469

Cover design: eStudio Calamar S.L.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

It may be popular among scientists, economists and politicians to complain about the indefiniteness of the sustainability term but one cannot deny that the problem to be solved becomes clearer and clearer. The world consumes oodles of resources while generating wealth and a human way of living. However, it will not be long until we need to refrain from treating resources this way because the material resources of the small planet Earth are getting fewer and will soon be exhausted.

However, coping with this problem does not only mean to use the remaining resources more efficiently. The **efficient application** of resources represents rational business behaviour. But with a more efficient application of material resources the existing pool of resources is indeed depleted more slowly but not one resource unit is being added.

The problem of lasting and intelligent economic activity requires a solution which enables following generations to satisfy their needs, too. This solution needs to be based on the **reproduction of resources**. A sustainable economy preserves its resource base which is required for the satisfaction of its needs. This means that one may not consume more resources than can be regenerated within a certain period. This rational economic behaviour does not only apply to the resource capital but to all immaterial and material resources the economy is dependent on.

The approach of sustainable management as presented in this book is based on the assumption that it is not only up to economic policy to fulfil the task of reproduction of material and immaterial resources. A healthy business always keeps an eye on the lasting supply of material and immaterial resources and it acts in consideration of these resource flows. This is easily said, quickly understood and difficult to realize: on the level of business decisions not only complex but also rather **dilemmatic coordination processes** will soon arise which are to be coped with. The phrase "profit through sustainability" usually cited by politics and science is actually not effective for the necessity to make decisions here and now. It simulates analgesia where there is none because taking account of the resource flows of tomorrow costs time, money and attention today and reduces profits of the current period.

If a business wants to become more sustainable, it first of all has to learn to deal with contradictory management rationalities. This is the essential message of this management book; the reader shall not only be offered a number of instruments but a thorough explanation of the fact that a sustainable development of economy is not realizable without **coping with the complex and dilemmatic decision-making processes** in businesses. Those persons that make decisions and especially those persons that legitimate decisions are challenged to cope with the effects of contradictory decisions – with the trade-offs or, put differently, with *the unreachable*. This is not so much a question of instruments for decision-makers but rather a question of their tolerance of ambiguity: the ability to constructively cope with the actually existing fields of tension.

This book is addressed to science, economy and politics. It can be of help for those who are trying to find out how the necessity of a sustainable development is reflected in the decision-making behaviour of economic units, beyond the normative postulate for more respect and responsibility or simple win–win-hypotheses. In this book I try to adapt my theory of management ecology to economic decision-making routines of managers, politicians and consumers. You will find my research results of the bygone years in a – as I hope – coherent argumentation and overall presentation.

Since my research language has been German during the last years, most references refer to German literature. The insights, however, claim to be internationally valid.

I want to thank Dr Juliane Riese and especially Ms Anna Katharina Liebscher for translating my book and for editorial support.

Bremen, November 2010 Georg Müller-Christ

Introduction

This management book deals with the question of how a reasonable sustainable behaviour can be adapted to economic decision-making routines. Speaking of economic decision-making routines shall make clear that this book is addressed to all actors in social systems that decide on the application of scarce resources. Not only the decision-makers in businesses can and must behave in a sustainable manner; persons in families, schools, parties, municipal administration, associations etc. are confronted with the task to treat their resources in an efficient and housekeeping way as well.

Actually, the whole argumentation is focused on the word "and": efficient *and* housekeeping or just efficient *and* sustainable. This "**and**" replaces a mentally deep-seated "through." Politics and science still speak of the need to behave according to "sustainability through efficiency." Extensive theoretic and axiomatic explanation is required in order to loosen the causal link of "**through**" and to open up to the difficulty of "and." This loosening will take place in ten chapters and will consequently be based on a resource-thinking.

The first part of the book deals with the perception of sustainability.

Chapter 1: Sustainability and Society

Since the issue of sustainable development is being discussed in politics and science all over the world it can only be outlined very roughly. Important institutions and their perception of sustainability will be sketched and the issue of sustainability in education will be explained. Within all this explanation the **newness about the sustainability** term remains unclear. Is it still a matter of environmental management und responsible economic behaviour, only in different words?

Chapter 2: Quo Vadis, Environmental Management?

Does it result in an equalization of environmental protection or environmental management and sustainability? What would be its use? Environmental protection and environmental management do not develop automatically – even if this was promised 30 years ago. This chapter will show why. The new and provocative thought presented here is being subsumed in the term **efficiency trap**. This trap is exactly what environmental management will be caught in if it tries to disburden the natural environment by pursuing the concept of eco-efficiency only. There is no sign of sustainability here.

Chapter 3: Quo Vadis, Social Responsibility?

Because of the similar title one might expect similar results as in the preceding chapter. Indeed, corporate social responsibility as a term of remedy – appealing to businesses to take responsibility for humans and nature – easily results in a **responsibility trap**. Society has to bear the multiple side effects caused by the economy and therefore asks for the possibility to attribute the effects to particular causers. However, this is not possible in a world of selected single causes and aggregated general effects. The traditional problem of attribution paradoxically turns into an expansion of attribution. The semantics of responsibility is indeed important for societal institutions but it has rather few points of interaction with the actual sustainability problem.

Chapter 4: Sustainability as Economic Rationality

The "**bilingualism**" **of economics** actually originates from forestry. Do not take more wood from the forest than can re-grow, was a rather painful experience of the eighteenth century, when forests were nearly fully cleared. In different words the message is: preserve the substance or the resource base from which economic activity emanates from! But what happens if the substance does not permit the fulfilment of economic objectives? By the way, the preservation of substance or the housekeeping-oriented treatment of natural resources is a necessity much older than the fossil era. Real profit-oriented economic activity was only possible when people realized how to produce high quality products from fossil raw materials. Due to the feigned inexhaustibility of fossil raw materials the original economic language of housekeeping disappeared – what remained is the market-oriented rhetoric of acquisition.

The second part of the book comprises theoretical impulses that could contribute to the required bilingualism or dual thinking of management studies.

Chapter 5: A Theory of Management Ecology

A housekeeping way of thinking circumscribes the necessity to focus more on the lasting supply of resources. System-theoretic, co-evolutionary and ecological insights show that the maintenance of the resource base of systems is an essential prerequisite for the fulfilment of a system's end. System-rational behaviour is characterized by the understanding of a system as a part of a **household or resource community** if it wants to ensure its survival in the long term.

Chapter 6: Dominant Management Rationalities and the Necessary Improvements for a More Sustainable Management

Sustainability of housekeeping-oriented thinking as an independent rationality raises the question of the relationship between this rationality and the traditional management rationalities. Exclusive profit-oriented thinking or efficient attainment of ends is not sufficient if a system wants to ensure its existence. This chapter explains in which way the existing management rationalities need to be enhanced (not replaced) in order that businesses are able to establish resource communities with their environments. A lot of explanation is required in order to make clear that the old and the new rationalities may not be reduced to each other, but that they have to stand next to each other on the same level. The essential insight is that **efficiency and sustainability are as well independent rationalities** which are, however, contradictory.

Chapter 7: Coping with Contradictions as Core Problem of Modern and Sustainability-Oriented Management Studies

It is not a completely new challenge for management studies to constructively cope with contradictions. However, not much attention has been paid to it either. If a businesses wants to (or has to) become more sustainable, decision-makers have to be able to identify and to accept contradictions, and they need to have the ability to cope with them by means of adequate measures. The core problem of **coping with contradictions** is that there are always trade-offs (mutual negative causalities) which make one objective unachievable. This chapter explains this relation and provides concrete design recommendations.

The third part of the book contains considerations on a resource management that does not only refer to an efficient application of resources but also to a sustainable supply of resources.

Chapter 8: The Use of the Term "Resource" in Management Studies

The resource term is deeply rooted in management studies. Even today, a lot of research is being conducted on competitive concepts like the resource-based view. This is why the **way towards resource-oriented management studies** will be explained in detail. It will become clear that the resource term (of both material and immaterial resources) implicitly contains a logic of resource treatment and that it is, in fact, hardly about a sustainable treatment of resources.

Chapter 9: Salutogenesis as Heuristic for Resource-Oriented Management Studies

The health perception of health psychology and the concepts of salutogenesis both have parallels with a sustainable management since they have a similar understanding of the resource term. Interesting assumptions on the **relationship of material and immaterial resource supply of systems** can be derived from the health-psychological individual resource management. Is it the immaterial resources of a system that secure the access to material resources?

Chapter 10: Strategic Resource Management

Sustainable management studies need instruments that make a **business's resource flows visible and controllable**. For this reason, several innovative instruments will be developed: the strategic sustainability vector, the sustainable SWOT analysis, the control of resource regimes and a resource-oriented sustainability monitoring.

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Sustainability and Society

Structure of the Chapter.
One glance at literature and press reveals that society has started an intensive and confusing discussion on the issue of sustainability. As an introduction to the topic this chapter offers a short overview of this discussion. The aim of this chapter is to reveal that by equalizing justice and sustainability the character of sustainability is not fully described. Moreover, it is fairly difficult to connect the discussion on justice with economic decision-making.

After Reading this Chapter You Should.

- Understand that it is hard to see what is new about sustainability when following the current debate because justice, human rights, humanity and other social objectives can also be pursued without using the sustainability concept.
- Understand that the idea of a sustainable development is being carried into the public discussion by new institutions.
- Understand that there are already extensive considerations on the competencies which not only decision-makers from politics and economics, but rather every person acting economically should have in order to contribute to a sustainable development.

1.1 Germany's National Sustainability Strategy

The best way to understand the German politics' perception of sustainability and its contribution to the development of a sustainable society is to take a look at the progress reports on Germany's national sustainability strategy, published by the German government in 2004 and 2008. The reports reflect the efforts made regarding the development of a sustainable Germany according to the sustainability strategy framed in 2002. It is the Chancellor who is responsible for the realization of the strategy, and therefore the highest authority in German politics.

In the progress report of 2008 chancellor Angela Merkel identified the aim of sustainable development as intergenerational justice and therefore as the safeguarding of a liveable future for current and future generations. Intergenerational justice is to

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_1, © Springer-Verlag Berlin Heidelberg 2011

be reached by giving more attention to the limits of the earth's bearing capacity. Within the process of doing so, the societal development needs to equally fulfil the demands of environmental protection, economical efficiency and social responsibility. In collaboration with businesses and consumers the government aims to **make sustainability a hallmark of the twenty-first century**. Figure 1.1 shows the organizational structure of the government's sustainability management.

This **political sustainability management** consists of the following elements:

1. Management rules: The ten management rules subsume the overall concept and the requirements concerning sustainable development (see Fig. 1.2).
2. Indicators and goals: Indicators show the level Germany has already reached on the way to sustainable development. Goals indicate the need for action and are of great importance for the control of success.
3. Monitoring: Every 4 years a progress report on the status of sustainable development is drawn up. Furthermore, every 2 years the federal statistical office reports on the performance of the sustainability indicators.

Within the management rules the German government connects sustainability with the **original goals of a human world society**. By this, the norms of humanization, peace and democratic development are being conjoined with the factual necessity to foster such development in order to prevent the earth from destruction of its bearing capacity. The chancellor puts it as follows:

> "The concept of sustainability combines economic power with ecological responsibility and social justice. None of these three goals can be achieved without the other for, in the

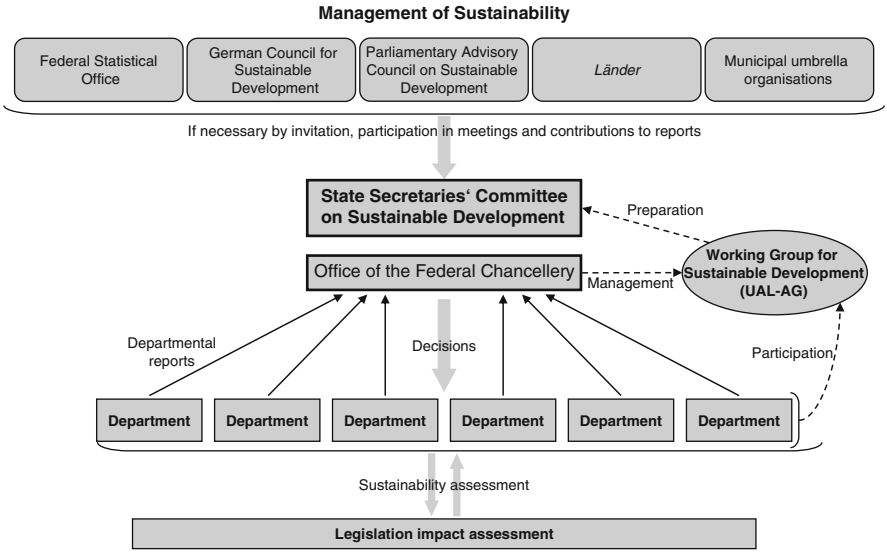

Fig. 1.1 Sustainability management of the German government
Source: Bundesregierung 2008:34

– **Basic Rule –**

1. Each generation must solve its own problems and not burden the next generations with them. It must also make provisions for foreseeable future problems.

– **Rules of sustainability for individual areas of action –**

2. Renewable natural goods (e.g. wood or fish populations) should only be used in long term within the bounds of their ability to regenerate. Non-renewable natural goods (e.g. minerals or fossil energy sources) should only be used in the long term within the context of how their functions can be replaced by other materials or energy sources.
3. The release of materials or energy should not exceed in the long term the adaptability of the eco-system – e.g. the climate, forests and oceans.
4. Dangers and unjustifiable risks to human health should be avoided.
5. Structural change triggered by technical developments and international competition should be shaped in a way that is economically successful as well as ecologically and socially sustainable. For this purpose, political fields should be integrated so that economic growth, high employment, social cohesion and environmental protection go hand in hand.
6. The association of consumption of energy and resources and transport services with economic growth needs to be broken. At the same time, we should aim for growth-related increases in demand for energy, resources and transport to be more than offset by efficiency gains. In this context the creation of knowledge through research and development as well as the dissemination of the knowledge through specific educational measures play a decisive role.
7. Public authorities are also obliged to take into account intergenerational equity. Federal Government, *Länder* and municipalities should present balanced budgets and then take the further step of continually reducing their debt position.
8. Sustainable agriculture needs to be compatible with nature and environment and take into account the demands of keeping animals in a way that is fair to the animals and providing consumer protection, particularly concerning health matters.
9. In order to strengthen social cohesion poverty and social exclusion should be prevented as far as possible, opportunities for participating in economic development should be open to all sections of society, necessary adaptations to demographic change should take place at an early stage in politics, economy and society, and everybody should take part in social and political life.
10. General international conditions should be shaped jointly in a manner, which ensures that people in all countries can lead a life worthy of a human being and according to their ideas and in unison with their regional environment while at the same time take part in economic developments. Environment and development form a unit. Sustainable global action is based on the Millennium Development Goals of the United Nations. An integrated approach should link the fight against poverty and hunger with regard for human rights, economic development, environmental protection, and responsible action by governments (good governance).

Fig. 1.2 Management rules for sustainability by the German government
Source: Bundesregierung 2008:207 f

> long run, no economic growth that is based upon either the ruthless exploitation of nature or social injustice is conceivable." (p. 11)

The government's progress report hardly focuses on the relationship of the three sustainability conditions: economic efficiency, social justice and ecological responsibility. It rather concentrates on the idea that **sustainability is a holistic and integrated approach** and neither the umbrella topic for the three pillars of

sustainability (economic, environmental and social demands), nor their intersection. The metaphor of pillars and intersection shaped the sustainability discussion at the beginning of our millennium. Today, the problem is being verbally dealt with which is comprehensible from politics' point of view. Decision-makers in businesses and municipalities as well as consumers need to cope with complex consideration processes balancing the three dimensions when making a decision. Even Ecosense – the Forum for Sustainable Development of German Business – broaches the issue of the dilemmas which arise when making sustainability decisions:

> "Sustainable development . . . is owed to the fact that we are living in an increasingly complex world in which economy, ecology, and society can no longer be separately perceived and addressed politically. The central task of sustainable development and every political programme related to it is to pinpoint and ponder the interdependence between its individual dimensions and the associated dilemmas." (as quoted in Bundesregierung 2008:21)

This books follows the premise that the **processes of balancing the colliding sustainability dimensions** are not only politics' business – as one might read out of the Ecosense statement – but that this process needs to take place (and actually is really taking place) in every economical decision by federal, regional or local politicians as well as by businesses and consumers. All actors are requested to accept the dilemmas in their decision-making processes and to organize a consideration process within the field of tension between short-term economic objectives and long-term sustainability goals.

1.2 The Discussion on Climate Change

Representative for the extensive debate on climate change, the **seven main statements** of the Potsdam Institute for Climate Impact Research are listed below.

1. Through using fossil fuels, deforestation and other activities, humans emit large quantities of greenhouse gases. The concentration of carbon dioxide (CO_2) in our air has risen from 280 ppm (short for parts per million, in other words, 0.028%) in pre-industrial times to more than 380 ppm today, the highest level for at least the past 800,000 years. Earth's surface is thus exposed to a massive **anthropogenic greenhouse effect**, which has increased global average temperature by about 0.8°C since 1900.
2. If humanity continues at current pace, the **climate on Earth could warm by about five degrees Celsius until the year 2100**. That approximates the difference between a glacial period (an ice age) and an interglacial (a warm period). This means that from the current warm period, we would be entering a "hot period".
3. Through this global warming, the **water in our oceans** expands, and additional melt water from glaciers and ice sheets streams into the seas. Mean Sea Level rose by about 15–20 cm over the last century; it is expected to rise by another 50–150 cm during this century. Further warming might destabilize the

Greenland and Antarctic ice sheets. Historically, Mean Sea Level rose by about 10–15 m for every additional degree of global warming. It is as yet unclear, however, how fast this happened.

4. Anthropogenic global warming could strain Earth's climate system beyond critical thresholds, causing important processes in the system to undergo profound change. This might change the climate of entire subcontinents and seas. For example, it might cause the Arctic ice sheets and the **Himalaya glacier to melt**, or damage the Amazon rain forest. We cannot even foreclose the possibility of a self-reinforcing greenhouse effect, in case the climate system begins to emit greenhouse gases because of anthropogenic warming.
5. If we are successful in **restricting global warming to a maximum of two degrees Celsius**, the most dangerous consequences of climate change might be averted, according to current state of research. To achieve this goal, world-wide greenhouse gas emissions must be reduced to about half the level of 1990 until the middle of the twenty-first century.
6. The necessary measures would reduce the **output of global production** by about 1% until the year 2100. That is if we are successful in taking full advantage of technological and institutional potentials for innovation.
7. Adaptation to climate change and the restriction of global warming to a maximum of two degrees Celsius require a **"Great Transformation"** of the global economy which will include a redefinition of life in both urban and rural areas.

As an answer to the great challenge of mankind to commonly solve a global problem the German government decided on objectives for climate protection. Based on the global objective – industrialized countries have to reduce emissions of greenhouse gases by 60–80% until the year 2050 – the German government defined the following objectives (Bundesregierung 2008:13):

1. Duplication of energy productivity until the year 2020.
2. Decrease of greenhouse gas emissions by 21% until 2012 (compared to 1990).
3. Increase in the proportion of renewable energies for electric power supply to at least 30% until 2020.

According to today's state of knowledge, the atmosphere's bearing capacity for greenhouse gas emissions is approximately 2 tons per citizen. Currently, the per capita CO_2-output of Germany is 10 tons. A **reduction of fossil energy by 80% per capita** is not realizable through energy efficiency measures solely. Only consequent investments in solar technology may someday result in the provision of enough energy for the development of a humane world society (e.g. Climate Change, 2007, Synthesis report).

How are the global climate change and an economic sustainability management related to one another? The development of the world society shows that it is not the natural raw materials that become scarce first; it is the bearing capacity of the atmosphere that is decreasing. More precisely, the atmosphere can indeed bear big quantities of CO_2, but not without dramatic impairment of human living conditions. Businesses will only make an effective and discrete contribution to CO_2-reduction

when they can legitimate these as **investments in the very own resource base**. This book shows why this is so difficult and how it could nevertheless work.

1.3 The Scarcity of Resources in the World

The resource term plays an important role in this book. Economic activity means to fulfil ends or needs with scarce resources (see Chap. 8). Resource is a synonym for means. Economic activity is only needed due to the scarcity of resources in the world. Economists used to believe that resources are only relatively scarce. During the last 10 years they accepted that especially **raw materials are actually absolutely scarce** (Gandenberger 2008:91 ff.).

In 1972 and 1992 the Club of Rome broached the issue of the limits of growth and the new limits of growth respectively and focused on the absolute scarcity of raw materials. A big public discussion was the result. Today, many hints can be found on the approaching exhaustion of mineral, energetic, agrarian and living raw materials in the world. However, at the same time, demands for these resources even grow. Commonly known topics are overfishing, deforestation, peak oil, degradation of soils, forest decline etc. Now that the scarcity of raw materials is made visible, **resource conflicts** will increase on a global scale because several societies of the Third World cannot overcome their poverty without raw materials. However, it is still 25% of the world population that consume 75% of the world's resources. With the visible scarcity the allocation battle will increase, too (Altner et al. 2010).

During the last 10 years of globalization – i.e. the establishment of the world as one economic market – material flows have globalized as well. But apart from the quantity of materials which have been transported, the basic problem is the trend to bring high quality materials to industrialized countries and to dispose of waste in the Third World countries (www.materialflows.net).

The basic problem of the world society is that the amount of consumed resources more and more hampers our planet to **regenerate the basis of human and animal existence**. If we kept the traditional production and consumption patterns, the worldwide consumption of raw materials would multiply within the upcoming 20 years. Hence, many raw material stocks and natural sources would be depleted and following generations would have to suffer the consequences. However, sustainable economic activity cannot develop with an increase in resource productivity only; by this, the consumption rate would just be slowed down, but resources would not be reproduced.

The lasting satisfaction of needs will only be possible if we do not use more resources than can be regenerated within the same period of time. This task becomes easier, the more respectful and efficient the available resources are treated. The way the world society currently treats its resource pool **cannot be generalized, neither spatial nor temporal**. From an economic and a managerial point of view the focus needs to be laid on the lasting supply of resources when defining the

factors of success of economic activity. Innovations for sustainable development (von Hauff and Kleine 2009) need to be accompanied by the considerations of a Great Transformation of systems (ISOE 2003) and the development of sagacious management (as introduced in this book).

1.4 Institutions for Sustainable Development

Today, numerous new institutions exist all over the world which aim at a more sustainable development of economy and society. In the following, some of these institutions will be presented: the Global Compact as a globally acting institution; the German Council for Sustainable Development as a nationally acting institution; and the Brundtland Commission which was the first institution to find a modern definition for the term Sustainable Development.

1.4.1 The Brundtland Commission

The concept of sustainable development became known due to the report of the **World Commission on Environment and Development**, published in 1987. This commission was established in 1984 at the initiative of the United Nations Environment Programme (UNEP) and was named after its chairwoman, the Norwegian Prime Minister Gro Harlem Brundtland. It was founded because of the insufficient development of the United Nations' environmental policy which started in 1968 in a general assembly and led to the Stockholm Conference on the Human Environment in 1972. The conference adopted a declaration on the human environment and an action plan for the prevention and improvement of the environment. In 1982, the conference noticed that the established aims had not been realized and that the environmental pollution actually increased. For this reason, the Brundtland commission was asked to work out recommendations on the connection between economic development and environmental protection.

In its final report the commission formulated the approach of a **"Sustainable Development"** (WCED 1987:43):

> "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:
> - the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
> - the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.
>
> Thus the goals of economic and social development must be defined in terms of sustainability in all countries – developed or developing, market-oriented or centrally planned. Interpretations will vary, but must share certain general features and must flow from a consensus on the basic concept of sustainable development and on a broad strategic framework for achieving it."

On the basis of the Brundtland report the UN decided to call a conference on environment and development (United Nations Conference on Environment and Development; UNCED), to be held in Rio de Janeiro in 1992. 170 states participated in the conference and decided on the Rio Declaration on Environment and Development and the **action plan Agenda 21** (Agenda: agens – what needs to be done; 21: twenty-first century). Due to the Agenda 21, sustainable development became a central issue.

1.4.2 The German Council for Sustainable Development

The German Council for Sustainable Development was originally established in April 2001 by former Chancellor Gerhard Schröder, and was reappointed by Chancellor Angela Merkel in June 2007. The council consists of 13 public figures that make contributions to the **implementation of the national sustainability strategy**, identify concrete areas of action as well as projects, and aim at making sustainability an important public issue.

The German Council for Sustainable Development significantly influences the development and continuing revolution of the German sustainability strategy. It enters into dialogue with the government and public actors, and needs to make sure that **sustainability policy** is clarified by means of concrete goals and is made measurable via indicators. The most recent efforts on the topic of the German government's sustainability policy are the "Ampelbericht" (traffic lights report) in which the status of goal attainment was valued on the basis of the 2006 indicator report of the federal statistical office, as well as a statement on the government's draft for the progress report 2008 regarding the national sustainability strategy. The council takes part in European discussion on sustainability within the network of European Environment and Sustainable Development Advisory Councils.

The council worked out recommendations on energy efficiency and energy research, on future coal policies, on the global agricultural trade, on the topic "sustainable consumption", on technology transfer, on forest management, on spatial claims, and on corporate responsibility in a globalized world. The most recent recommendations are concerned with biomass and the modernization of public procurement (see www.nachhaltigkeitsrat.de/en for further information).

1.4.3 Global Compact

On 31 January 1999, during the World Economic Forum in Davos, then Secretary-General of the United Nations Kofi Annan called on managers of global corporations to participate in the **establishment of social and ecological cornerstones for the support of a new global economy** and to make sure that globalization will be of benefit for all people on Earth. From this initiative the Global Compact evolved

at which more than 5,000 businesses as well as employee, human rights, environment and development organizations take part by now. The current Secretary-General Ban Ki-Moon came to a positive conclusion on the Global Compact Leaders Summit on 5 July 2007:

> "It has lived up to its promise – bringing business together with other stakeholders, and infusing markets and economies with universal values." (www.unglobalcompact.org)

The Global Compact is an institution aiming at the promotion of institutional learning. It wants to create transparency and enable dialogue in order to present and to support good practices which are based on universal principles. The Global Compact does not perceive itself as a political control instrument of globalized markets; it rather wants to fill the gap where there is an informed **interest in voluntary commitment**. For this reason, the worldwide network provides further information on questions which go beyond the businesses' core competences.

The **compact comprises ten principles** in four groups (see Fig. 1.3) which derive from the Universal Declaration of Human Rights, the International Labour Organization's (ILO's) Declaration on Fundamental Principles and Rights at Work and the statements of the Rio Declaration on Environment and Development. The Global Compact plans to establish an institutional **voluntary agreement for businesses** to endorse a worldwide sustainable development.

If a business or an organization wants to join the Global Compact it has to write to the Secretary-General of the United Nations and has to explain that it wants to get

I. Human Rights	
Principle 1:	Businesses should support and respect the protection of internationally proclaimed human rights; and
Principle 2:	make sure that they are not complicit in human rights abuses.
II. Labour Standards	
Principle 3:	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
Principle 4:	the elimination of all forms of forced and compulsory labour;
Principle 5:	the effective abolition of child labour; and
Principle 6:	the elimination of discrimination in respect of employment and occupation.
III. Environment	
Principle 7:	Businesses should support a precautionary approach to environmental challenges;
Principle 8:	Undertake initiatives to promote greater environmental responsibility; and
Principle 9:	Encourage the development and diffusion of environmentally friendly technologies.
IV Anti-Corruption	
Principle 10:	Businesses should work against corruption in all its forms, including extortion and bribery.

Fig. 1.3 The ten principles of global compact
Source: www.unglobalcompact.org

involved in being a official advocate of the Global Compact and in committing to its ten principles. The participating businesses are expected to report on their concrete measures to implement the principles and the lessons learnt in their annual reports on Corporate Social Responsibility and they are asked to send these reports to the central Global Compact Office. These progress reports are obligatory for the assurance of the Global Compact's integrity. **In the case of disregard** the case is made public and the businesses are excluded from the Global Compact. Since this mechanism was established, more than 600 businesses have been excluded from the initiative.

1.5 Education for a Sustainable Development

The discussion on environmental protection during the 1980s and 1990s was characterized by a focus on environmental education on natural processes in ecosystems. By now, a discussion is held on the education for sustainable development which is more focused on the complexity of economic decisions. A more respectful decision-making of managers is made an issue in the Principles for Responsible Management Education. During the United Nations Decade of Education for Sustainable Development (2005–2014) a competence-based approach has been developed in Germany which deals with complex decision-making in general (Bormann and de Haan 2008). Both approaches will be outlined in the following.

1.5.1 Principles for Responsible Management Education

The Principles for Responsible Management Education are an attempt of both United Nations and Global Compact to integrate responsible management in the **education of future business leaders** worldwide (Fig. 1.4).

> "The PRME are inspired by internationally accepted values such as the principles of the United Nations Global Compact. They seek to establish a process of continuous improvement among institutions of management education in order to develop a new generation of business leaders capable of managing the complex challenges faced by business and society in the 21st century." (www.unprme.org)

By the beginning of the year 2007 a newly-founded academic network of the United Nations Global Compact was asked to work out guiding principles for management education. After having received the results of this workforce in July 2007, Ban Ki-Moon called on business schools and universities to commit themselves to the Principles for Responsible Management Education (PRME) and to organize their **managerial research and education** in a way that public responsibility of businesses receives more attention. The Principles for Responsible Management Education are an effective institution in order to make a modernization and

As institutions of higher education involved in the development of current and future managers we declare our willingness to progress in the implementation, within our institution, of the following Principles, starting with those that are more relevant to our capacities and mission. We will report on progress to all our stakeholders and exchange effective practices related to these principles with other academic institutions:

Principle 1 Purpose	We will develop the capabilities of students to be future generators of sustainable value for business and society at large and to work for an inclusive and sustainable global economy.
Principle 2 Values	We will incorporate into our academic activities and curricula the values of global social responsibility as portrayed in international initiatives such as the United Nations Global Compact.
Principle 3 Method	We will create educational frameworks, materials, processes and environments that enable effective learning experiences for responsible leadership.
Principle 4 Research	We will engage in conceptual and empirical reseach that advances our understanding about the role, dynamics, and impact of corporations in the creation of sustainable social, environmental and economic value.
Principle 5 Partnership	We will interact with managers of business corportions to extend our knowledge of their challenges in meeting social and environmental responsibilities and to explore jointly effective approaches to meeting these challenges.
Principle 6 Dialogue	We will facilitate and support dialog and debate among educators, students, business, government, consumers, media, civil society organizations and other interested groups and stakeholders on critical issues related to global social responsibility and sustainability.

We understand that our own organizational practices should serve as example of the values and attitudes we convey to our students.

Fig. 1.4 The Principles for Responsible Management Education
Source: www.unprme.org

professionalization of management education discussable (Pies and Hielscher 2007). They enable universities to contribute to a contemporary education profile of graduates and can help them to become more sustainable themselves.

1.5.2 Organizational Competencies for a More Sustainable Development

The issue of education for a sustainable development has gained great importance due to the **United Nations Decade of Education for Sustainable Development**. This world decade aims at an incorporation of the concept of sustainable

development in all educational systems. Actually, every scholar in every educational institution all over the world should have the possibility to acquire knowledge on the organization of a more sustainable development.

In Germany, it is the German UNESCO-commission who coordinates the realization of the decade projects. The commission translated the overall objective of the decade into **four sub-objectives**:

1. Further develop the concept of Education for Sustainable Development and broadly spread good practices.
2. Forge stronger links between individual players and stakeholders in Education for Sustainable Development.
3. Increase public visibility of Education for Sustainable Development.
4. Strengthen international cooperation.

In order to reach these objectives, not only expert knowledge is needed, but also key competencies, which the OECD defined as follows (www.oecd.org):

1. The competency to act autonomously.
2. The competency to use communication and know-how tools interactively.
3. The competency to interact in socially heterogeneous groups.

These competencies were further sectioned into shaping competencies in order to define the organizational competencies for a sustainable development (see Fig. 1.5).

This book concentrates primarily on the shaping competencies T.2, T.3, G.2 and E.1:

- T.2 *Competence in anticipation* – Analyze and value future developments:
  The awareness of the difference between medium- and long-term main and side effects of economic activity on the resource base needs to be strengthened.
- T.3 *Competence in interdisciplinary gaining of interdisciplinary knowledge* – Gain interdisciplinary insights and act accordingly:
  From the perspective of management ecology the justification of the long-term preservation of the resource base is an interdisciplinary one; in parts, the recommendations require knowledge in natural and social sciences (see Chap. 10 on resource controlling).
- G.2 *Competence in coping with individual decision-making dilemmas* – Consider conflicts of objectives when reflecting action strategies:
  This book focuses on the explanation of the dilemmas of sustainability decisions; therefore, this competency is the crucial innovative goal of the resource-oriented sustainability approach.
- E.1 *Competence in reflection on models* – Reflect the own and other's models:
  Sustainability is often referred to as a model. However, the fundamental information is often hidden behind the models: How can a sustainable development be achieved? It is the essential appeal of this book to reflect on the explicit model which suggests that economic entities can reach economic success through environmentally friendly and socially acceptable behaviour.

OECD competencies	Sub-competencies of the shaping competencies
Using tools interactively (T)	T.1 *Competence in adopting perspectives:* Acquire knowledge in a cosmopolitan and perspective-integrating way
	T.2 *Competence in anticipation:* Analyze and value future developments
	T.3 *Competence in interdisciplinary gaining of interdisciplinary knowledge:* Gain interdisciplinary insights and act accordingly
	T.4 *Competence in handling incomplete and over-complex information:* Detect and calculate risks, dangers and uncertainties
Functioning in socially heterogeneous groups (G)	G.1 *Competence in cooperation:* Plan and act in collaboration with others
	G.2 *Competence in coping with individual decision-making dilemmas:* Consider conflicts of objectives when reflecting action strategies
	G. 3 *Competence in participation:* Participate in collective decision-making processes
	G.4 *Competence in motivation:* Motivate oneself and others to take action
Acting autonomously (E)	E.1 *Competence in reflection on models:* Reflect the own and other's models
	E.2 *Competence in moral action:* Use visions of justice as basis for decisions and action
	E.3 *Competence in self-contained action:* Plan and act on one's own
	E.4 *Competence in promoting others:*. Show empathy for others

Fig. 1.5 Sub-competencies for education for sustainable development
Source: de Haan et al. 2008:188

1.6 *Digression*: The Sustainable University

Universities play a vital role in the topic of "education for a sustainable development". The discussion on education policy is only at the beginning because never before has a topic been approached from the outside to the sum of universities, demanding its closer consideration in research and teaching. Universities often take recourse to the **independence of research and teaching** when being exposed to such soft political pressure. However, there are numerous universities that have developed initiatives of the integration of sustainability in research and teaching.

In this digression a map will be draught for the hardly manageable landscape of universities and sustainability, based on three topographic elements:

1. Universities are economic institutions which need to be managed in a sustainable way.
2. Universities are central public actors which must contribute to a sustainable development in the world.

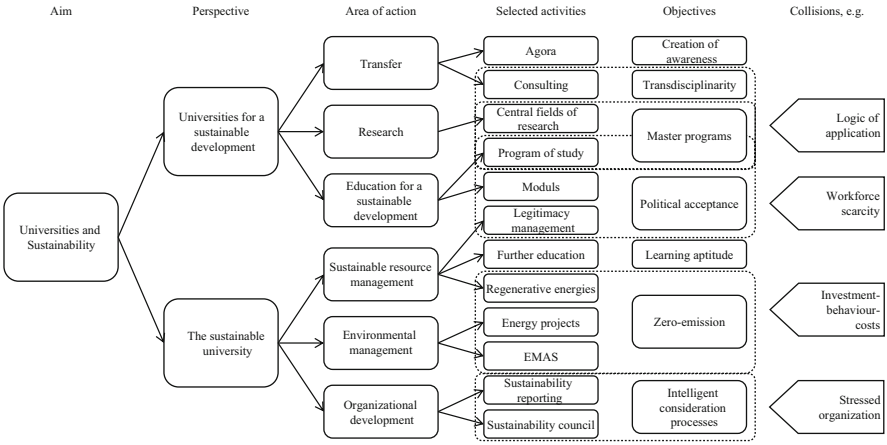

Fig. 1.6 Map of a sustainable university

3. The above perspectives are clearly separable from each other. The following explanation will be based on this insight (see Fig. 1.6).

1.6.1 Two Perspectives on the Sustainable University

Universities are exposed to a multitude of external demands. Nearly each of these public demands needs to be assigned to two levels. Humanization of work, gender equality, environmental protection, democracy and finally sustainability make demands that – on the one hand – initiate more innovative research. In this context, **the university is the subject**, the actor, who creates new knowledge for a more liveable society. Due to the closeness of research and teaching this new knowledge quickly find its way to students. Through this, the university contributes to society.

At the same time a university is a social subsystem of society and therefore the object of its own insights. Design recommendations for improved environmental protection, progress in the issue of gender equity, humanized work processes and democratic decision-making processes should always lead to changes in the institution itself, too. Being a public employer, a university must take the responsibility and live up to its insights.

The difference between an outward and an inward perspective applies to sustainability as well. At the first crossroads the university needs to decide whether it wants to contribute to a more sustainable society through research and teaching, or to orientate the economic social system university itself towards sustainability. This differentiation is of great importance, since different decision-making processes and decision-makers are affected. Researchers need to decide if they want to focus their cognitive interest on the question of how the world society could reduce the destructive side-effects on sources of the natural environment and society in order

to conserve their vital productive forces. Such a realignment of cognitive interest could be accelerated through incentives, general conditions and arguments of university policy and university administration.

The extent to which a university as an economic social system is involved in gaining insights in sustainable management, is dependent on the decision of the university administration which can be quickened through the commitment of professors.

The two perspectives of the linkage between sustainability and university result in different areas of action. These areas clarify the contents of the sustainability construct.

Contributions of the university to a sustainable social development

The **aim of a university** is to create new knowledge through research and to impart this knowledge through teaching. At the same time, universities aim at transferring knowledge to other public institutions and to support a critical discussion on social development.

In the area of research it becomes apparent that the extensive research of engineering and natural sciences, which create application-oriented first order knowledge, needs to be enhanced by socio-scientific sustainability research creating second order knowledge: providing orientation for the valuation of main and side effects of economic and technological development.

In the area of teaching the already existing environmental education needs to be enhanced by an education for a sustainable development (de Haan et al. 2008). This approach follows the insight that under modern conditions the problems to be solved become more and more complex. Competence of organization for a sustainable development includes those sub-competences needed for the solution of complex consideration and decision-making processes (which have not least been intensified in the course of the demand for a more sustainable development). The university needs to deal with the challenge to establish a way of communication that reaches as many students of as many departments as possible.

Sustainability of the institution university

The organizational objects of a sustainable societal development are **all the public institutions, which are economic social systems**. So the university is requested to reflect all the main and side effects on man and nature that are caused by its activities. Consequently, it needs to improve its activities in a way that fewer disturbances are caused, and it needs to focus strongly on the intrinsic value and the authorities of its sources (which provide it with the resources needed).

One way to meet this challenge is to live an environmental management system. Environmental management usually means to reduce material and energy flows, i.e. to apply natural resources more efficiently, whereas sustainable management aims at preserving the resource base. There is a serious difference between the two: Even the thriftiest resource application leads to depletion in the future, if reproduction is not taken into account at an early stage (see Chap. 2). This is what sustainable resource management is about: Which are the vital economical, social and ecological resources a university is dependent on and what can it do in order to secure resource supply in the long run?

The previous efforts in terms of environmental management have shown that institutions need to develop their organizational structure if they want to control their material and energy flows in a way that reduces side effects. This imperative becomes even stronger as soon as the idea of sustainability is included. Organizational development is of great importance because ongoing processes have to be aligned with the decision-making premises of sustainability.

Understanding sustainability as a postulate to stronger focus on the university's resource relationships seems to exclude the previous efforts on the humanization of work, gender equity, democratization and the compatibility of working life and family life. However, by doing so, the concept of a sustainable development at a university takes shape. The excluded issues need to be re-included on the next level of concretion. Anyhow, the humanization of work, gender equity, democratization and the compatibility of working life and family life are all normative concepts which have the right to exist even without the term sustainability.

1.6.2 From Areas of Action to Selected Activities

The initial differentiations and crossroads on the map of a sustainable university have been developed based on the **logic of the sustainability concept** (as will be further elaborated in the following) and the aims of a university. The next level of concretion requires the attribution of activities to the areas of action. This affects activities that can strongly contribute to a first stage of the development of a university towards sustainability because they tie in with already existing developments. However, it needs to be noted that these activities indeed have great effects for all universities but that they have to be adjusted to the different situations. Therefore, the selected activities can only be outlined briefly as follows.

Transfer

The newly-created knowledge does not only have to be transferred to students, but also needs to be transported to the public via **consulting and discussions**. Agora is the fictitious public space where knowledge production takes place, where its conditions are negotiated and where its results are interpreted. Agora ability therefore comprises the ability to network and to cooperate with other non-academic actors in the production of knowledge and the ability to communicate the objectives, possibilities and limits of academic knowledge production to a non-professional public which also includes the establishment of complex dialogue structures (Bastenhorst 2005). Because of the high level of familiarity of the sustainability term, the university should foster public discussions in order to reach both the already informed and sensitized public and the yet uninformed by skilfully staging the topic (Behrens 2009).

Sustainability consulting to politics, economy and society follows the same rules as any other form of consulting regarding technical, social, economic, ecological,

political, educational or theological questions. It is provided by sustainability experts.

Research

The **visibility of public overall research questions** in a university is provided through the differentiation of research fields and the appellation of research institutes. It is important to not only redefine environmental research as sustainability research, but to create a (new) research field comprising both the relevant environmental research and the concepts of social and economic sustainability by consciously discussing the sustainability concept. Such interdisciplinary research fields pose a great challenge for the collaboration of the involved scientists.

Education for a sustainable development

All over Germany new study (mostly master) programs are being developed which focus on the sustainable development of one sub-area of society, e.g. in economy, tourism or environmental engineering. The **study programs** will be successful if they pursue a clearly defined and labour-oriented image of real-job needs. However, these jobs are usually very specific and are seldom chosen by students.

The objectives of education for a sustainable development are to identify the causes for a non-sustainable development of society and to deduce organizational possibilities for a more sustainable society (see Chap. 1.5.2). Such interdisciplinary competences should be imparted to students from all disciplines. The newly created bachelor studies aim at an orientation towards the demands of the labour market which provides connecting factors for the installation of multidisciplinary modules and competences.

Sustainable resource management

Management studies point out that, under modern conditions, a social system does not only have to reach its aims efficiently, but that it also has to preserve its resource base. This is the rationality of this book's theoretical approach. Every social system (including universities) needs ecological, economic and social resources for the fulfilment of its aims, and it needs a secured long-term resource supply. It therefore has to focus on the sources which produce these resources and to invest in their operational capability. Examples for a university's scarce resources are legitimacy, learning aptitude and energy, of course.

Legitimacy towards politics is the prerequisite for the inflow of money for universities. Legitimacy management means understanding the autonomies of the development of legitimacy and investing in means that secure legitimacy in the long run.

Further education means investing in human resources in order to help increase the employees' problem-solving capacity in science and administration in situations of rising decision-making complexity. The assurance of energy supply requires early investments in regenerative energy sources.

Environmental management

Investments in **regenerative energy sources** are closely linked with energy-saving projects for increases in energy efficiency and reductions of energy

consumption. Environmental management systems like the European EMAS set up stable processes which enabled the reaching of environmental goals and their translation into programs, the realization of activities and the control of compliance.

Organizational development

The sustainable orientation of a university results in **new processes of negotiation** including all the institutions belonging to the university. Every new cross-sectional task (like organizational development) can be facilitated by establishing an institution in which the members of relevant faculties, departments and research institutes enter into a moderated process of balancing the ecological, economic and social demands of the university. This does not affect the work of environment committees.

A useful medium for internal and external communication is the **periodic release of sustainability reports**. Such reports can lead to raised awareness (internal) and raised legitimacy (external) and could be geared to the structure introduced above.

1.6.3 From Activities to Objectives

All the activities serve different objectives, and an objective can also be reached with several activities. This is why only those objectives will be mentioned here, that have always been present for universities, but which now experience **re-alignment**.

Public expectations towards universities seem to increase, as regards teaching the society sustainability and learning the realization of sustainability from society. **Creation of awareness** and **transdisciplinarity** must therefore be the objectives of the transfer-area of action. Universities could start to cope with the interdisciplinary challenge of doing research on the sustainability topic by establishing ambitious and integrated master programs or even postgraduate programs. This could be a medium-term objective for research and teaching.

Modules contributing to an education for a sustainable development aim at imparting knowledge on the one hand and at the **political acceptance of the institution university** on the other hand. The latter is an objective which is also pursued by legitimacy management.

The general learning aptitude – or **lifelong learning** – is an objective being pursued in the course of further education of a university's human resources.

All measures for the control of energy consumption and energy supply aim at **zero emission**. This metaphor contains the demand to produce and emit as few emissions as possible and to offset the emissions by taking compensating measures within the university setting.

The objective of organizational development is to cope with the increasingly difficult processes of negotiation of a modern institution. Such **consideration processes can be called intelligent** if they cope with dilemmas and conflicts

constructively. These dilemmas and conflicts even grow bigger when taken sustainability into consideration which is why the last part of the map consists of the possible collisions. These will be derived in detail in Chap. 7.

Some universities have already recognized that they can benefit from new ways of communication and that they are able to react to the new expectations of their public stakeholders and their sources. Moreover, today communication of organizations or institutions is actually medialized communication. Universities gain their regard and acceptance increasingly with the help of **modern information and communication technology**. The internet is an important factor in this context: no great effort is needed when providing lots of interested persons with actual information and knowledge. Persons and groups with different interests in universities can communicate, exchange information and build up communities of interest without any spatial or temporal boundaries.

1.7 Sustainability as Normative Metaphor for Global Justice

The Brundtland definition of sustainability clearly puts sustainability in the context of intergenerational justice. There is an increased awareness that current generations are producing their wealth **hazarding considerable consequences for coming generations**. The latter will not be able to use fossil fuels, ecosystems will be very much impaired in their functioning, state budgets will be riddled with debt, and a majority of people will lack the degree of education necessary to partake in modern society. The long-term consequences of twentieth century generations' actions are deemed to be ethically dubious because they cannot lead to desirable conditions for people living in Third World countries today and for people, all over the world, tomorrow (WCED 1987).

Yet the concept of intergenerational justice is too abstract a demand on businesses to be integrated directly and effectively into **managerial decision-making routines**. It is a justified demand, for practice shows that firms increasingly have to reflect on the long-term effects of their actions (Assländer et al. 2005). Intergenerational justice, as a demand, is of equal value to other normative demands such as sustainability, responsibility, securing of jobs and prosperity.

When **ethical or normative demands** are made towards businesses, the question is under which conditions businesses make the new norms their own and how they justify this. After years of debate on ethics and management, or business ethics, it is clear that ethics' normative demands have little chance of being integrated into businesses' decision-making routines if abruptly confronted with the rationality of economic efficiency, or if understood merely as a corrective for economic deliberations.

Justice is an **age-old norm of humanity**. Not only does the Bible offer solutions to the problem of justice; human beings, in their daily lives, have to find such solutions again and again. Justice is about the distribution of opportunities and restrictions. Intergenerational justice discusses the restrictions for coming

generations brought about by the actions of current generations. The normative discussion is about the question which restrictions for coming generations might be called reasonable and legitimate (Birnbacher 2003). Development is just in an intergenerational sense when coming generations have at least as many options for action as current generations (Tremmel 2003). But this conceptualization is problematic because the needs and the desired options for action, of coming generations are unknown to us. The coming generations are not sitting at the bargaining table when justice is negotiated.

Our **definition of intergenerational justice** is split into a necessary and a free part. The necessary part is based on Tremmel:

> "Intergenerational justice is achieved when the opportunities of coming generations to meet their own needs are at least as great as those of current generations." (Tremmel 2003:34)

Sustainability as a vision (not as a rationality) is defined by the Brundtland Commission in a very similar way:

> "Sustainable Development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

At the core of both definitions is the **satisfaction of needs**, an inherently economic concern. For the free part of the definition, both concepts can be concretized from a resource-oriented, economic perspective. Needs can only be satisfied if the necessary means, or resources, are available. Intergenerational justice could only be achieved if all generations preserved the economic, ecologic, and social resource base such that other generations can satisfy their needs according to their own wishes. But this in fact is tantamount to saying that intergenerational justice is achieved if all economic units act in a sustainable fashion.

We must distinguish between **distributive justice and justice with regard to needs**. Should everyone receive the same, or should each receive what he or she needs (but not more)? In the face of scarce (in an absolute, not relative sense) ecologic, economic and social resources, solutions cannot be based on the premise of distributive justice, even though it has the advantage of simplicity. For if everyone receives the same quantity and quality, everyone will receive very little.

On the other hand, justice with regard to needs is problematic too. How much does an individual need, depending on their social status, geographical origin, personal situation? How much will future generations need? The question how *many* future generations are to be taken into consideration by current generations is a difficult one too. Thus, answering questions on intergenerational justice from a normative perspective is a very complex task.

Intergenerational justice is often taken to be equivalent with **responsibility for the future**. But intergenerational justice in fact seems to be more concrete and easier to delineate. It clearly refers to both its object (generations) and its premise (justice). Responsibility for the future is a more open concept, charged with the emotions of the semantics of responsibility (Birnbacher 2003).

Intergenerational justice is part of a horizon of values which describes a **dignified life for all human beings**. The goal is to fully realize the intellectual and

psychological potential of all. A sufficient material and immaterial resource base is a prerequisite for this.

A potentially helpful step is for businesses to consider whether they will be, and can be, **active in the future**. This step suggests itself, because most institutions assume that they will exist also in the long term. So, if current businesses are to be our future businesses too, it is reasonable for them to consider **their future conditions for doing business** and to analyze the effects of their current ways of doing business on those future conditions.

The above suggests that the problem is **overuse of global resources**. The solution, then, must be a more thrifty, or economical, use of resources. According to this logic, it is more sustainable to consume less, buy more long-lived products, use less housing space, travel less, and so on.

Global justice would then imply that rich countries realize their wealth deploying fewer resources, such that poorer countries have more resources to build up their wealth. This formula is not a new one, but since the Rio Summit in 1992 it has become the accepted standard for global development. It is really nothing more than a reformulation of the **principle of efficiency**. The model is one of pain-free redistribution: Rich countries will not lose any of their wealth, and gain considerable technical know-how; the Third World can also use the new, resource-saving technologies, and voilà: global justice is achieved.

The proponents of this model do concede that an efficiency revolution will not suffice to solve the climate problem and redistribute resources and energy fairly. They admit that the West also needs a **sufficiency revolution**, to put a good life above the acquirement of large quantities of possessions. Yet society (or the state) is not supposed to dictate frugality, or ideals of happiness, according to some (Ekardt 2005:231). The problems of realization are obvious here.

It needs to be said, then, that sustainability, if understood to mean the vision of a just, free, peaceful and intact world, is an **overstretched concept**. That particular reading of sustainability is simply too ambitious. It indicates that the debate is less about sustainability, as it were, than about the implementation of global justice. But that is not what this book is about. The strife for such an ideal is too removed from the world of daily decisions billions of people, as consumers or producers, have to take. And we cannot wait for the translation of such an ideal into everyday action, which undoubtedly will be a protracted and complex process.

Further Reflection

It is well worth to reflect on the utilization of the sustainability term in our society. In a first step, it is really interesting to concentrate on the use of the term in our everyday language. After all, it is not only economy, politics and environmental groups that use this word. Even in everyday conversations the adjective “sustainable” is often used and the question is posed: “Is this sustainable?” The word is often used with the connotation of *lastingly effective* or just *lasting*. In the positive sense, this means that a measure is effective for a long time, in the negative sense the question is implied whether the measure might produce undesired side effects in the future.

All too often science, economy and politics use the word sustainability as a synonym for environmental protection. Here, the question arises whether the use of the sustainability term creates new information or a new quality that is not yet implied in the term environmental protection. On the other hand, expressions like Corporate Citizenship, Corporate Responsibility, Corporate Governance or Compliance appear that businesses summarize under the umbrella term sustainability. It is not easy to detect explicit differences in their meaning.

Within the issue of education for sustainable development several terms are used which require further consideration due to the frequency of their use and their ambiguity. Formerly, one spoke of environmental education, whereas today one speaks of shaping competencies. The competency term and the question how competencies can really be conveyed is a great challenge for the whole educational system.

The following questions and recommendations might be of help when reflecting on the topics of this chapter:

Businesses and sustainability:

Analyze the web pages of big companies regarding their statements on sustainability.

- How do businesses perceive sustainability? Which steps are taken?
- What is Compliance and why is this term so popular today?
- What is the difference between Corporate Citizenship, Corporate Responsibility and Corporate Governance?

Institutions for sustainable development:

- Have a look at the results of the World Summit of 1992 in Rio de Janeiro.
- Have a look at the results of the World Summit of 2002 in Johannesburg. Which expectations of the conference have not yet been fulfilled?
- Find out which businesses from your country are members in the Global Compact.

Education for sustainable development: Reflect the 12 sub-competencies:

- Which sub-competencies could a university with its specific teaching conditions most likely convey to you?
- Which competencies could you acquire best on your own?
- Which sub-competencies focus the most on the sustainability problem to be solved?

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Chapter 2
Quo Vadis, Environmental Management?

Structure of the Chapter.
This chapter debates the premise, omnipresent in studies of environmental management, that environmental protection must pay off at all times. This "win-win-hypothesis" suggests that we can be economical by being ecological. This chapter illustrates the potential development of environmental management studies which do not leave behind the idea that environmental protection should be implemented only where this promises to increase profits.

After Reading this Chapter You Should.

- Know the goals of environmental management.
- Know the strengths and weaknesses of environmental management systems.
- Be able to explain the "efficiency trap" concept

2.1 The Development of Environmental Management Studies

A decade ago, environmental management studies were seen by other management scholars to be a field for "unsuspecting utopians". Environmental management studies, critics claimed, did not have a sound theoretical idea of the relationship between firms and the natural environment, and their contention that there could be a win-win situation for economics and ecology was too optimistic. This section discusses how the rationality of sustainability can make environmental management studies a more realistic field, and **integrate it better with management studies in general**.

There are few fields in management studies which are as tightly linked with trends in society as environmental management studies (Müller-Christ 2001a). During the 1980s and 1990s, awareness that nature is not simply a resource pool to be used and depleted increased. Today, yet other problems are on the agenda. These trends were reflected in the **development of environmental management studies**: Although our ecological problems have not been solved, they have not been granted sufficient attention. Economics and management studies are sure to be

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_2, © Springer-Verlag Berlin Heidelberg 2011

criticized for this next time a big environmental debate comes around. That they are insufficiently prepared is obvious when looking at the discussion about climate change. Strictly speaking, climate change is really nothing more than an aspect of what we might call ecological management studies: The goal is to reduce greenhouse emissions resulting from production, distribution and consumption, ideally to a level of "Zero-Emission".

In 1994, Stitzel argued that **environmental management was "unsuspicious in Utopia"**. He found proof for this contention in that environmental management scholars believed that instrumental knowledge would guarantee environmentally friendly behaviour; and that simple managerial heuristics would suffice to explain the complex interplay between the firm and its natural environment.

Moreover, all publications in the field at the time followed a market-based logic of argumentation: The strategic orientation of firms towards environmentally friendly products and services would secure market share and open up new markets. Stitzel saw the way out of Utopia in the search for interdisciplinary theory, in a behaviourist analysis of the restrictions of individuals' and organizations' economic actions and decision-taking, and in a case-by-case analysis of the conflicts between economic and ecologic interests.

Since the publication of Stitzel's criticism, environmental management studies have developed and taken up his questions. It seems science is hurrying ahead of practice: Protection of the environment and its resources has obviously not been advanced far enough in the daily business of firms. Thus, practice will face this inevitable challenge in the near future. There are signs that important raw materials such as metals and crude oil are getting scarcer. Environmental management will thus probably come back in the guise of a debate on the supply of raw materials, granting renewed importance to issues and ideas such as circular flow economy, recycling, zero-emission commercial areas etc.

We can take Stitzel's 1994 criticism as point of departure for a new assessment of environmental management studies. The following three questions will have to be answered:

1. Is increased sustainability of firms taken to be the result of market or stakeholder pressure, or are there approaches which assume that economic and ecological rationality can be contradictory?
2. What can environmental management systems, as systematic applications of environmental information systems, do for a reduction of environmental damages? How far have results of behaviourist research been integrated into environmental management studies?
3. On what basis do environmental management studies explain the exchange relations between firms and nature? Is there a general rationality which can explain the relations of firms with all their environments?

Environmental management studies can only be led out of Utopia (and thus isolation) if scholars succeed in relating more to management studies in general. We therefore need to assess whether environmental management studies are currently positioned in opposition to, or in isolation from, general management studies.

2.1.1 *Are Profit and Environmental Protection Goals Complementary?*

In the early 1990s two empirical studies analyzed the integration of environmental protection with firms' strategic goals in Germany (Meffert and Kirchgeorg 1989; Raffée et al. 1992). Both studies concluded that **firms saw environmental protection as complementary with almost all their other goals**, such as profit, turnover, market share, competitiveness, image, job creation, productivity and motivation of staff (Fig. 2.1). A further study by Fritz (1995) confirmed the positive relation; Baum et al. (2007) qualified it somewhat but did not fundamentally question it.

This conclusion is based on the idea that environmental protection is easiest integrated with businesses' decision-making when referring to economic rationality. There are two options how this can be done. Either one argues that environmental protection lowers costs, or one argues that it increases turnover. These two options shall both be considered.

Lowering costs by way of investment in environmental measures is a first step to sensitize firms to matters of environmental protection. Production processes can be optimized according to economic, as well as ecological, criteria, such that waste and emissions may be reduced and use of resources and energy minimized.

Other goals of the firm	Environmental protection		
	Meffert/Kirchgeorg, 1989	**Raffée et al., 1992**	**Agreement**
Short- term profits	–	(+)	No
Long- term profits	+	+	Yes
Turnover	+	+	Yes
Market share	+	(+)	Yes
Competitiveness	+	+	Yes
Public image	+	+	Yes
Cost-saving	–	+	No
Productivity	(–)	+	No
Creation of securing of jobs	+	+	Yes
Motivation of staff	+	+	Yes

\+ = goals are complementary;
– = goals are in opposition to each other;
(+) = relation between goals is neutral with tendency towards complementarity;
(–) = relation between goals is neutral with tendency towards opposition
This table only shows the goals which were included in both studies.

Fig. 2.1 Relations between environmental protection and other goals of the firm according to two empirical studies
Source: Raffée and Fritz 1995:346

It is irritating however that this approach is currently termed "Sustainable business management" (see for example Dyckhoff and Souren 2008).

Of course there are **great potentials for saving** resources and energy in firms. But these potentials will not be tapped through environmental management, but through application of the economic principle – produce a given output with minimal inputs. Mostly this approach will only slow down the increase in total use of resources.

The second way to combine economic rationality and environmental protection – **increase turnover through environmental protection** – is more complicated. It is based on the assumption that environmental protection will only become a common goal if we succeed in tapping firms' power to innovate and market competition, and using them to further environmental protection (Meffert and Kirchgeorg 1998). Many publications have discussed this assumption (for example Dyllick et al. 1997; Zahn and Schmidt 1992; Kreikebaum et al. 1994; Fichter and Schneidewind 2000).

But such innovations as would be necessary for active, rather than passive, environmental protection by firms are, in practice, not that widespread. Empirical studies conclude that **legislation is the most important factor influencing management with regard to environmental issues** (Schwaderlapp 1999:14 ff.). Businesses most often respond to legislative pressure by choosing strategies of minimum-cost adaptation to it.

Steger (1997) therefore contended that the ability and willingness of businesses to reform had been overestimated. There are more ecological products and services in niche markets, but environmental and resource protection is not the main goal of innovation in mass markets such as automobiles, electronics, food or textiles. We thus need to face the fact that environmental protection often reduces profits, which necessarily makes managers reluctant to do more than what is legally required (Dyckhoff and Souren 2008:V).

2.1.2 Generating Profits Through Environmental Protection

The perspective which sees environmental protection as a method of lowering costs of production is of course most consistent with the classic logic of management studies. Strategic management is in fact mostly based on a model of equilibrium between system and environment. The long-term survival of the firm is secured by achieving fit between environmental demands and the firm's actions (Bea and Haas 2001:15 ff.; Welge and Al-Laham 1999:53 ff.). But it is questionable whether theory based on this model will suffice to master the current environmental challenge. Markets signal to firms, via prices, that resources will be available, in sufficient quantities, even in the long-term. The market-environment's signals to firms are thus not strong enough, although obvious signals that our basis of raw materials is running out have been mentioned for years (Meadows et al. 1972).

More recent studies show that for a great majority of businesses, **environmental protection matters less than monetary profit**. This does not question the complementarity between profit and environmental protection which is generally assumed, but it does qualify the relationship between the two (Baum et al. 2007:77 ff.). Science must thus confront the problems of businesses' ecological reorientation, rather than selling environmental management as simple in implementation and positive for profits (Pfriem 1999:136).

In fact, the strategic deficits are not to be blamed on environmental management studies alone. Strategic management studies also suffer from analytic and conceptual shortcomings. For example, empirical research shows that business thinking is much less strategic than theory presumes (Welge et al. 2000; Al-Laham 2000). Furthermore, the idea of "optimal strategies" is still dominant. Non-prescriptive schools such as Mintzberg (1999) have not, as yet, gained solid ground in the theory and practice of environmental management. Two possible reasons why environmental protection is not perceived as a strategic opportunity by businesses can be identified:

On the one hand, it is assumed that motivational structures and knowledge of employees, as well as internal processes of the firm, are the most important determinants for a strategic orientation of the firm towards sustainability, if the ecological signals from the environment are too weak. In order to implement a reorientation, the firm would therefore need to **create new organizational structures** which increase internal decision-making ability with regard to ecological issues. But this task is disproportionately more challenging for management.

On the other hand, it is worth thinking about how strategic orientation of businesses can be implemented such that the **same management logic is applied to *all* relations with the environment**. At this point, we can either take ethics to be our guideline (Ott and Gorke 2000); or we can choose a rationality of exchange which takes into account the respective autonomies of the exchange partners (Müller-Christ 2001b).

2.2 A Critical Evaluation of Environmental Management Systems

2.2.1 The Logic of Management Systems

The topic of environmental management systems is currently dominant in environmental management studies. Politicians and scientists wish to make such systems more widespread. Thus, in order to achieve better fit with target audiences, environmental management systems are becoming more diverse. **Well-known examples** include the Environmental Management and Audit Scheme (EMAS), ISO 14000 ff. and EcoStep, and there are many others more specific to certain industrial sectors.

Management systems strive to implement a **cross-divisional function**. The existing, purpose-oriented management structure is to be complemented by another whose purpose is orthogonal to the original purpose (see Fig. 2.2). The European Union's 1995 Eco-Audit-Scheme and the 1996 ISO 14000 ff. are examples of this.

Both schemes provide an approach to the implementation of a systematic environmental management. Fundamentally, they are about a **continuous process of improvement**. The circle of environmental goal setting, planning, implementation, control and correction as well as evaluation by management is to be repeated over and over again, such that the firm continually improves and finally reaches a higher level of implemented environmental protection (see Fig. 2.3).

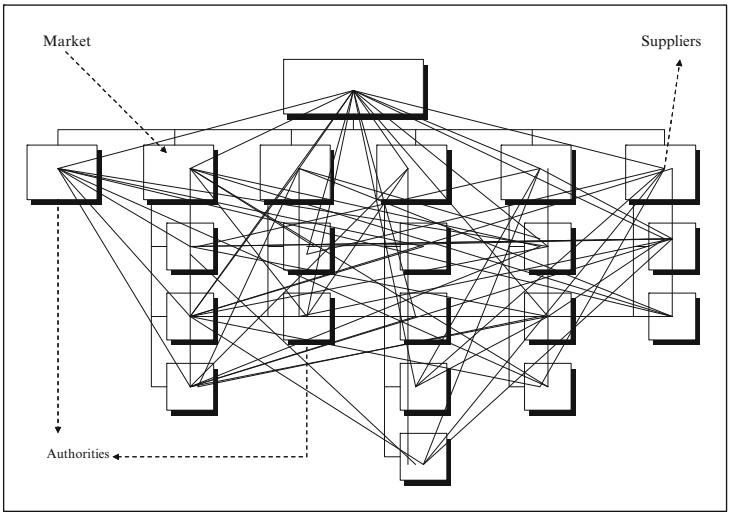

Fig. 2.2 Superimposing cross-divisional functions on purpose-oriented management structure
Source: Müller-Christ 2001a:206

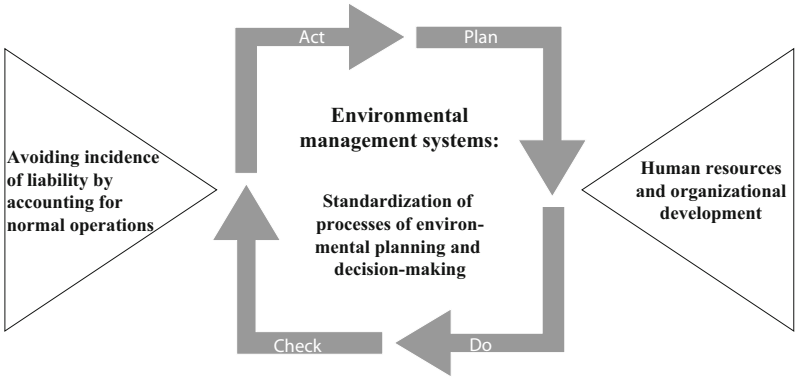

Fig. 2.3 The basic structure of management systems

An environmental management system is that part of the management system which includes the organizational structure, responsibilities, processes and resources for the definition and implementation of environmental policies of the firm. Thus environmental management systems clearly exceed the mere development of role systems (and thus the instrumental view of organization). The political aim with supporting the implementation of environmental management systems as indicated by EMAS is to induce proactive and self-governed action for environmental protection in **small and medium enterprises**. In an environmental management system, the usual management and decision-making process is orientated systematically towards the realization of environmental protection, just as quality management systems gear the process towards quality (Müller-Christ 2001a).

A major argument in favour of environmental management systems can be derived from systems theory. Systems change their behaviour when in possession of new information (Meadows et al. 1992). Environmental management studies acknowledge this. However, adding environmental information to the internal decision-making process of the firm **increases the complexity of decisions**.

On the level of the individual firm, **decisions are often taken not in an integrated fashion, but successively**: first the economic, then the ecologic decisions. But an environmental management system will only be effective if it is integrated into core management systems and processes.

Moreover, environmental management systems are **ambivalent per se**. On the one hand, firms can start a continuous process of improvement by implementing them. On the other hand, firms may avoid fundamental improvements by pointing to their certified environmental management systems. Even if an empirical study by Ankele et al. (2002) found that firms deal with this ambivalence in intelligent ways, the question remains whether environmental management systems do in fact result in better environmental protection, and why their dissemination, in practice, is a tedious process.

2.2.2 Pros and Cons of Management Systems

Quality, environmental protection and safety are issues which management systems aim to systematically address and improve on. The concept of management systems has been popular since the early 1990s. Thanks to ISO 9000 ff., many businesses developed quality management systems, with the goal of **improving the quality** of both products and processes.

The **EMAS environmental management systems** build on this experience. But they failed to note that there is a difference between quality, and environmental protection and labour safety. Competition will force businesses to improve the quality of their products. But environmental protection and safety aim to reduce side effects of production; they are not the main interest of businesses. It is external actors such as the state, non-governmental organizations or unions who demand this

reduction of side effects. Businesses perceive it as forced self-restriction which increases costs or prevents them from increasing turnover.

Implementing a management system is a challenge to the organization: Additional and more complex tasks have to be attended to. Because **efficiency is the dominant rationality**, the proponents of management systems argue that the increased workload will pay off in terms of:

1. Reduction in production costs, because of lower expenditures for waste, energy and materials.
2. Increased legal security, because the firm will comply with all relevant environmental legislation.
3. Better risk management thanks to clearer instructions.
4. Better market image.

The focus was thus on cost reduction; results in terms of increased turnover or market share are hardly mentioned. Moreover, the argument of cost reduction assumes firms to possess a sound cost accounting system. But many small and medium enterprises are unlikely to do so; and even more unlikely to possess a sound eco-controlling system.

Despite these relatively strong economic arguments, EMAS is still viewed sceptically. Business leaders still see a **dearth of external incentives** to implement EMAS, especially for small and medium enterprises. The fact that businesses demand external incentives for implementing environmental management systems strongly indicates that they understand environmental protection as a restriction. They want compensation for a reduction of side effects of their actions. The model behind this reasoning is that of equilibrium between incentives and contributions.

2.2.3 Incentives-Contributions-Equilibrium for Environmental Management Systems

When potentials for rationalization have been fully realized, new categories of benefit have to be introduced, lest the operating costs of management systems should not be outweighed by any sort of profit. Businesses demand **new incentives** in the form of reliefs in terms of authorities' controls and administrative processes. These could be quicker application procedures, fewer obligations to report, more environmentally friendly public spending, increased financial and technical support for businesses or better access to information. Support for EMAS would have to take the form of changes in the allocation of public funds and in public acquisition policies to increase EMAS participants' competitiveness (EMAS Aktuell, No. 5, April 2005).

A big problem is that new incentives are not, like reduction of costs, easily quantified. More complex internal organization and decision-making must be overcompensated by a reduction in the costs of interaction with authorities. As this kind

of correlation is not subject to simple calculations, the most influential factor in the decision-making process will be management's experience with authorities. How have relationships with the authorities been so far? Not all businesses will be motivated to act in favour of environmental protection by the promise of more flexible and quicker administrative processes, as some do not perceive their relations with the authorities as problematic in the first place.

Businesses would have to commit to potentially risky advance performance: Implement an environmental management system today and realize the benefit of quicker and more flexible administrative processes tomorrow. But authorities' controls and application processes are not ends in themselves or simple chicanery, but instruments for reduction of ecological side effects of production. Laws and rules are often the most effective means to make firms act in more environmentally friendly ways.

If controls are indeed reduced and application procedures sped up, it would have to be ensured that environmental management systems reduce side effects more fully and permanently than laws and rules. But this, as of today, is by no means certain. Thus, the state would have to commit to **risky advance performance**: change regulation today, trusting that firms will implement environmental management systems and thereby reduce environmental damages. These considerations show that negotiations on an incentives-contributions-equilibrium between firms and the state are a complex process which cannot be expected to proceed quickly.

Rarely is the assumption that deregulation is at all times advantageous for firms discussed at all. It is quite possible that there are businesses out there that prefer clear and binding rules for all players to the increased uncertainty which self-rule and **voluntary responsibility** necessarily bring about.

2.2.4 The Blind Spot: Contradictory Decision-Making Processes

The assumption of win-win-situations between environmental protection, social responsibility and profits all too often obstructs the view of real **decision-making processes in firms**. What happens when the environmental management system forces members of staff to choose between cost reduction and reduction of environmental damage? Organizational structure has traditionally been designed to avoid such decisions: Automatic and tested routines, systems and schemata, which rule day-to-day business and prevent individuals from taking risky decisions with potentially great consequences for the organization at large, dominate (Neuberger 2000).

From a management perspective, all decisions which are not simple Yes-No-alternatives or calculations of cost are risky. **Contradictory alternatives or dilemmas** are irritating for most firms. Both cost-cutting and cost-intensive environmental measures are important, and both have to be implemented at the same time. But the two exclude each other. Firms have a hard time dealing with contradictory decision premises of the kind. This is the reason why many

businesses, after completing a project on environmental protection, fall back on old decision-making routines and favour economic decision premises. Special projects, in cooperation with other businesses and universities, increase the complexity of decisions.

Environmental management systems are not designed to deal with contradictions between economic and ecologic decision premises. They are a **standardized and formalized management process**, which describes goal setting, definition of responsibilities, realization of projects, and auditing. This environmental management process is orthogonal to the traditional monetary management process and hard to integrate with it. There are too few systematic approaches which truly address the question of such integration.

This **blind spot of management studies** has grave consequences for the transfer into practice. Businesses anticipate that improved environmental protection cannot be realized without a reduction in profits. For this reason, they demand compensation, ideally financial compensation, while they still can. And they only move in the direction of environmental protection if and when (legislative) pressure is strong enough. In the case of legislation, there are no contradictory decision premises: the legal standard has to be complied with in a cost-effective manner. Organizational structure is designed to deal with exactly this kind of decision problem.

Management studies provide little information on how systems can be induced to **restrict themselves voluntarily** or refrain from actions in order to reduce external effects on other systems. But this is precisely the necessary requirement for environmental management systems to be implemented successfully. Empirical observation however seems to prove that it does not work.

Small and medium enterprises deserve special mention. They depend to a great degree on the owner or executive director. In fact, the degree of complexity which can be dealt with in a small or medium enterprise depends on the personal qualities of that very person. But this means that executive directors are often overburdened. They have to decide too much. And much depends on how they personally deal with ignorance of alternatives and consequences of decisions.

Decision-making in firms is necessarily **decision-making under conditions of uncertainty**. This uncertainty is drastically increased when ecologic information is taken into account. Ecologic information, in turn, is often uncertain itself. Experience shows that if attention, knowledge, time and money are scarce, deciders will mainly work to remove uncertainty in the fields of main interest. In less important fields – and often, environmental protection is one of these – uncertainty is decreased mainly through such activities as the activation of prejudices (Kreibe 2004). Important information on such subjects as environmental management systems might be perceived, but it does not advance into the main field of vision.

As long as EMAS is not mandatory, its **incentive structure** is the factor most decisive for its success. Firms demand external incentives for reducing their external effects on the environment. As yet, there is no equilibrium between incentives and contributions with regard to EMAS, and it can not even be reached through the payment of considerable subsidies, as experience from the introduction of EMAS shows.

This may well be the reason why the **argument of economic efficiency**, in all its various forms, is not overcome. The strongest argument in favour of environmental protection continues to be that it increases profits. Every time subsidies for more environmental protection are provided, this argument is repeated. We therefore must scrutinize the hypothesis once more: Can it motivate businesses to reduce their harmful impact on the environment?

2.3 A Critical Evaluation of the Win-Win-Hypothesis

"Win-win-hypothesis", in this context, is taken to mean an increase in profits at the same time as environmental damage per unit of output is reduced. This is also described as "**eco-efficiency**": economic efficiency plus ecologic efficiency. Reduction in environmental damage is assumed to imply fewer costs, because fewer resources and energy are deployed and less waste is produced. But can we really assume economic efficiency and ecologic efficiency to be synonymous? To answer the question we first need to **take a look at the concept of costs**.

2.3.1 The Negative Image of Costs

All parts of society are subject to the **semantics of economization**, but we lack sufficient analysis of what that implies. According to economic semantics, costs are the enemy of survival. Systems cannot be expected to bear additional costs, and neither can the current level of cost be judged acceptable. Media reports on businesses which make record profits yet cut jobs are symptoms of this way of thinking. Politicians are slow to question this perspective. Political reforms mostly aim to help firms to cut costs by lowering taxes and non-wage labour costs.

Business studies define costs as **valuated utilization of capacity**. This definition implies that if costs are reduced, either

- utilization of capacity remained constant but its **valuation was changed** (for example because wages or wholesale prices were lowered), or
- valuation remained constant and utilization of **capacity was reduced**.

The latter point requires some explanation. If a constant output is produced using fewer materials, less energy, fewer personnel, etc this often means that **turnover and profits (wages) of staff and suppliers are reduced**. Every cost-cutting measure within the firm reduces profits of the firm's environments. In order to survive, these environments are forced to cut costs themselves, which in turn has an impact on *their* environments. The pressure of efficiency is thus spread by a kind of snowballing system.

Reducing costs by putting pressure on suppliers does not lead to an improvement of environmental protection, however. Quite the opposite: Suppliers' latitude for

producing in environmentally friendly ways is reduced. This effect is stronger if bargaining power of suppliers is weaker. At the end of the supply chain, we find the worst ecological and social conditions of production.

2.3.2 Positive Effects of Increased Efficiency for the Firm

The positive effects of increases in efficiency are, of course, increases in profits, which are the dominant goal of management. They take place mostly in the **monetary sphere of the firm**, which currently dominates managerial action. They take place in the material sphere of the firm when emissions are reduced, when deployment of resources is decreased or when risks are minimized. However, the absolute consumption of resources and materials by the firm can still increase despite such relative efficiency gains, if production is expanded and the firm grows.

Positive effects of cost reduction for society may exist, but only in isolated cases, and where they can be found they are often ambivalent. An improvement for one group is accompanied by deterioration for another. (For example, rationalization in production renders physically taxing tasks unnecessary, but this also reduces the number of jobs.)

2.3.3 Negative Effects of Increased Efficiency for the Firm

The negative effects of increases in efficiency will only have indirect effects in the monetary sphere of the firm. Cost reductions mean lowered income for suppliers and personnel. This fuels the **efficiency spiral** described above; and it robs suppliers and staff of some of their resources, which they need to survive. If companies move to other countries in order to minimize tax dues, the state too is forced into the efficiency spiral. Tasks such as education and infrastructure maintenance, which businesses in turn deem to be important for their own survival, will then have to be performed on smaller state budgets.

The natural environment suffers from efficiency increases when **too much material and energy is used** or when goods are transported over long distances in order to reduce costs, or when consumers, instead of repairing products, discard them and buy new. Other considerable side effects on society arise when jobs are transferred to low-wage countries, raising unemployment and straining social security systems at home.

If management systems are introduced without new jobs being created, this is tantamount to a reduction in labour costs. The staff have to work more for the same wage. Increased labour intensity means **greater health risks** and additional burdens on the healthcare system. Moreover, workers will have less time for other roles they might want to play, as parents, as voluntary workers in associations, as friends. Their environment will have to cope with these negative externalities.

Acceleration of product development, too, is a negative side effect for society. Composition and potential side effects of products are no longer transparent for consumers. This is particularly true for groceries, cosmetics and in the pharmaceutical industry.

2.4 Environmental Management Studies and the Efficiency Trap

The following figure shows why protection of the natural environment and consideration of society's needs are a **contradictory task** for profit-oriented businesses. The purpose, or intended effect of the social system that is a firm, is to produce marketable goods and services, in order to secure income for workers, suppliers, and the firm's owners (Fig. 2.4).

Businesses are today managed in the monetary sphere. While the financial aspect of business was formerly a secondary condition, it is now taken to be dominant due to competitive pressure. Competitive pressure is **pressure to externalize costs and pressure to refuse to internalize costs**: Where possible and legal, costs are externalized onto suppliers, society, humanity, and nature. This is what the rationality of efficiency implies (Gahrmann and Osmers 2004).

It is thus rational for businesses to **produce side effects not prohibited by law** in order to achieve the intended effects (fulfil the business's end) as efficiently as possible. The argument that firms should implement measures for environmental protection in order to reduce costs seems particularly problematic when considered in this context. In fact, eco-efficiency, when understood in this way, supposes that side effects of increased efficiency can be compensated for, or offset, through being more efficient. This is the efficiency trap: It is assumed that a problem can be solved using the very strategy which caused the problem in the first place.

Empirical evidence shows that businesses do not fall into the **efficiency trap**. Only very few firms have implemented an environmental management system, meaning that besides compliance with regulation, very little is done in the way of

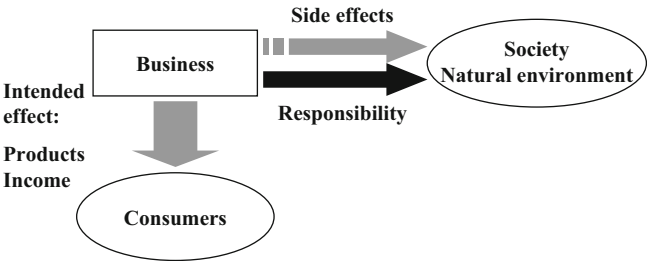

Fig. 2.4 Businesses' intended and side effects

environmental protection. Businesses apparently understand that an environmental management system, while promising efficiency gains upon implementation, will be a cost factor in the longer run.

Reduction of side effects of production in many cases cannot be achieved simply by optimizing inputs and cutting costs at the same time. And producing marketable goods and services always requires deployment of energy and materials. Thus, in a **growing economy**, reduction of utilization of natural resources is not possible to the extent which would be necessary if ecosystems' functional capabilities are to be protected, rather than overstrained.

The only way to avoid the efficiency trap is to convince firms that there are "protective" measures which will not assist them in their main purpose (producing marketable goods), but which they still have to implement. Put differently, **reduction of side effects and fulfilment of purpose must be viewed and discussed independently of each other**, as issues in their own right (see Chap. 6.5).

Further Reflection

For more than 30 years society has discussed the necessity to increase the efforts for environmental protection. In the end, it is about the preservation of our basis of existence. Actually, the resource consumption in Europe and all over the world rises; even pollutant emissions stagnate on a high level or even intensify. For consumers, the range of products increases and it is difficult to find out which product is more environmentally friendly than another. A glance into stores reveals that products with little environmental impact are still hardly to be found. Of course, one could start a big discussion on the logic of our profit-oriented economic system which often leads to criticism of system and growth. But since this book concentrates on the microeconomic decisions of economic entities from a managerial perspective, the focus shall remain on the question of how environmental protection could be aligned with the predominant decision-making routines.

The following questions might provide some suggestions for further reflection on this chapter:

Goals of environmental management:

- Read the introductions to about five to eight textbooks on environmental management. Summarize why, according to the authors of these textbooks, companies should invest in environmental protection.
- Analyze five different sustainability labels for consumer products. Which characteristics of the products are certified by these labels?
- Make a list over 20 products which, in your opinion, are more environmentally friendly than comparable products.

Environmental management systems:

- Do some research on EMAS II. Which processes does the system require to be institutionalized?
- Read up on the theory of economic exchange. Which other theories explaining human relationships exist?

Efficiency trap:

- Do research on eco-efficiency. Why does eco-efficiency not lead to comprehensive solutions to environmental problems?
- Why does eco-effectiveness lead to a more fundamental change of products and production?

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Chapter 3
Quo Vadis, Social Responsibility?

Structure of the Chapter.
This chapter analyzes the phenomenon that the corporate responsibility concept is currently very much en vogue with both managers and politicians. The chapter explains the problems of businesses and society which the use of the semantics of responsibility is supposed to solve. Referring to the ideas introduced in Chaps. 1 and 2 – that production processes have intended, as well as unintended (or side) effects –, we can answer the question "Quo vadis, social responsibility?" by saying that social responsibility can lead into a responsibility trap.

After Reading this Chapter You Should.

- Know the goals of some practical approaches to CSR.
- Know the different readings of the responsibility concept.
- Be able to explain the "responsibility trap" concept.

3.1 Corporate Social Responsibility in Practice

It is astonishing just how much en vogue the **Corporate Social Responsibility** concept is today. A great number of businesses feel obliged to respond positively and proactively to responsibility demands. The quickest and most obvious reaction is to publish statements on "best practice" and "missions" on the internet and in brochures, indicating that businesses have always acted in a responsible fashion and intend to do so even more in the near future. Remarkably, even politicians try, by way of numerous measures and initiatives, to anchor the CSR idea in discourse and to induce businesses to bind themselves to it.

A review of the numerous business publications on CSR shows that CSR is taken to be a strategic management instrument for increasing competitiveness and thus, profits of firms. Responsibility, as a normative concept, is about respectful relationships with human beings and nature, and must be voluntary. If firms can learn from the best practice of other firms, it is hoped, they will be induced to voluntarily do more in the way of CSR. As an incentive, it is repeated again and again that

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_3,

responsible behaviour will increase profits. This is the **business case for sustainability** (Lenzen 2007:20).

If this was so, CSR would have to be a fast-selling item, as profits are what enterprises are all about. However, Chap. 2 already questioned the premise that profits can be increased through improved environmental protection. Similarly, the premise that profits can be increased through CSR must be questioned. The challenge to management, it will be explained in this chapter, cannot be "Profits through environmental protection and CSR". It must be **"Profits, environmental protection, and CSR"**. And the three compete for resources.

This dilemma is not, as yet, fully accepted by businesses. This can be illustrated using the example of a study conducted in Germany in 2008 by consulting company Ernst & Young. The subject of the study was *responsibility and entrepreneurship: sustainable management in small and medium enterprises*. In the study's problem definition, responsible interaction with human and natural resources is not taken to be connected with business profits. Instead, the argument is that firms need to interact with their environment in a fair and value-oriented fashion, and that they need to do so voluntarily. However, the concluding advice by Ernst & Young is to organize CSR activities in such a way that entrepreneurial responsibility can generate competitive advantage.

3.2 Corporate Social Responsibility in Theory

Much of the discussion about CSR suffers from a theory deficit. One reason why this is so may be that consideration and respect for humanity and nature is a normative demand which is best illustrated through good examples and how-to guides. The justification for such consideration and respect are then delegated to ethics.

For a thorough theoretical analysis, however, it is important to distinguish between the question when it is reasonable for firms to **commit to societal goals** or projects, and a demand that firms should be more considerate of society and nature in general. Both issues are well worth discussing, but they result in different recommendations. The question when commitment to social goals, such as the production of public goods, is reasonable for firms must always be an economic one, though other ideas of man than the model of economic man may be used.

Hahn (2005) develops an empirically grounded, economic explanation why and under what conditions firms contribute in meaningful ways towards societal projects. He contends that referring to the reciprocal behaviour of stakeholders – stakeholders' rewarding of desired, and punishment of undesired behaviour of the firm – makes a more **realistic calculation** possible. If costs incurred through stakeholder reactions are greater than the cost of the commitment to social goals, businesses will choose the latter.

The idea of homo reciprocans, who sanctions or punishes the behaviour of the firm according to assessments of fairness, is based on the resource dependence

approach. Thus, it is about power. But an approach focusing on power cannot analyze the fundamental problem in the relationship between the firm and its stakeholders: the problem of **cost externalizing**.

3.2.1 The Pressure to Externalize Costs

Businesses produce value by purchasing labour, raw materials, energy and components, combining them and selling them on a market as a new product whose price is higher than the combined prices of the inputs bought. The **value added**, for the firm, is thus the difference between purchasing prices of inputs (or factors of production) and market price of the produced good or service.

These relations are managed through economic valuation. Value added can be increased, either on the side of procurement, by paying a lower price for a factor of production or by purchasing better quality at the same price. Or value added can be increased on the market side, by increasing the price per product or selling lower quality for the same price.

The **laws of competition** force businesses to be watchful of costs at all times, and to compensate increases in purchasing prices or decreases in market prices by cutting costs. In this process it suggests itself to externalize costs and make society and nature bear the burden, as far as they allow businesses to do so. The externalized costs are also called social costs (Kapp 1958).

Firms produce in abundance for the markets and produce more and more side effects at the same time. The natural environment and labour in particular are burdened excessively. In the end, society has to pay, in part out of public funds, for unemployment, ill health, environmental protection and repair of environmental damages. **Damages are thus socialized (or nationalized), while profits are privatized**. Businesses make use of every opportunity to stabilize this unfair system, be it through the exploitation of superior knowledge or through power play. The gap between social costs and private profits could only be closed through internalization of the social costs, but this would mean that businesses' income – and thus capital owners' profits – would decrease. That the gap is not greater than it is at present is due to the system of social market economy, which seeks to restrict firms' externalizing of costs by way of regulation.

But state regulation will be most opposed where measures intended to reduce side effects of production, restrict the intended effects of production. In such cases politics will have problems of legitimacy and acceptance. Low maximum permissible values for CO_2 emissions reduce the opportunities for the automobile industry to make profits by selling huge cars. Thus lobbyists argue that such regulation is bound to destroy German jobs, and that **self-restriction** of automobile corporations makes much more sense.

There are numerous theories and approaches to **taming the efficiency principle**. Taming is here supposed to mean that businesses do not exploit opportunities for cost externalization, in other words, do not act in opportunistic ways.

But the **verbal self-restrictions** of actors of the global economy are orthogonal to the efficiency pressure of global competition. It is thus understandable that scientists and politicians endlessly repeat the mantra that businesses will gain economically from acting responsibly. In the short-term this would require that consumers reward responsible behaviour through their buying preferences, leading to increased profits despite internalization of costs for responsible firms. But it cannot be assumed that this will generally happen, and certainly it does not generally happen at present. There is thus no general formula to cope with the contradiction between voluntariness and obligation with regard to reduction of side effects of production.

To sum up, our problem is that the efficiency pressure of global competition means that it is reasonable for firms to accept legal side effects (social and ecological costs) of their business. Firms thus face an **efficiency trap** also with regard to social cost (see Sect. 2.4 on the efficiency trap concept). In the social dimension of sustainability, Corporate Social Responsibility is taken to be the magic formula to solve this problem, much like eco-efficiency is taken to be the magic formula in the ecological dimension.

3.2.2 The Semantics of Responsibility

As indicated by the term "semantics of responsibility", there are numerous interpretations and meanings which can be attributed to responsibility. While CSR can thus be defined in different ways, this is the definition used by the **European Commission**:

> "CSR is a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" (European Commission 2001)

The question is whether it is a **promising strategy** to integrate social and environmental concerns into the core areas of business by way of using the responsibility concept. The strategy seems to be chosen because regulation seems to take us only so far in times of global competition. Yet it is questionable whether responsibility has here been analyzed, and understood, in depth.

Responsibility means to respond to a desired, or intended, effect or an unintended side effect. If businesses react to demands from society using the semantics of responsibility, this would imply, in the ideal case, that they respond to questions about their intended and the unintended, or undesired, effects. The **intended effects**, of course, are goods and services, produced to make a profit; the **unintended effects** are burdens on nature and society which have now become too great to be ignored.

The problematic nature of these side effects is that they are often tolerated or accepted by many parts of society, as well as legal, and have multiple causes. It is

no simple task to put a stop to them, because causalities are complex, the blame cannot be put on a single actor, and effects often remain hidden for considerable periods of time. This is why managers and politicians emphasize that **CSR must be voluntary** rather than mandatory.

Why should businesses act responsibly, and what does responding to unintended side effects entail? Obviously it must mean that these side effects are reduced or even avoided. Reducing or avoiding side effects would be an act of self-restriction. Self-restriction, in fact, is at the core of **consideration**. When will an individual or an institution take others' interests or welfare into consideration? The following may be reasons for doing so:

1. Fear of negative consequences of being inconsiderate.
2. A belief that others should not be harmed in order for oneself to gain an advantage (we might call this a reason of virtue).
3. A deeper insight into the long-term conditions and requirements of production.

Firms whose **core business is more or less free of side effects** do not have much to justify vis-à-vis society. But firms with core business activities that are riddled with unintended effects for humans and nature will have problems describing their actions as responsible. Responding to side effects, for such firms, means to prove, through reporting, that they strategically restrict themselves in their core business out of consideration of their environments' interests.

3.3 The Responsibility Trap

According to Heidbrink (2003:35), responsibility is a normative substitution concept substituting for the causal criteria which formed the basis for linear and personal attribution. In that sense, responsibility is a reaction to the increasing number of nondeterministic processes which, although they are unpredictable, still must be evaluated and regulated.

The challenge is to conceptualize decisions in networks about complex issues. The fact that **attribution of causes and effects** has become more not less difficult has made questions of responsibility become more, not less, acute. According to Kaufmann (1992:9 ff.), the harder it is to find individuals or institutions to whom consequences of actions can be attributed, the greater the need for individuals or institutions who can be held responsible.

Thus, the **crisis of traditional schemata of attribution**, paradoxically, leads to a globalization of the responsibility concept (Küng 1992). All too often, there are no actors in the traditional sense that can, on the basis of traditional moral values, be identified as guilty of bringing about the global consequences of production for the natural environment, for the climate and for society. Production is now so integrated, so much organized in networks, that there is no central instance or institution that can legitimate the side effects of production. Instead, the scope of

the responsibility concept is universalized. Deficits of attribution are compensated by expansion of attribution. The results are concepts such as "organized irresponsibility" (Beck 1988), "disorganized all-encompassing responsibility" (Münch 1991). Taking these concepts as instruments of analysis, the behaviour of corporations and lobby organizations, who communicate vaguely and generally about their responsibility without going into detail, appears questionable.

The **responsibility trap**, then, can be described as follows. Human beings, and institutions, feel the need to attribute an effect (be it an intended effect or an undesired side effect) causally to an intention, or to a failure to reflect on potential side effects. This attribution often happens in order to find a perpetrator who then has to compensate victims. But it can also happen in order not to get lost among effects for which one cannot find a cause. But in nonlinear, dynamic systems, the observer will constantly, inevitably be confronted with effects whose cause he or she cannot determine. The attribution of causes and effects in such systems is often based on drastic simplifications in order to cope with cognitive uncertainties and normative insecurities (Heidbrink 2003:42).

The **responsibility trap frames the area of conflict** in which enterprises, today, have to act. They might even have to respond to, and justify, effects which they can only marginally be accused of in a strict juridical sense.

Businesses are expected to create attributions which really are quite unrealistic. For example, global food corporations must respond to the problem of adiposity, although obesity in an individual is seldom traceable to the products of a particular corporation.

The question **"Quo vadis, social responsibility?"** is answered here as follows. Businesses have to learn how to deal with the responsibility trap. A first step can be to use the semantics of responsibility. But as a reduction of ecological and social side effects of production and consumption is unavoidable, the second, and more difficult, step must be to **negotiate rules for the attribution of moral responsibility** among actors. This can only be achieved in discourse, which means that all actors, including businesses and non-governmental organizations, must learn to accept the limited scope of the responsibility concept.

Further Reflection

The term responsibility has a positive connotation in our everyday language which relies on an intuitional understanding of its content. Actually, it is amazing, that this term – describing a characteristic of interpersonal relationships – is suddenly applied to the relationships of institutions (like businesses) and environments, i.e. man and nature, in such an extensive way. The philosophical question is: Can institutions be responsible for each other? One possibility to reflect on this question is the attempt to replace the word responsibility by a synonym whenever businesses use it, and to challenge the content of the statement.

The following tasks might help you to trace the essence of the responsibility term and its utilization in management studies:

CSR in practice:

- Do some research on the internet and collect three examples of each of the following:
  - CSR being understood as a means to maximize economic profit.
  - CSR being understood as a means to achieve profit, but also having other advantages.
  - CSR being deemed to be necessary without any reference to economic profit.
- Find out what stakeholder dialogues are and what role they play in the CSR context.

Responsibility:

- Find one juridical, one philosophical, one ethical and one Christian definition of responsibility, and compare the four.
- Do some research on approaches to intergenerational responsibility, and analyze how responsibility is understood within them.

Responsibility trap:

- Try to explain what might be meant by the following: "organized irresponsibility", "disorganized all-encompassing responsibility".
- Make a list of five ecological and five social problems (harmful effects) which cannot be attributed to (blamed on) individual actors (causes).

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Chapter 4
Sustainability as Economic Rationality

Structure of the Chapter.
This chapter explains how sustainability can be understood as an economic rationality. Beginning with historical conceptualizations of sustainability (such as those of Aristotle and of sustainable forestry), the chapter shows that the problem sustainability is supposed to solve is really an inherently economic one: the problem of resource husbandry, or housekeeping.
The economic rationality of housekeeping differs from the dominant economic logic or rationality, that of efficiency. This chapter aims to show that economics and management studies must become "bilingual": We must do business efficiently, and at the same time sustain the resources our business depends on. The managerial view of the firm must therefore be complemented with the aspect of the firm as a resource-dependent system.

After Reading this Chapter You Should.

- Know the origins of the concept of economic sustainability.
- Be able to compare the dominant managerial (or profit-oriented) economic logic and the economic rationality of housekeeping.
- Be able to explain the difference between the perspective which sees firms as structures for value creation, and the resource-oriented view of the firm.

4.1 The Rationality of Sustainability: Historical Roots

Although sustainability as a buzzword is relatively new, the **idea of sustainability**, or the problem it answers to, has been known for a long time. This can be shown referring to the concepts of the household, and housekeeping.

Representatives of housekeeping studies have analyzed the history of households in depth (Richarz 1991b; Seel 1975; Schweitzer von 1991; Egner 1976; Petzina 1991). Their motive seems to be to identify the basis of housekeeping as timeless knowledge. This knowledge is about interrelations which are independent of changes in living conditions over time. It is about a **general economic rationality**.

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_4, © Springer-Verlag Berlin Heidelberg 2011

The oldest writing about the management of an oikos goes back to Xenophon (430–354 BC) (Schweitzer von 1991:27). Yet the literature mostly quotes the works of **Aristotle** as the origin of the idea of housekeeping. The Aristotelian conceptualization of sound housekeeping was prominent in Occidental thinking until the late Middle Ages, and its traces can even be found in our times.

Oikos denoted the house, as a place of residence. Together with oikia it meant the whole household, which included the building, the property, and the family. More broadly, Oikos was also the name for a temple or cultic building: The profane and the sacred were not strictly separated (Kruse 1989:81). The world was understood to be ordered into houses, from the simple dwelling to the church buildings and the Empire. Ultimately, the world was one Christian house, whose master was God. Domes and churches, even today, are called Lord's houses (Richarz 1991a:36).

In a household at the time, men, women, children and domestics were all assigned specific tasks and responsibilities. The **socioeconomic unit of the household** was that of traditional economics which understood it as their task to integrate each household into a greater living context, and to give human beings recommendations for how to behave and act. The social order was based on the idea of humans being created unequal, which meant that particularly women and servants had limited opportunities (Richarz 1991a:37 f.). Still, housekeeping was characterized by long-term thinking, which took into account the needs of future generations. Housekeeping also included duties toward society, such as donating to churches, schools, the nation, or the poor.

Aristotle distinguished between Oikonomia (the study of life in the house – oikos) and politics (the study of life in a political context – polis) (Arendt 1960:31 ff.). Economics, then, consists of two parts: the question of how to use property in the right way, and the question of the acquirement of property. Aristotle's elaborations on the use of property are less important here than his ideas on the acquirement of property. Property can be acquired in two different ways:

1. Through **natural acquisition**; this is studied by economics.
2. Through unnatural acquisition, which Aristotle calls ***chrematistike*** (chrematistics).

This distinction marks the difference between a **profit-oriented way of doing business, and economic housekeeping** (Aristoteles 1958:14 (1256a)).

Natural acquisition refers to **securing the material conditions for leading an ethically good life** (or having the opportunity to do so). Goods thus have to be acquired only up to the point where the material prerequisites for such a life have been obtained. Natural acquisition has to be abandoned when its purpose is fulfilled. All further labour of man is then to be directed towards the fulfilment of the norms which define morally good life. Natural acquisition is thus clearly delimited. Only this restricted form of acquisition is a legitimate subject of economic studies, according to Aristotle.

Unnatural acquisition, on the other hand, is acquisition for acquisition's sake. But if the whole purpose of economic activity is acquisition, as an end in itself, one can never define a point at which the economic task has been fulfilled. However much has been acquired, it is always imaginable to acquire more, and owning more

will always mean better fulfilment of the economic task. This is most obvious with regard to capital, which indeed can be augmented indefinitely. Unnatural acquisition is thus unlimited while natural acquisition is not. According to Aristotle, unnatural acquisition is therefore not part of true economics, whose purpose is the preservation of property, or of means (Aristoteles 1958:20 (1257b)). Aristotle calls unnatural acquisition immoral. One reason for this is that it is exploitative of other people. If an ethically good life, but not acquisition as an end in itself, is the economic goal, then the social order in which a good life can be realized is the measure for what is economically right or wrong.

Economic activity, or housekeeping, should be an instrument for the preservation of the social order. This idea was taken seriously during the Middle Ages and is still relevant today. A modern reading is that the family (the private household) is the nucleus of a healthy society.

Such a reading implies that today's private household is the successor of Oikos. The development can be modelled as one from a **state of perfect self-reliance** without external income to a **state where provisioning is done exclusively through exchange** (Hack-Unterkircher 1976:15). This development became possible through technical innovation and the emergence of market economies.

However, today's households, extremely dependent as they are on their environment for the exchange of goods and services, are very different from the original Oikos. Because of the changes households underwent, the holistic perspective, the idea of integration into a greater social order was lost. Today's society, which values production above all else, views households as sites of value destruction, in other words, as sites of consumption. Households' **relation to the economy as a whole** is reduced to the function of labour supply; all other functions they fulfil for human existence and the functioning of the economy are not included in neoclassical economics.

4.2 Sustainable Forestry

The concept of sustainability goes back to Hans Carl von Carlowitz from Freiberg, who coined the term in 1713. Forests at the time were overexploited: Due to economic growth, a lot of wood was needed both as energy source and as building material, and consequently much more wood was cut down than could be regrown.

To fell a forest is a simple technical matter; understanding the autonomy of a forest in order to manage its growth was a very difficult task at Carlowitz's time. What today is called carrying capacity, or ecological viability, was called the true power of forests or the sustainment of forests' productive powers then. The vision was one of an everlasting forest, which would supply wood for society for all time. But this required a new method of forestry, whose aim was to determine the maximum harvest which a particular forest could be expected to provide sustainably (Grober 2008).

This was an economic dilemma. Not demand, but sustainable supply was to determine the extent of harvesting. Not surprisingly, much energy was invested in order to reduce the self-restriction which became inevitable under such a regime. Attempts were made to increase the supply of wood without destroying forests' productive powers; this was done through monocultures with fast-growing trees. Later, liberalism focused on long-term maximum return rather than on sustainable natural supply and provision for the populace. As a consequence, growing times were shortened and fast-growing conifers were preferred even more. Again, the idea that forests' productive powers should be preserved was lost. Monocultures led to massive infestation by pests and increasing use of fungicides.

Ultimately, little was learned from forestry's problems. Coal was discovered as energy source in the eighteenth century, such that demand for wood decreased.

4.3 Profit-Orientation vs. Housekeeping

Based on the teachings of Aristotle and the lessons learned from forestry, we can now consider the essence of a housekeeping economy. It is best understood when **compared to a profit-oriented economy**. Aristotle's distinction between natural and unnatural acquisition can be seen as the foundation of this comparison. Acquisition (in the sense of unnatural acquisition) and housekeeping (in the sense of natural acquisition) are an antagonism which is of practical importance even today.

The findings from the above chapters are summarized in Fig. 4.1. The individual components of a housekeeping economy will be further explained below. The essence of a profit-oriented economy, however, is explained by Gutenberg's theory of management, which can be seen as the origin of the theory of the firm. The theory of the firm became more and more realistic over time. Sustainable management is concerned with adapting the theory of the firm even better to reality. This can be done with the help of housekeeping economics.

This comparison serves the purpose of becoming "economically bilingual". The second part of this book elaborates on the rationality of housekeeping and its independence vis-à-vis the rationality of efficiency. Chapter 5 explains the rationality of sustainability as a leitmotif of a housekeeping economy.

4.4 Firms as Resource-Dependent Systems

The resource perspective focuses on the importance of resources for the functioning and the development of natural and anthropogenic systems. This is true both for society as a whole and for individual institutions. They depend on a constant stream of resources to stay alive, fulfil their ends, and reach their goals. As all open systems are resource-dependent systems, they exchange resources with other open systems. Systems thus receive resources from their suppliers and give resources to other

	Profit-oriented economy	Housekeeping economy
Purpose	Value creation	Provision for elementary requirements
Medium and valuation	Money; unidimensional valuation	Resources; multidimensional valuation
Activity	Obtaining income through the production of goods and services	Create and sustain the resource base for a certain standard of living
Conceptualization of scarcity	Production factors (resources) are relatively scarce.	Material and immaterial resources are absolutely scarce.
Unit	Firms as sites of efficient combination of production factors	Households as sites for alignment of resource supply and resource consumption
Rationality	Each additional unit of value creation is rational.	It is rational to keep resource supply and resource consumption in balance.
Guiding question	Which maximum output can be generated with a given input? How can a given output be realized with a minimal input?	Which standard of living can be realized without destroying the resource base?
Success	Maximal profit	Preservation of resource base
Measure of success	Profitability	Sustainability
Parameters of action	Lowering costs/ Increasing profits	Resource supply and consumption
Bottleneck	Output (the volume of production which can be sold on the market)	Input (Resource supply for the household)
Time	With capital, all input factors for production can be provided at any time.	Resources need time to reproduce. Time is determined by the autonomies of resources.

Fig. 4.1 Comparison of profit-oriented and housekeeping economy
Source: Müller-Christ 2001:333

systems, which in turn means that they are suppliers themselves. Each system is thus both dependent on other systems and has other systems depending on it.

These vital resource flows are disturbed each time a system is constrained or damaged in its functioning to the degree that it fails as a supplier to other systems. In this perspective, it again becomes rational for systems to contribute to the sustainment of their suppliers. Supplying systems can only be preserved if their autonomies are taken into consideration, and the same is true for receiving systems. Such considerate relationships follow the rationality of sustainability. The idea is depicted in Fig. 4.2.

The resource perspective is not new. It is coming into focus in management studies again because firms realize that the resources on which they depend have

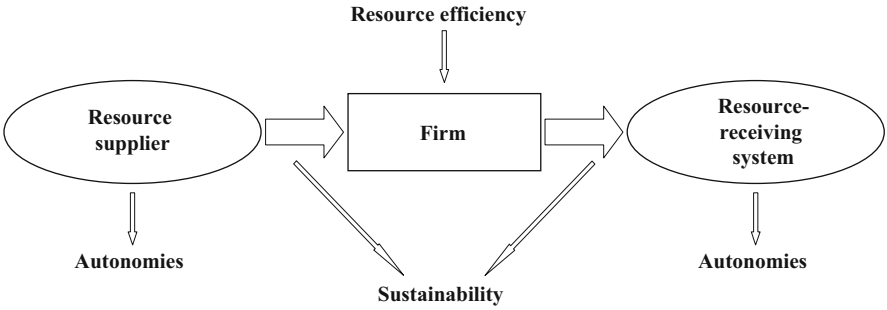

Fig. 4.2 The firm as a resource-dependent system
Source: Müller-Christ 2003

	The firm as a value-creating system	The firm as a resource-dependent system
Purpose	Making a profit by producing goods and services	Production of resources for the environment
Conceptualization of environments	Environments as resource pool	Environments as resource suppliers
Design of relationships	Relationships as arenas of power(resource-dependence approach)	Reciprocal relationships for resource exchange
Rationality	Efficiency	Sustainability
Bottleneck	Sales	Resource supply

Fig. 4.3 The view of the firm as value-creating and as resource-dependent system compared
Source: Müller-Christ 2003

become absolutely (not merely relatively) scarce. As long as this scarcity was not observable, in other words, as long as there were no bottlenecks in the stream of resources, businesses could focus on the efficient utilization of the resources they acquired on markets.

Now the perspective has to change. The dominant view of the firm as a value-creating system must be complemented with the view of the firm as a resource-dependent system. The major difference is in the changed conceptualization of environments and in the opportunity to design relationships with these environments not merely according to the rationality of efficiency. Figure 4.3 contrasts the differences as a preview of the argumentation.

In order to integrate a resource-oriented view of the firm with management studies we need to

- Define the term "resource".
- Distinguish between different rationalities for dealing with resources.
- Design resource relationships.
- Research on the autonomies of resources and their production.

The following chapters consider this in more depth.

4.5 Sustainability as Strategic Success with Regard to Resources

Section 4.2 on sustainable forestry outlined a way to transfer the principle of sustainability to management studies. What can we learn from the principles of sustainable forestry?

Sustainability teaches us on the physical unity of production and reproduction and its relevance for industry (Hofmeister 1998:195). In forestry, it is directly observable that the way in which a forest is managed and harvested – in other words, the way in which goods and services are produced – is also the way in which the physical and ecological conditions for recurrent production are produced. **Production and reproduction** form a unity in forestry and have always done so. That this has been understood is not a result of insight however, but of a painful process of experience with over-utilization of forests. The long reproduction times of wood make it vitally important not to take out more wood from the forest than can grow again in the same time period. Only if that rule is observed will it be possible to harvest wood also in the long run. Forestry knowledge is thus oriented towards future sustainment of the productive powers of forests. Next to the quantitative aspect there is also the qualitative: It is a vital requirement to preserve the functioning and health of the forest as a complex network of ecological relationships (Henning 1991:19 f.).

It is thus the task of forestry to ensure that **preservation and utilization** of forests are in balance. The productive capacity of forests must be preserved, and what is needed to this end is, above all, investment of time. Thus, what can be learned from forestry is the principle of sustainable utilization of resources.

However, most businesses do not produce with the help of natural growth processes, but through the application of technology. They do not have to invest time, as is necessary in forestry, but capital. Capital (next to the other factors of production, land and labour) is usually understood as consisting of all forms of wealth which are used in the production process in order to obtain income. **Sustainability with regard to capital** means to report profits only after the capital invested has been earned back. If this rule is applied the ability to invest, and produce, is maintained. This principle with regard to capital can now be extended to become a general principle of sustainability.

However, we should not use the term capital so much, as it is closely associated with the idea that making a profit is the purpose of the firm. In management studies, capital is also used as a financial term indicating the firm's assets on the balance sheet. If we are looking for a term in managerial language which corresponds to the economic understanding of the term capital as production factor, then we should choose the term **resources**. Speaking of resources, for example human, natural or social resources, seems to be more adequate for a discussion about the integration of the principle of sustainability into management studies. This is because, when speaking of capital, one implicitly refers to its utilization (investing it in order to make a profit), but when speaking of resources, one implicitly refers to their source, or origin.

When the principle of sustainability is transferred from the use of capital to the use of resources, it turns out that it is rational for the firm to **reproduce, or restore, all resources it has consumed**. The rule which so far only applied to the capital invested, now applies to all resources used by the firm: Long-term ability to produce and thus, a sustained flow of income can only be realized if consumption and (re) production of resources are in balance. The ratio of consumption and supply of resources is defined as the measure of sustainability as an economic rationality (Müller-Christ and Remer 1999:70).

$$\text{Sustainability} = \frac{\text{Resource supply}}{\text{Resource consumption}} = 1$$

The firm is here understood as an institution which depends on resources from its environment to fulfil its ends (Hill 1995:125). All relationships of the firm with its environment are **relationships of resource exchange**. Sustainability is seen as a strategy for the configuration of these relationships.

The advantage of this definition of sustainability is that it is compatible with the usual managerial measures of success such as productivity and profitability (or return on investment), which are expressed as ratios as well. The major difference is that while the standard managerial measures describe the degree to which the firm fulfilled its purpose, and thus evaluate output, **sustainability evaluates the degree of supply of resources**, and thus, input. This difference will be further elaborated below.

It might seem somewhat unusual that we also like to use the term **supply**. The literature on sustainability mostly speaks of reproduction of the ecological basis of production. Yet our discussion is about more than just the preservation of the natural basis of production. We therefore look for a term which can also indicate the following:

- The identical restoration of an exhausted resource (such as capital, education, or trust).
- The production of a functionally equivalent resource (renewable instead of non-renewable resources).
- Investment in the productive ability of a source a firm depends on (for example, in staff, in schools, in the assimilative capacity of nature).
- An understanding of goods and services produced by the firm as resource supply for other systems.

These demands show that the term supply, if understood metaphorically, is useful at the beginning of a debate on how to understand sustainability. This is less about proving, technically or scientifically, that raw materials or energy or new sources have been made accessible or restored in a given time period. Rather, we want to begin thinking differently. Evaluation of the success of a firm should not merely take its profits into account. It should also consider a firm's **commitment to the provision of all resources** needed for doing business in the long run.

Each environment of the firm will demand different measures of caretaking of the firm, if its capability to serve as a source to the firm is to be preserved. It will be shown below that all environments of the firm, and particularly the firm itself, can increase their ability to survive (survivability) if strategic consideration of the autonomies of the environments is implemented. Sustainability should therefore be understood as a strategy for the utilization of resources. Further, it can be shown that such a strategic approach can lead the way to a more realistic theory of the firm.

4.6 Sustainability as a Contribution Towards a More Comprehensive Theory of the Firm

A debate on the theory of the firm must take the historical roots of management studies as we know it into account. Too easily researchers speak of **paradigm changes** and ignore historical developments. Management scholars must understand that new solutions always build on older ones. And they must prevent the separation of management studies from economic theories, such as the theory of the firm (Pfriem 1997:9).

The early development of a managerial theory of the firm, in the German literature, is usually associated with the names Schmalenbach and Gutenberg. Economic theorizing on firms, at their time, built on the premise that there was **no latitude for firm-internal decision-making** and thus, no need for leadership or management. The firm knows its production function, maximizes its profit, and acts under the conditions of a perfect market (Schauenberg 1993:4172). With the help of this stylized model of the firm it was possible to calculate supply and demand curves and equilibrium prices. However, it was impossible to explain factual behaviour of firms.

Gutenberg began to close the gap between this theoretical conceptualization of the firm and the real firm by modelling the firm as an input-output machine and the productive process as productivity-oriented combination or transformation of input factors. His vision was to build a uniform and consistent theory of the firm (Gutenberg 1967).

The basis for such an integrative theory he saw in the **productivity relationships** which are internal to businesses. According to Gutenberg, a firm is a productive system. Productivity is not just a question of the productivity of individual input factors; it is also a question of their combination and interaction. It was precisely this idea through which Gutenberg contributed to improving the theory of the firm and making it more realistic. If the combination of input factors is relevant, this implies that there is a need for planning, and thus ultimately, for management.

Gutenberg's theory is well suited as **starting point for adapting the theory of the firm** because it leaves out peripheral and external factors and sees parts of the environment as static in order to arrive at hypotheses on the relationships of

firm-internal variables in their entirety. Technical, judicial, sociological, political, psychological, and ethical problems and influencing factors are seen, but not defined as part of the subject of economics and management studies. Research on those was the task of other scientific disciplines.

This conceptualization already offers opportunities for making the theory of the firm more complex and thus more realistic. The idea here is to proceed in a strict methodological fashion: isolate and abstract first, then relax premises and assumptions step by step. Albach (1999) demonstrates that the historical development proceeds from Gutenberg's general theory of the firm with a lot of restrictions, to current management studies which are capable of answering very diverse questions on the firm.

Albach succeeds in demonstrating this development because he takes **costs as starting point of the analysis** (Albach 1999:411 ff.). Costs are here understood to be not only monetary costs, but also behavioural costs. This perspective is surely close to reality: The firm is confronted with more and more costs which do not originate in the core task of combining input factors in an optimal way such as in Gutenberg's model. To use Gutenberg's terminology, more and more factors are identified which must be integrated into the factor system of business activity. Their optimal combination with conventional factors influences returns on these factors. The productivity relationships between factors become increasingly complex.

Current management studies might express it as follows. Businesses can no longer be seen as institutions which merely achieve profit for their owners. Rather, they must answer to various demands from society (Staehle and Nork 1992:72). Configuring the relationships with all stakeholders efficiently increases costs. But these relationship costs do not lead to an improved fulfilment of purpose (making profits); instead they are an investment into the firm's survivability.

The approach developed here connects to a general trend of changes in the problem structure of firms. But how has the general theory of the firm developed historically? The development is outlined only roughly here, and it is shown which assumptions of Gutenberg's theory have been relaxed in its course (Albach 1999:412 ff.) (Fig. 4.4).

1. **The production problem: Production costs.**
   Gutenberg wanted to analyze and optimize the process of factor combination and transformation, in other words the process of production, with regard to costs. In order to do this he excluded all problems which were not a direct part of the task of production. Input and product markets are perfect, production factors (including human resources) can be efficiently deployed and managed, and external (irrational) influences do not exist. Thus optimal production capacity and the point of maximum profit can be calculated with the help of the production function. Management is about the optimal configuration of productivity relationships.
2. **The time problem: Adjustment costs.**
   The first assumption of the production function which had to be abandoned was that of a static environment. External changes in price, interest rates or behaviour

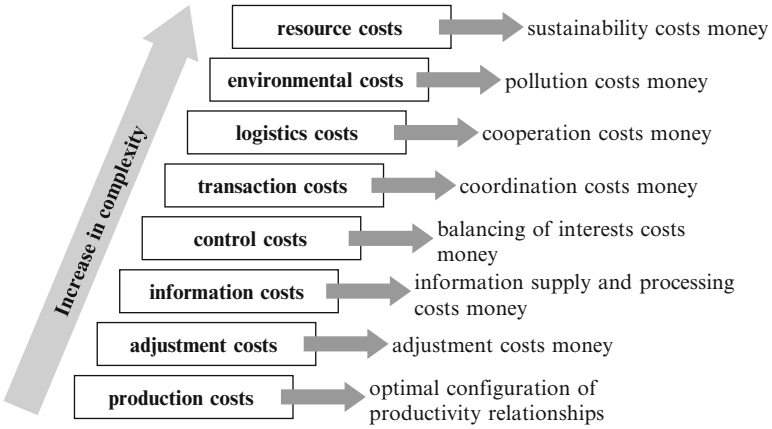

Fig. 4.4 The development of the theory of the firm

of capital owners act as external shocks after which the production function has to be readjusted. In a world without adjustment costs (adjustment of equipment, human resources or raw materials) this could happen immediately; in a world with adjustment costs finding a new balance takes time. The integration of adjustment costs thus changes the original Gutenberg conceptualization.

3. **The information problem: Information costs.**
   A further assumption is abandoned when it is taken into account that the firm and its staff are not informed about all prices and developments on factor and product markets. Implementing an internal information system is costly, as are deficits in coordination due to imperfect information. As costs of search for information and processing of information as well as unrealized profits are often no longer quantifiable, profits cannot be maximized on the basis of the production function. This trend continues during the further development of the theory.
4. **The motivation problem: Control costs.**
   The information problem becomes even greater if one takes into account that the goals of different parts of the firm may diverge from each other, and from the overall goals of the firm. Principal-agent theory also teaches us that owners and managers may have different goals. We must therefore abandon the assumption that the most important decision premise in the process of information selection is that profits should be increased. Information can also be selected and used (and even distorted) so as to serve the goals of individual departments, managers, or members of staff. This is where control costs become relevant.

   However, the problem is not just one of motivation, as Albach suggests. We can summarize the development at this point by saying that production factors become more and more independent. To configure their contribution as inputs to the production process is now a motivational problem, a problem of identification, a problem of qualification and a problem of calculation (Remer 1997:169). Typical suggestions in the management literature as to how control costs can be reduced refer to building up trust and to the intelligent use of wages policies.

5. **The coordination problem: Transactions costs.**
   The development on input and sales markets makes it seem reasonable to abandon the assumption that they function perfectly. The configuration of a business's relationships (transactions) with customers and suppliers is very costly, and these costs have considerable relevance for internal decision-making and affect the optimal productivity relationships Gutenberg referred to. Transaction cost theory analyzes these phenomena while the set of contracts perspective is concerned with managing transaction costs through contracts. Neoclassical economics, as well as Gutenberg's approach, do not take transactions costs into account at all (Bonus 1996:2). The theory of the firm is thus opened up further for taking the autonomies of the firm's environments into account.
6. **The integration problem: Logistics costs.**
   Efficient transactions cannot be achieved merely through contracts. This assumption of transaction cost theory is now abandoned. In reality, firms do not simply exchange products, services and money with others. They also develop their products and services together with others. Such an integrated development process requires mutual adjustment of process and organization structures of all partners with the aim to minimize integration costs. In practice this is done through cooperation in various forms.
7. **The environmental problem: Pollution costs.**
   Transactions between firms and their environments can only be organized through contracts and cooperation as long as the partners can be clearly identified. But production is not only dependent on markets; the natural environment also supplies inputs. Nowadays we face considerable costs for the use and the protection of nature which earlier could be ignored as external effects. However, taking the environmental problem into account, the theory of the firm can again build on Gutenberg's model of production. His theory of a linear input-transformation-output process must be reformulated as a theory of circular flow, or closed loop, production processes. In integrated production systems waste, sewage and discharged air become inputs into subsequent processes of production. However, this transformation of production processes can only succeed if external effects get integrated as real pollution costs and thus, as production costs which ought to be avoided.

The greatest part of management problems can be sorted into the above classification scheme. We need to add one more category however in order to be able to discuss an **ecological development of the firm.** This category must continue the above scheme in the sense that it also must be a change in firms' cost structure. Sustainable management thus contributes to the development of the theory of the firm by introducing.

8. **The resource problem: General resource costs.**
   The assumption that only the natural environment supplies resources for production processes must be abandoned. Instead, the assumption must be that there are many environments which all ensure that firms can continue their production processes. But these environments are less and less ready to supply resources at low prices and in good quality. Firms become increasingly aware that they are

part of a much denser network of relationships with their environments than they realized so far. All those relationships can be described as resource exchange relationships. General resource costs increase because businesses must invest consciously in the preservation of these resource exchange relationships, in other words, they must work to ensure the continued supply of resources (sustainability).

This eighth development of the theory of the firm makes it possible to describe the situation of firms in an even more realistic way. However it is also obvious that businesses can only tackle these new problems if internal decision-making processes become much more complex. The management of attainment of ends (making of profit) must be complemented with a **management of the protection of resources**.

These two different management tasks are not interchangeable; management can no longer be successful when it thinks along simple means-ends-lines. An ecological approach to doing business offers an alternative.

Further Reflection

The attempt to define sustainability as an economic rationality has not encountered general approval. In this chapter, progress has been made to exempt the character of sustainability or sustainable development from any allocation of meaning assigned to the term prior to its introduction. The insight recurs that, in the long run, economic activity can only contribute to a liveable society if the required resources are constantly reproduced. So it is about a housekeeping way of treating resources in order to ensure the lasting supply of material and immaterial resources. However, the idea of cultivating immaterial resources needs habituation. Are trust, health, education, legal security, reputation etc. really resources which need to be consumed and reproduced? The question remains: which institutions are responsible for the reproduction of immaterial resources?

Maybe you can lay special focus on the notion of resource reproduction when taking the following questions and recommendations into account for further self-study:

Historical roots of the economic rationality of sustainability:

- Do some research on sustainability's rules for ecological management and compare these with the definition of sustainable forestry. Name similarities and differences.
- Find out what subsistence economy is. Can it contribute towards a more sustainable economic system?

Profit-oriented ways of doing business vs. housekeeping:

- Reflect on the tasks of a private household. On which material and immaterial resources does it draw? Who is responsible for the supply of resources, who consumes resources?
- Explain the burnout syndrome as an example of bad housekeeping with regard to one's own body.

Firms as resource-dependent systems:

- Make a list of material and immaterial resources the firm depends on. What resources does a firm provide for its environments?
- Compare the stakeholder approach of management studies with the picture of the resource-dependent firm. What is the difference between demands (stakes) and resources?

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Part II
Theoretical Impulses

Chapter 5
A Theory of Management Ecology

Structure of the Chapter.
This chapter explains that sustainability is an important contribution towards a system's survivability. Systems theory, co-evolution and ecology show that taking care of resource relationships is decisive for the relation between a firm and its environments and thus, for the autonomy of systems. Management ecology assumes that it is economically rational for a business to form a household community with its environments. The chapter also discusses the use of the term household in economics, and presents the original meaning of the term as a central building block for a theory of management ecology.

After Reading this Chapter You Should.

- Know systems-theoretic reasons for sustainable behaviour.
- Know co-evolutionary reasons for sustainable behaviour.
- Be able to explain what management ecology is.

5.1 Market Communities as Business Ecosystems

According to the US-American management consultant James F. Moore, industrial economics' "structure-conduct-performance" hypothesis can no longer explain the competitive behaviour of American firms. For this reason Moore develops a new description for the strategic behaviour he observes. He contends that we need a new and more comprehensive language, a new logic of strategy formation, and new methods of implementation in order to enable firms to behave strategically under the new complex conditions (Moore 1998:32 ff.).

Moore's observations can be summarized as follows. Businesses must develop innovation and survival strategies in the area of conflict between competition and cooperation, bearing in mind their **co-evolution with all environments**. In order to be able to do so firms overcome conventional barriers and form business communities that can open up new markets. Moore sees this as the end of competition as we know it. The new development is reflected in new terminology. Industrial

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_5, © Springer-Verlag Berlin Heidelberg 2011

sectors become business communities, competition becomes an area of opportunities, product orientation turns into needs orientation.

The *leitmotif* seems to be that of **community**. The new economic communities can also be termed business ecosystems. These are about survivability in a complex environment. This indicates an **opening of the paradigm of management studies**: Moore works both with metaphors (firms are elements of ecosystems) and with a different conceptualization of success. This first step towards using the ecological paradigm provides the basis for a second step in this book, which takes us to the **conceptualization of household or resource communities**. The metaphor of a business ecosystem will now be elaborated further.

5.1.1 The Business Ecosystem Metaphor

Moore takes biology as a starting point. A biological ecosystem is a community of organisms which relate to each other and to the environment they live in, which is also part of the ecosystem. Such a system includes both biotic and abiotic parts.

Moore understands a business ecosystem as an economic community of organizations and people who relate to each other. These are the organisms of the business sphere. The **ecosystem metaphor** is used to analyze the complex market game in its entirety, not in order to preserve markets, but in order to conceptualize new successful moves and rule changes. Perceiving the market as an area of opportunity means that instead of market research, firms have to conduct environment research. It's no longer about the products that can be sold, but about the deficits and needs surrounding the firm (Moore 1998:24).

Moore calls on firms to cooperate in new and different ways. His contention is that the success of firms depends on the success of other system partners. As a consequence, it must be a matter of course for firms to care for the well-being of their partners in the community. Such a perception of reality also changes the conceptualization of economic success.

5.1.2 What is a Successful Business Ecosystem Like?

In order to analyze changes in the conceptualization of economic success one must first define what economic success – or a successful firm – is usually taken to be. It is here assumed that a firm is traditionally taken to be successful when it fulfils its purpose, that is, follows the rationality of purpose-orientation. The purpose of a firm, of course, is to make a profit.

The reference to the **rationality of purpose** has the additional advantage that it emphasizes the difference between social and natural systems. Moore is aware of this difference: Social systems can be purpose-oriented while natural systems are undirected (Moore 1998:36) While Moore still uses the language of purpose-orientation to discuss new markets and innovation, his emphasis on communities and relationships can be interpreted to indicate that Moore is concerned with the

question of continued existence, or sustainability. We might use the formula "Success through community formation".

5.1.3 *New Perspectives on the Relationships Between Firms and Society?*

According to Moore, co-evolution of the business ecosystem and its environment means that firms have to take the **interests of society** into consideration. Businesses depend on society even if they do not like to admit it. Customers, values, politics are outside of businesses' control.

But what can cooperation between businesses and society look like in practice? Moore gives few recommendations. The use of a metaphor like that of a business ecosystem alone does not make for a new theory. In what follows we therefore discuss the systems-theoretic, co-evolutionary, and ecological building blocks which Moore, too, uses, if only implicitly.

5.2 Building Blocks for A New Theory of Management Ecology

Ecosystems serve as models for a sustainable treatment of resources. Most **mature ecosystems** succeed in using their resources highly efficiently over longer periods of time, because their organisms live in mutual resource relationships. Except for water and energy there are few external inputs of elements. The observation of processes in ecosystems can thus give valuable impulses for how businesses, and the economy as a whole, can treat resources sustainably.

Systems theory, the theory of co-evolution, and housekeeping all suggest **resource communities as an ecological survival strategy of firms**. The problem is, however, that concepts such as evolution, systems theory, and ecology are often used in management studies already. Also, the different theories are very closely connected. Fig. 5.1 identifies the core hypotheses of these theories and presents a "theory map". A short overview of the theories is provided below.

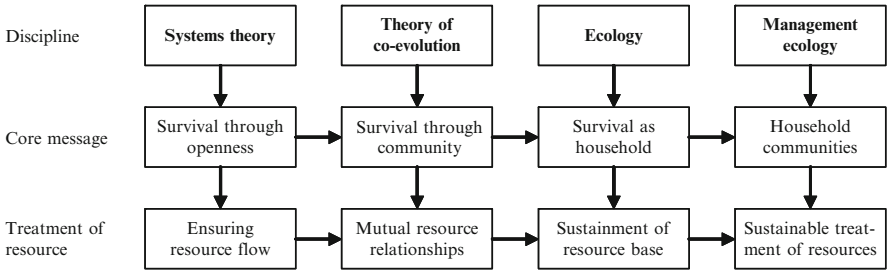


Fig. 5.1 Building blocks for a theory of management ecology – an overview
Source: Müller-Christ 2001:279

5.2.1 *The Systems-Theoretic Approach: Survival Through Openness*

5.2.1.1 Openness Through Environmental Reference

General systems theory assumes that living systems are open systems which must receive energy, matter or information from their environment in order to survive. If the environment changes the resource flow the system depends on, the system must adapt to the change or perish. Open systems, therefore, are **environmentally determined**, a characteristic also called environmental reference (Willke 1987:93). This idea has already been integrated into management studies.

But the idea of complete environmental reference, or environmental determination, is being questioned by the theory of autopoietic systems. This theory goes back to Humberto Maturana. At its core is the idea that an autopoietic system reproduces the elements it consists of with the help of the elements it consists of (Maturana 1998:106). This theory thus criticizes the earlier systems theoretic conceptualization of the relationship between system and environment, in particular its conceptualization of openness.

5.2.1.2 Bounded Openness Through Self-Reference

The theory of autopoietic systems models living systems as autonomous, operationally closed systems. The achievement of autopoietic systems is not so much a "fit" with the environment ensuring survival. Rather, it is the **permanent self-reproduction of its own organization** and identity (autos = self, poiein = to make).

Autopoietic systems can only react to their environments according to their own internal organization. It is just not possible for them to carry out each and every adaptation which might be necessary at some point. This core idea of self-reference was at times so much overemphasized that autopoietic systems were seen as independent of their environment because of their operational closure (Bühl 1990:31). But it must be taken into account, particularly when transferring the idea of autopoiesis to social systems, that self-reference can only be realized when referring to the environment.

But what kind of sensitivity, of openness for the environment do self-referential, autopoietic systems possess? Autopoietic systems produce their own identity by subordinating all changes under the task of keeping up their own organization. Because every element is thus oriented towards the sustainment of the system's identity, autopoietic systems cannot refer to the environment in ways which are not part of that identity.

If this conceptualization of systems is applied to businesses, this begs the question whether the environment is a **projection of the firm's own identity** or self-description, rather than an area independent of the firm which has to be confronted. Many "environmental" problems, businesses realize, have to do with

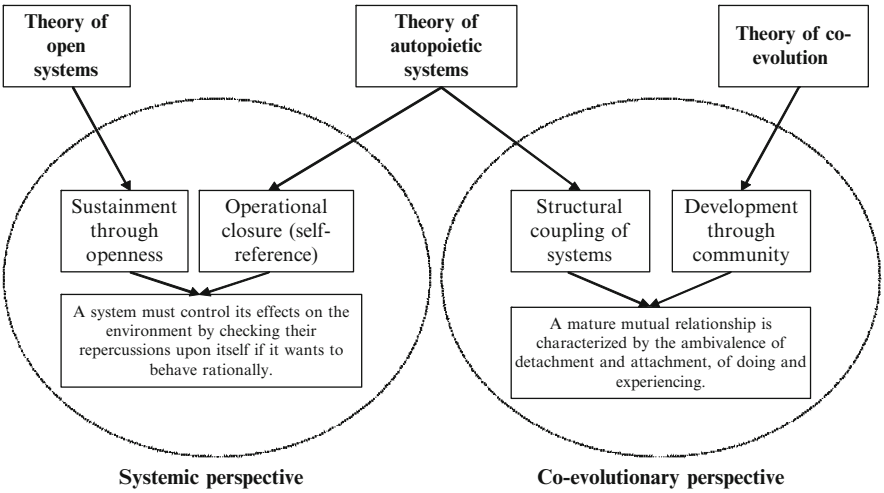


Fig. 5.2 Systemic and evolutionary contributions of autopoietic theory
Source: Müller-Christ 2001:283

the identity they are trying to sustain. Management of the firm then becomes management of the firm's self-description. The theory of autopoietic systems thus leads us to the realization that while keeping up an identity or self-description is vital for all living systems, there are different ways to achieve this. Putting this realization into practice is what Morgan calls systemic wisdom (Morgan 1997:359).

The theory of autopoietic systems offers both systems-theoretic and co-evolutionary insights. Two aspects will be particularly discussed in this book: the abovementioned **operational closure** and **structural coupling**. As the latter is very much about co-evolution it will be discussed in the next section. Operational (or structural) closure, however, refers to the organization of the system, which must be closed if the system is to recognize itself as a system, or an identity. We will now discuss this systems-theoretic aspect, as outlined in Fig. 5.2.

All living systems are operationally closed vis-à-vis their environment. Their internal organization, their structure, not the environment determines how they behave and change. Living systems are thus self-organizing and autonomous. Every action of the system is aimed at self-sustainment (Maturana and Varela 1992:95 ff.). This self-reference, that is, the orientation towards self-reproduction and the limited ability to react to impulses from the environment logically require special sensitivity towards the environment. *Because* the system's potential to react to environmental influences is limited, it is true that

> "... a system must control its effects on the environment by checking their repercussions upon itself if it wants to behave rationally." (Luhmann 1995:475)

The system does depend on its diverse exchange relationships with its environment. It must therefore always reckon with repercussions of its own actions upon itself, and if its actions threaten the environment the **repercussions might threaten**

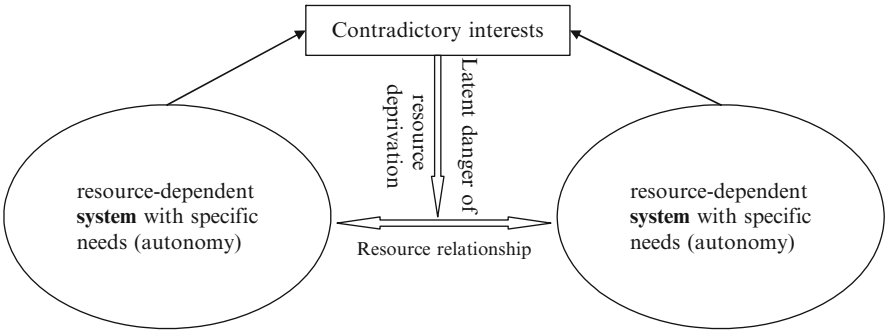


Fig. 5.3 Repercussion control as survival strategy
Source: Müller-Christ and Remer 1999:73

its own existence. This kind of reflection of a system's own actions reintroduces the system/environment distinction, thereby coupling the self-referential system to its environment at least with regard to central questions (Luhmann 1984:600 ff.). The consequence of such self-reflection is **self-restriction**.

From a resource-oriented management perspective, it also makes sense to speak of **systems-in-environments**, rather than of environments. More precisely, systems-in-environments are the **sources** from which businesses receive their resources. The rationality of repercussion control from a resource-oriented perspective is illustrated in Fig. 5.3.

The self-reference of systems, that is, the reference of systems to themselves in the production of their elements and their elementary operations, is the reason why systems become **more and more differentiated with regard to their functions** (Luhmann 1984:25). In practice, however, such specialization means that systems have to face more and more environmental influences. This observation corresponds to the vital correlation between self-reference and the necessary reflection of repercussions of systemic actions.

5.2.1.3 Self-Reference and Differentiation

While Luhmann's (1984) idea of "differentiation of systems" became widely known in a relatively short time, the complementary principle is paid little attention in management studies.

Differentiation of functional systems in society describes the observation that the political, the economic, the academic, the educational, the juridical and the religious system specialize more and more. They are each responsible for one aspect of society's reproduction only, respectively. Willke calls this process **exclusion**: Each system excludes all others from fulfilling their specific function. It is only the educational system which is responsible for education, only the economic system which is responsible for wealth-creation, only the political system which is responsible for policies, etc. (Willke 1989:113).

Inclusion is the complementary principle, according to Willke. While the functional systems become more differentiated and limit themselves to one particular function, respectively, they realize that all events in society are potentially relevant for them. Therefore, their awareness and interest must expand to include all areas of society. This dialectic relationship between exclusion and inclusion leads to a combination of specialization and potential responsibility for everything, of general indifference and hypothetical interest for everything (Willke 1989:113).

At the core of this dilemma is the fact that the functional systems produce **massive externalities** for other functional systems because they are so specialized with regard to their functions. Thus, they threaten each other and produce collective risks which might well backfire upon themselves (Willke 1989:115). The current problem is that the functional systems, the way they have evolved until now, are characterized by great indifference towards many environmental events. They cannot process a number of events internally because they lack the required ability to reflect.

Nevertheless, it is an important consequence for our argumentation that all systems, with the exception of the state, are co-equal in principle. Assumptions about priorities would thus be illogical, and contradict functional differentiation (Willke 1989:117). This is important also with regard to the behaviour of representatives of the economic systems. Their claim seems to be that the economy should take a leading role among society's functional systems, as it produces the value added which pays for the services of all other functional systems.

The **interplay between exclusion and inclusion** can thus only be realized by the economic system if it realizes that it is a system among systems. It must observe its environment as a combination of systems with identities of their own, systems which are self-referential themselves. A productive conflict between the systems would require that they see what they do not see, and realize what they usually do not realize: the impact of their actions on the systems in their environment.

This **"civilization of self-referentiality"**, to use Willke's terminology, (Willke 1989:120) can be brought about by reflection. Luhmann defines reflection as a form of self-management whereby systems focus on their environment and their identity and become aware of the fact that their environment consists of other systems. Every system is environment for other systems (Luhmann 1984:617 ff.).

The observation of one's own impacts on the systems in the environment requires increased reflective ability, ability for self-observation, self-description and *Verstehen* of other systems (Willke 1989:122).

Verstehen of other systems can also be termed **empathy**. From a management perspective, this begs the question whether a social system can be taught to be empathic. Empathy requires internal structures and conditions which can model the structures and conditions of *other* systems, and integrate them into the system's decision-making process. This process aims to bring about a form of learning or self-education which changes internal structures and processes so as to take into account a context which transcends the system's own identity. A system can only see itself as part of a greater whole if it achieves insight into the functioning and development of other systems.

5.2.1.4 The Systems-Theoretic Building Block of Management Ecology

For businesses, their environments have so far often not been more than a world out there which tends to threaten the business's survival, if it is not an area of opportunities.

Businesses which interpret their environment in this way mostly have a clear conception of their own identity which they want to maintain at any price. Morgan calls this kind of businesses **egocentric organizations**. They are, in the main, occupied with themselves, and overrate their own importance. However, they underrate the importance of the network of relationships in which they exist.

Morgan believes that egocentric organizations do not really understand their own complexity and the many recursive exchange processes their existence depends on. Such organizations try to maintain their unrealistic identity, or create an identity which at long last must destroy the contexts they are a part of. In the short run, the assertion of self-interest on the basis of a narrow self-definition might work out. In the long run, however, egocentric organizations leave the design of their development to their environment. This behaviour need not necessarily endanger their existence. But it does threaten the good life, in the sense of the capability to reach self-defined goals. Environmental pressure on such organizations (from consumers, the public, or the state) will grow and their latitude will become restricted (for example through legal requirements) (Morgan 1997:356).

The insights presented here make a different perspective on businesses feasible. Businesses which understand that their "environmental" problems depend on their self-description act in a kind of **systemic wisdom**. Businesses must make sure that their actions do not provoke repercussions upon themselves to which they cannot adequately react, exactly because they have such limited ability to react to environmental changes. If they do not do this, their survival is threatened. In order to be really capable of reflecting on such repercussions, businesses need to be capable of understanding the systems in their environment.

Figure 5.4 summarizes the results of the above discussion of the theory of autopoietic systems. These results can be seen as a basis for further research for life-enhancing relationships between systems and their environment.

5.2.2 The Co-Evolutionary Approach: Surviving Through Community

The change of phenomena in the living and inanimate world is termed evolution by biologists. Evolution is a process which leads to changes in animal and plant species in the course of long chains of generations. The changes in species become manifest in changes of genetic programmes: Genetic information itself changes.

These processes take place over such long periods of time that they are not subject to everyday observation. This is a problem also for the **transfer of the concept of evolution to the social sciences**. The well-known mechanisms of

New perspective on the problem:	The "environmental" problems of businesses stem from the self-description they want to maintain.
Insights:	• Autopoietic systems are very sensitive vis-à-vis their environment, whereas all other systems are only reactive, or environmentally determined. • However, autopoietic systems can react to their environment according to their own internal organization only. • Because the autopoietic system's capability to react is limited, it is rational for the system to control its impact on the environment by observing the repercussions of its actions upon itself. • The starting point for managing interactions is the system's self-description. It determines whether the system of environmental relationships can be threatening or supportive.
Contribution towards a theory of management ecology:	Businesses must develop a kind of empathy for the demands of their environments. This requires mechanisms for self-enlightenment with regard to system-external effects. It also requires the willingness and ability for self-observation and self-description as a system in circular interaction with other systems. The goal of self-reflection must be a self-description whose realization enables both the system and the environment to survive.

Fig. 5.4 The systems-theoretic building block

mutation, variation, selection and retention have led to the development of the species we know today over a space of time which covered millions of years. When the concept of evolution is used in the social sciences, however, we often refer to spaces of time which only stretch over a few years. The transfer of the term evolution and the underlying mechanisms from one field of research to another can give rise to considerable misunderstandings (Bühl 1990:149).

The systems-theoretic building block of management ecology does not in fact refer to questions of evolution, that is, questions of the origin of living systems. Rather, it recognizes the characteristic of autopoietic systems that all elements are connected in a **continuous network of mutual reactions**. This circular interdependence leads to a different conceptualization of how organisms change. The theory of autopoietic systems offers an alternative to Darwin's evolutionary theory, as it recognizes the importance of mutation and selection, but develops a different explanation for these mechanisms (Maturana and Varela 1992:45).

5.2.2.1 Autopoiesis and Co-Evolution

The theory of autopoietic systems conceptualizes living systems as being structurally coupled to their milieu. They realize their autopoiesis in a manner which enables their continued existence in that medium. As living systems are structurally determined, there is no "inside" and "outside" for their functioning as autopoietic units. They either continue the process of autopoiesis, or they cease to exist. It is

therefore impossible to speak of living systems as "using" their environment, "exploiting" it or committing "mistakes" (Maturana 1998:184).

The structure of a living system and the structure of the environment are, in that sense, compatible, so that continued autopoiesis of the living system is possible. The environment triggers changes in the autopoietic system through perturbations, but it cannot determine the changes. Instead of targeted adaptation of the living system to its environment, an **adjustment of the structural coupling** on the basis of circular interdependence takes place. Living systems can only survive as long as they compensate their impact on their environment in such a way that the environment is not damaged.

Thus, what evolution preserves is the concordance between system and medium. These two develop together; the system cannot evolve further if it is no longer in concordance with its medium (Maturana 1990:17). The theory of autopoietic systems postulates that **evolution is always synonymous with co-evolution** (Maturana 1990:18).

Preservation of the concordance between system and medium can be interpreted as mutual coordination of the vital exchange processes. Traditionally, however, general systems theory has drawn an artificial boundary between system and environment, so as to be able to explain what is happening inside the system. Seen from the perspective of autopoietic systems theory, the circular interaction patterns were interrupted at one point or other for the sake of analysis. This was probably why the **principle of recursivity** was not considered. The theory of autopoietic systems, on the other hand, makes it clear that all systems are recursive: their elements refer to one another (Maturana and Varela 1992:84). This reference to each other in the form of chains of circular interactions makes it impossible to speak of environments of the system, for within the organization of a living system, we find recursive systems within recursive systems. The environment is part of the system; its services are a kind of co-production. **Autopoietic units combine self-preservation with the preservation of connected units**.

This correlation seems to be fundamental for a **theory of management ecology**. It implies that in the long run, survival is only possible as survival in harmony with one's environment. Businesses, being autopoietic systems, must accept that they are more than just isolated units. They must realize in what ways their suppliers, their markets, their staff, the national and international community and even competition are parts of the same organizational system. If businesses change parts of this greater system, they change their own living conditions. This idea is now further elaborated with the help of the biological theory of co-evolution.

5.2.2.2 Co-Evolution: From Symbiosis to Joint Development

In biology, mutual relations between organisms are called symbiosis. The term mutualism describes such relationships between two living systems as are advantageous for both parts. Both parts can exist on their own, but the partnership is an advantage. **Symbiosis**, on the other hand, means that both partners depend on each

other for survival. Symbiosis implies an exchange between two living systems where the usage of the exchanged products is vital for both of them (Burton et al. 1986:53).

All living systems are characterized by symbiosis of one kind or another. This is why there are no "over-exploiters" in natural systems. **If one partner in symbiosis ruins the other, they ruin themselves as well**.

In a symbiotic relationship each part will sacrifice part of their **individual autonomy**. In exchange they gain participation in the superordinate system and thus, in a new kind of autonomy. Therefore, it is true, even in biological evolutionary theory, that **evolution must always be co-evolution**.

Co-evolution means that evolution can never be complete adaptation to something which can be entirely separated from the evolution of the unit in question. In general, biologists understand co-evolution to be the joint evolution of two or more species, which is advantageous for all parts (Fortey 1999:308). Collective evolutionary development means that the species react to changes in their partners. Such a development, where the partners refer to one another, cannot simply be understood as a process of cause and effect, an action-reaction scheme or a subject-object relationship, however. Instead, **the partners are causes for one another in an existing mutual relationship** (Riedl 1987:157).

The decisive difference between evolution and co-evolution, therefore, is the definition of the unit of survival. In Darwin's evolutionary theory, the unit of analysis is the species or the subspecies. In co-evolutionary theory, the unit of analysis or the **unit of survival is the organism-in-its-environment**, the systemic community. An organism which only cares about its own development will inevitably destroy its environment and thus, itself (Bateson 1972).

Thus, from the perspective of co-evolution, the unit of survival is not independent or isolated. It is an organizational pattern of mutual effects between organism and environment (Capra 1988:320). The premise of indispensable adaptation is relaxed in the co-evolutionary perspective. Co-evolving systems play between adaptation and non-adaptation. Both complete adaptation and complete non-adaptation are fatal (von Weizsäcker 1975:515).

Because the co-evolutionary perspective sees mutual relationships not as chains of cause and effect, or as action-reaction schemes, the question of **mechanisms or principles of co-evolution** becomes even more important. How does co-evolution proceed? There are few concrete explanations in the biological literature. One principle of co-evolution might be derived from the work of von Weizsäcker: The prerequisite for an emancipated relationship is mutual fit without mutual definition. This implies that none of the co-evolving parts can be optimized completely without taking the other into consideration (von Weizsäcker 1975:515).

5.2.2.3 Mechanisms of Co-Evolution

Psychology, particularly environmental psychology integrated the co-evolutionary approach much sooner. The discipline thus realized that the development of an

individual cannot be managed or restricted by its environment, but is formed by the **mutual relationships between individuals** (system-system relationships) (Willi 1985; Schröer 1993).

Environmental or ecological psychology thus superseded the traditional methodology, which isolated the individual, as an information-processing system, from his or her societal context. Environmental psychology's unit of analysis is not the individual, but the individual's interaction with his or her environment. The individual's identity is formed, to a considerable degree, by his or her life context, the relevant social environment. Environmental psychology emphasizes the **dynamic exchange aspect**: Human beings are not just passive products of their environments, they also affect them purposefully, and by changing them, change themselves as well (Wüstner and Stengel 1998:250).

Obviously, the co-evolutionary approach in psychology is not about mere physical survival of human beings, but about development. Instead of units of survival, units of development come into focus. Individuation is understood as co-individuation, which is described as co-evolution. Development, then, is not a process of continuous but undirected and unpredictable change of an organism-in-its-environment over evolutionary periods of time, as is the case in the natural sciences. It is a life story of change in an individual dependent on its environment.

The biological *motif*, however, is repeated. **Every development in an organism depends on the development of its relationship with the environment**. Egoistic development destroys the environment and thus, the individual. Of course, time periods, mechanisms and scope for design are quite different for different disciplines. Psychology is not about improving the human genome, such that human beings may be happier. Psychology's subject is the living person and his or her behaviour. Thus, logically, psychology's conceptualization of evolution is not congruent with biology's. However, we can assume similarities between the development of human beings and that of businesses.

Meanwhile, which mechanisms support co-evolution of individuals? It has been explained above that the ideal must be to fit together without defining each other. This, however, requires an ambivalent treatment of the individual's boundaries: For every increase in individuation, one must intensify the relationship (Kegan 1982:124). Paradoxically, **intact boundaries are the precondition for maintaining relationships with others**. Every progress with regard to individuation must be accompanied by new efforts to communicate and reconcile. Stierlin calls this "related individuation" (Stierlin et al. 1987:23).

The basic *motif* is quite well-known. The criterion for success must be whether there is a mature relationship (not merely a stable personality structure or a psychologically "healthy" person). Such a form of relationship becomes manifest in a process of increasing relative independence of all partners, a process of co-evolution which can be illustrated by a spiral, or helix. Through the **interplay of detachment (drawing of boundaries) and relationship maintenance**, the individual reaches a higher level. Again and again, he or she meets with the same problem, but every time, the problems are characterized by a different level of complexity (Kegan 1982; Stierlin 1988:15).

While the Self detaches itself more and more from the environment, it also integrates more aspects from the environment. Such a process can be called co-evolution because the individual, by drawing a boundary between Self and Other, determines the extent of understanding for others. Development is a process in which the boundary between Self and environment must be determined time and again.

The goal of a process of mutual interaction, from the perspective of psychology, must be a **mutual liberation of the parties involved**. Liberation, in this context, must be both an individual and a collective phenomenon. A state of oppression must be overcome. The classic revolutionary tends to turn into a vindictive oppressor in the moment of triumph, continuing the negative mutuality and thus creating quasi-liberation only. Positive mutuality, however, aims to bring about a true liberation through which both parties can achieve a new conceptualization of each other and a new freedom for each other (Stierlin 1988:189).

In order to achieve such positive mutuality, the oppressing environment, the oppressor and the oppressed must change in such a way as to enable all parties to win a new freedom, rather than merely defining winners and losers. This is still a co-evolutionary perspective. The individuals must master, must be proficient in the **ambivalence of doing and letting happen**.

In doing, the individual declares his or her interests, demonstrates initiative, explains his or her goals, needs and priorities. Doing, human beings become aware that they are effective agents. This aspect enables us to take a new perspective on the actions of businesses. Doing of human beings means embracing, not just of one's own needs and intentions, but also of one's own conflicts, ambivalences, dark sides, weaknesses and mistakes, for which one must accept responsibility (Stierlin 1988:189). Only if these are truly and fully embraced can human beings develop and become mature. Metaphorically transferred to the world of businesses, this begs the question whether it would not be a necessary step towards maturity for businesses to embrace their own mistakes (such as externalities of their actions for society).

Letting happen, on the other hand, describes the ability and the willingness to let oneself be influenced by others. One must be open for the needs, wishes, and developments of the interaction partner, even if he or she is felt to be oppressive or exploitative. **Related individuation** means that drawing of boundaries is not sufficient for the development of a stable personality structure. It must be related to others, be embedded in continuing relationships.

It seems that businesses tend towards over-individuation, the establishment of too strong and inflexible boundaries, which kill the exchange with the environments their survival depends on. This is not so much about the exchange of material as about the exchange of immaterial resources. Businesses strive for autonomy, but they do not succeed in reaching a higher level of individuation through communication and reconciliation. They must, from time to time, open their boundaries, and reconcile detachment with mutuality, individuality with solidarity, and autonomy with interdependence.

5.2.2.4 The Co-Evolutionary Building Block of Management Ecology

The co-evolutionary building block is a process-oriented development of the systems-theoretic building block. While the latter explains the structure of the interplay between system and environment, co-evolution is about explaining the mechanisms of change in these mutual relationships.

Applied to businesses, the co-evolutionary perspective leads to the following problem description. The development of the self-description, or identity, of businesses must be adjusted much more closely to the life-supporting exchange processes with the environment. The complex circular interdependencies with the environments thus diminish the role of strong organizational culture and power-oriented business strategies. These are often realized at the expense of the environment (Morgan 1997:361 ff.). The substance of what is seen as successful management must change. **The business is not to realize any profits at the expense of the environments on which a firm's development depends**. A firm can only be called successful if, at the time of evaluation, all vital exchange processes are stable or have even been improved.

Investment in stable relationships with the environment, however, reduces short-term profits. At this point, we already see that economic success must be conceptualized in a dualistic fashion. Fulfilment of purpose, that is, making a profit, and preservation of existence, that is, investment in environmental relationships, are independent of each other and coequal (Luhmann 1973:143 ff.). This trend towards a dualistic definition of economic success will be further explained below.

Figure 5.5 sums up the results of our discussion of co-evolutionary ideas. They can serve as a first basis for further research by management scholars into life-supporting relationships between system and environment.

5.2.3 Ecology: Surviving as a Household

Co-evolution tries to explain the phenomenon that organisms can only develop in relation with one another. Thus, **community** is a core concept. How can such a life-supporting community be built? We might explore this with the help of **ecology**.

Most definitions of ecology are versions of the following basic definition by Ernst Haeckel: Ecology explores the relationships between organisms and environment (Keil 1990:11; Bick et al. 1984:16). This conceptualization of ecology as the studies of relationships became particularly fruitful when higher-order living systems, rather than organisms, became its object of interest. The individualistic perspective was abandoned. It was this step which predestined ecology to be misunderstood as the **studies (logos) of environmental protection, or conservation**. From that point on, ecology studied the existence of collective units, such as communities, cultures, and societies.

Against this background it was also nearby to import economic problems and concepts into ecology, such as competition, production, consumption, or

New perspective on the problem:	Businesses and their environment survive together, or not at all. Joint survival means that the unit of survival or development is not the firm, but the organizational pattern describing the mutual, life-supporting exchange process between firms and their environments. Life-enhancing development requires an ever improving co-ordination of these relationships.
Insights:	• All organisms live in some kind of symbiotic relationship.Thus, evolution is co-evolution. The firm-in-its-environment, not the firm, is the unit of survival. • The maintenance of a mutual relationship requires both partners to be self-reliant in the sense that they fit together without defining each other. • The development of the unit of survival depends on the development of its partners. The partners are causes for each other. • To preserve the possibilities of mutual fit and joint development, full optimization of either of the parts must be foregone. • An active process between Self and environment can lead to a better organized relation between the two. This better organizational pattern is achieved through a process whereby the Self increasingly detaches itself from the environment, and at the same time integrates an increasing number of aspects from the environment. • The aim of a mature relationship as a result of co-evolution is not mutual dependence, but *mutual liberation*. Through such positive mutuality, both partners gain a new awareness of each other and a new freedom for each other. • Positive mutuality is characterized by the ambivalence of doing and letting happen. • Individuation, in the sense of maturation and adaptation of one's self-description, is achieved through a process whereby communication and reconciliation with the environment are taken to a higher level. Time and again, businesses must open their protective boundaries and reconcile detachment with mutuality, individuality with solidarity, and autonomy with interdependence.
Contribution towards a theory of management ecology:	The co-evolutionary perspective changes the view the firm has of its environments. The action-reaction pattern of the firm's environmental relationships becomes a pattern of mutual cause for change. Every change of the firm changes the relationship with its environment, and vice versa. Thus, firms may only change in ways which do not threaten the survivability of their environment.

Fig. 5.5 The co-evolutionary building block

household. This tendency is called the economization of the living (Becker 1998:37). This also shows the common root of the concepts economy and ecology.

In what follows we will focus on two concepts whose contents have not yet been made systematically fruitful for other disciplines: **community and household**. Both concepts do not have a systems-theoretic synonym or equivalent. They will

lead us to a new *leitmotif* for an ecologic rationality. This leitmotif's content transcends the ideas of co-evolutionary theory.

5.2.3.1 Ecology as the Studies of Households

Ecology was founded in 1866 by Ernst Haeckel as the **studies of the household of nature**. Haeckel's primary interest was to research the relationships among animals, and their dependence on food and their abiotic environment (Hackel 1866, as quoted in Schramm 1984:150 ff.). The concept of household was incorporated into the definition of a community by Möbius (1877). A community (biocenosis) consists of living beings of different species which shape the conditions of existence for each other, and continue to exist in a delineated space over time through reproduction (Möbius 1877, as quoted in Dudel 1996:31).

How is the concept of household used in the natural sciences? Is there such a thing as a **natural household**? Seen from an evolutionary perspective, housekeeping should be a special strategy for survival. However, remarkably often biologists only refer to the fact that the term ecology stems from the word *oikos*, and then use the idea of household merely in a metaphorical sense. This is a hint as to the problems biology has with this concept, which originates from economics.

Possibly even Haeckel, in his definition of ecology as the studies of the household of nature, used the term only as a metaphor. He had probably realized that there were weak similarities between what was meant by the word housekeeping, or what was left of the old European understanding of *oikos*, and the phenomena he had observed in nature. We can only speculate what led Haeckel to the use of this particular term. He had possibly recognized delineated habitats which had regulated their resource production and consumption relatively autonomously, and for the long term.

If this were true we could formulate an – albeit abstract – difference between systems-theoretic and ecological questions. Systems theory is interested in the question of the origins and causes of structures and relationships. It aims to explain general principles of survival of the individual system. Ecology, on the other hand, observes a collective, a unity. It aims to explain the contribution of the individual organism towards the functioning of the collective. Thus, it is about the effects of structures and relationships. The **ethos of ecology** is ultimately about the survival of the household, or the community. This perspective cannot satisfactorily be modelled if a community, or a household, is understood as a system. Systems can be modelled to include supra- and subsystems. However, there is a difference between the observation of hierarchical relations and the observation of a biocenosis of species in their habitat.

Systems theory does not need the idea of wholeness, but ecology does. Put differently: An ecology which refuses to hypothesize on the collective whole will turn into an **ecology of mutual relationships** which uses systems theory and is ultimately absorbed by systems theory. That kind of research does not face many

normative problems. After all, the preservation of a species does not seem to need either explanation or justification.

But the conditions for survival of a collective unit, such as a household or community, do beg normative questions. Why should one particular community be preserved if the species living in it could, theoretically, also survive in different networks of relationships? Indeed, today, the concept of household seems to be used where research is not about biological questions, but about the conflict between usage and preservation of nature. This outlines the challenge we face when we try to justify management ecology on the basis of the household concept.

5.2.3.2 Central Questions of Management Ecology

In all probability there is no unified science of ecology, but a coexistence of different approaches which originated in biology and were transferred first to geoscience, then to the social sciences. Nowadays there are many **ecological sub-disciplines**: human ecology, cultural ecology, social, city, or landscape ecology, and so forth. The fact that ecological thinking (re)migrated into the non-natural sciences challenges us to identify the core of a general, interdisciplinary ecology.

The above elaborations show that such a general definition of ecology **cannot mark out a great difference** between ecology, systems-theory, and co-evolutionary theory. All of these study mutual relationships. However, the central question of management ecology, which must be an ecological management, shall here be defined as follows:

> "How must an economic system be defined in order to be able to form a household community with the other systems in its habitat, a community which enables the growth of a culture?" (Remer 1993:461)

The aim of "growth of a culture" should be seen as a corrective for a too "natural scientific" understanding of ecological insights. Human communities or systems do not simply want to survive. They want to live, lead a good life, and reach normative goals.

Towards this end, they need resources. The **rationality of the household** can be taken as a fundament for a resource-oriented view of the firm. As a household community, firms can expect each other to jointly invest in the preservation of resources they all depend on.

From a managerial perspective we could, for the purposes of this book, also have chosen the term **business ecology or organizational ecology**. These terms are not yet clearly defined in the German literature. However, organizational ecology does have a tradition in the Anglo-American literature. The origin and the usage of the term organizational ecology show that there are quite great differences as to how it is understood. These differences result from the fact that organizational ecology uses insights from natural scientific ecology to describe changes in organizations. This population-ecological frame of reference is obvious when looking at the systematization of the key issues by Amburgey and Hayagreva

(1996): these are density dependence, organizational mortality, adaptation and selection, and so on.

The subject of organizational ecology, as of today, can be summarized as the explanation of the interaction between external and internal change and processes of selection and development with regard to organizations. It is thus part of an **evolutionary paradigm**: Its primary focus is on co-evolution of organizations, based on an understanding of ecology as a developmental science. Because the term organizational ecology is thus already defined in a specific way, we here speak of management ecology rather than business ecology or organizational ecology. The concept of management ecology can also justify the necessity to reconcile individual economic rationality and collective economic rationality.

To answer the central question of how an economic system has to be designed in order to be able to form a household community, we need to more closely examine the **logic of housekeeping**. In other words, we need to explore the core of a household rationality.

5.3 The Household Approach: Surviving as a Resource Community

In everyday understanding, a household is an institution of seemingly anthropological character. In what follows, we need to **clearly distinguish between an everyday or colloquial understanding of household and the original rationality of housekeeping**. We describe the development from *oikos* to today's private household, and explain the current understanding of the term household in economics and the subject of interest of household science. This will enable us to better understand the rationality of the household as an antipole to the rationality of efficiency, as explained above.

5.3.1 The Development from oikos *to the Private Household*

Representatives of housekeeping studies have analyzed the history of households in depth (Richarz 1991a; Seel 1975; Schweitzer 1991; Egner 1976; Petzina 1991). Their motive seems to be to identify the basis of **housekeeping as timeless knowledge**. This knowledge is about interrelations which are independent of changes in living conditions over time. It is about a general economic rationality.

The oldest writing about the management of an oikos goes back to Xenophon (430–354 BC) (Schweitzer 1991:27). Yet the literature mostly quotes the works of Aristotle as the **origin of the idea of housekeeping**. The Aristotelian conceptualization of sound housekeeping was prominent in Occidental thinking until the late Middle Ages, and its traces can even be found in our times.

Oikos denoted the house, as a place of residence. Together with oikia it meant the whole household, which included the building, the property, and the family. More broadly, Oikos was also the name for a temple or cultic building: The profane and the sacred were not strictly separated (Kruse 1989:81). The world was understood to be ordered into houses, from the simple dwelling to the church buildings and the Empire. Ultimately, the world was one Christian house, whose master was God. Domes and churches, even today, are called Lord's houses (Richarz 1991b:36).

In a household at the time, men, women, children and domestics were all assigned specific tasks and responsibilities. The socioeconomic unit of the household was that of traditional economics which understood it as their task to integrate each household into a greater living context, and to give human beings recommendations for how to behave and act. **Housekeeping was characterized by long-term thinking**, which took into account the needs of future generations. Housekeeping also included duties toward society, such as donating to churches, schools, the nation, or the poor (Richarz 1991b:37 f.).

Aristotle distinguished between Oikonomia (the study of life in the house – oikos) and politics (the study of life in a political context – polis) (Arendt 1960:31 ff.). Economics, then, consists of two parts: the question of how to use property in the right way, and the question of the acquirement of property. Aristotle's elaborations on the use of property are less important here than his ideas on the acquirement of property. Property can be acquired in two different ways:

1. Through **natural acquisition**; this is studied by economics.
2. Through unnatural acquisition, which Aristotle calls **chrematistike** (chrematistics).

This distinction marks the difference between a profit-oriented way of doing business, and economic housekeeping (Aristotle 1958:14 (1256a)).

Ad 1. Natural acquisition applies to the **material assurance of the possibility to live a moral, good life**. It has to be practiced only until the material conditions for such a life are reached. Actually, natural acquisition must be stopped as soon as its purpose is fulfilled. Further effort may only be made for the pursuit of the norms which define a moral, good life. Therefore, natural acquisition is explicitly limited. For Aristotle, only this limited acquisition is a legitimate part of economics and a part of his studies of households.

Ad 2. Chrematistics is **acquisition for acquisition's sake**. However, if acquisition is seen as the objective of economic activity, there will never be the point at which the objective is fulfilled. Hence, unnatural acquisition is unlimited. For Aristotle unnatural acquisition – aiming at the accumulation of wealth – is not a part of real economics which aims at the preservation of assets (Aristotle 1958:20 (1257b)). Aristotle even calls chrematistics 'morally condemnable' because the **accumulation of property has an exploitative character**. Since a moral, good life is the objective of economic activity (and not acquisition for acquisition's sake), the social order in which a moral, good life is actualized is the absolute criterion for what is economically right.

Summing up, **economizing is an instrument for the maintenance of the social order**. This idea has persisted until today. Now, the family (the private household, being the successor of the early European oikos) is widely seen as the basis of a healthy society. The history of development of today's private household ranges from entire self-supply without external income to entire supply through exchange (Hack-Unterkircher 1976:15). These changes were made possible due to technological development and the implementation of market economy.

Market economy is characterized by the division of labour which enables households to replace self-supply by less elaborate external supply. For this, the members of the household need to earn income by selling their manpower. The self-supplying oikos turned into a **private or family household supplied by exchange**: manpower for income, income for goods. In the end, households have completely changed their nature and their behaviour because of the extensive dependence on their environments due to the necessity of exchange. However, they lost the big picture the hierarchical classification within the superior social system. Maintaining subsistence and ensuring existence remained the purpose of housekeeping, but the means changed dramatically.

Today's society reduces the perception of **households to a place of value destruction**, i.e. consumption. Its relationship to the *whole* was being reduced to the supply of labour; its other efforts for human being and functioning of economy fell into oblivion during the period of economic neoclassicism. This explanation is a sign of the way economics perceive households today.

5.3.2 Housekeeping Theory in Business Sciences

In both business studies and economics the development of the household resulted in a **separation of the profit-oriented rationality from the housekeeping rationality**. However, literature reveals that the examination of the institution household does not entail the examination of housekeeping rationality. Of course, economic analyses do not automatically involve the examination of profit-oriented rationality either. It is assumed that this rationality is known and implicitly applied. Consequently, only the statements on housekeeping activity can reveal the underlying rationality.

Housekeeping theory in economics

In economics, there are only two economic institutions: businesses and households. A business is the institution that offers goods, and the household is the institution that demands consumer goods. From an economic point of view, **households and businesses act within a circular process of exchange of goods and manpower**. Households earn money by selling their manpower, and businesses earn money by selling goods to households. Since not every consumer is able to sell his or her manpower, an institution is needed that aims at the fulfilment of demand of more than one person: the household (Streissler 1974:5).

Due to its economic rationality, housekeeping theory in economics formalizes the **decisions on the household's demand for goods and offer of factors as an optimization problem**. Consequently, the household acts rationally if it allocates its income to goods in a way that its overall benefit is being maximized (Fehl and Oberender 1999:305). Among all possible decisions and decision-making criteria of a household, economics only give attention to the decisions which have been made rationally and concern the spending of money (consumption decisions). Microeconomic housekeeping theory therefore displays a theory of rational demand decisions which can – without modification – as well be applied to any other economic unit (Streissler 1974:1). A theory of households (being a system that explores causes and effects of households) is hardly found in economics. Once household theories are mentioned, it is a question of refining statements on the way consumption decisions are made. Consequently, one should rather speak of a decision or consumption theory of households than of a household theory (Luckenbach 1978).

Obviously, the representatives of household theory know about the **deficit of their approach as regards content**: economic household theory had to economically translate the complex purpose of a private household – the preservation of existence – into the purpose of maximizing benefits. Again, the benefits are being maximized by an economically rational demand behaviour which is hardly investigable. Actually, a household theory based on the model of economic rationality hardly provides any explanatory value in terms of insights into economic reality in households. It has rather an axiomatic character. In order to gain information on realistic theoretical statements on the economic behaviour of households economists try to enhance the analysis of demand decisions (Streissler 1974). However, there is hardly any effort to find out the specifics of a housekeeping rationality.

Housekeeping theory in business studies

In business studies, the separation of profit-oriented and housekeeping rationality can be intended as the development of business studies from isolated economic studies (with the household belonging to it) to concrete business economic studies (concentrating only on the business). To date, representatives of business studies have not managed to embed the idea of a common economy plausibly and realistically in a theoretical framework. This idea of collectivity is based on the thesis that economic success is to be judged according to its benefit for commonalty and not according to its benefit for the business only.

The distinction between households and businesses is drawn by means of their specific objectives. Households aim at the fulfilment of the own demands, whereas businesses aim at the fulfilment of external demands (Kosiol 1962:5541). Today, only the latter is a subject matter of business studies, and housekeeping is limited to **consumption decisions of private households** (Wöhe 1996:4).

In the course of time, there have been several attempts to return to a perspective of an isolated economy and to re-integrate private households as economizing units into business studies. In 1966, Raffée framed the idea that for all market partners, business studies of private households could contribute to a better understanding of interests and internal processes of each partner since the **lasting advantages of one**

partner are dependent on the survival and the advantages of the other partner (Raffée 1966:192). The idea that empathy for market partners (environments or stakeholders) can be crucial for survival has been explained above from a system-theoretic and a co-evolutionary perspective. Raffée tried to conceptualize his approach as special business economics, but it did not become accepted. This is probably the reason why there have been no attempts to develop an independent business-economic theory of housekeeping which could, for example, explain why there are households at all. But even if there had been attempts, business studies of households would not necessarily have resulted in a housekeeping theory of economy.

5.3.3 Theoretical Significance of Household Economics

From the middle of the twentieth century on, and quite unnoticed by business studies and economics, the discipline **home economics** developed. It concentrates on the household in general, laying the main focus on private households. Home economists treat home economics as an independent discipline and understand households both as a socio-economic entity within economy and society and as a modern business and the life form "family" (Schmucker 1965). According to their understanding, private households do not only play a role within the economic cycle (function), but they are value-creating entities themselves. Consequently, the (value-creating) efforts of a household do not really differ from the (value-creating) efforts of a business (Schmucker 1980:146).

The increasing importance of home economics seems to be closely connected to the economic trend to reduce private households to places of consumption or even to value-destroying institutions. With this decrease of importance the public interest in productive effort of private households for a well-functioning economy and society declined as well. This tendency seems to be a catalyst for a counterforce: home economists tend to be strongly concerned about the social strengthening of the private household; they try to expose its role for the well-being of society. They aim at the establishment of economics of housekeeping (Schweitzer 1991) in which housekeeping is being modelled as a specific decision-making problem. As a result, they aspire to develop recommendations that help the actors in private households to better reach their objectives. This entails the problem of home economics, too: since home economists understand themselves as representatives of a specific science, aiming at an explanation of people's everyday actions, they have to state specific objectives of private households.

When explaining the quantitative and qualitative bundle of objectives of a household, home economists usually refer to the construct of living standard. Therefore, every household needs to define a **particular living standard as its target figure**. In contrast to business sciences who concentrate on benefits or consumption when defining objectives, the target figure "living standard" requires the consideration of all functional areas of the household as well as their

interdependencies. The rational choice of a certain living standard would then require the alignment of the standard with the material and the time resources available.

Resources are perceived as available sources for support which are needed in order to master daily life (preservation of existence). The sources of resources are the social and natural environments, which also cause a field of tension which negatively or positively influences the household. A household needs the resources time, energy, money and material goods as well as know-how, interest, abilities, dexterity, attitudes, interactions with family members, methods, proven plans and community facilities in order to fulfil its purpose (Gross et al. 1980:151 ff.).

Households and businesses cannot follow the same rationality, not even if they are both perceived as systems. **If businesses are productive social systems then households are reproductive social systems** (Tschammer-Osten 1979:25). Furthermore, their respective rationality is perceived by different social institutions. The concern of the preservation of existence being pursued by home economics manifests itself in securing resource reproduction. Today, this task is completed in a non-economic way; it is, so to speak, externalized. This applies especially to the reproduction of human physique: the value of efforts regarding care and education cannot be expressed in an economic way because their production takes place beyond market mechanisms. A housekeeping theory of economy should be able to offer a framework for the reintegration of productive and reproductive spheres of society.

5.3.4 The Rationality of Housekeeping

The character of housekeeping becomes apparent when dissociating home economics from profit-oriented economics (see Chap. 4.3). Because of the importance of this distinction, Fig. 4.1 will be shown once again and will be explained in detail (Fig. 5.6).

Both profit-making and housekeeping are economic activities. However, it is not sufficient to define businesses as productive social systems and households as reproductive ones. The management of (private) households is rather a comprehensive effort. **Housekeeping includes the production, maintenance and reproduction of resources needed for a certain living standard**. For this reason, a household should be perceived as the place where resource consumption, resource maintenance and resource generation are located (Müller-Christ and Remer 1999:83).

Housekeeping activities are rational as long as resource supply and resource consumption are balanced. As long as this is the case, the household's substance is being preserved. This substance-preserving perception of success is identical to the demands of sustainable development: sustainability – understood as a strategic factor of success for businesses – has been defined above as balance between resource supply and consumption. Thus, the postulate of sustainable development

	Profit-oriented economy	Housekeeping economy
Purpose	Value creation	Provision for elementary requirements
Medium and valuation	Money; unidimensional valuation	Resources; multidimensional valuation
Activity	Obtaining income through the production of goods and services	Create and sustain the resource base for a certain standard of living
Conceptualization of scarcity	Production factors (resources) are relatively scarce.	Material and immaterial resources are absolutely scarce.
Unit	Firms as sites of efficient combination of production factors	Households as sites for alignment of resource supply and resource consumption
Rationality	Each additional unit of value creation is rational.	It is rational to keep resource supply and resource consumption in balance.
Guiding question	Which maximum output can be generated with a given input? How can a given output be realized with a minimal input?	Which standard of living can be realized without destroying the resource base?
Success	Maximal profit	Preservation of resource base
Measure of success	Profitability	Sustainability
Parameters of action	Lowering costs / Increasing profits	Resource supply and consumption
Bottleneck	Output (the volume of production which can be sold on the market)	Input (Resource supply for the household)
Time	With capital, all input factors for production can be provided at any time.	Resources need time to reproduce. Time is determined by the autonomies of resources.

Fig. 5.6 Comparison of profit-oriented and housekeeping economy
Source: Müller-Christ 2001:333

reanimates the early European idea of a housekeeping economy. Why did the ideas of housekeeping get lost in economics at all? One reason might be the scarcity of resources. In an economy based on the division of labour the scarcity of resources finds its reflection in the price. Neither human nor natural resources have been absolutely scarce in the markets. However, relative scarcity does not

provide any information on the actual absolute scarcity of resources. But since society consumes more and more material resources, the limited stocks become obvious. The necessity of housekeeping arises only when resource supply becomes a crucial factor. This is also evident for private households: As long as there is an excess of resource inflow (money), there is no need to align resource outflow with resource inflow. Only when the resources needed for a certain living standard become absolutely scarce, the necessity to reflect on the preservation of sources arises.

This need is effective for businesses, too. Even if absolute scarcity of material resources is hardly seen, the scarcity of immaterial resources is palpable. Strategic management's resource-based view focuses on internal intangible resources because there are no factor markets for these resources; they cannot discretionarily be purchased and therefore they suddenly become absolutely scarce. This affects human resource managers as well; and even natural resources become absolutely scarce which becomes apparent when looking at increasing prices for metals or fossil fuels. It will be reality that will force businesses to reintegrate the logic of housekeeping in their decision-making behaviour and to actively treat questions of resource supply. This approach can be referred to as **sustainable resource management**.

The difference between profit-oriented economy and housekeeping economy is in the **character of the rationality terms**. Max Weber differentiated between a formal and a substantive rationality of economic action (Weber 1976:44 ff.):

Profit-oriented activity and its success factor efficiency/profitability correspond to Weber's formal rationality:

> "The term 'formal rationality of economic action' will be used to designate the extent of quantitative calculation or accounting which is technically possible and which is actually applied. (. . .) The concept is thus unambiguous, at least in the sense that expression in money term yields the highest degree of formal calculability." (Weber 1976:85)

Housekeeping activity and its success factor sustainability correspond to his substantive rationality:

> "The 'substantive rationality', on the other hand, is the degree to which the provisioning of given groups of persons (no matter how delimited) with goods is shaped by economically oriented social action under some criterion (past, present, or potential) of ultimate values (*wertende Postulate*), regardless of the nature of these ends. These may be of a great variety. (. . .) [Substantive rationality] conveys only one element common to all 'substantive' analyses: namely, that they do not restrict themselves to note the purely formal and (relatively) unambiguous fact that action is based on 'goal-oriented' rational calculation with the technically most adequate available methods, but apply certain criteria of ultimate ends, whether they be ethical, political, utilitarian, hedonistic, feudal (*ständisch*), egalitarian, or whatever, and measure the results of the economic action, however formally 'rational' in the sense of correct calculation they may be, against these scales of 'value rationality' or '*substantive* goal rationality'." (Weber 1976:84 f.)

The substantive rationality requires **content-related statements**. An answer to the question of what is reasonable can only be given with the aid of further criteria: ethical, political, social, aesthetical, etc. This is effective for housekeeping

rationality as well. It holds, indeed, a formal rationality (ratio resource supply/resource consumption) but this is not sufficient for the description of housekeeping rationality. Aristotle already introduced the *modest* as the point of reference for housekeeping activity (Arendt 1960:55) which is why home economists chose the living standard as their point of reference. It is the scarcity of resources that is the major problem. Even if it was possible to be supplied any amount of resources, housekeeping-orientation delimits the level of living standard. Housekeeping rationality rejects the *immodest*. This is why the public discourse on sustainable development always leads to the consideration of the ethical limits of wealth: What can be considered a fair, global allocation of resources?

The **illusory dichotomy** of housekeeping and profit-oriented economy can be resolved when taking into account that economic activity aims at the realization of an optimal ratio of ends and (limited) means (Myrdal 1958:213). The profit-oriented rationality represents a strong ends-orientation, whereas the housekeeping rationality displays a strong means-orientation. However, these parameters are not independent from each other: ends can only be defined when considering the means that are needed for their fulfilment. And means are only means if they are used for the fulfilment of ends (Myrdal 1958:213 f.).

After their application, means are consumed, but the ends remain. When means are getting scarcer, profit-oriented thinking demands a more efficient application; housekeeping thinking demands the discussion of **long-term resource supply**. This leads to an increased importance of the means of economic activity. However, it is obvious that when taking the housekeeping rationality into consideration, the **optimality criteria of economics** need to change. By linking profit-oriented and housekeeping rationality, business success means that within a certain period the available resources have to be transformed into as many values as possible, but with a preservation of sources. This is what sustainable development is about.

5.3.5 The New Housekeeping-Oriented Building Block

As pointed out above, both profit-oriented and housekeeping rationality are based on the economic handling of scarcity. However, they contain different perceptions of success. Profit-oriented rationality focuses on the satisfaction of needs and is therefore unlimited. Housekeeping rationality focuses on the absolute scarcity of resources and concentrates on the preservation of the resources base of economic activity. This rationality will henceforth be called ecological (Fig. 5.7). Supposedly, this insight led Haeckel to the creation of the word ecology: in nature, life is being produced without an impairment of the resource base. This is why Haeckel founded the biological ecology as the studies of the household of nature.

New perspective on the problem:	The increasing scarcity of resources recommends the pursuit of a housekeeping rationality for businesses.
Insights:	• The main idea of housekeeping activity has already occurred in Aristotle's differentiation between natural and unnatural acquisition. • Housekeeping rationality justifies the necessity of a balanced ratio of resource supply and consumption. The objective is the preservation of the resource base of economic activity. • Profit-oriented rationality holds an explicit success factor (profit), whereas housekeeping rationality needs not only the success factor sustainability but also decisions on the handling of the scarcity of resources (e.g. definition of living standards). • Economic activity aims at the realization of an optimal ratio of ends and (limited) means. The profit-oriented rationality represents a strong ends-orientation; the housekeeping rationality display as strong means-orientation. • Housekeeping unfolds its potential particularly for immaterial business resources for which nov factor markets exist.
Contribution towards a theory of management ecology:	These new insights turn the active investment in the resource supply into a rational action. With such a sustainable resource management businesses are no longer controlled by means of output-oriented success factors. In view of the preservation of the resource base, it is rational to always keep in mind the lasting supply of (immaterial) resources.

Fig. 5.7 The new ecological building block

5.4 Household Communities as the Objective of Management Ecology

The three building blocks of management ecology can be connected in order to reach a comprehensive view of the business/environment relationships. An example will illustrate the important aspects of a theory of management ecology.

The German cardinal Wetter made a comment on the recent discussion on work on Sundays. He made clear that society does not build its existence on the results of its own efforts only, but also on the mental, moral and material resources it encounters. Man and society tend to suspend the solidary structure of society and the mutual dependencies of social sections as well as the solidary connection between all of them because of an individualistic and restricted perspective. Wetter criticized that clergy is being smiled at when over and over again fighting against the transformation of the Sunday into a workday. They are allowed to fight for the Sunday as a Christian institution, but they are confronted with arguments such as increased capacity utilization, cost reduction, competitive advantages, job creation and preservation. However, Wetter states that the interdependency of economy and family as well as church and economy that demands Sunday work today, might lead to a discussion tomorrow determined by complaints about decreasing working

morale resulting in damages in the millions, about insufficient bearing capacity of juveniles and a decreasing number of graduations. Wetter expected that church might then be blamed for their failure to provide values and stabilize people's characters. But the interface between these problems and the problems of Sunday work will remain unknown. Wetter pointed out that this interface is characterized by the topic: health of economy and society through a renewal of ethical moral concepts (Wetter 1996:56 ff.).

Implicitly, Wetter applied the building blocks of management ecology: the idea of society as a pool of resources for businesses is being dismissed. Reality rather shows that the operational capability of businesses is dependent on various inputs of society. In accordance with the **system-theoretical** insights, a business's environmental problems derive from its self-perception which implicates that the business is allowed to take societal resources from its environment. The consumption of the resource "Sunday rest" causes repercussions on businesses which they cannot respond to due to their internal organization. Businesses would have acted in a system-rational way if they had anticipated that the effects of their actions – the abolishment of Sunday rest – would lead to negative repercussions on the businesses themselves. The disturbance of the rhythm of week and the abolishment of employees' regeneration stages cannot be cushioned by a change in the internal organization structure. Businesses have to put pressure on humans in order to work efficiently. So businesses may only change themselves within a framework in which the operational capability of the source environment is not violated. This insight demonstrates the interface to co-evolution.

From the **co-evolutionary perspective**, the survival unit is the relationship (precisely: the relationship pattern) between economy and society. From this pattern, Wetter picked the familial and the ecclesiastical input for economy. Economy can only develop if its sources co-develop. However, sources are only able to develop if they can contribute to their autonomies which, in turn, is only possible as long as the mutual resource exchanging processes are being maintained. The pros of Sunday work serve economy only; by this, the mutual relationships are changed in a way that moral and mental resources cannot be fully reproduced. However, economy can only survive and develop in coexistence with its environment.

The example on Sunday work may be hypothetical but the implicit rationality corresponds to the **perspective of management ecology** which comprises system-theoretical, co-evolutionary and home-economic insights. Therefore, pursuing such a perspective means to consider the viability of adjacent systems in order to assure the viability of the own system. This rationality is effective for all systems, ecosystems included.

The objective of management ecology is the establishment of **household communities of economy and society**. For the purpose of this argumentation, Wetter urges to perceive economic reality in a more comprehensive way than before. If businesses see their environments as resource pools they can discretionarily exploit, they deprive themselves of their productive base. Exploiting the pools implies an encroachment on the autonomies of adjacent systems which can no longer reproduce the resources needed by economy. Businesses and their environments are mutually connected with each other in resource exchanging processes and need to

aim at a conjoint housekeeping in order to protect their resources. The example of Sunday work affirms the discussion outlined above: at present, this way of housekeeping applies primarily to scarce immaterial (mental and moral) resources of economy and society.

This approach of management ecology can answer the question whether the current perception of sustainability could lead to a comprehensive and realistic theory of the firm. For this purpose, the classification scheme for Albach's theory of the firm has been enhanced above (see Chap. 4.6). Businesses increasingly have to bear the costs for the maintenance of the purpose of production (Gutenberg) which have no direct relation to this purpose. A new (eighth) development step has been introduced as a kind of hypothesis:

8. **The resource problem: General resource costs**

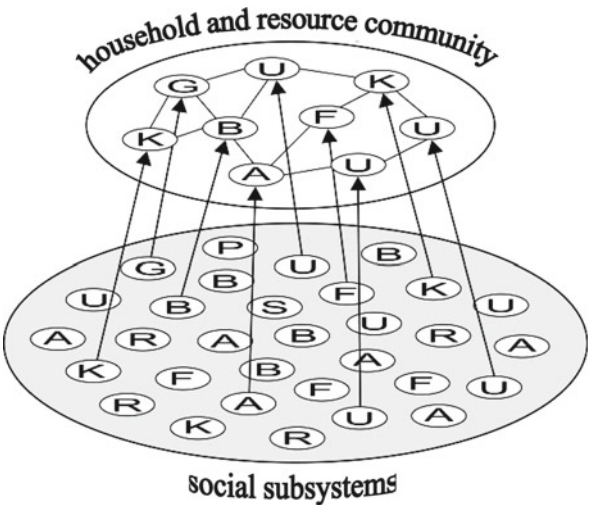
   The assumption that only the natural environment supplies resources for production processes must be abandoned. Instead, the assumption must be that there are many environments which all ensure that firms can continue their production processes. But these environments are less and less ready to supply resources at low prices and in good quality. Firms become increasingly aware that they are part of a much denser network of relationships with their environments than they have realized so far. All those relationships can be described as resource exchange relationships. General resource costs increase because businesses must invest consciously in the preservation of these resource exchange relationships, in other words, they must work to ensure the continued supply of resources (sustainability).

At this point, a progress has been made as regards the description and explanation of a **life-sustaining business/environment relationship**. With the help of the above explained building blocks this eighth development step can be substantiated as follows:

8. **The resource problem: Investments in the operational capability of environments preserve the businesses' survival**

   When business studies give up the belief that the environments supply businesses with (immaterial) resources without further ado and for free, they finally need to qualify their profit-oriented perception of success as well. The results of systems-theoretic, co-evolutionary and housekeeping research entail a re-evaluation of the inside/outside, the system/environment and the means/end ratios. The relationship patterns of a system and its environments are the basis for survival. All costs incurred for the improvement of the resource relationships between business and environment are, at the same time, investments in a working sustainable resource and household community which preserves the resource based on a mutual basis. Business sciences regain a more comprehensive perception of economic activity: production and reproduction are seen as a unity. With the help of this advancement business and management studies can contribute to a sustainable development of economy and society.

This modification of the perception of success contributes to a paradigm shift in management studies. The conventional paradigm of business studies used to be



A = labour market; B = education; F = families; G = financial market;
K = church; P = politics; R = religion; S = law; U = businesses

Fig. 5.8 Household and resource community

survival through profits. However, this short-term, profit-oriented rationality is insufficient nowadays. Particularly the housekeeping-oriented building block for a management of sustainability demands a new role of the means needed for the fulfilment of ends. The new paradigm of management studies aims at a new perception of business success: the success of businesses is not only determined by maximal market performance but also in the organization of sustainable resource relationships. But management becomes far more complex if success is measured both on the output (market) and input (preservation of resource base) side. Initial implications will be explained in the following chapter.

In which way could a **household community as a resource exchange relationship** be visualized? A household's character is similar to the market: the market balances supply and demand, a household community balances resource consumption and resource supply. Just like in markets, the actors in the household community do not necessarily have to meet in order for the exchange to take place. Each partner has to identify the community he or she belongs to by picking the subsystems to which direct resource relationship exist. A household or resource community then forms a linked subset of social systems (see Fig. 5.8).

Further Reflection

Research on the mutual relationships between systems and systems and between persons and persons is still in its early stages. If the identity of systems and persons does not emerge from the respective characters but from the kind of relationships

they have, the view of systems and persons changes significantly. Maintaining a relationship then means to align the own character and autonomies with the ones of the partner. Consequently, it is essential to know the own character and autonomies exactly and to have a realistic self-assessment, to know the partner's self-assessment and to enter into continuing processes of coordination. This applies to both businesses and persons.

The following questions and task might be helpful for further reflection on the notion of relationships:

Systems theory:

- Do research on the self-descriptions of businesses. How do firms present themselves on their homepages and how do lobby organizations describe the tasks of firms? Look for presentations which indicate an egocentric self-perception and for presentations which indicate a community-oriented self-perception.

Co-evolution:

- Analyze yourself. Which relationship pattern in your community supports you or restricts you? What role do you play in such relationship patterns, where do you support or restrict others?
- Look for examples of businesses describing their relationship with their environments. How do they express their knowledge that they can only develop *with* not *without* or *against* their environments?

Ecology:

- The term ecology is colloquially often understood to be synonymous with environmental protection. Find out how biologists define the science of ecology.
- Management ecology discusses the connection between household community formation and cultural development. Discuss how economy influences culture and how European culture should develop. How can economy contribute to such a development?

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Chapter 6
Dominant Management Rationalities and the Necessary Improvements for a More Sustainable Management

Structure of the Chapter.
Management rationalities focus on reasonable action for a company's success. Based on the considerations of the theory of management ecology this chapter shows that the conventional management rationalities are no longer sufficient to guarantee a company's survival in complex environments. The necessity of improving (not replacing) the management rationalities for the development of resource communities – consisting of firms and their environments – will systematically be explained. Some explanation is required to point out that the old and new rationalities may not be reduced to each other, but that they must coexist. The essential outcome is the realization that efficiency and sustainability are independent rationalities requiring different action-strategies.

After Reading this Chapter You Should.

- Be able to explain why system rationality I has to be complemented by system rationality II.
- Know why means-end rationality I has to be complemented by means-end rationality II.
- Understand why decision rationality I has to be complemented by decision rationality II.

6.1 Change of Management Rationalities

The change for a sustainable development still implies the question: who or what shall change in which direction? Typically "who or what" means the necessity to change the common production and consumption patterns, logics or structures in order to provide a sustainable economic situation. In this book we assume that **sustainability can be scientifically precisely defined** and thus the transformation goal is objectively clear: the ecological, economical and social substance which forms the basis of the economic system has to be maintained. According to this economic understanding of sustainability, the change bearers are the economic units themselves, i.e. all the social systems that aim to fulfil a specific end.

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_6, © Springer-Verlag Berlin Heidelberg 2011

The objective of the intended change is building stable and lasting resource relations between the business entities that understand themselves as a resource community. The change requires a refined definition of the success of social systems. The subjects of the intended change are the internal decision-making processes of social systems. The following argumentation refers to this understanding of a change of management rationalities:

1. Rationality as a criterion of action is to be strengthened. This appears paradox in a time in which an **increase in value orientation serves as a solution to sustainability** and rationalities are being deconstructed. Rationalities may not be relativized, but must be focused on as a benchmark for action.
2. Different rationalities exist, even in an economical context. But rational behaviour is often equated with calculated decision-making and must face the fact that the human ability to optimize information processing is bounded (Simon 1947). Explicitly for this reason the highly relevant **differences between system rationality, means-end rationalities and decision rationality** has to be emphasized.
3. Values must be taken into consideration. **Rationalities as instruments** can only be action-guiding in a value context. As experience teaches, the value context, as an abstract set of objectives, must be connected to the rationalities by mental models, so-called frames, in order to support pragmatic acting. At present there is no such commonly accepted frame that links the value of intergenerational justice to the rationality of sustainability in a simplified manner. This is one of the reasons which make it so difficult for firms to accept the challenge of sustainable development.

Progress in management means to control the simultaneous existence of parallel rationalities in which the basic problem is their disharmony. Disharmony between rationalities is not to be equated with conflictory sets of objectives. Contradictions indicate that the topic "economics and environment as well as social protection" is neither a zero-sum game nor a win-win-situation. There is no third alternative and so the solution has to be located in the stress field of the two extremes in the form of a frame for sustainability.

6.2 Rationality and Its Dissidents

A businessman may talk about economical rationality and asserts that with its help, the problem of sustainable development can be solved. This can easily lead to being caught up in an **old scientific debate**. One party accepts rationality as the sole authority and wants to banish all norms, values, traditions and prejudices. The other party assumes that complex problems of modern society can only be dealt with if scholars integrate aspects of morals and values into their systems of scientific recommendations.

The latter is gaining in importance within the general discussion of sustainability. This scientific and public discussion suffers however from a strong polarization between **rationality and moral values**. The message of this conceptual theory of sustainable management is: we need both moral values and rationalities; we have to differentiate between them and relate them to each other constructively. Nevertheless, the focus remains on describing sustainability as a rationality. A sole concentration on moral values implies the risk of creating the impression that **the umbrella term "sustainability" can solve all social problems of the global community**. Without referring to rationality it is difficult to bring such complex discussions back down to earth and to understandably link plan alternatives and objectives.

The normative sustainability discussion tends to refer only to the rationality of eco-efficiency which infers that for production and consumption less energy and materials may be used. This is insufficient and in the following discussion it will be shown that this **economic rationality must be supplemented by another self-contained rationality**. In doing so the economic efficiency rationality is neither to be deconstructed nor intensified; it merely needs to be corrected in a non-ethic way.

Rationality can be defined as an inter-subjective correlation between plan alternatives and plan objectives (Türk 1995:540), its counterpart is normativity. The significant difference lies in the role of belief for normative-ethical statements. Normative appraisals refer to practical action and cannot be logically derived from descriptive empirical findings (Hoerster 1980:195).

However, rationalities replace descriptive empirical findings by a normative postulate or axiom: reason becomes an instrument. The economic rationality of efficiency is a formal principle and does not judge or rate the means adopted for certain ends. Only a value context can limit the effects of rationality and align it with the desired objectives of economic activity.

So what possible form could the normative postulate take? The rationality of efficiency postulates that it is rational to use resources sparingly, given the fact that resources are scarce. The rationality of the spare use of resources seems logical when resource scarcity is considered, and is additionally intersubjectively comprehensible.

This rationality (as a formal principle) is not bounded, but due to increasing complexity its possibilities of application are. Every definition of a formal principle entails a **fading-out of other orientations**, which results in a reduction of complexity. The reconstitution of orientation cannot be accomplished by questioning the rationality itself, but only by adding new orientations.

Politics and economics especially, tend to understand sustainability not as a rational but as a normative-ethical problem. Efficient economic activity may be seen as rational, but primarily self-serving; societal sustainability may be understood as a moral activity. So what happens, if ethic and economic premises clash? Possibly the rationality of sustainability can arbitrate between the ethical and the economic premises.

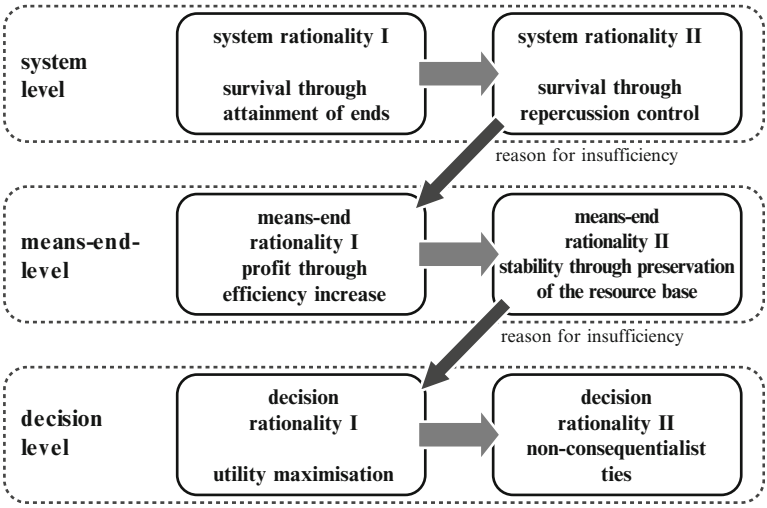

Fig. 6.1 A model of comprehensive management rationalities
Source: Müller-Christ 2007:24

6.3 A Model of Management Rationalities

Both frameworks – rationalities and resource-dependent systems – have already postulated possible management rationalities and their adoption in the decision-making processes of businesses. Not every economic activity makes use of the rationality of efficiency. Modern management has adopted a relative definition of success as the optimal means-end combination of economics, in terms of behavioural-scientific relativism which has later been system-theoretically qualified (Remer 2004). Each of these theories has its own rationality: system rationality, means-end rationality and decision rationality, all of which can be dissociated from each other, but remain nevertheless mutually dependent (see Fig. 6.1).

6.4 Improvement on the System Level

6.4.1 System Rationality I: Survival Through Attainment of Ends

According to Luhmann, social systems set ends in order to reduce environmental complexity. If firms decide to pursue an end, other ends can be saved for other situations. The choice of an end provides a system with autonomy and a capacity for action since henceforth it only has to deal with purpose-oriented questions and must only consider certain environments and fewer perspectives. However,

environmental complexity may be reduced, but it still exists outside the system. The **suppressed** becomes unrecognizable for the specific system, but its possible impacts could become relevant for the system at any time (Luhmann 1979).

This relevance is revealed in the environments' signalling of not being able to provide the resources needed for preservation. So far, business studies assume that an efficient pursuit of an end comes hand in hand with an unlimited availability of resources; if businesses realize adequate profits, peripheral systems are willing to supply the businesses with all the resources required (Hülsmann 2002). This willingness to transfer resources still exists even though it is declining due to diminishing possibilities. For companies this results in the need for further action to guarantee their further existence. Remer sees the necessity to set a focus on efficiency **and** existence, relinquishing the assumption that existence is achieved **by** efficiency (Remer 2004:311). So how can this rationality of ends (or rationality of purpose) be amended?

6.4.2 Digression: *Survival and Attainment of Ends: Two Different Rationalities?*

Luhmann interprets the function of ends as one out of several methods for **reducing complexity** in social systems, an acceptable simplification in order to make the system capable of acting. But the pursuit of an end cannot by itself assure the system's existence (Luhmann 1984:190). What exactly does this mean?

Entrepreneurial ends can be specified as the production of certain goods of saleable quality, oriented towards a niche market for example. A management consultant would suggest to not only concentrate on the niche market but to look for new markets for the firm's core competencies, namely the best possible production of a certain good. According to the systems theory not only does the objective environment (the niche market) provide the firm with resources. The dependence on other environments demands further regard for credit worthiness, liquidity and work motivation (Luhmann 1984: 215). A broader system perspective is needed to justify this line of thought. This broader systems perspective consists of a *formula of ends* and a *formula of persistence*.

A hypothesis for the combination of a strategic resource management and its possibilities for complexity reduction could read as follows: The resource dependence approach results from a combination of utilitarian rationality and the supply of material resources. The theorem of mutual resource relationships results from the combination of the formula of persistence and the guarantee of immaterial resources (see Fig. 6.2).

The taking into account immaterial resources is a sign of a different quality in the perception of methods for ensuring survival, exceeding the economic means-end thinking. By focusing attention on the resources, these methods gain a special significance in their relation to entrepreneurial ends; this eventually has far reaching consequences for the economic definition of success.

	material resources	immaterial resources
utilitarian rationality	resource dependence-approach big reduction of complexity is possible	
preservation of existence		mutual resource relationships little reduction of complexity is possible

Fig. 6.2 Resource rationality and the reduction of complexity

The survival of businesses beyond the formula "survival through success" plays a subordinate role for management studies. Most scientists and scholars concentrate on instruments and methods for gaining profit. According to Luhmann, survival is the result of appropriate strategies of complexity reduction which will be outlined in the following.

Formula of ends and formula of persistence as differing possibilities for complexity reduction

Building a system reduces the world's complexity by drawing a line that demarcates a difference to the environment. Social systems effect such a demarcation self-referentially by using communication, or respectively its attribution as the meaningful correlation of actions (Luhmann 1984:176). Luhmann defines the criteria affiliation and non-affiliation. This differentiation results in a selection of ends leading to a preservation of autonomy and a capacity for action. This method of complexity reduction is not a guarantee for success, but a scheme for operationalizing the problem of persistence (Luhmann 1984:184). Operationalizing leads to a breakdown of complexity to the point where decision-making becomes possible.

The choice of the adequate strategies for complexity reduction is aligned with a sufficient reduction of complexity on the one hand and reducing the risk of overseeing potentially relevant aspects. This results in a critical decision-making problem for the preservation of the system's existence.

All in all, Luhmann's approach is aimed at starting a rethinking process away from a utilitarian rationality to a kind of system rationality. Today, environmental conditions are becoming more and more complex and affect firms in a way that makes the consideration of survival-oriented strategies necessary.

What exactly is utilitarian rationality?

Luhmann differentiates between system end and activity end and states that the system end derives from the activity end. He defines **ends as subjective visions of a system's future impacts** (Luhmann 1984:188) and understands **utilitarian rationality** as the reasonable handling of ends which leads to the selection of adequate

methods and to the value neutralization of non-intended consequences (Luhmann 1984:227).

Limits and problems of utilitarian rationality

The polemic nature of mere utilitarian rationality becomes clear in the saying **"The end justifies the means"** referred to several times by Luhmann (e.g. Luhmann 1984:46). Setting an end involves a constriction of the value horizon and a partial neutralization of the value implications of actions. In practice this tends to provide a legitimation of the inevitable effects of the business on the environment. Consequently, an association of systems (e.g. a state) could not at all survive if every system tried to fulfil its aims at the expense of the other systems, i.e. if it solely used utilitarian rationality as a strategy of complexity reduction. Thus, there must be a **set of complexity reducing strategies** serving both the survival of the system and the systems-in-their-environment. Nevertheless, the "technique of ends" should not be totally rejected: utilitarian rationality is necessary for the survival of businesses and this kind of complexity reduction is indispensable. The description of the value neutralization of ends makes the necessity for the existence of a set of strategies clear.

Value neutralization does not mean sequencing and weighting all possible values. It means **leaving some values out of consideration while pursuing desired effects**. These unconsidered values are neither negated nor are they declared unimportant. The multiplicity of values requires a reduction in importance of certain values for one end, for other values for other ends (Luhmann 1984:48). Luhmann concludes that ends cannot be based solely on the pursued values, but only on their capacity to reduce complexity. The separation of ends from the system of values leads to the possibility of exchanging ends in a non-changing system of values.

Ends are created by decision-making processes in businesses. They serve as temporarily effective preferences and remain constant. Thus, intrasystematical ends are clearly differentiated from environmental expectations (Luhmann 1984:193). Thus, utilitarian rationality does not contribute much to the forming of conclusions about the rational handling of the environments. System rationality is always a system/environment rationality. To this, utilitarian rationality can only make appropriate comments as long as the environment makes only few and stable demands on the business system. What happens should these demands be subject to change will be shown below.

Limited respect for the environment Scholars attach great importance to the handling of means. Business studies tend to assume that in a market economy ends are predefined by society so that the only task left is the search for ideal means. **A change of ends is considered to be the formulation of a value judgement**, which in turn cannot be the job of business studies. Business studies should only elaborate secondary value judgements, i.e. judgements about efficient means-end relationships (Woll 1994:37).

Recently, environments have been making businesses aware of the fact that under these circumstances (the pursuit of just one end which is the production of saleable products) utilitarian rationality is in fact a "violation of values", a blinkers

principle (Luhmann 1984:46 f.). Today, there is a trend towards a decrease in the acceptance of the legitimation of limited respect for alternative ends and values. But it is unclear **whose ends a firm should fulfil**. With this in mind, firms have to face a double problem: the internally defined ends get amended by externally defined ends which can even be **contradictory** to the traditional programme of ends. Thus, complexity increases dramatically and the question is raised if an intensified utilitarian rationality can really be the only way of reducing complexity. It becomes apparent that a new rationality is needed.

Control of the side effects of economic activity. The emergence of side effects begs the question of the main effects of economic activity. These used to be the company ends, precisely the production of saleable goods. But large-scale production entails undesired side effects on society, e.g. for health, consumer and environmental protection. Furthermore, economic theory can no longer argue that economic activity only serves the **satisfaction of material needs**. In fact, an economy has to understand that it creates needs itself and that it therefore is creatively active in cultural terms (Koslowski 1994). As a result, the companys' autonomy is restricted regarding the setting of its own ends. Cultural changes affect all systems so that these systems will try to exert influence on the company, which is why the question arises whose ends a company should fulfil. In practice, this question always arises at the moment when companies are asked to comment on social phenomena. It is difficult to evade the question whose needs are to be satisfied and moreover: in which manner are they to be satisfied? What Luhmann calls the corollary of utilitarian rationality is in fact decreasingly accepted by society: neutralizing values in order to attain economic ends.

Value neutralization as a synonym for external effects

Economists have discussed the problem of value neutralization as the consideration of undesired side effects (in the form of external effects or social costs of economic activity) for some time now. Nevertheless, both business and economic studies have problems with the integration of external effects into their theoretical basis. Business studies have maintained a mere internal view for a long time whereas economics have mainly understood external costs as side effects on third parties. The attempt to cope with side effects with the same economic logic as was responsible for the side effects' appearance (business studies) as well as the attempt to externalize side effects (economics) both interfere with the attempt to avoid side effects by an intensification of economically rational behaviour. Thus, the neutralization of values becomes more difficult: in the end, every side effect (treated or non-treated) causes repercussions on the economic activity and takes its toll.

Another problem of utilitarian rationality exists: the instrumentalization of means and ends leads to an abstraction of materials and goods (Weber 1991:44 f). When materials and goods are characterized only as means to an end they lose their intrinsic value. They are compared only on the basis of their applicability as a means. Following this definition, capital is by now seen as the predominant means of production.

The following questions arise when talking about value neutralization and side effects: To what extent could an amendatory rationality resolve the problem of undesired side effects or value neutralizations? Which consequences may occur for the choice, the formulation and the enhancement of ends? An answer is found in Luhmann's formula of persistence.

What is the formula of persistence?

Persistence is more than the end of a system. Persistence occurs as a problem once one tries to keep a system invariant within a changing environment. The formula of persistence cannot be depicted as clearly as the utilitarian rationality's means-end schema. In the enhanced system/environment theory a basis is provided in which the utilitarian rationality and formula of persistence can exist next to each other, in each other, among or on top of each other (Luhmann 1984:144). The problem of persistence is obviously a very complex one since Luhmann uses the term formula instead of rationality.

The importance of the discovery of the formula of persistence becomes apparent in its **independence from utilitarian rationality**. In fact the two theories are incompatible. Luhmann figuratively states that one theory has to swallow the counter principle without being able to digest it (Luhmann 1984:151).

The term counter principle gives us the opportunity to tackle the problem of separating the formula of persistence and utilitarian rationality. Three relations between the two are possible:

1. The sustainment of the system's existence results from a maximum attainment of ends (instrumental relation). As can be seen in practice, especially the relation between an intensive pursuit of ends and a dramatic neutralization of values gains in importance. This indicates that companies have already begun to adjust their ends to the environment's demands. The **adjustment of ends** seems to be the crucial requisite for a firm's preservation. Such an adjustment of ends often conceals a belief that a long-term pursuit of ends can be put on a level with the conservation of existence.
2. A long-term pursuit of utilitarian rationality can be equated with the formula of persistence (complementary relation).
   Long-term measures do neither derive from utilitarian rationality nor from the formula of persistence. In fact, **capital or money carries the most universal potential for problem solutions** businesses can own. According to Luhmann, businesses (if they possess enough capital) can react on problems because problem solutions can be bought. Since short-term problems can also arise, the assertion "a firm's existence can only be maintained by long-term management action" can therefore be declared false.
3. The formula of persistence is a system's set of complexity reducing strategies. Utilitarian rationality is just one of these strategies (independent relation).
   The formula of persistence has to face an unmanageable amount of complexity. Consequently, there must be **more complexity reducing strategies** than just utilitarian rationality. These strategies are supposed to be functionally equivalent to utilitarian rationality (Luhmann 1984:237). The process of complexity

reduction can be defined as **redefining a problem up to the point where it gets decidable**. Complexity reducing strategies according to Luhmann are (Luhmann 1984:183 f.):

- Subjectivization of environmental perception
- Institutionalization of the subjectivization
- Environmental differentiation
- Internal differentiation
- Indeterminacy of the system structure

Causality too, plays a vital role as a system strategy. The **two causal factors cause and effect are related asymmetrically**: the analysis of one factor requires the constancy of the other factor (Luhmann 1984:193). Two possibilities arise: the fixation of the effect is a purpose-driven technique; the opposite (i.e. the fixation of the cause) is called **conditional programming** (Luhmann 1984:242). Conditional programming turns out to be functionally equivalent to purpose-driven programming. Both rationalities are able to realize complexity reducing strategies, only the resulting **decision programmes are different**.

The universal problem-solving medium money and its contribution to persistence
By specifying a system's end as its output, an interdependence is invoked: the existence of the supplying system is only assured if the receiving part of the environment values the effort and reimburses it in a way that the system is able to solve its problems and to stay alive. This cannot be achieved by linear causality. **Stability** can only evolve if the complexity reducing strategies "environmental differentiation", "end specification" and "universal media of problem-solving" are developed simultaneously and are coordinated (Luhmann 1984:184 ff.).

In reality, the most common medium of problem-solving is money. Businesses receive money (profits, subventions) when attaining their ends. With sufficient money they possess the potential to solve today's and future problems. Money as an institution fulfils the function of a problem-solving medium best. It generates a significant number of degrees of freedom which are again the prerequisite for the potential of responding to unspecific problems (Luhmann 1984:204).

Today, businesses face the problem that the universal problem-solving medium money cannot cover their latent problem structure. As will be shown in the following, the resource-oriented theory is attributed to the lack of factor markets for the relevant resources. More and more problems arise that cannot be solved by means of money, such as the so called organizational capabilities known from the resource-based view. By concentrating on knowledge management, trust and a resource-orientation, the economy seems to try to compensate for the decline of the problem-solving potential of money.

According to Luhmann, universal media of problem-solving (money), the type of environmental differentiation and end specification are in an interdependent relationship. The consequence is obvious: changing one parameter has far reaching consequences for the other parameters. This means that if firms consider new

Guiding principle:	The successful realization of the avowed ends does not automatically preserve the system's existence.
Central findings: • The sustainment of a system's existence can be achieved by several (partly functionally equivalent) strategies of complexity reduction. • The end specification, the environmental differentiation and the medium of problem-solving are interrelated in their role as complexity reducing strategies. Changing one variable results in the adjustment of the other variables. • There are no factor markets for the procurement of immaterial resources. Money becomes less important as a medium of problem-solving. • Immaterial resources like trust or reliability can be seen as universal media for problem-solving.	
Implication:	Firms have to bear in mind that when counting on new mediators for environmental problem-solving they have to bear the internal consequences; they have to reflect their self-perception and develop a more differentiated view on their environments. This is the only way of sustaining the realized degree of complexity reduction.

Fig. 6.3 A complexity-based building block for a theory of management ecology

resources (e.g. trust) as a universal medium of problem-solving between systems, they have to think about changing the type of environmental differentiation and end specification at the same time. The rearrangement of the interdependent relationship of environmental differentiation, end specification and the new universal medium of problem-solving serves as a starting point for a translation of the existence problem into manageable decision parameters. However, the question if the issues of the conservation of existence have to be raised sporadically or permanently remains unanswered.

A complexity-based building block for a theory of management ecology

Due to the lack of factor markets immaterial resources as key elements of a strategic resource management cannot be bought. Consequently, firms sometimes have to acquire a new medium of problem-solving in order to acquire immaterial resources. According to Luhmann, this has far reaching consequences for the environmental differentiation and the end specification. Firms have to change their view on their environments and at the same time have to specify their ends anew in order to be able to reduce complexity. These findings are in line with the assumptions of modern systems theory which consider the firm's self-perception as the cause of environmental problems. See Fig. 6.3 for the complexity-based building block.

6.4.3 System Rationality II: Survival Through Repercussion Control

A theoretical analysis of the autonomy of systems arrives at the conclusion that a broader system rationale beyond the realization of ends is needed. Management studies have accepted that a system's reference point must be the environment, not

the end. Thus, systems theory is always system/environment-theory or system/system-theory from an autopoietic point of view. Accordingly, system rationality deals with **reasonable environmental relationships** that contribute to the system's survival. This survival, or rather the assumption that systems strive for an enduring survival, displays the normative postulate which is the prerequisite for system-rational statements.

The theoretical analysis leading to the principles of system rationality II is based on the **theory of autopoietic social systems**. The theory of autopoietic social systems understands living systems as organizationally self-contained autonomous interaction systems which can only refer to themselves. Autopoietic systems can only respond to their environment within the scope of their internal organization. This basic idea of self-reference is overemphasized from time to time, to the point of stating that the system is independent from its environment because of its operative closure.

So **what kind of environmental sensitivity** does the self-reference of autopoietic systems demand? Autopoietic systems create identity by subordinating all changes to the perpetuation of their own organization. A system cannot enter into interaction because all interactions are oriented towards the own issues. An autopoietic system can only interact with its environment if this contributes to its own sustainment. This characteristic is called structural closure. A system's interaction with its environment is a reflection and a part of its own organization at the same time. This means that the environment is a part of the system itself (Morgan 1997:346).

Based upon this outline, system rationality is a **formal principle for the realization of environmental sensitivity**. In this connection, system rationality means that a system deals rationally with its environment if it controls its impacts on the environment by considering the repercussions on itself (Luhmann 1984:638). In the following, this rationality is referred to as system rationality II. It is intersubjectively comprehensible since every individual applies it when interacting with others. The system's self-reflection leads to a self-restriction regarding interpersonal relationships as well as intersystem exchange relationships (Martens 1997:285).

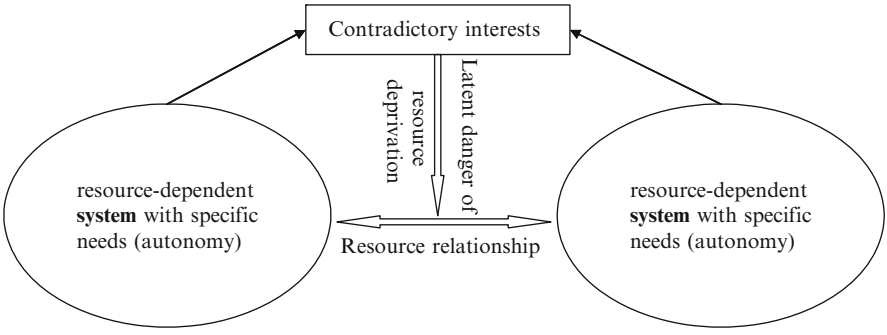

Fig. 6.4 Repercussion control as survival strategy
Source: Müller-Christ and Remer 1999:73

Using the framework of the resource model, the system is in a variety of exchange relationships with its resource pools and resource-receiving systems (see Chap. 4.4). If it endangers its environment, it must therefore anticipate repercussions that might jeopardize its own existence. Wilden states that a system which can regulate its environment eventually regulates itself (Wilden, as quoted in Luhmann 1984:642). Environments are resource-dependent systems with their own autonomies so that within the exchange relationships contradictory interests can occur (see Fig. 6.4).

The high degree of environmental sensitivity enforces a **constant self-reflection and appraisal of possible repercussions**. Systems should avoid repercussions they cannot protect themselves from because of their structural closure. Self-reflection poses the question to what extent the system's survival can solely be assured by the attainment of ends. Is existence through efficiency possible or is the sustainment of existence independent from the attainment of ends?

6.4.4 Implication: Dualistic Definition of Success

The two parallel system rationalities cannot readily and entirely be reduced to each other. Neither "attainment of ends through repercussion control" nor "repercussion control through attainment of ends" is solely considered correct. Repercussion control is an instrument for the conservation of existence. Luhmann uses the expressions formula of persistence or persistence model instead of conservation of persistence or persistence rationality. Social systems have an immanent urge to survive, and in doing so they conserve their existence. However, the specification and realization of the existence problem is substantially more complex than the utilitarian rationality.

The two terms – formula of persistence and utilitarian rationality – are situated on different levels of the description of reality: the concept of ends is assigned to the level of individual actions whereas the formula of persistence is tailored to system problems in general. The two formulas are incompatible when raising the claim that each of them provides the only framework of basic principles. The independence of the formula of persistence from the utilitarian rationality is the essential point when talking about its discovery. Thus, the implementation of a dualistic definition of success includes attainment of ends on the one hand and conservation of existence on the other; in other words: both efficiency and existence.

6.5 Improvement on the Means-End Level

For social systems the setting of an end is an abstract instrument for complexity reduction. It manifests itself in the organization of means-end relationships on the level of acting. As soon as ends are set the following question arises: by which

means shall the ends be fulfilled? Means can be selected in consideration of different criteria; it depends on the system's end which rationality assumes control. A profit organization will choose the **rationality of efficiency**. The input of production factors, efficiency factors and resources must be technically faultless, socially accepted, legal and politically correct, but above all it must follow the minimization or maximization principle, and thus be economically viable. This is why economic acting is often confused with rational acting.

Having this in mind, business studies could be reduced to means-end studies (Woll 1994:37). In general, the end of businesses is the production of saleable products and services. Due to the disposition of such a clear formal rationality as efficiency is, business economists do not tend to question the ends, but to search for suitable means.

6.5.1 Means-End Rationality I: Profit Through Efficiency Increase

Efficiency and effectiveness are the terms that circumscribe the efficacy of a means-end structure. An action is called effective when a desired end is fulfilled. It is called efficient when the desired end is fulfilled by an economical use of resources. From an economic point of view the context of justification of efficiency derives from the assertion that resources are scarce whereas human needs are endless. From this follows that it is rational to apply resources as efficiently as possible. From a business management point of view the context of justification of efficiency derives from the **normative setting of the profit principle**. Gutenberg transferred the profit principle to the necessity of economic action. Profit can only be realized if revenues exceed costs. This can only be obtained by realizing a certain revenue at minimum expenses or by realizing a maximum revenue at a certain expense (Gutenberg 1983:464).

Now how can repercussion control and the reduction of economic side effects be associated with the definition of efficiency? Two possibilities arise, but both seem problematic. The first possibility is an **enhancement of the definition of efficiency**. Eichhorn (2005:162) tries to include the valuation of outcome as well as the consequences of the implications of an action in the appraisal of efficiency, stating that the comparison of costs and revenues displays a bounded look at efficiency (see Fig. 6.5). The problem with this redefinition is the fact that efficiency loses its rationality character and becomes a general thinking model. However, the appraisal of qualities (which main and side effects are desired, which are not?) cannot be achieved by a rational formal principle. If only certain efficiencies are desired, efficiencies must be selected from a normative perspective and be characterized as regards content.

The second possible combination of side effects and efficiency is the deep-rooted basic assumption that by **increasing efficiency a reduction of side effects is possible**. However, the appearance of such a win-win situation is an exceptional case as has already been explained in Chap. 3.

The premise of eco-efficiency fosters the belief that side effects generated by cost pressure can be remedied by a further increase in efficiency; this effect is called the **efficiency trap**, as derived in Chap. 2.4. A problem cannot be solved by the

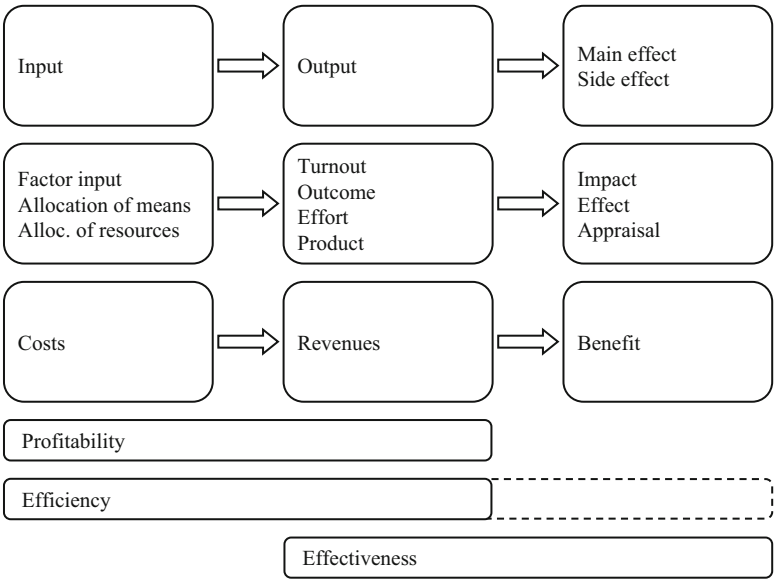

Fig. 6.5 The relationship between profitability, efficiency and effectiveness
Source: Eichhorn 2005:163 (modified)

means that made the problem arise and economic growth cannot come along with a considerable reduction of resource deployment.

Firms can only escape from the efficiency trap if they accept that there are "protective measures" they have to apply without considering their market relevance. In other words: repercussion control and the reduction of side effects have to be looked at independently. System rationality II may not be applied to the means-end level solely by the rationality of efficiency. The rationalities are rather contradictory: **businesses often increase their efficiency without repercussion control** since increases in efficiency frequently go hand in hand with an increase in side effects on the interconnected systems. This is revealed when examining the monetary sector: costs appear as revenues for the interconnected systems, cost reductions are equal to a revenue reduction for the adjacent systems (usually staff or suppliers). Each cost reduction of a business entity can force the adjacent systems to likewise invest in cost reductions. Businesses located at the end of the value chain usually have no scope for increasing environmental and social compatibility because their profit margin is too small.

6.5.2 Means-End Rationality II: Stability Through Preservation of the Resource Base

At this point a new course is set: so far, scholarship and society assume that a reduction of side effects requires new norms and re-strengthened values. **Business**

ethics is looked upon as a corrective for a far too dominant economic logic. But actually this idea is quite naive: what happens if an easy-to-handle formal decision premise (efficiency) is faced with a complex action-guiding decision premise (formula of persistence, repercussion control)? Little attention is paid to this question by ethically refined economists. Everyday life shows that a person, when having to make a decision, will more likely follow the simpler economic premise than a reflexive ethic premise.

Consequently, the course must be set differently: system rationality II must be translated into a means-end rationality II. Based on the model of resource-dependent systems the rationality of sustainability (introduced in Chap. 4) describes the reasonable aim of long-lasting economic activity: the resource base can only be preserved if the ratio of consumption and supply of resources is kept balanced. Economic entities must not spend more money than they can earn; they have to preserve their capital assets. This rationality paraphrases the logic of housekeeping which is why sustainability can also be referred to as a household economic rationality (Müller-Christ 2001).

Housekeeping does not only affect financial but also social and ecological resources which are becoming scarce due to their complex and long reproduction

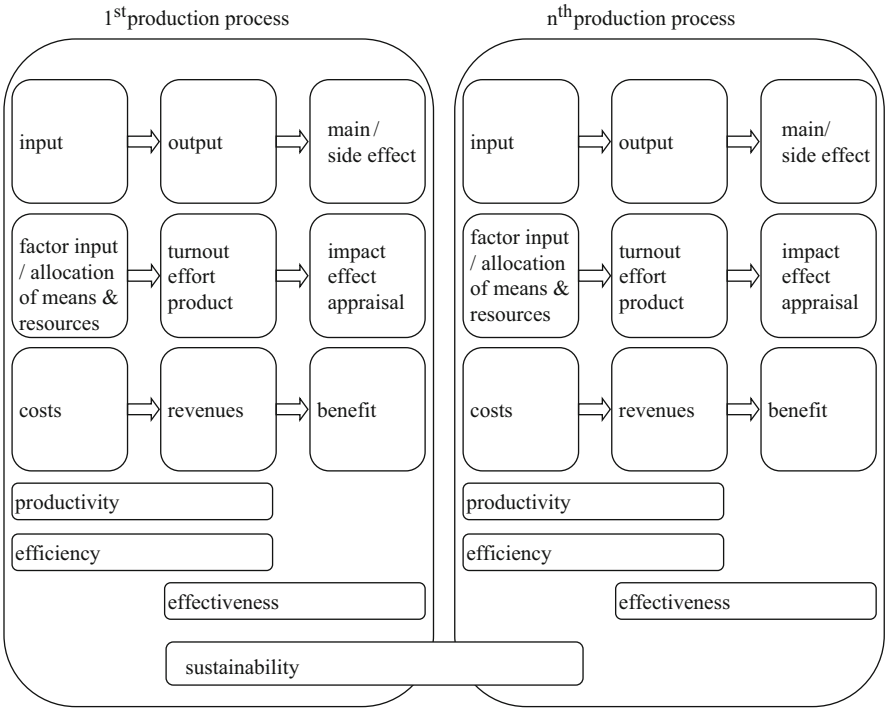

Fig. 6.6 The relationship between profitability, efficiency and effectiveness and sustainability in comparison
Source: Eichhorn 2005:163 (modified)

time. By **taking into account the concept of reproduction**, sustainability makes a connection of present production and consumption processes to possible future ones, and re-implements a time dimension in the economic logic. This is what efficiency is not capable of.

Sustainability also brings back the socio-spatial dimension of economic activity to the economic logic. Acting according to system rationality II demands a new weighting of the ratios inside/outside, system/environment and means/end. It is no longer the system's utilitarian structure (side effects) but the system's relationship pattern to its environments (repercussion) that is crucial for survival. All the costs incurred for an improvement of resource relationships are investments in a functioning sustainable resource and household community preserving the joint resource base. Business sciences obtain a broader economic understanding by thinking of **production and reproduction as a whole**.

Thus, the entire economic rationality consists of the rationality of efficiency as well as the rationality of sustainability (see Fig. 6.6). This enhancement has significant consequences because it leads to contradictions on the means-end level that cannot be dealt with using conventional patterns of thought (Fig. 6.6).

6.5.3 Sustainability and Efficiency as Contradictory Means-End Rationalities

The rationality of efficiency can no longer solely contribute to the applicability of means to given ends and to an adequate treatment of people and objects (repercussion control). More and more frequently the social diagnosis is: economically flawless, morally questionable. We state that it is not economically flawless either because the economic rationality of sustainability is not being taken into account.

Sustainability can neither be achieved through a maximum of efficiency nor be put on a level with a long-term pursuit of efficiency. In fact, **sustainability and efficiency are two independent rationalities** which companies have to follow at the same time. The relationship between sustainability and efficiency is actually contradictory. Their application on decisions to be made in a means-end context leads to different and partly even dilemmic assertions.

In general, **contradictions turn into dilemmas** as soon as they are put in a decision context. A dilemma occurs when a decision between two contrary alternatives of equal value has to be made (Neuberger 2002:337):

1. Sustainability and efficiency are two given action alternatives (see preceding chapter). "Given" means that the alternatives are clearly defined, unambiguously termed and unmistakably identified.
2. The statement that sustainability and efficiency are action alternatives of equal value derives from a long-term time horizon: long-term economic action

(meaning long-term satisfaction of material needs) is only possible if the required resource base is constantly reproduced and if at the same time resources are applied very efficiently.

3. The statement that sustainability and efficiency are contradictory action alternatives in profit organizations can be made for a short-term time horizon: the money employed in the reproduction of resources and the reduction of side effects is lacking when showing profits today since every monetary unit can only be employed once.

In the context of the two rationalities an **objective-means dilemma** arises. The objective of permanent realization of profits is achieved by efficiency measures that in turn thwart the permanent realization of profits by perturbing the inflow of resources. In other words: the more efficiency is applied as an instrument for gaining profits the more side effects on the resource pools occur which then affect the future potential for the realization of profits. Firms cannot bypass this dilemma. Business sciences should therefore pay more attention to the question: how does the company profit from profit? (Pfriem 2003:175)

By being contradictory, sustainability and efficiency in a way control each other. Thus, the rationality of sustainability raises the question of **the quality of means** again: It is irrational to pass the costs for today's efficiency increases on to the resource pools since this disenables the pools to provide essential resources in the future.

In compliance with the dualistic definition of success, the criteria of optimal economic activity have to change. Combining sustainability and efficiency to a new theoretical construct of success leads to a new definition of **successful management**: generate as many economic values from the available resources as possible within a certain period of time without destroying the resource base.

6.5.4 Efficiency and Sustainability in the Value Context

Logic can on its own neither be of help for the choice of objectives nor for mediation in conflict situations. The formal principles of rationality have to be embedded in a **value context** which serves as a search-space for accepted objectives. The objective level and the instrument level tend to get mixed up in the social discourse about sustainability. However, this differentiation is necessary when relating values and logic constructively and facilitating social and individual decisions in the context of sustainability.

A collective agreement process is impossible without rationality, i.e. without an intersubjectively comprehensible context of justification. If decision-making processes falter because contradictory norms and values must be coped with, an intersubjectively comprehensible "life belt" in the form of rationality can help out.

But how can value context and rationality become linked in order to facilitate decision-making? Ortmann states that there are mental models that make pragmatic decision-making possible (Ortmann 2001:284). These mental models can be

referred to as frames since they have a complexity-reducing effect and provide a framework in which action becomes possible.

Mental models or **frames** reduce the number of possible combinations in the value context's search-space and provide a corporate definition of objectives. The absence of a frame that is able to combine the social value context and the rationality of sustainability in a complexity-reducing and activity-oriented way is responsible for the sluggish change towards sustainability.

Framing as a mental linking model

Goffmann perceives a frame as a "schema of interpretation to organize and guide action" (Goffmann 1974:21). A frame consists of an action-pertaining and complexity-reducing formula that links moral ideals to the context of operation and translates the formal logic of rationality into a common definition of success. The concept of framing is borrowed from decision theory that uses frames as a descriptive thinking model for a simplification of processing the information overload. Esser states that framing is the human organism's clever answer to the problem of bounded rationality (Esser 1996:17). But it is difficult to detect how frames are formed. The cognitive linking model is not a conscious act of logic operation, but a process of repeatingly defining a situation in regard to a common leitmotif or a **common coding** (Esser 1991:65). This coding must be kept quite abstract because of the individuals' different interpretations of value context and rationality.

Frames do not have to be communicated openly. They can even drift into the subconscious where they are no longer reflecting mental models and from where they guide the action. This is why frames can only be conceived of as an interpretation of a broad appreciation of the linkage between value context and rationality: if there was only one uniform interpretation there would only be one precise frame.

Framing of efficiency in its economic value context

Rationalization of efficiency used to be an instrument for the achievement of business objectives aiming at the social leitmotif "wealth for everyone". This connection between values and economic rationality was first of all made by Adam Smith who separated morality from the business of producing wealth. People's welfare should be enhanced by an efficiency-demanding market economy (Smith 1776). The **invisible hand** was the first frame to be formulated by Smith himself. It means that if all individuals maximize their self-interests, the social welfare will be maximized as well. Adapted to our time, the principle is: any income increase that does not negatively affect someone else's income status is legitimate (Priddat 2000:110).

The **frame for businesses** says that profits assure survival (for economics: growth assures wealth). The indications leading to this frame are evident: basically, economic policy means growth policy and business policy means cost-cutting policy. Management studies struggle constantly with this frame by translating it theoretically into new tools, but cannot corroborate it empirically. See Fig. 6.7 for the outlined economic value context and its frame.

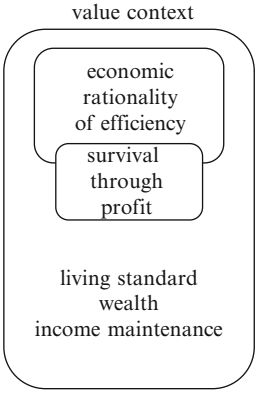

Fig. 6.7 The economic rationality of efficiency in its value context and the appropriate frame

The value context surrounding the rationality of efficiency is based on values that have recourse to the needs of today's generation, i.e. values that bear upon the desired conditions of economic activity. It has nothing to do with the total of all possible values, nor has it to do with the values that restrict economic activity. It only has to do with the normative agreement about the primary objectives that should be achieved by economic activity.

Framing of sustainability in its economic value context

Values that aim for a limitation of the extent of economic activity do not directly rank within the economic value context but can be referred to as **relational values**. They belong to the category of business ethics and convey the ideas of a thoughtful handling of adjacent systems, which means respect for man, nature, society and its institutions.

These values shall be precisely separated from those values contributing to economic activity. Internationally typical values are (Paine 2000:144 f.):

- Respect towards the individual and equal opportunities without influences of race, gender or religion
- Honesty, openness and accuracy in the flow of information
- Fulfilling promises and duties
- Fair competition without illegal payments or incentives
- Prevention of conflicts of interest within the firm and abdication of personal advantages at its expense
- Respect towards property, including intellectual property and legally protected information
- Health protection and security of employees, customers and public
- Social responsibility, including respect for laws, payment of taxes and environmental protection

These relational values merge in the value set of intergenerational justice made by the Brundtland Commission in the course of defining sustainable development in

1986: any **subsequent generation** should be provided with a productive, ecological, economical and social resource base that enables it to satisfy its needs. The instrument for this objective is the rationality of sustainability. Long-lasting economic activity can only be possible if the resource base and the society's substance is preserved. This means that the consumed ecological, economical and social resources have to be fully reproduced. For this purpose, the operational capability of resource pools is prerequisite. Figure 6.8 shows the economic rationalities in their value contexts.

The frame for a pragmatic linkage between intergenerational justice and sustainability has not yet developed. The values "intergenerational justice" and "high living standards for everyone" are as contradictory as the economic rationalities "sustainability" and "efficiency". The acceptance of "intergenerational justice" by all economic actors requires the acceptance of its contradiction to the so far pursued value "wealth for everyone".

This contradiction is problematic for framing considering that the mental model should be able to display the complexity-reducing linkage of intergenerational justice and sustainability as well as coping with the contradiction between the frame and the value context of the rationality of efficiency. But, as outlined before, frames do not only emerge from a conscious act of logically linking rationality and value context but also from the **process of repeatingly defining a situation** in regard to a common leitmotif. The problem is that the logical linkage of intergenerational justice and sustainability does not fit into the social definition of the situation:

- Several institutions try to code the following frame by repeatingly defining the resource situation as a problem of efficiency: sustainability through an increase in efficiency. This frame turns out to be a **contradiction-ignoring model**.
- The logical linkage of intergenerational justice and sustainability in reference to the linkage between the model of resource-dependent systems and system rationality could be: **self-restriction assures the long-lasting inflow of resources**.

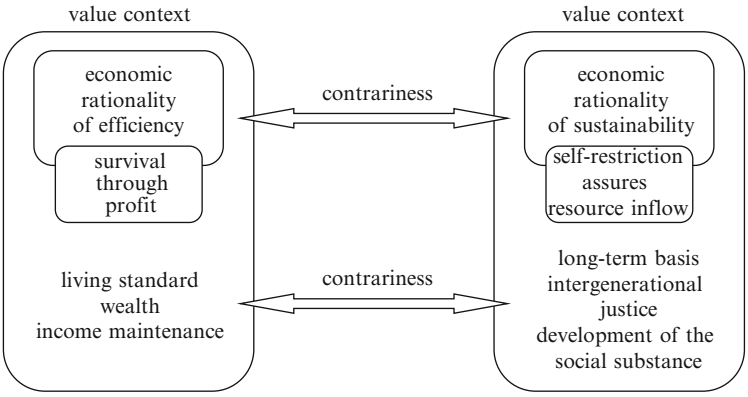

Fig. 6.8 Economic rationalities in their value contexts

An action-guiding frame can only develop if the **logical linkage of intergenerational justice and sustainability** bears up to the scholarly discussion and is accepted as true. At the same time, the social discussion must become more tolerant towards contradictions.

The theoretical construct of self-restriction shows that another change has to be made which affects the decision level. Utility maximization, as the premise on which the normative decision theory is based, is incompatible with the necessity of self-restriction and repercussion control.

6.6 Enhancement on the Decision Level

From a decision-theory perspective the **decision-making process through means** follows a different logic than the decision-making process through ends. The decision through means is a decision between alternatives that are weighted according to their occurrence probability are ordered by preferences. Following the ideal of the rational choice theory, the alternatives have perfect information available so that actually no choice has to be made. Weighting leads to an alternative on the top of the ranking which maximizes the cost-benefit ratio (decision rationality I).

Whenever the cost-benefit ratio cannot be clearly defined different action alternatives occur. Between these alternatives a rational decision in the common sense is impossible. In these situations decisions can only be made according to von Foerster's theorem: "We can only decide those questions that are in principle undecidable." (von Foerster 1992:14). This case could occur if **companies made decisions on the basis of** ends since ends elude the cost-benefit ratio.

Luhmann states that the classic belief "Good decisions are right decisions and right decisions can be reached by a rational weighting of means and ends" is dissolving. In this context he poses the question of what could replace this classic belief (Luhmann 1993:288). We replace it by rational weighting in the mode of decision rationality II.

6.6.1 Decision Rationality I: Cost-Benefit-Maximization (Utility Maximization) on a Short-Term Basis

One of the main insights of decision theory is that a decision-making process can be understood as a general problem-solving process following different stages (see Fig. 6.9).

For every stage of the decision-making process information has to be obtained and processed. Since man is only capable of processing a limited amount of information and is therefore not able to make optimal decisions, Simon introduced the concept of "bounded rationality" (Simon 1947). Prescriptive (or normative)

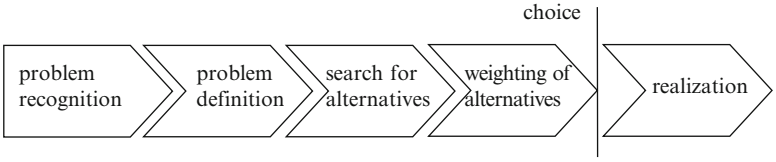

Fig. 6.9 Ideal-typical stages of the decision-making process
Source: Remer 1989:221

decision theory recognized early that the stage "weighting of alternatives" is the critical one and established numerous rules for methodically choosing between the alternatives in order to pick the alternative with the highest degree of objective realization (Bamberg and Coenenberg 1974; Szyperski and Wienand 1974).

Game theory upheld the importance of the stage "weighting of alternatives". Based on methodical individualism and the assumption of the utility-maximizing individual, rational choice theory tried to model the stage of weighting as an **act of calculation or optimization**. Focusing on the best cost-benefit ratio led to an exclusion of future costs. This is what led to a dissolution of **a great part of the side effects and was no longer a part of reflection**. Furthermore ends disappeared from reflection and the interest in emotions during the decision-making process declined (Bless 1997:1). The topic of emotions is only now being rediscovered for business studies (Ortmann 2001).

Rational choice theory fails in several cases. On the one hand the theory cannot give a recommendation when actors are not able to choose between action alternatives which promise the same benefit. On the other hand it cannot give a recommendation when an actor is not able to compare action alternatives and can therefore neither rank the alternatives nor make a choice. Just as problematic are situations in which the consequences of an action are not predictable (Petermann 2001:87). Rational choice theory cannot even be applied if the crucial evaluation criterion is not utility calculation but the costs of an alternative. Such selection problems make the enhancement of decision rationality I by another decision rationality inevitable.

Basically, the consideration of the costs-benefit ratio for the purpose of utility maximization should not be called into question. However, a critical view should be applied if this rule tried to **classify every desired effect as a benefit**. Rational choice theory becomes imperialistic as soon as it too hastily converts cause-and-effect thoughts into cost-benefit thoughts. We state that every human action is final, but not every finality can be referred to as a benefit that derives from a need.

This means that decision rationality I has no concept of **non-consequentialist decision premises**: reciprocity as well as fairness, self-restriction, altruism and trust are decision premises that negate utility maximization as ultimate justification (Esser 2005:109). These effects are in fact desired, but their occurrence and their material benefit are uncertain. Nevertheless, people tend to follow these kinds of behavioural patterns.

Summing up, we question the ability of decision-making processes in the rational choice mode to represent **long-term decisions**. This is due to the supposition that long-term cause-and-effect relationships can only be squeezed into the cost-benefit schema. Many long-term effects of sustainability decisions do not provide a need for today's decision-maker to which a benefit could be related. Moreover, cause-and-effect relationships are based upon complex, uncertain and individual causes that must lead to a social effect. We assume that decision rationality I cannot handle both obstacles at the same time during the decision-making process. This is why decision rationality I has to be complemented by decision rationality II.

6.6.2 Decision Rationality II: Non-Consequentialist Ties on A Long-Term Basis

Decision rationality II tries to protect decisions from irrationality. Nonetheless, decisions must remain intersubjectively comprehensible. The problem is that by taking account of sustainability and of the conservation of existence the information complexity in decision-making processes augments. This is due to the need of differentiating between short-term direct and long-term indirect effects. Two possibilities for handling this challenge exist:

1. Improvement of the rational choice theory in order to broaden the ability to handle restrictions and side effects
2. Separation between decision rationality I as reasonable decision-making via short-term effects and decision rationality II as reasonable decision-making via long-term effects

The first possibility is pursued by rational choice theorists who try to **make more complex decisions more calculable by new weighting models** (Esser 2005). This way of thinking goes along with the presumption that all possible main and side effects are certainly predictable and therefore calculable as well.

On the system level and the means-end level this way of thinking led to first conclusions, whereas on the decision level unknown territory is being entered. Long-term effects can only be achieved by making decisions beyond cost-benefit calculations. By applying the model of resource-dependent systems, (see Chap. 4.4) long-term desired effects can be structured as disturbance-reducing (pathogenic) and stability-increasing (salutogenic) effects.

The initiation of effects without direct benefit seems to resemble the **social exchange**. This suggests the possibility of deducing conclusions for decision rationality II from social exchange theory. Resource-dependent systems must understand themselves and their peripheral systems as a resource community (Müller-Christ and Remer 1999) or, put differently, as a resource network. Social exchange in networks means exchanges without direct rewards (gift exchange). Such an exchange cannot be carried out from a cost-benefit perspective since the benefit is postponed to the remote future (Fig. 6.10) (Matiaske 1999).

salutogenic	4. An investment in the operational capability of the relevant peripheral systems: indirect and direct measures for an increase in the healthiness of the resource-receiving systems	⇑ *complexity increase*
	3. An investment in the operational capability of the relevant peripheral systems: indirect and direct measures for an increase in the healthiness of the resource-supplying systems	
pathogenic	2. A reduction of direct and indirect side effects on the vital resource-receiving systems that undermine the systems ability and willingness to receive resources in the medium and long term	
	1. A reduction of direct and indirect side effects on the vital resource pools that undermine the pools' operational capability in the medium and long term	

Fig. 6.10 Elements of decision theory II in the sustainability context

The differences between the decision rationalities provide first conclusions for decision rationality II: decision rationality I tries to "define paradox away" by calculating the value of the anticipated benefit. Decision rationality II demands the consideration of the suppressed, **the "not observed" in the decision premises**. Luhmann calls this the paradox of decision-making (Luhmann 1993). Luhmann uses the key terms *decide* and *differentiate* (in German: *entscheiden* and *unterscheiden*); the first paradox-avoiding imperative which is actually a paradox in itself is "draw a distinction" (Luhmann 1993:289).

Drawing a distinction means emphasizing a particular item and hence not observing anything further. The *observed* is the *differentiated* but the *not observed* can not even be observed. However, a unit of differentiation would require exactly this observance of the not observed, actually an observance of the observance (cybernetically expressed: the second order observance).

Following this understanding, sustainability decisions turn into **decisions about decision-making premises** which are guided by an observance process of second order. The research question is to be specified: in which way must decision-making processes be configured via decision-making premises in order to integrate **sustainability as a restriction** (premise) into the process of weighting of alternatives? The necessity of a second order observance leads to the thought that the three dimensions of sustainability have to observe each other and have to set mutual premises. These premises will finally demand respect, especially for restrictions. Such thoughtfulness demands the action-guiding consideration of non-consequential ties like fairness, altruism, reciprocity or repercussions in the decision-making process. This seems quite difficult for decision theory I (Esser 2005:109).

6.7 Implications for the Change of Economic Behaviour

Of course, long-range implications derive from the enhancement of management rationalities. However, these implications can only be substantiated if the considerations for a normative theory for decision rationality II are sufficiently stabilized.

Nevertheless, all implications are targeted on the necessity that businesses must learn to master several rationalities at the same time.

An exemplary implication of the simultaneousness of system rationality I and system rationality II is that companies have to change their self-conception and have to regard themselves as institutions which need to adapt their ends to their environments (Remer 2004). Transferred to management studies, this means a search for a cultural component of companies (Pfriem 2003). The meaning of system rationality II is the advice that firms should more strongly reflect the side effects of their actions. From a broadening of the reflection scope and processes, a more robust system is evolved. The way to more robustness in a system comes with a discussion about power structures that could lead to an ignoring of side effects, e.g. by the possibilities of impersonal exclusion of liability.

The implications of the simultaneousness of means-end rationality I and means-end rationality II result in a systematic contradiction management. The contrariness of the rationality of efficiency and the rationality of sustainability provides a great chance for change: learning processes occur when contradictions, paradoxes and irritations arise which produce discrepancies and areas of tension regarding the usual expectations, thoughts and reactions (Nagel 2003:28). Learning processes are stimulated by the provision of tools for dealing with new problems. The absence of a frame for sustainability in the value context of intergenerational justice as well as the handling of the logical contradiction to the frame of the rationality of efficiency in the value context of social wealth obstruct the social changing process towards sustainability. In this context a considerable necessity of deconstruction of the mental model "sustainability through efficiency" can be identified.

The implications of the simultaneousness of decision rationality I and decision rationality II show in the context of the justification of decisions. Decisions in the context of rationality I are communicable and are seen as a contribution to the business's success. Justifications in the context of rationality II are hardly communicable because of the unclear relation between cause and effect. Psychology teaches us that self-restrictions (i.e. the definition of decision premises) are the major way of solving the problem of weak will. By restricting the self, non-consequentialist ties (decision rationality II) can be reached through indirect measures (Elster 1987:68).

The topic of change can be connected to the research field of **crisis management**. A sustainable handling of resources reduces the system's crisis susceptibility: fewer side effects occur that could endanger the resource pools' ability and willingness to reproduce resources (Hülsmann 2005). Especially social sustainability can be referred to as a professionalization of non-commercial acting for crisis prophylaxis (Müller-Christ 2005).

Further Reflection

People are greatly challenged when having to cope with multiple rationalities in economic decision-making processes. Tensions between these rationalities might occur because they cannot be equally pursued. If such tensions are suspected people

tend to cope with the tensions by means of traditional thought patterns (frames). A longer process of reflection might be inevitable in order to identify and formulate such patterns and to challenge their transferability, especially if frames are needed for unknown problems. How do we connect today's effort (time, money, attention) with uncertain future benefits in long-term decisions?

The following tasks might help you find initial insights for this challenge:

System rationality:

- Concentrate on the phrase "The end justifies the means." Under which conditions would this attitude be reasonable? When would it be morally reprehensible?

Means-end rationality:

- Concentrate on the concept of framing. What is the advantage and what is the disadvantage of simplified thought patterns?

Decision rationality:

- Concentrate on the rational choice theory. Why is it so difficult to make well-calculated decisions?
- Think up decisions that are made from a long-term perspective and reflect on these. Identify the motives that led to the decision to accept costs today with a view to long-term and uncertain benefits.

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Chapter 7
Coping with Contradictions as Core Problem of Modern and Sustainability-Oriented Management Studies

Structure of the Chapter.
The preceding chapter showed that modern management has to cope with different and even logically contradictory rationalities. This coping assumes that contradictions are identified and accepted and that the logical forms of coping with contradictions are being deployed. Coping entails trade-offs. These turn out to be a great challenge for conventional decision-making processes and require a high tolerance of ambiguity from the decision-maker.

After Reading this Chapter You Should.
- Be able to apply the semantics of contradiction properly.
- Be able to describe the different forms of coping with contradictions.
- Be able to explain the handling of trade-offs.

7.1 Contradictions in Management Studies

After explaining contrariness in the preceding chapter, we now want to show how to **cope with this contrariness constructively**. In this chapter we will show which methodical questions arise when constructively coping with contradictions. We have the objective to pinpoint the implications for a systematic contradiction management. At this, the focus lays on the following question: what is the subject matter of decisions which have to be made based on contradictory premises.

Aristotle stated that **a phenomenon cannot be true and untrue at the same time**. If such a case occurs, people tend to argument to the point where one of the alternatives is true and the other one is not. It seems as this also affects sciences: experiment design and theoretic thoughts of plausibility are designed in a consistent, i.e. non-contradictory way.

Nevertheless, terms like area of conflict, ambivalence, paradox and dilemmas are used quite frequently in today's management literature. However, **systematic**

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_7, © Springer-Verlag Berlin Heidelberg 2011

approaches for a contradiction management are seldom found although organizational scholars actually know that the **effectiveness of organization is influenced by an inherent contrariness** (Cameron 1986). It is surprising that despite these insights the topics oppositeness and dialectics are not dealt with more often. And if these topics are broached, they lack the forms of logically coping with contradictions; scholars rather seek to find the balance between the contradictions in order to overcome the tensions (Förster 2005).

We state that these tensions do not have to be overcome but coped with for a long-lasting and constructive solution. The acceptance of contrariness (in the realm of action) and of the occurrence of **trade-offs** (in the realm of decision-making) is preconditioned if firms want to cope with contradictions properly. Experience teaches that in practice barriers are being built against the term contradiction because it comes along with the assumption of being unattainable (Wiedemann 2003). But it is exactly this unattainable – in fact: the trade-off – that challenges business and management studies which only have a one-dimensional definition of success: value creation.

Since a consistent use of technical terms is not given in literature, the following chapter will provide the theoretical background, description and definition of the term *contradiction*.

7.2 Terminology of Contradictions

Various ideas about oppositeness exist. The comprehension of these different ideas is limited by language. There are logical and linguistic differences that will be shown in the following.

7.2.1 Contradiction in Philosophy

Philosophers define contradiction as *a unity and fight of opposites* (Klaus and Buhr 1983). Philosophy differentiates them into **logical and dialectic contradictions**. Logical contradictions only exist in the sphere of thinking, whereas dialectic contradictions affect the objective reality.

Aristotle outlined four kinds of opposites:

1. Correlatives, e.g. double and half
2. Contraries, e.g. the good and the bad
3. Privatives to positives, e.g. blind and seeing
4. Affirmatives to negatives, e.g. he or she sits and does not sit

Aristotle specified the opposite of affirmatives to negatives as a contradictory opposite. Based on this contradictory opposite, Aristotle developed the law of excluded contradiction as the supreme principle of verification: One cannot speak

truly if one makes contradictory statements about an identical subject (Klaus and Buhr 1983).

The **law of excluded contradiction** (tertium non datur) ranks among the elementary laws of logic and metaphysics. Its clearness and its claim to absolute right perhaps led to the interpretation of contradictions more as a perceptional mistake (illogicality) than as normality in a complex world.

Even if tensions are hard to bear, **contradictions can actually have constructive effects**. Hegel stated that contradictions can lead to action and to changes: only if something is inherently contradictory, it can move (Hegel 1948). Popper explains the positive force of contradictions with the principle of non-contradiction: the only force that pushes the dialectic development is the decision to not accept and to not tolerate the contradiction between thesis and antithesis (Popper 1972).

Thus, western philosophy concentrates on the exemption from contradictions and appreciates harmony in order to overcome contradictions. Eastern philosophy, Buddhism in particular, has a different understanding of harmony: the two extremes of a pair of oppositions are being held latent and only get mentioned together (Ho 2000). The picture of Yin and Yang shows that opposites are not only contrary but that the extremes even contain a part of the counter extreme (see Fig. 7.1). **Harmony and unity** in the contrariness are the objectives of eastern philosophy.

Philosophy teaches that there is a difference between logical and dialectic contradictions. Logical contradictions pertain to the world of thinking and relate to problems of cognition. One should aim for a profound understanding, adjusted for illogicality, which means that the contradiction is not coped with but it dissolved. **Dialectic contradictions** pertain to the world of action. They relate to dual principles which are – on their own – true and can be shaped. However, together they are incompatible; nevertheless they have to be considered simultaneously. As soon as a decision is necessary, a dilemma occurs if, for its realization, time and money and other resources have to be applied (Gebert 2000:8).

Fig. 7.1 Yin and Yang

7.2.2 Contradiction-Related Thinking Contexts

In everyday language the term contradiction is used in the contexts of differences and oppositeness.

For the development of a consistent use of the term contradiction (the forming of the semantics of contradiction) four thinking contexts can be detected:

1. *Context:* ***The logical development from a unit to integration***
   At least since the system theoretical insight that systems differentiate in the course of rising complexity, integration plays an important role: it is used as a means to free the world from the *differentiated* and therefore from *opposites* that produce too many side effects. The newly originated differences of the *differentiated* can be understood as contradictory but they are not subject to contrariness in any case.
2. *Context:* ***Conflicts and opposing interests***
   Due to the increasing variety of individuals and institutions the potential for contrary or incompatible interests rises. Opposing interests emerge that can be referred to as conflicts which can be solved through moderated processes of negotiation. But not every conflict arises from a logical or a dialectic contradiction of interests.
3. *Context:* ***From convergence to divergence***
   Convergent phenomena or opinions are congruent and explicit. The more variety and abstraction occur the more reverse and ambiguous phenomena and opinions can become. The divergence of opinions and phenomena does not necessarily mean that they are opposed or contradictory. They can also only be ambiguous or ambivalent.
4. *Context:* ***Thesis, antithesis, synthesis***
   Plato's dialectics describes the art of conversation. The mutual convergence of thesis (dictum) and antithesis (contradiction) amounts to an enlargement of knowledge for the discussion partners. Hereby, they come very close to the truth (synthesis) (Patzig 1992).

Today, these four thinking contexts become evident because the world produces more and more incongruities. They overlap but anyhow they carry different perceptions of success regarding the handling of these incongruities, the differences, the opposing interests and the ambiguities of a modern world. Initial considerations lead to the following perceptions of success:

1. **Integration**
   Etymologically, integration means "reconstitution of a whole". This process ends with the evolution of a new unit. The overcoming of the duality of differentiated phenomena can only be a mental (immaterial) achievement since material differences (e.g. the application of ecological, social and economical resources) cannot be merged due to the impossibility of overcoming the difference of matter and time. Hence, especially in the sustainability context, cautious language is imperative when talking about the integration of the three dimensions.

2. **Agreement**
   Conflict management is about reaching a compromise or consensus (Glasl 2004). Conflicts can be solved by the conflicting parties by changing the opposing interests and by renouncing parts of their claims. Interests can basically be formed and harmonized. Thus, conflicts are solvable (even if dissatisfaction remains).
3. **Re-convergence**
   The term divergence (as long as it is not just used as a synonym for conflicts or opposing interests) describes the dispersion of opinions and objectives. Re-convergence does not aim at full agreement but at specification since ambiguity can only be solved through preciseness. However, contradictions can not be coped with by specification or re-convergence alone.
4. **Synthesis**
   The perception of success of dialectics (as a method for conducting conversations) is the reconciliation of the opposites, i.e. the synthesis. This reconciliation manifests itself in a merging of thesis and antithesis on a higher level of knowledge. In the end, the reconciliation is just temporary because it will soon be called into question by a new thesis again. Consequently, the coping with contradictions by reconciliation can only happen by redefining the opposites.

Contrariness or duality, as discussed in these thinking contexts can also be based on logical contradictions. Thus, **the synonymic or inconsistent use of the terminology seems logical**. But since the perceptions of success of the four thinking contexts influence and partially even constrain the approach of a contradiction management an analytical distinction is important. In the design context contradictions can neither be coped with by integration nor by conflict-management, re-convergence or synthesis in a constructive and long-lasting manner.

7.2.3 Contradiction-Related Terms

A contradiction describes an opposite having several synonyms in everyday language which is why the classification of the different terms is difficult. The umbrella term to the synonyms is the opposite; the similar terms are ambivalence, duality, paradox, dilemma and conflict.

Ambivalence

Ambivalences describe a **double valence**: opposing emotions and efforts exist simultaneously. Psychologists use the term ambivalence for the simultaneous appearance of opposing beliefs, emotions (i.e. love-hate) and intentions which are intensified by psychoses or neuroses. **Tolerance for ambivalence** (or ambiguity) is a major concept of psychology. It describes how humans cope with the tension being evoked by opposites.

Duality

Dualities can be referred to as opposites or polarities. One pole (or perspective) exists with respect to the other pole (Pankau 2002:49 ff.; Fontin 1997:24).

Examples for dualities are human/nature, life/death, man/woman, light/darkness (Attems 1996:529). Dualities or dualisms are often found in philosophy and religious studies. They do not create an anxiety for a reconciliation which is why they do not lead to decision-making problems.

Paradox

The term paradox can be traced back to the Greek para (contrary) and doxa (opinion). A paradox is an **apparently absurd statement contrary to the general experience** drawing one's attention to the variety, contrariness and complexity of decisions. In organization and management literature the term paradox has received attention for about 20 years now. It does not confine itself to the explanation of organizational phenomena but it is also a catalyst for intervention strategies, i.e. for organizational development (Prisching 1996; Cameron 1986). Unlike contradictions, paradoxes are manageable; they can be resolved.

Dilemma

A dilemma is a situation or a **plight** in which a decision between two equally worthwhile or unpleasant alternatives has to be made. If more than two decision possibilities exist, one speaks of a polylemma (tri-, tetra-, . . . -lemma). A dilemma describes a specific decision-making situation in which **two mutually exclusive and contradictory actions** have to be taken (Neuberger 1995:535). The simultaneous pursuit of both alternatives is not possible and there is no third possibility (tertium non datur). The term dilemma is often applied to a management context. However, it is used in different senses, i.e. as regards the openness and closeness of societies or the management dilemma in firms deriving from contradictory objectives.

Conflict

The Latin term conflictus means collision or antagonism. In everyday language it is ambiguous and used in different ways such as inner psychic states, discrepancies in behaviour or objectives between two or more persons or collective quarrels (Regnet 2001:7). Accordingly, literature provides a vast range of definitions from different specialist disciplines.

Whenever conflicts deal with opposing interests, incompatible action plans or decisions resulting from subjective experience, the **perception of these opposing interests** is an indispensable prerequisite for the conflict (Regnet 2001:9). The tensions in conflicts derive from the incompatibility of objectives, valuations, allocations and relationships; they do not come from logical or dialectic opposites. Formulations of objectives, valuation processes, allocation demands and relationship expectations are brought about by mental and emotional ways of thinking which are, in principle, changeable. This is why conflict management's perception of success is the compromise. Compromises lead to the reduction of tensions to a tolerable level for the actors (Glasl 2004). Such a consensus can also be referred to as reconciliation. It has already been explained why this solution premise cannot serve as a means for coping with contradictions.

7.2.4 *The Nature of Contradictions*

Paradoxes describe logical opposites which are temporally independent, not bound to persons, insoluble and are rooted in the matter. The following distinction may be drawn:

- The **adversary contradiction or contradiction in the narrow sense** comprises a term and its negation at the same time; standardization vs. non-standardization. Only in situations in which decisions about both options have to be made at the same time, this formal negation gains relevance. When such decisions are made, gradual deliberations are carried out which are trivial due to the fact that in almost every decision one option is chosen over the other option (Grimm 1999:31 ff.).
- The **contrary contradiction or contradiction in the broader sense** is based on opposite content, which is justified by accepted premises, regularities or rules. Antonyms describe two different states which cannot be brought together as a unit (in terms of being contrary). In a contrary contradiction it is impossible to fully and simultaneously combine the opposites (e.g. standardization and individualization or control and autonomy).

Pseudo-contradictions are based on a hidden inconsistency of thoughts or argumentations which in turns is based on wrongly adopted premises or the breach of accepted premises. A prominent example for such a fallacy was the contrary market strategies of cost leadership and differentiation.

Selected contradictions from organization and management studies

Organizational theory has always studied the interplay between the different roles for a certain purpose within the **context of constraint and freedom** or, in other words, determinism and voluntarism (Neuberger 2000). This interplay displays the logical contradiction in the design of social systems. Every further unit of constraint reduces freedom and every further unit of freedom reduces the possibilities of exerting constraint; see Fig. 7.2 for some examples.

These contradictions lead the organizational theory into a **dilemma of management orientation** (Remer 2004; Hülsmann 2003). Under modern conditions,

Constraint		Freedom
determinism	versus	voluntarism
control	versus	autonomy
standardization	versus	flexibilization
centralization	versus	decentralization
external organization	versus	self-organization
external control	versus	self-control
cooperation	versus	competition
orderliness	versus	creativity
collectivity	versus	individuality

Fig. 7.2 Selected contradictions from organizational theory

coping with this orientation dilemma is possible by arbitrating between idea and reality. Idea means the concerted and conscious organizational claim of a system in its environment. Reality means the adjustment of a social system to the environmental conditions which manifest themselves in restrictions and limitations. Both idea and reality are special cases, only rarely occurring in social reality. See Fig. 7.3 for examples of areas of tension deriving from the major contradiction between idea and reality.

This operationalization seems to be a hint for the fact that **modern management should basically be a management of contradictions** (Mintzberg 1989). The demands of a system and the demands of the environment cannot fully be taken into consideration at the same time due to the partial presence of logical contradictions (Remer 2004:188 ff.). Contradictions occur because of the scarcity of resources. Hence, it is not surprising that organizational studies understand the contradiction between idea and reality as a contradiction between organizational politics and organizational practice (El-Sawad et al. 2004).

The abstract semantics of idea and reality conveys the impression that ideas only have to be adjusted to reality in order to solve the contradiction. Thus, could this contradiction rather be a pseudo-contradiction?

Idea and reality as a pseudo-contradiction?

Representatives of both science and practice either react in an ignorant or defensive way or start a discussion about pseudo-contradictions when being confronted with the argument that **efficiency and sustainability are contrary**. The latter notion is definitely justified and shall be explained in the following.

Remer (2004) outlines the **development of management** abstractly as follows: management developed from the starting point of unity between idea and reality (classical conditions: any idea is realizable) to a perfect difference (neoclassical conditions: idea and reality have to mutually convey to each other) to a re-integration (modern conditions: ideas derive from the necessity of means). Contradictions on the means-end-level only exist as long as the end of a social system does not take environmental autonomies into account. Firms have to change their self-conception to the effect that they understand themselves as systems of societal problem-solving. Only then is it possible to re-integrate ideas and reality as well as ends and means.

The contradiction between sustainability (reality) and efficiency (idea) is as well based on the **restriction stemming from the absolute scarcity of resources**. In a

Idea	Reality
objective	means
purpose	existence
efficiency	sustainability
demands	conditions
system	environment
output	input

Fig. 7.3 Operationalization of the area of tension between idea and reality

world of scarce resources it is logically impossible to realize long-term growth (satisfaction of increasing needs of a growing world population: idea of economy) and to take the regularities of resource origination (reality of nature and society) into consideration at the same time. Idea and reality can only mutually convey to each other whereas type and amount of needs have to be matched with the autonomies of the resources of economic activity.

Hence, in the medium term natural and social resources may only be consumed to the extent to which they can be reproduced. The worldwide possibilities of satisfying material needs would have to be dramatically reduced which appears to be utopian. Consequently, the contradiction between sustainability and efficiency must be referred to as a logical contradiction and cannot be called a conflict or a pseudo-contradiction. Finally, the contradiction persists only on the level of the value context at which the rationality of sustainability and efficiency are applied.

7.3 Logical Ways of Coping with Contradictions

Due to the fact that contradictions evolve from logical opposites and are not a perceptual problem of individuals, there must be ways of handling the contradictions that, again, arise out of the logic of contradictions. In the following, we will try to systematize these ways of coping with contradictions. It must be noted that people tend to ignore contradictions or try to abstract opposites on a verbal level. As explained above, ignorance and abstraction cannot be ranked among the ways of coping.

Different ways of coping are alternative ways of dealing with a perceived contradiction. These patterns of thought provide several possibilities of relating decisions to each other: almost every way of coping implies that **coping with a contradiction can only happen by making several succeeding and related decisions**. Complex problems have to be broken down; analogous to this, the big problem of coping with a contradiction has to be divided into several smaller problems. The following ways of coping systematize the different possibilities of designing the processes of decision-making.

7.3.1 Non-Coping Through Ignorance or Abstraction

Ignorance of contradictions

Everyday life teaches that both in business and in private life people tend to avoid the tensions built up by contradictions. By this they bypass the constructive examination of the contradictory demands. Those ways of avoidance leading to a denial of tensions can be summed up to negation, ignorance and abstraction (Pankau 2002:63). Negation is a conscious act in order to not let tensions arise, whereas ignorance is an act of non-perception. Both ignored and negated

contradictions can have great impacts such as a general disorientation, destructive conflicts, ongoing disputes and the partial incapacity of decision-making (Grimm 1999:40). These phenomena occur due to the attempt of "defining the aspects of the unconsidered pole away" by using power or inappropriate compromise formulas.

Contradictions in organizations are ignored or negated for many reasons. The ignorance of one pole and the intensive pursuit of the counter-pole can on the one hand be up to successes in the past. On the other hand decision-makers may have a lack of competence leading to the employment of insufficient analysis methods (Grimm 1999). Furthermore, a lack of tolerance of ambiguity can be a reason for ignorance. The **force and power that the unconsidered counter-poles develop** influence the effects of ignorance. The rigidity of organizations often leads to an inability to solve complex and contradictory problems. Actually, organizational studies have already explored such organizations for a long time (Remer 2005).

Abstraction of contradictions

Abstraction arises if contradictions are perceived but the emerging tensions are verbally negated. Abstraction as the opposite of concreteness occurs if an issue is **intentionally phrased vaguely**. The contradiction gets concealed and both poles are promoted as being within reach at the same time. Since abstraction is a verbal way of problem solving the contradictions actually remain and recur as soon as one shall suit the action to the word. Abstraction thus postpones a problem to the future or a different situation. From a corporate-policy perspective this can be a suitable reaction if the active coping with a contradiction requires measures which are not realizable or effective in the short term.

For this reason, abstraction is a popular way of coping with contradictions in the sustainability discussion. Managers and consultants praise the win-win situation arising from an alleged complementarity of sustainability and efficiency. Business's publications regarding sustainability as well as consultant-related management literature try to prove that sustainability efforts increase a firm's efficiency. But the tricky thing about abstraction is that as soon as a specific area of tension has to be managed the **opposites in the decision-making premises re-arise** and have to be coped with.

7.3.2 Systematization of Logical Ways of Coping with Contradictions

Unlike ignorance and abstraction **active ways of coping with contradictions lead to decision-making processes**. Decision-making processes comprise the preparation of the actual act of decision. Essential to the act of decision-making are the preparations leading to a situation of choice, a situation which is being hampered by inconsistency of the problem-posing, search for solutions, and valuation of alternatives.

When perceiving and accepting a contradiction two possibilities of coping with the tension exist:

- On the one hand one can try to **allay the "pain of the tension"** by avoiding, cushioning or overcoming the tension.
- On the other hand one can try to **accept the tension as insuperable** and to work with the tension. In this case, coping with contradictions means to defend inconsistency and disharmony as the result of a contradiction management and to accept the increased internal degree of complexity.

A **second category of systematization** contains the logical ways of dealing with contradictions resulting from the construct of oppositeness or polarity:

- The **pendulum metaphor** suggests that it is appropriate to alternately consider both poles if they are both action-guiding. Decision-making processes are, so to speak, sectioned into sequences of efficiency and sustainability.
- By **segmenting** one does not make decisions within a two-dimensional scope but one uses different organizational elements that are oriented towards the opposing poles in a hybrid way. This way of coping deals with the simultaneous pursuit of both poles of tension.
- **Balancing** provides a more dynamic perspective. The image of tightrope walking depicts that the acrobats find their balance in the interplay between their posture and the balancing pole. Balancing is similar to sequencing and segmentation but yet focuses more on compensation and dynamic equilibria.

These logical ways of coping with contradictions can either be used for a reduction of tensions in connection with an increase in consistency or for a maintenance of tension in connection with the presence of inconsistencies. Complexity increases from sequencing to segmenting to balancing (see Fig. 7.4).

	1st level sequencing (pendulum)	2nd level segmenting (hybrids)	3rd level balancing (tightrope walking)
effect on tension: - avoiding - cushioning - overcoming	avoiding by keeping the golden mean	cushioning by obtaining a sound mixture	overcoming through integration
maintenance of tension	area of complementarity	partitioning	compensation

Fig. 7.4 Systematization of ways of coping

7.3.3 The Pendulum

Provided that contradictions are accepted and constructive coping is sought after, the pendulum provides the simplest way of coping. Both poles are alternately considered in the context of action. **Contradictions are referred to as two-dimensional poles located on a continuum**. The contexts of action are designed to decide on only one contradiction respectively.

This way of coping follows the logic of sequencing (Grimm 1999:129). The consideration of each pole takes place in **consecutive sequences**. Anyhow, it is assumed that the pendulum should not swing to the extreme points each time (Fig. 7.5).

Sequencing leads to a chronologically consecutive pursuit of the tensional poles. Decisions are made one after another by means of the extreme poles. Sequencing mitigates the contradiction by balancing. Two alternatives of sequencing exist:

- Sequencing can be seen as a non-recurring operation and pursue a **compromise by keeping the golden mean**. Tension is removed from the continuum.
- Sequencing can also be understood as an enduring pendulum movement. In this case, the amplitudes have to be controlled and taken into an **area of complementarity** (Evans and Doz 1992). Tension is maintained in the continuum.

Avoiding tension by keeping the golden mean

Keeping the golden mean means making a **compromise**. When making compromises one tries to find a position in between the two contradictory poles and, ideally, this compromise takes the centre position between both extremes. This offsets the tensional relationship of the two poles and avoids further quarrels. Following the principle that man has a disposition to overcome dissonance, the contradiction is coped with by bringing the pendulum to a stop and searching for the golden mean. Pascale (1990) states that a big part of western management literature tries to induce this very equilibrium. However, this equilibrium leads to a state in which a lack of tension results in a lack of creativity.

In the end, this solution model is a hypothetical one: in reality, the perfect middle between two extremes is probably not at all identifiable. Thus, forces will remain

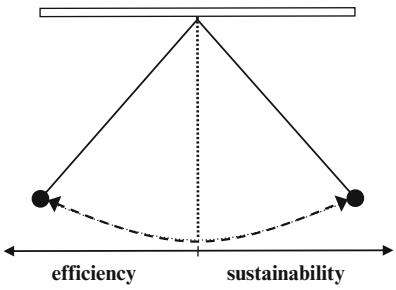

Fig. 7.5 The pendulum metaphor

acting which is why the golden mean should not be mistaken for synthesis: the contradiction is not eliminated but only turned off in the continuum of opposites.

In the narrowest sense, a compromise or the **golden mean is a form of not coping** with dilemmas and contradictions. Non-action leads to non-decision-making. Since the search for the golden mean cannot be successful the next step is to realize a modest swinging (Fig. 7.6).

Maintaining tension through the area of complementarity

The stoppage of the pendulum at the golden mean causes evident side-effects. However, Evans and Doz (1992) also warn against the dangers the extreme poles can contain and therefore prefer concentrating on the centre. The **"complementarity of opposites"** results from a movement towards the centre which is not one static point but rather an area of constructive tension. The pendulum swings but it has a smaller amplitude (Fig. 7.7). The term complementarity suggests that there is an area in the centre in which the oppositional forces act in the same direction and a **win-win situation** is created. Moreover, the concentration on the area of complementarity could be seen as a means for minimizing side-effects by oppressing forces of the respective counter-pole. Transferred to the contradiction between efficiency and sustainability, the pendulum could permanently swing towards the efficiency pole but only slightly and only within the area of complementarity.

But complementarity could also mean that it is possible to strive for both poles at the same time, given a restricted amplitude. This suggestion shows that in the area of complementarity there is no swinging but a simultaneous pursuit of the opposing lines of action, however on different levels (Evans and Doz 1992). Hereby, a change in contradiction management takes place, from level one to level two.

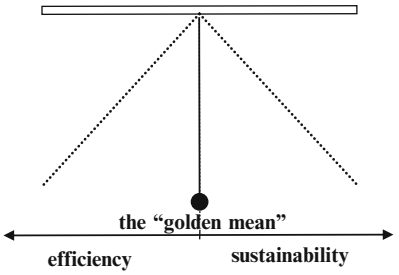

Fig. 7.6 The golden mean

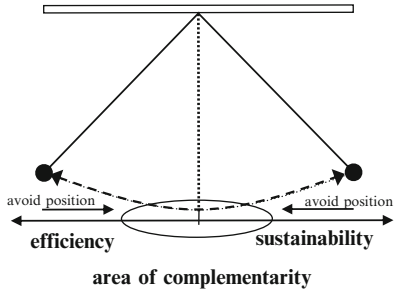

Fig. 7.7 The area of complementarity

Relevance for decision-making

By sequencing, **opposites are always latently present in the conscience of a decision-maker**. The decision-maker must know that for every decision

- . . . the pursuit of one pole leads to a reduction of the other pole's forces.
- . . . further decisions must be made in favour of the counter-pole.

If decision-makers are tension-averse, they will strive for equilibrium whereby they avoid the necessity of relating decisions to each other. If decision-makers are tension-loving, they will maintain the tension whereby they have to face the necessity of monitoring the sequences as well as their decisions (see Fig. 7.8).

The problem with sequencing is the possible occurrence of a situation that demands the **long-lasting pursuit of one pole**. By this, the back-swinging of the pendulum is postponed to the future. The nature of sequencing reveals the **limits** of the pendulum thinking model: sequencing takes place in a chronological manner within a time frame. The pendulum cannot be in two places at the same time. Nevertheless, management can work on different levels so that actually both poles can be pursued simultaneously.

In order to refine the pendulum metaphor one can see the continuous professionalization of ways of coping with contradictions as a **helix**. By constantly swinging between the poles of accepted contradictions the system improves its ability to solve problems and acts on the next higher level using hybrid ways of coping.

	efficiency-oriented decisions	**sustainability-oriented decisions**
strategic planning	sum of decisions about competitive advantages	sum of decisions about a robust relationship network
marketing and sales	sum of decisions about earnings increases	sum of decisions about long-term customer relationships
production	sum of decisions about capacity utilization	sum of decisions about equipment maintenance
human resource management	sum of decisions about increases in labour productivity	sum of decisions about the preservation of the personnel's ability for regeneration
environmental protection management	sum of decisions about increases in eco-efficiency	sum of decisions about the preservation of nature's ecological production processes
financial management	sum of decisions about increases in return on investment	sum of decisions about the preservation of liquidity

Fig. 7.8 Monitoring of sustainability decisions

7.3.4 Hybrid and Segmenting

Hybrid forms combine elements (segments) that do originally not occur together. By this, they increase advantages and reduce disadvantages. In contrast to sequencing, segmenting, i.e. the hybrid way of coping with contradictions, allows the simultaneous consideration of contradictory decisions. Two possibilities exist: cushioning the tension by obtaining a sound mixture and partitioning the opposing forces while retaining the full amount of tension.

Cushioning the tension by obtaining a sound mixture

Obtaining a sound mixture means avoiding extremes while combining differing or even contradictory segments. In contrast to the golden mean, a sound mixture does not aim for a stoppage of the pendulum. One tries to combine a little flexibility and a little standardization, a little efficiency and a little sustainability. However, **simultaneity** can only be reached by not taking the extreme poles into account. The obtainment of a sound mixture is as well dependent on an area of complementarity cushioning the tension. In this case the area covers several organizational levels and is recognized and applied rather emotionally than systematically.

Maintaining tension by partitioning

Partitioning is a metaphor borrowed from computer sciences where it means dividing a data medium into parts. Similarly, a business can be divided into different organizational units, each having consistent role systems but being contradictory to the others. Segments are designed bigger and more systematically than within the sound mixture. The overall system contains the whole tension in between its poles. It is the organization of conjoint decisions that is particularly challenging for the partitions.

Relevance for decision-making

On the one hand, coping with hybrid forms can lead to a spatial separation (segments, partitions) of the opposing concepts which means that the individual subsystems of the decision-making organization are **consistent with themselves but contradictory to each other** (subsystem-hybrid design). On the other hand, the separation of partitions or segments could directly be transferred to the duties of a role (personalized hybrid design).

Subsystem-hybrid design for the organization of decision-making

This form of coping masters the opposites by separating them spatially, i.e. by relocating them into subsystems. These subsystems are non-contradictory and consistently pursue one of the extremes. Within the relevant decision-making processes the subsystems (including their individual action approaches) encounter each other and try to reach a common solution. This way of coping can only be effective if the subsystems have an **equal voice** in the premises of decision-making, if they are not only rewarded for egoistic commitment but also for their contribution to the welfare of the overall system (Grimm 1999:156).

In the **processes of negotiation** of the subsystems only people can reveal the consistent oppositional perspectives. For this reason the subsystem-hybrid way of coping makes a detour via the consistent but oppositionally thinking subsystems. In the end, however, it is the people who negotiate the consideration of decision-making premises. The tension between the contradictions is then located between the subsystems, but the members of the subsystems cope with this tension as soon as they meet each other. The advantage of this way of coping is that contradictions enter an official coordination and conflict process (Luhmann 1973:233). Hence, it is the tolerance towards ambiguity within the decision-making processes that determines whether opposites are ignored or being coped with.

For example, a subsystem-hybrid way of coping would advise the creation of a **sustainability department** for the visualization of the contradiction between sustainability and efficiency in a business. Such a department would have a voice in strategic decision, but would serve as "advocatus diaboli" who would have to again and again call attention to the long-term side effects of efficient economic activity on the sources. As pointed out above, the consideration of presumed side effects depends on the tolerance towards ambiguity of the strategic decision makers, but also on the constellation of power and the public valuation of sustainability problems.

A sustainability department acts according to *partitioning* if it works on the assurance of the sources' operational capability, completely detached from core business. An example clarifies the context: In Germany, there are big coffee roasters who, on the one hand, still buy coffee according to the quality/price ratio at coffee exchanges (partition: purchase department). On the other hand, they actively work towards improvements of social and ecological conditions on coffee plantations in order to help coffee farmers to improve quality and to realize higher prices (partition: sustainability department). This course of action aims at an increase of world market prices in order to improve the farmers' living conditions. However, this results in a rise in purchase prices of raw coffee as well. Inside the business, this contradiction is controlled by letting the purchase and the sustainability department work independently. The board of management decides on the sustainability department's budget and therefore takes on the **process of consideration** regarding the means to be invested in the preservation of sources (plantations).

Personalized hybrid design for the organization of decision-making

The personalized hybrid form of coping assigns contradictions directly to the decision-makers **without making the detour via subsystems**: The contradiction therefore appears at the same time and place in the action and decision-making context of roles. This can be realized by integrating roles with consistent action orientations (experts) in one group or one subsystem in which they have to cope with opposites together (project organization). A stronger effect on the individual is found in the formulation of contradictory role expectations. In this case, the coping with a contradiction is totally personalized: Purchasers must behave efficiently and sustainably. Their ability to bear the tension and the way they cope with the contradiction depend on their mental models (tolerance towards ambiguity), on the existing information systems as well as on the incentive and gratification systems of their roles.

If the contradiction between sustainability and efficiency is combined temporally and spatially in one role, the role holder has to **handle the contradictory decision-making premises on his or her own**. Already since the 1990s the debate on environmental management understood the image of the employee who combines ecological and economic mindsets as the ideal of ecological business development (Müller-Christ 2001). However, the balancing of two decision-making premises of different complexity is highly challenging for employees which is why this development actually never really occurred. As long as the system does not positively sanction commitment to ecology and sustainability the insufficiently complex decision-making premise of economic efficiency will remain the dominant logic. In fact, there is hardly any decision-making assistance (integrated eco-controlling) that could help employees organize the negotiation process.

The prospect theory (a part of descriptive decision theory) for example points out that decisions are strongly influenced by the **framing of decision alternatives** (Kahneman and Tversky 1979). This means that in most decisions on environmental protection profits (ecological relief) and losses (high costs) are simultaneously decided on; however, people apply different premises when valuing profits and losses. This already indicated that contradiction decisions are always trade-off decisions most businesses were not prepared for.

7.3.5 Tightrope-Walking and Balancing

The most complex degree of coping with contradictions is balancing. The terms **balance and equilibrium** are frequently mentioned when talking about the challenges of sustainable management. The difference is that equilibrium is more static whereas balancing is dynamic.

Whilst sequencing and segmenting try to reduce contradictions in management, tightrope walkers permanently feel the forces acting on them. Swinging can have fatal consequences, balancing is only possible within the area of complementarity. While trying to find the golden mean, they keep moving and do not stand still. Tightrope walkers seem to have overcome the tensions by merging with the tightrope which means that they have integrated the forces within the field of tensions into their movements.

Transferring the metaphor of the tightrope walker to a multilevel thinking, the metaphor of an **artistic mobile** seems applicable. Every element is equally important for the mobile's balance. From a systems perspective this means that every element has to be considered an essential factor of balancing (Remer 2004:450). In a "business mobile" the weights and manifestations of the management elements keep changing so that the balancing act becomes a process among different levels.

Overcoming the tension by integrating

Integration has been mentioned before: in the etymological sense integration means "reconstitution of a whole". At the end of the reconstitution process there is the new (old) unit. The question is: is an integration of different aspects only

possible if one understands the history of their separation? Why did the dimensions formerly building a unit get separated or did they separate themselves?

Sustainability tries to integrate ecological, economical and social aspects of economic activity. Relating to this attempt the question is: under which conditions did these aspects belong together and why did they become separated from each other?

The public debate on environment has claimed an environmentally friendly management of economic activity. However, it showed that both management scientists and practitioners encounter difficulties when having to pursue two different decision premises at the same time: **profit seeking and ecological respect**. The attempt to casually subordinate (ecological respect through profit seeking) does not work. Even so, management studies have not yet managed to systematically and deliberately work on the integration problem. Actually, they tend to immediately develop independent instruments for ecological, economical and social demands. They term this line up of information "integrated management system" or "integrated information system" instead of working out the problem of logical integration first (Müller-Christ 2001:340). In fact, lining up of information only leads to a change in the system of providing information.

Actually, integration is a philosophic discourse when considering the current necessity for decision-making in social systems. There are practically no examples from practice that do not imply extensive changes in the economic system at the same time. Consequently, integration or synthesis are no feasible solution examples for coping with contradictions (Gebert and Boerner 1995:369). In search of a synthesis, the necessity for decision-making gets neglected.

Nevertheless, an integrative contradiction management is imaginable. The basic contradiction between means and ends will enforce a better balance between **management idea and management reality**. However, the re-integration of the management idea into reality requires common norms for a liveable and humane society. This finding makes clear that **unity as an objective of integration** can only be realized on an intellectual (or spiritual) level.

Maintaining tension by compensating

Compensation does not only mean equilibrium. Equilibrium is established by removing the effects of opposed causes, whereas compensation maintains the forces. Compensation as a way of coping pursues the balancing premise. However, this complex approach aspires to gear a social system or economic entity towards **contradictory environmental demands** by making management contradictory itself. Modern management spotlights rather the relationships of business elements than the elements themselves (Remer 2004:466). This can only work if the system itself is designed contradictory by taking contradictions into account: constraint/freedom, means/end, idea/reality, openness/closeness. Business systems therefore have to be idealistic and realistic, close and open, self-centred and able to adjust to changing contexts as well as centralized and decentralized at the same time (Remer 2004:448). Moreover, they simultaneously have to be sustainable and efficient. Coping with these contradictions has to be understood as the major managerial task in order to endorse structures and processes tolerant to contradiction and to aim at a contradictory business organization.

levels of openness / management elements	**purpose orientation** (responsibility from an internal perspective)	**problem orientation** (responsibility from an external perspective)	**means orientation** (pursuit of existence from the internal perspective)	**resource orientation** (pursuit of existence from the external perspective)
policy	e.g. profit orientation	e.g. stake-holder approach	e.g. maintenance of capital	e.g. sustainability
planning	e.g. sales	e.g. marketing approach	e.g. competence-based view	e.g. resource-based view
organization	e.g. functional structure	e.g. divisional structure	e.g. learning structure	e.g. network structure
personell	e.g. production factor approach	e.g. personnel portfolio	e.g. human asset management	e.g. human resource management

Fig. 7.9 Building set for a contradiction management
Source: Remer 2004:460

Relevance for decision-making

This way of coping is not about coordinating single decisions; it is rather only imaginary. A **broad and consistent management approach** has to be taken as a basis (containing all the elements of the artistic mobiles as well as their balancing capacities) if recommendations are to be made. Remer (2004) created such a consistent approach. He states that by a contradictory design of policy, planning, organization and personnel a decision-making structure is built that is able to cope with the dilemmas mentioned above (see Fig. 7.9).

The contradiction between sustainability and efficiency is found in the modern managerial demands that ask for a **simultaneous coping with several and likewise contradictory rationalities**. These different rationalities entail a different perception of success: if businesses want to survive, they not only have to be successful in the market but also preserve their existence. This dual definition of success can be referred to as "efficiency and existence" (Remer 2004) or "efficiency and sustainability" (Müller-Christ 2003).

7.4 Decision-Making, Trade-Offs and Contradictions

After having focused on the organization of decision-making, we now want to give attention to the problem of decision-making. What exactly is the problem about? In connection with this, trade-offs have to be explicitly taken into account, i.e. the **legitimacy of non-achievement**.

7.4.1 *Trade-Offs: The Decision-Making Problem with Contradictions*

The **subject matter of every decision-making problem** is the allocation of resources: time units, monetary units, mental capacities, labour capacities, natural resources etc. Viewed in the context of space and time, every allocation to a certain resource comes along with a non-allocation for an alternative resource, since resources can only be applied at one time and place. The scarcer resources are the more serious is the allocation problem. The "as-well-as-problem" of contradiction management (sustainability as well as efficiency) returns to being an "either-or-problem" on the level of specific decisions.

As soon as both poles of an opposed couple have to be served simultaneously, the problem of resource allocation leads to a trade-off-problem. A trade-off is the negative mutual dependence of two aspects. It occurs whenever the improvement of one aspect can only be achieved by accepting the deterioration of the other aspect. A **zero sum game** occurs in which the one party's benefit is the other party's loss. The exchange relationship between sustainability and efficiency is expected to be a zero sum game regarding costs: a decision in favour of efficiency is accompanied by a renouncement of sustainable demands; a decision for the benefit of sustainability comes along with an abandonment of efficiency demands. In order to manage this balancing process, one must accept the contrariness and has to establish decision-making premises legitimating the non-achievement of one pole's demands.

Herewith, the central question of contradiction management is unfolded: **what are the decision-making premises or rules that legitimate the trade-off?** The question of legitimating the non-achievement implies the basic problem of self-monitoring and self-organization. Decision theory deals with the problem of legitimacy in particular. Decision-oriented management studies (supported by psychology) differentiate between descriptive and prescriptive decision theory. It is debatable whether these decision theories have yet contributed to the handling of contradictory decision-making problems.

7.4.2 *Prescriptive Decision Theory and Trade-Offs*

Prescriptive (or normative) decision theory raises the claim to define the norms for decision-making (Fischer 2004:14; Bamberg and Coenenberg 1996:2). Decision theory roots in utilitarianism, stating that every action can only be taken with regards to its objective. From a prescriptive decision-theoretic perspective, a conventional decision-making problem comprises three questions: what are the objectives, which alternative courses of action exist and which environmental conditions could occur (von Nitzsch 2002:85)? Three categories influence these questions: decisions under certainty (all possible alternatives and conditions as well

as their occurrence probabilities are known; decision-making is an optimization task), decisions under uncertainty (alternatives and conditions are known but their occurrence probabilities are unclear; again, decision-making remains an optimization task) and decisions under risk (alternatives are still known but environmental conditions and their occurrence probabilities are unpredictable).

The topic of contradictions in the decision-making process and decision-making rules for trade-offs are hardly found in literature. This is due to the fact that the theory judges the achievement of objectives on the basis of utility maximization. In a trade-off decision the decision-maker has to decide on utility benefit together with utility loss which is impossible to decide on in one sole act: balance can only be realized after several decisions.

Furthermore, rational-choice theory is considered to impede the consideration of the legitimacy of trade-offs in prescriptive decision theory. In fact, prescriptive decision theory is an approach aiming at the neutralization of the legitimacy problem through optimization. The optimal choice is determined by the (highest) degree of utility.

7.4.3 Descriptive Decision Theory and Trade-Offs

Descriptive decision theory tries to detect heuristics and decision-making rules by empirically describing real decision behaviour. Trade-offs do play a role since they are made a subject of discussion in the field of **conflicts of objectives** (and sub-objectives) **in the decision-making process**. Descriptive decision theory draws nearer to the question of how to cope with trade-offs in decision-making processes by investigating the decision-making difficulties. Presumably, the fundamental causes for such difficulties are found in the cognitive process of pondering objectives and giving up certain objectives for the benefit of other ones.

Moreover, descriptive decision theory knows a decision-making rule called **trade-off method** which aims at compensation: the occurrence of both positive and negative characteristics of an alternative leads to the question if the decision-maker can accept the trade-off. In such a situation, people tend to not making a decision at all or to compensate the negative aspects by giving the positive ones more weight (Jungermann et al. 2005:414).

Compensatory rules demand from the decision-maker the ability and willingness to set the disadvantages of one aspect off against the advantages of another one. The decision-maker may find this decision-making process irksome so that this procedure could tempt him or her to avoid making a decision. This is due to the fact that it is cognitively difficult to weigh up the pros and cons of several options. Empirical studies have shown that negative emotions evolving from the required cognitive effort subserve the choice of non-compensatory rules which help to ignore trade-offs (Luce et al. 1999). Studies have also revealed that the **possibilities of justification** have a great impact on the choice between alternatives.

The (im)possibilities of justification bring humans to choose alternatives which are not presumed to have the best consequences but which are easier to justify.

The further development of Kahneman and Tversky's **prospect theory** (1979) provided further insights into the risk assessment arising from balancing benefits against risks (risk-benefit-trade-off). Individuals perceive profit and loss or benefit and risk not as opposing poles of one dimension but as different concepts: loss is not regarded as negative profit. This indicates dependence between risk assessment and risk perception or perspective. Jungermann and Slovic (1993:94) found out that while having the same expected value small profits are preferred to uncertain large profits whereas large uncertain losses are preferred to small assured losses.

The findings outlined above suggest that the **framing or staging of sustainability decisions** become more and more important (Behrens 2009). Since trade-offs derive from decisions influenced by logical contradictions, ways of coping can be deduced.

7.4.4 Ways of Coping with Trade-Offs

Trade-offs can be referred to as a **precise manifestation of the major contradiction** between idea and reality: in reality, scarce resources encounter a wide range of possibilities in the world of ideas. This shows that coping with trade-offs means either applying scarce resources more efficiently or aligning ideas to reality.

The example below shall help to illustrate the different ways of coping which derive logically from the means-end-contradictions. The **trade-off between work and family** confronts every educated employee with the problem of not being able to simultaneously make a career and have a family. In this case the scarce resource is time: every unit of family time leads to a lack of career time and vice versa.

The logical ways of handling this trade-off are:

1. **Giving up one objective:** On the one hand, especially women tend to give up their career plans in favour of their families. Practice shows that, on the other hand, careerists pursue career opportunities after separation or divorce. In both cases, the trade-off is not coped with but it is eliminated.
2. **Unilateral demand levelling:** Since it is impossible to achieve both objectives to a satisfactory degree, the demands of one objective are cut back to a medium degree of objective achievement. The alternatives are: invest enough time in the family in order to anticipate the family break-up or invest enough time in the career in order to make (at least) little progress.
3. **Bilateral demand levelling:** Both the demands of the career and the family are scaled down. By this, the trade-off is reduced.
4. **Intensification:** Since time is subject to limitation, the time units invested could be used more efficiently. This results in a tight work organization and little, but intensive, time with the children.

In everyday life, the trade-off between work and family is often concealed because of the application of further resources and the vague formulation of success and objectives. Also, other people can **buffer side-effects** for some time. But today's divorces rates show that familial systems are not infinitely resilient to the deprivation of shared time.

The findings of descriptive decision theory make clear that the abdication and levelling of objectives lead to decision-making difficulties. This explains why firms try to avoid trade-offs in operational decision-making processes. Yet, there are no accepted **processes of acceptance and legitimacy of the non-achievement** in entrepreneurial systems. The non-achievement is often equated to failure which often leads to personnel changes in management. Consequently, discussion processes must be initiated which deal with the legitimacy of trade-offs, ideally with shareholder involvement.

7.5 Implications for a Contradiction Management

In the current phase of tolerance of contradictions the most important challenge seems to be the decision-makers' perception and acceptance of contradictions in social systems. As soon as the acceptance and awareness of contradictions rises, attention can be drawn to the choice of suitable ways of coping and to decision-making processes that consider trade-offs.

Hence, the management of contradictions is not only the application of management instruments but rather a **learning process for the design of complex decision-making processes**. This learning process expands from the swinging pendulum to the hybrid design to the compensation approach by applying a systematic management approach.

Modern management does not only deal with the contradiction between efficiency and sustainability but also places emphasis on the basic contradiction between idea and reality. Businesses therefore have to convey their idea (self-conception) to reality (scarce resources). Currently, it seems that reality (society, nature) is not willing to suffer the side-effects of economic activity which represent the consequences of trade-offs. However, the current debate about climate protection indicates an increase in legitimacy of trade-offs.

7.6 Coping with Contradictions Through Tolerance of Ambivalence and Ambiguity

Coping with contradictions is not only affected by systematic and methodical approaches but also depends on the **personality of the human resource manager**. According to the classical trait theory the question would be: which traits must

human resource managers have if they want to be able to act successfully under contradictory circumstances. Practice teaches that there are **no general leadership traits** that can lead to success in any situation. **Integrated leadership theories** causally connect personality traits, behaviour and situation with success. Any leadership behaviour is influenced by the leader's traits. In terms of contradictory decision-making conditions the leader has to behave in a way that enables him or her to manage a dilemmatic decision-making process.

If leaders behave in a trade-off-sensitive way, they accept and legitimate contradictory problem definitions, solution alternatives and realization measures in the decision-making process. During the whole decision-making process the **non-achievable can be openly discussed**. It is presumed that leaders only show trade-off-sensitive behaviour if they have the trait of being able to bear the tension caused by contradictions. Psychology calls this trait "tolerance of ambiguity" or "tolerance of ambivalence".

7.6.1 Leadership and Contradictions

Leadership is referred to as the psychological side of management. For quite some time, management studies recognized with the fact that leaders often have to face contradictions and dilemmas in their everyday work (Glasl 1996; Neuberger 1995; Schettgen 1993). In order to **link contradiction with leadership** one sets several premises leading to different solutions and therefore being discussable. Hence, which traits in terms of sensibility of performance and recognition must a leader have in order to successfully manage the balancing act in the field of tension? Do inner psychic mechanisms of coping with tension exist that define some kind of contradiction competence and are needed in addition to the logical ways of coping with contradictions?

Argyris states that in practice, leaders often send **mixed messages** which are not favourable to coping with contradictions. Leaders intentionally combine precise and imprecise orders in an ambiguous manner with the objective of making inconsistencies undiscussable. According to Argyris (1988:258) a mixed message develops in four steps:

1. Design a message that is inconsistent.
2. Act as if the message is not inconsistent.
3. Make the inconsistency in the message and the act that there is no inconsistency undiscussable.
4. Make the undiscussability of the undiscussable also undiscussable.

Such mixed messages meet the desire of managers (who find themselves pressured by explicitly formulated requirements (profit)) to pass the higher decision complexity on to subordinate departments, claiming "You'll manage that!". Actually, human resource managers have to meet the demands of the ***decision-making problem with contradictions*** described above: they have to legitimate and realize

trade-offs. The tension within this decision-making problem cannot be reduced by inner psychic mechanisms; it retains since the two possibilities of coping with personnel decisions – care or dismissal – are mutually exclusive.

With regard to contradictory requirements to be met by managers, tolerance of ambiguity – understood as the ability to manage ambiguous situations – is the most frequently mentioned trait managers must have if they want to **successfully comply with the leadership position** (Schettgen 1993). Huber (2003) states that the training of managers with regard to tolerance of ambiguity is a key element for the preparation for success in a fast moving and chaotic business world. Actually, the precondition for this is making tolerance of ambiguity teachable and communicable. The **concept of tolerance of ambiguity** shows how individuals react when being faced with ambiguous situations.

7.6.2 Tolerance of Ambiguity

The concept of tolerance of ambiguity first of all describes the ability to take note of ambiguity and uncertainty. For Furnham and Ribchester, tolerance of ambiguity is an indicator for the way individuals or groups perceive and handle information about ambiguous situations or stimuli in view of unfamiliar, complex or incongruent signs (Furnham and Ribchester 1995:179).

Development of the concept

Frenkel-Brunswik developed the concept of tolerance of ambiguity from the psychoanalytic concept of ambivalence. She defines ambivalence in terms of a simultaneous presence of affectionate and hateful impulses toward the very same object by an individual whereas she understands tolerance of ambiguity in a cognitive way by defining it as an individual's ability to recognize the coexistence of both positive and negative traits in the very same object (Frenkel-Brunswik 1949). This ability to recognize coexistence is an important **emotional-cognitive personality trait** which may not be mixed up with the actual emotional ambivalence.

For Frenkel-Brunswik the cognitive element of ambivalence is the problem of **reality adequacy and inadequacy respectively**. Later scholars place emphasis on intrapsychic emotional-cognitive factors (e.g. Norton 1975) who states that a person gets more intolerant of a stimulus the more it understands the stimulus as a cause of psychic indisposition and psychic threats). Budner (1962) defines tolerance of ambiguity as "tendency to perceive ambiguous situations as desirable" whereas MacDonald (1970) states "that persons having tolerance of ambiguity (a) seek out ambiguity, (b) enjoy ambiguity, and (c) excel in the performance of ambiguous tasks". Furnham and Ribchester summarize as follows:

> "The person with low tolerance of ambiguity experiences stress, reacts prematurely, and avoids ambiguous stimuli. At the other extreme of the scale, however, a person with high tolerance for ambiguity perceives ambiguous situations/stimuli as desirable, challenging, and interesting and neither denies nor distorts their complexity of incongruity" (1995:179).

Tolerance of ambiguity vs. tolerance of uncertainty

In literature, the term "tolerance of ambiguity" is sometimes used in place of "tolerance of uncertainty" or even "tolerance of insecurity". However, uncertainty comes along with a lack of information about a situation's prospective development. A person with low tolerance of uncertainty fears uncertain situations, a tolerant person regards it as challenging. Compared to the concept of tolerance of uncertainty, the concept of tolerance of ambiguity is more specific: avoiding uncertainty and being intolerant of ambiguity correlate with each other, but uncertainty is more diversified since ambiguity assumes that alternatives are known (Furnham and Ribchester 1995). Consequently, an ambiguous situation contains mutually contradictory information and logical contradictions. Following Frenkel-Brunswik (1949), tolerance of ambiguity is the ability to discover contradictory information and to bear the emanating contradictory requirements.

7.6.3 Tolerance of Ambivalence

The concept of tolerance of ambivalence is related to the concept of tolerance of ambiguity. The difference is that ambiguity is affected by cognitive impressions; ambivalence is conceived in a more affective-emotional way.

The term ambivalence traces back to the Latin terms ambo (both) and valentia (strength). The Swiss psychiatrist Eugen Bleurer originally used the term ambivalence for schizophrenic patients. However, he also admitted that highly ambivalent emotions can also be handled by the sane; a person draws a conclusion from contradictory valuations; it loves less because of accompanying bad traits and it hates less because of accompanying good ones (Bleuler 1975; in: Otscheret 1988).

The ability to cope with ambivalence depends on a person's specific early relationship experiences. Different psychoanalytic schools of thought put emphasis on different points in early childhood development. However, they have in common the assumption that the ability to handle ambivalence lays the foundation for a healthy psychic development (Reis 1997).

Ambivalence does not only deal with affectionate and aggressive impulses concentrating on persons but also on other subjects and things. Otscheret states that any thinking, feeling and acting is affected by inner and outer influences, by contradictory emotions, expectations and aims (Otscheret 1988:54). Mental healthiness comprises the ability to not only perceive, deal with and manage contradictions and tensions but also to regard them as supporting for the personal development. **Therefore, a person's maturity manifests itself especially in its tolerance of ambivalence.** However, according to Otscheret, persons tend to avoid tensions and to suppress contradictions. In this regard, the individual ego-strength affects the ability to cope with ambivalence.

In organization literature ambivalence is of importance in changing situations. According to Heitger and Doujak, changing situations are full of contradictions and ambivalence (Heitger and Doujak 2002:16). This ambivalence must be taken

into consideration since it can become the source of contradictions and a restraint to change (Schirmer and Luzens 2003). Many classic concepts about a person's behaviour in contradictory situations are based on the (implicit) assumption that the persons concerned by an organizational change adopt a contradiction-free attitude towards change processes. However, empirical studies have shown that managers sometimes adopt an ambivalent attitude and neither approve nor reject intended changes (Schirmer and Luzens 2003). The authors of this study refer to Piderit's understanding of ambivalence: an employee's behaviour toward contradictions is based on three independent dimensions. First, a cognitive dimension which means the rational assessment of a situation; second, an affective dimension which contains emotions arising from a change; and third, a behavioural dimension containing the person's intended behaviour. Ambivalence thus emerges as the experienced opposite between thinking, feeling and acting (Schirmer and Luzens 2003:317).

7.6.4 Exemplary Linkage of Tolerance of Contradictions and Coping with Contradictions

The thoughts and findings outlined above may in the following be combined as tolerance of contradictions and be referred to as personal variable. This variable can on the one hand moderate the experience and handling of contradictory demands and therefore have a positive impact on the bearing of tensions and on the other hand make the discovery of the existence of contradictory information possible in the first place. However, there is also a difference between the concepts.

Both concepts of tolerance result from the psychological analysis of a person's ability to recognize both positive and negative traits of another person or subject and in this regard handle ambivalent emotions like affection and refusal at the same time. But the concept of tolerance of ambivalence reflects the emotional aspect of handling tensions whereas the concept of tolerance of ambiguity concentrates on the cognitive aspect of handling tension.

The following model shows how tolerance to ambivalence and tolerance to ambiguity might be connected in order to moderate the different ways of coping with contradictions (see Fig. 7.10). Under the premise that the emotional reaction to a contradiction happens faster than the cognitive one, the emotion-based tolerance to ambivalence constitutes the first perception and coping filter for contradictions. If ambivalence is ignored or neglected, a decision is necessary which might lead to mixed messages; consequences might be decision-making aporia, disorientation and personalized conflicts.

If a manager has enough tolerance for ambivalence, the contradiction in the context of decision-making is accepted. It might be constructively handled, but might also be – due to mixed messages – relocated to lower levels of decision-making.

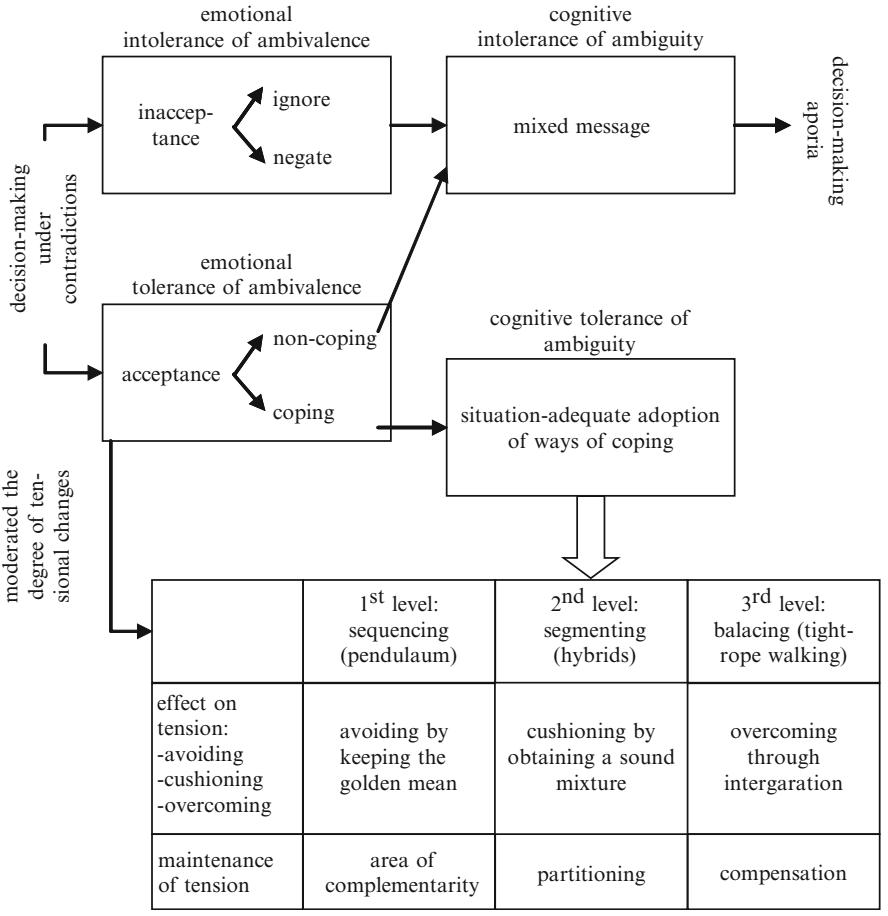

Fig. 7.10 Model of the relation of tolerance of contradictions and coping with contradictions
Source: Müller-Christ/Weßling, 2007

Contradictions can only be coped with constructively if they negotiate a manager's filter of tolerance of ambivalence and afterwards face his or her adequate tolerance of ambiguity. This model shall contribute to further research in psychology and descriptive decision theory regarding managers' reactions when having to decide on trade-offs.

Further Reflection

In a modern world with a plurality of interest in persons, in autonomies and intrinsic values of systems, inconsistencies, collisions and dilemmas seem to be the normal case. However, it is not easy to cope with these contradictions constructively. Many

decision-making processes alter if inconsistencies are not being defined as conflicts but as logical contradictions. To recognize the difference between solvable conflicts and to-be-coped-with dilemmas requires great knowledge about social and organizational processes. And if dilemmatic decision-making processes result in trade-offs, the involved persons are expected to be prepared for the legitimacy of *the unreachable*.

Maybe you can detect the differences between conflicts and dilemmas and organize constructive legitimacy processes if you consider the following suggestions:

Semantics of contradiction:

- Discuss the dealing with moral dilemmas with your fellow students. Outline decision-making situations in which you have to decide between two equally important values and frame the best argument for each pole.
- Pick a book about conflict management and try to figure out the logical proximity of escalating conflicts and contradictions.

Forms of coping with contradictions:

- In accordance with the statements of economics and politics the ecological, economical and social dimensions need to be related. Analyse the statements you find on the internet regarding indications for a constructive way of coping with contradictions. Collect statements that regard the relation between ecology, economy and society in a non-contradictory way. Try to find statements that ignore or negate contrariness as well.

Legitimacy of trade-offs:

- Elaborate a dialogue of a young married couple about the decision whether to have a weekend relationship or to give up one of the remunerative jobs both have in order to live together. What are the non-achievements of each option and how can the couple cope with these non-achievements factually and emotionally?

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Part III
Sustainable Resource Management

Chapter 8
The Use of the Term "Resource" in Management Studies

Structure of the Chapter.
In management studies the term "resources" is widely used. On closer inspection, the term conveys an implicit rationality for the application of resources. Thus, the principles of a sustainable resource management encounter a use of the term resource being contradictory to the logic of sustainability. In this chapter the different terms and axioms of resources will be introduced and will be differentiated from a sustainable treatment of resources. The objective is to answer the question whether management studies are on a way towards a resource-oriented business image or not.

After Reading this Chapter You Should.
- Be able to differentiate between the different perceptions of resources in management studies.
- Know about the resource-oriented axioms of management studies.
- Know which understanding of the term resource is generally applied in different business units.

8.1 Deficits of Strategic Management Studies

For some time, environmental management studies have tried to turn the problem of environmental protection into a strategic business problem. Strategic management is responsible for a business's general orientation towards environmental requirements. Here, the market is the dominant environment so that the linking of environmental protection and strategy in a first step became a market-oriented environmental management. By subordinating environmental protection to a market perspective only the strategic planning process had to be turned into an environment-oriented planning (Müller-Christ 2001a, b:21 ff.). However, strategic environmental protection is hardly found in practice. Actually, **there is much less strategic planning in businesses** than management studies suggest. Literature seems to concentrate too much on the *how* of strategic planning and consequently disregards the *what*.

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_8, © Springer-Verlag Berlin Heidelberg 2011

From the perspective of system/environment-theory **the *what* of strategic planning** is: businesses have to strategically define the boundary to their environment and arrange their relationship with the environment as well as the intern means-end relationships (Remer 2002:370). Since efficiency is the most common rationality of economic decisions, businesses want strategic decisions and investments to pay off within a very short time span. With a planning horizon of only 2 years (which is seen as a plannable time period) only basic decisions can be made. This is probably the reason why strategic planning is not very popular among businesses. Environmental protection management is particularly affected: since payback periods are very short, long-term investments in environmental protection are hardly made.

In this book it is argued that the **deficits of theoretic management studies** and practical management decisions are to be traced back to the sole employment of efficiency as decision-making rationality. Long-term economic activity cannot be achieved by only increasing efficiency.

Based on this insight, the treatment of resources becomes the central concern of strategic management studies. Businesses as resource-dependent systems represent a new reference framework for the question of which rationality should be employed in strategic planning in order for businesses to survive in the long run. The resource perspective holds significant consequences for the common perception of success: the realization of profit is not the only precondition for a business's survival; the traditional perception of success has to be complemented by the **preservative** one which acts upon the rationality of sustainability.

8.2 Different Resource Terms

Just like a lot of other terms, sustainability and resources are frequently used terms in management studies although they seem to elude a clear definition. For a consistent use some aspects of how to **conceptualize and define these terms** have to be taken into account.

If sciences do not want to be committed to certain groups of actors, they must try to define the terms sustainability and resources in a **context-free** way. The major problem is that both resources and sustainability are terms which are being used in many contexts without taking the terms' essence as a point of reference for substantiation. The sense of a definition lays in the differentiation of terms. In management studies, resources are defined from three different perspectives:

1. The business is seen as an input-transformation-output system.
2. The business is seen as a bundle of resources (resource-based view).
3. Economic activity is seen as the structuring of means-end-combinations.

These three thought patterns do have a close relationship but the diverging basic assumptions lead to different perceptions of the resource term.

8.2.1 Resource Definition of the Input-Transformation-Output Model

The input-transformation-output model serves as the basis for production theory. Erich Gutenberg introduced the three factors of production *labour performance*, *working capital* and *materials* which, according to him, a business has to combine as efficiently as possible. The **ideal combination of these factors** can be found by applying the production function (Gutenberg 1975/1958). The production factors involved in the production process can also be called input factors or resources (Steven 1998:1). Two assumptions can be deduced:

1. "Resource" is an umbrella term for the specific input of a production process.
2. The rationality applied to the treatment of resources is efficiency.

The production function is based on the presumption that input factors are unlimitedly available. Thus, the terms "input factor" and "resources" are used synonymously. Moreover, the input of resources is connected to the rationality of efficiency: reduce costs by minimizing the employment of input factors.

8.2.2 Resource Definition of the Resource-Based View

In the resource-based view the resource term already shows up in the concept's name. There are two possibilities of how the resource term managed to make it into the concept's name:

1. It's a matter of economically-rational use of resources.
2. It's a matter of objectives having resources as means.

A discussion on these assumptions requires a clear definition of the resource term. A consensus on a generally accepted definition has not yet been reached. Freiling uses the term resources if value is added to input factors and therefore the input factors become business-specific parameters for competitiveness, and if the possibility to sustainably exclude competitors from using the resource is provided (Freiling 2001:20). This means that input factors are turned into resources which are then turned into **competitive advantages**. For this transformation process a business needs competences.

Since the focus is on competitiveness, the resource problem becomes a **matter of power**. From a competition perspective, reaching competitive advantages is rather a question of retaining power than a question of resource preservation. Hence, the resource-based view is not about using resources in an economically-rational way.

Strategic management had to face the problem that during the last 30–40 years the relationships to the environments (especially to the markets) became more and

more complex. Strategic management reacted to this development by introducing more and more abstract terms for the explanation of business success. Specific factors of production were turned into factors of success, then into potentials for success and core competences. **Resources are consequently an even more abstract term for potentials for success**. This is due to the fact that resources are not planned with regard to a specific employment.

8.2.3 Resource Definition of the Means-End-Scheme

Economic activity aims for an **optimal ratio of means and ends** (Myrdal 1958:213). Accordingly, business studies understand themselves as a science which asks for means-end-relations. With the formal objective of making profits it has to study the adequate means for the achievement of this objective in consideration of changing conditions. Since every change on the means level (such as the occurrence of the term "potentials for success") implies a change on the ends level, the business objective *maximization of profits* turned into ***pursuit of profit* or *reasonable profit***. This trend towards a relativization is also to be found in the resource orientation of strategic management. The difference between the terms potential and resource is in the means character: potentials aim at certain effects; resources are oriented towards their causes or sources respectively.

All in all, businesses depend rather on their means than on their ends due to the resource or potential orientation of management studies. In other words: if more and more categories of means are called resources, the sources of business means will require special attention.

Means can be systematized by three characteristics:

1. By the concreteness of their possible employment
2. By the manifestation of their possible employment
3. By the autonomies of their development

Ad 1. All means have in common that they only turn into means when being related to existing ends. Accordingly, ends can only be defined in relation to the means required for their achievement (Myrdal 1958:213). Concrete ends need concrete means; in management studies these means are called factors of production or efficiency factors. Abstract ends need abstract means; an economising social system can only survive when having abstract means available which are financial, natural and social resources (material or immaterial).

Ad 2. Even if concrete means are physically perceivable – their use is not inevitably apparent, but can also be latent. Likewise, there are latent means for concrete ends. The **differentiation between latent and apparent** brings the time factor into play. Latent means can only be turned into apparent means if in the near or distant future new ways of application unfold. These are the characteristics which are associated with resources: one speaks of resources instead of materials

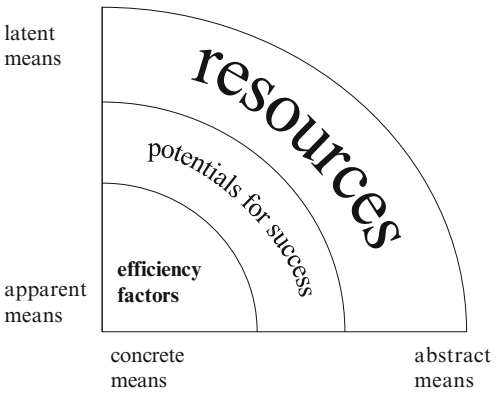

Fig. 8.1 Boundaries between the categories of means
Source: Müller-Christ 2003b

(e.g. oil or coal) if the latent utilization possibilities which are not yet exploited are discussed.

In conclusion, the means-end-scheme provides an **essentialist definition for resources**: resources are abstract and/or latent means of economic activity. The boundary between resources and potentials for success is defined upon the concreteness of utilization possibilities. Only if the content of success is clear, one may speak of potentials for success. However, factors of production or efficiency factors are very concrete means for concrete ends. The relation between resources, potentials for success and efficiency factors is depicted below (see Fig. 8.1).

Ad 3. Another characteristic for the systematization of means has been introduced above: the autonomies of their development. The term resource contains the word source which resources must therefore be related to. These sources have different autonomies by which they produce output which then represents the resources for economic activity. In contrast to the categories efficiency factors and potentials for success, it seems (etymo)logical to think of **resources and the autonomies of their sources as a whole**.

The sustainment of a long-term resource supply is only ensured if the sources' operational capability is maintained. For this, the **autonomies of the resource development** have to be well-known. Within the discussion about sustainability there is a general differentiation between economical, ecological and social resources. By this, the sources economics, nature and society are made a subject of discussion. The respect for the autonomies of these sources is the aim of a sustainable use of resources.

8.2.4 Against the Everyday-Perception of Resources?

The preceding explanation made clear that the resource term can be defined from different perspectives. As is known, **a definition cannot be true or false**. It can

	input-transformation-output-model	resource-based view	means-end-scheme
spatial boundary	firm's property line	company's property line	boundless
theory	production theory	theory of competition	systems theory
synonyms	factors of production	organizational capabilities	means
attempts at a definition	enumerative: sum of all input factors	conditional: through utilization possibilities and their effects on competition	essentialist: latent and/or abstract means without specific effects

Fig. 8.2 Perspective resource definitions by comparison

only be useful or not useful. An overview of the different perspectives and the approaches to define them is once more given in Fig. 8.2.

The novel abstract resource definition meets an everyday understanding referring to means of all levels of concreteness as resources: from concrete input factors to potentials for success to latent means. Furthermore, a lot of people certainly put natural raw materials on a level with resources. Consequently, the implementation of a consistent use of a resource definition will be very difficult. However, many other terms suffer the same fate.

Actually, the resource term is omnipresent in management studies due to the resource-based view. The popularity of the resource-based view has both advantages and disadvantages for the use of the resource term:

- The resource term is firmly established in management studies.
- However, the management approach spreads an understanding of the resource term which does not fully exploit the term's connotation.
- Moreover, the resource-based view utilizes a rationality in which power plays a major role for the treatment of resources.

Thus, there is a difference between strategic management's and the resource-based view's understanding of a sustainable resource management. The main focus of a sustainable resource management is laid on the maintenance of the resource supply by taking into account the sources' autonomies in order to maintain the sources' operational capability. A sustainable resource management must therefore consider two rationalities for the treatment of resources: efficiency and sustainability.

8.3 Resource Relationships: Mutual or Dependent?

The resource-based view makes clear that the resource supply can be connected to questions of power. This perspective is not new; the **resource dependence approach** has already framed a power-oriented theorem. The approach focuses

on one essential problem concerning the exchange between a business and its environment: the resource receiver's dependence on the resource supplier. The approach is based on social exchange theory and the following assumptions:

- Businesses are faced with a scarcity of resources.
- Through exchange, businesses can obtain these resources from other institutions.
- The businesses' dependence on other organizations for the acquisition of resources reduces their autonomy.
- Then again, businesses try to maintain their autonomy by building interorganizational relationships which compensate the loss of autonomy.
- If this fails, businesses develop several strategies in order to control the behaviour of those institutions or businesses they are dependent on, e.g. by building up dependencies themselves.

Thus, the resource dependence approach reduces the system/environment relationship to one single topic, the **dependence on resources**. The environment is no longer seen as an abstract variable but as a specific institution, a resource supplier. The system/environment relationship turns into a system/system relationship and therefore becomes interorganizational. This interactive perspective places less emphasis on resources than on dependence.

Resources are only relevant inasmuch as they systematize these dependencies. The degree of resource dependence is determined by the closeness of the exchange relationship and the resource's exclusiveness. An extremely high degree of dependence leads to uncertainty which a business has to minimize since it makes the planning of future activities difficult. Consequently, the theorem of the resource dependence approach is: **avoidance, exploitation and development of resource dependencies** (zu Knyphausen-Aufseß 1997).

Control turns out to be the major topic for a resource management. The actual resource exchange will not be of importance until the focus is no longer laid on the organization of dependencies but on the **preservation of the source**. The inverse element of the perception of the environment as a resource pool is the perception of the environment as a source which is dependent on resources itself. Both perspectives are based on the theory of environmentally open systems. The difference is that the former regards a business's survival as dependent on the environment, and the latter regards a business's survival as dependent on the environment's survival.

The resource dependence approach does not focus on a reduction of consumption but on the conservation of the option to permanently consume resources. Thus, the approach concentrates on *taking*. The sustainability approach asks for a completely different perception of the environment. Businesses can only assure the long-term supply of resources, if they respect the sources' autonomies since environments are resource-dependent systems themselves. In the end, there is the necessity of a mutual preservation of systems (Remer 1993:460).

Thus, a perspective is aspired that overcomes the resource-based view (gaining for power over a resource pool) and results in a resource management (gaining for the organization of exchange relationships). This approach will in the following be referred to as the **theorem of mutual resource relationships**.

8.4 Autonomies of Sources

Which are the crucial sources for businesses? The sustainability discussion lays a focus on the economical, the ecological and the social dimension of resources. Many sciences concern themselves with the autonomies of the sources economy, natural environment and society, but they have not yet placed emphasis on a reduction of the manifold system relationships regarding the exchange of resources. Management studies tend to understand the relationship between businesses and their environments only as **stakeholder relationships**, but this definition of relationship lacks a consideration of autonomies.

If relationships with the environments are understood as sustainable resource-exchange-relationships, every exchange partner has to consider that its particular source must not only be willing but also be able to produce resources. The willingness to exchange resources is actually given but several sources' ability declines; the educational system, the political system, the environmental system, they all want to provide the economic system with their outputs as resources, but they are decreasingly able to do so.

For this reason, businesses have to recognize the autonomies of their sources; and they have to keep an eye on their operational capability. Businesses act rationally if they control their impact on their sources by observing the **repercussions of their actions upon themselves**. This process of reflection does not only require the knowledge of the environments' autonomies, but also an intense study of the impacts produced by the very own system. Consequently, an honest and comprehensive self-reflection of the business is required, in order to comprehend and to value all direct and indirect impacts (Müller-Christ and Hülsmann 2003a).

The following chapters deal with the scientific questions arising from the attempt to describe businesses as resource-dependent systems which interact with their sources in a sustainable way: with the natural environment, with economy and with society.

8.4.1 The Natural Environment as a Source

The natural autonomies are the **laws of nature**. Naturally, man cannot violate natural laws, he can only disregard them. Any environmental pollution implicates an impact on the ecosystem, on organisms and on humans. Environmental pollution leads to a reduction in the possible utilization of nature. Therefore, the autonomies of environment must be paid attention to. Using the autonomies of the environment for economic purposes means permitting pollution only within nature's bearing capacity and assimilation ability so that the natural environment can regenerate itself (output side of businesses). At the same time, natural regenerative resources may only be applied with respect to their reproduction rate (input side of businesses). By now, the natural laws play a vital role for the success criteria of a strict ecological sustainability (e.g. for Germany: Enquete Commission 1994:42 ff.).

1. Utilization of renewable resources:
   The depletion rate of renewable resources may not exceed their regeneration rate
2. Utilization of non-renewable resources:
   Non-renewable resources may only be consumed to the extent to which a physically and functionally equivalent compensation in terms of renewable resources or a higher productivity of both renewable and non-renewable resources is still possible.
3. Utilization of the natural environment's absorption capacity:
   Environmental pollution needs to consider the capacity of environmental subjects.
4. Consideration of time scales:
   The time scales of man-made input or intervention to the natural environment and the time scales of the relevant natural processes responsible for the environment's reaction capacity must be kept in balance.
5. Danger and unacceptable risks for human health through man-made intervention are to be avoided.

The major problem of natural sciences is the fact that complex cause-and-effect relationships exist: today's causes lead to several effects tomorrow; effects can add up; effects can occur with substantial spatial displacement. Hence, environmental damages can never be fully predicted and therefore caution must be exercised.

8.4.2 The Economy as a Source

It is the task of economics to study the autonomies of the economic system. One major assumption of economics is that, in the long run, income can only be produced where there is growth. Business and management studies agree with this assumption: from a long-term perspective, businesses can only allocate means if they constantly grow. By applying different theories, management studies try to identify the autonomies of the social system "business".

The major problem when trying to identify these economic autonomies is that there are **no social laws** (in analogy to the natural laws). Forecasts of the behaviour of social systems are uncertain since in social systems the different social elements do not always respond in the same manner to the same incidents.

One can assume that businesses know the autonomies of other businesses quite well. But they will only take these into consideration if one business becomes existentially dependent from another business's procurement or sales. In this case, businesses enter into cooperation in order to keep the partner alive.

8.4.3 The Society as a Source

The essential material resource society provides the economy with is **education**. This comprises vocational education as well as general education. People – human resources – carry problem-solving capacities. The more educated a person is, the more latent and abstract problem-solving capacity he or she brings into the business.

Education is provided by educational establishments like schools of general education, vocational schools and universities. These institutions possess autonomies in the transfer of knowledge (e.g. regarding the involvement of parents in school affairs).

An example for autonomy within universities is the so called pork cycle. If businesses cut back on jobs, e.g. for engineers, there will soon be less first-year students for engineering sciences. And as soon as more engineers are needed, there are too few alumni. Consequently, first-year students will jump at engineering sciences so that soon there will be too many alumni and engineers lack jobs. The number of engineering students will decrease again and the cycle starts anew.

The essential immaterial resource society provides the economy with is **legitimacy**. In the sustainability discussion, practitioners state that the license to operate is in danger. Businesses become aware of the fact that legitimacy is a resource which constantly has to be reproduced. The major problem is, however, that the autonomies for the reproduction of legitimacy are hardly known. Possibly, the resource legitimacy cannot be reproduced directly but only indirectly. The research and findings on trust may give information on the autonomies of the development and preservation of legitimacy.

8.5 An Overview of the Perception of Resources in Functional Business Areas

The resource-based view made the resource term popular in management studies, but nonetheless other functional area studies have also spoken of resources. This is of importance insofar as the **resource term** entails an implicit rationality for the application of resources. This rationality can actually not only be the rationality of efficiency but also the rationality of sustainability. And the less importance is attributed to power and the access to resources, the more likely issues of sustainability can be taken into account.

Especially within the functional areas **human resource management, marketing and environmental protection** the resource term is used. Each of these areas has its own resource problems and has therefore found its own rationality for dealing with these problems. Thus, one cannot yet speak of a homogeneous resource-oriented business image.

8.5.1 Environmental Management and Conservation of Natural Resources

For businesses, environmental protection does not only include reductions of emissions and dangers but also – and in particular – the protection of natural resources. For most businesses, natural resources are just relatively (and not

absolutely) scarce. Virtually, businesses are dependent on natural resources but the perception of this dependency fades due to polypolistic market structures which make businesses believe that they can access natural resources whenever they please. Only those businesses which are dependent on one particular resource are aware of the absolute scarcity of natural resources (e.g. in fishery, oil and metal industry).

The majority of businesses act on the assumption that an increase in **eco-efficiency** will solve the problem of absolute scarcity. Environmental management studies and environment policy support this position (factor 4). The fundamental problem is that resource conservations are often realized per product unit, yet these conservations are (over)compensated by production growth.

The **absolute consumption of resources** must be reduced, and this can not be realized regarding only one single business. The tasks of a business environmental management can be illustrated most easily by taking a look at the sustainable application of natural resources since these appear as mass flows and therefore are physically palpable and measurable. A closer look should be taken at those concepts of environmental management that deal with the **reproduction of resources**: recycling, closed loop economy and material economy.

8.5.1.1 Recycling

The term recycling implicates the reuse of materials by reinsertion into the cycle of production and consumption. A closer look at recycling's history reveals that the motive for a reuse of waste has actually been the protection of natural resource deposits. In a narrow definition it is sufficient to return waste as a production factor to the business that produced it. The common understanding of recycling thus comes along with a narrow material coupling. Therefore, the **consumption of natural resources must be stretched through multiple use**. This approach sometimes entails great quality losses (e.g. for glass and steel) which may lead to a kind of downcycling (e.g. for plastics).

Whereas at the beginning of the recycling debate the technical feasibility and physical limitations were discussed, today emphasis is placed on the **organizational issues of circulation**. Recycling as well as closed loop economy is conceived as a process in which unused material and energy outputs are returned to the economic system as input factors. However, only today is there enough sensibilzation to acknowledge that in case of a continuous circulation it is the input side that represents the critical factor: therefore, only those materials may be brought to the economic process which are reproducible afterwards.

8.5.1.2 Closed Loop Economy

Instead of a narrow material perspective, closed loop economy applies a rather systemic perspective. Material coupling led to an overcoming of the throughput

economy. In a throughput economy materials are taken from the natural environment for productive purposes; production residues and emissions as well as products (after usage) are given back to nature as waste. This process caused major damages for nature's operational capability. This makes the protection of the natural environment indispensable in order to prevent the environment from total destruction. Nevertheless, it was not the insight that economic action destroyed the natural environment, neither was it the imminent scarcity of natural resources that led to the establishment of closed loop economy; it was rather the imminent scarcity of landfill repositories.

However, closed loop instead of throughput economy is up to reintegrate production waste and used products into the production process (as input). The **processes of natural ecosystems** serve as perfect models for a sustainable treatment of resources. Progress in knowledge manifests itself in the necessity to **consciously organize reproduction processes artificially and rapidly**.

Businesses now have to extend environmental management from an internal to an **inter-business environmental management**. Upstream and downstream processes must be considered in material flow management. Examples are: supply chain management, process chain analysis and production networks (Haasis 1996:122).

Closed loop economy's perception of sustainability does not exceed the understanding prevalent in recycling: multiple use shall lead to the possibility of keeping materials in the economic cycle for extended periods and the consumption of resources shall be reduced. Science and practice will possibly only realize the necessity to **actively invest in the supply** with natural resources when they recognize the limitations of radical decreases in consumption. Until now, closed loop economy has – among the large number of environmental problems – the task to primarily minimize the waste problem.

Probably, **closed loop economy and the rationality of sustainability** cannot be related to each other. Closed loop economy only wants to solve the output problem of the economic process. This concept may lead to saving materials but it does not automatically lead to saving or recovery of energy.

8.5.1.3 Material Economy

A conclusive attempt to apply the sustainability principle to the treatment of nature is provided with the material economy approach; here, the **natural environment is understood as a product of economic activity**. This means that the results of a production process serve as the source and the ecological basis of all subsequent production processes at the same time. Production and reproduction become a unity. This sustainable economy aims at an understanding of nature as a household and not as a resource inventory. Regarding nature as a resource inventory implicates that economy will run out of supplies 1 day. Regarding nature as a household means to use and to keep up natural processes in such a way that inventories will not be exhausted.

Taking the reproduction of resources into account requires the conscious consideration of nature's autonomies. The physical value of a material implies the ability to be **produced and reproduced**. The difference between profit-oriented economy and housekeeping economy re-arises. The former refers to productivity and profitability; the latter aims at a unity of production and reproduction (see Sect. 5.3).

Probably, the present industry system will come to the conclusion that the waste problem makes the recovery of physical substance and productivity necessary. Consequently, material economy does not only want to reduce the material throughput but it aspires to preserve the conditions and the ability for reproduction of the human economic society.

8.5.1.4 Sustainable Industrial Parks as Resource Communities

The meaning of sustainability for industrial parks depends on the selected definition of sustainability. The issue of environmental protection in industrial parks has already been broached quite some time ago. However, it is only a part of the sustainability issue. When speaking of sustainable industrial parks, many people tend to think of eco-industrial development and eco-industrial parks in particular.

Eco-industrial parks:
Since 1994 there have been plans for eco-industrial parks in the USA. By now, there are attempts to create such ecologically oriented parks worldwide. "Ecological" means especially the identification of material flows, the increase in eco- and material efficiency and the reduction of traffic. But what exactly is an eco-industrial park? In such parks single businesses or cooperating firms realize particularly high environmental protection standards, e.g. through eco-friendly building techniques, water-saving and energy-efficient production processes, a common waste management etc. Attributes for "ecological industrial parks" are broadly used. However, when considering the relevant protective effects for the natural environment, one should not speak of the attribute "ecological" if

- only few businesses are networked in secondary material flows.
- there are only recycling companies located in the park.
- there are only environmental technology companies located in the park.
- there are only businesses that produce ecological products.
- the park got designed according to an environmental topic.
- an eco-friendly building technique is the only ecological reference.
- there is a mixture of industry, retail and housing estate.

These factors may contribute to a reduction of environmental impacts, but actually they represent just a small part of all possible action. However, the idea of an eco-industrial park should rather include more **challenging objectives for environmental relief**.

It took the ecosystem billions of years to develop efficient solutions by applying the trial-and-error method. Today one can neither adopt this innovation speed nor apply this method. There are three major reasons for the difficulties that turn up in the course of an eco-industrial development:

1. The market pressure in most industries is not high enough for businesses to make large investments. Customers seldom reward such commitment.
2. Legally and economically independent businesses have to tolerate close structural coupling of their material flows.
3. Complex production processes make high demands on production materials and therefore the trial-and-error method cannot be applied.

In only very few cases the conditions for an eco-industrial development have been favourable for businesses to save materials and energy by coordinating their material flows. In fact, industrial parks can only be "islands" of efficient material flows, real environmental relief can, however, only be realized if there is a national and internal zero-emission-system that has left throughput behind and pursues a closed loop economy.

Recycling networks and industrial symbiosis:
In practice, the coordination of material and energy flows between businesses is called recycling network or industrial symbiosis. The most prominent example is the industrial symbiosis in Kalundborg (Denmark) where the production residues are re-used instead of disposed: **one business's waste is an adjacent business's raw material**.

Such recycling networks require excellent knowledge of material and residue flows. In an existing industrial park external help is needed when collecting information about material and energy flows and when planning to enter into cooperation. Experience teaches that:

- the partners must have a critical production volume.
- entering into cooperation must result from voluntariness.
- a cooperation must be profitable.
- the partners may not be afraid of competition.
- the spatial distance between the partners may not be too great.

During the last few years there have been few attempts to establish recycling networks. This is due to the high effort that has to be made in terms of **managing the establishment and maintenance of those networks**. The main reasons for cooperation in a recycling network are:

- Security of disposal
- Security of supply
- Cost reduction and
- Environmental relief

The more expensive materials become due to their scarcity the more willing will businesses be to enter into cooperation in a recycling network. Investments in the

security of supply are eventually investments in a business's sustainability which are impossible without considering the proximity of space.

Sustainable industrial parks as resource communities:
In spite of all these difficulties the organization of more sustainable industrial parks is not an insoluble task. It may even be the other way round: by increasing sustainability efforts, businesses could enter into close material-flow-cooperations in the medium-term. The aim is a kind of **embedded regional closed loop economy** – embedded in a constellation of municipal and regional actors in order to reduce transportation costs and to increase regional value creation.

Many sustainability problems in industrial parks can be solved best through cooperative action. Of course, every business can also look for inner-organizational sustainability-increasing approaches. Hence, two (not really independent) possibilities for a sustainable development in an industrial park exist.

A sustainable industrial park can therefore be defined as a local or inter-municipal system of voluntary but organized cooperation between the different actors that share a joint vision of a sustainable preservation of their common economical, ecological and social resources. Further, actors need to be willing to accept colliding interests which must be coped with in negotiation processes.

Sustainability of industrial parks as the sum of single businesses' commitment?
What can a business do for a sustainable development on its own? Examples could be:

- The installation of a certified environmental management system or an integrated management system indicates that a business is willing to consider environmental and/or social objectives and to invest money, time and personnel in order to reduce environmental impacts.
- Social commitment in terms of cultural or social sponsorship is a clear indicator of a business's seriousness towards a sustainable development. Just as positive is an above-average commitment to apprenticeship and in-service training which constitutes investments in human capital as a resource.
- Internal measures also affect the topic work-life balance. Businesses are considerate of the multiple roles their employees play in their lives: they are involved in relationships, their family, their neighbourhood, clubs, friendships and politics. Through flexibility in terms of time, businesses support their employees in their efforts to manage the multiplicity of roles.

The more commitment one single business demonstrates, the easier it is to create a common commitment in the industrial park. These businesses might already have realized that commitment is not reflected in direct economic advantages but that it **supports indirectly the business's strength and healthiness**: it has an excellent reputation among customers and the employees develop high commitment.

Sustainability of industrial parks as a common task:
In the rational understanding of sustainability, a sustainable industrial park, by a cooperation of all actors (businesses, municipality, citizens), is able to cultivate the

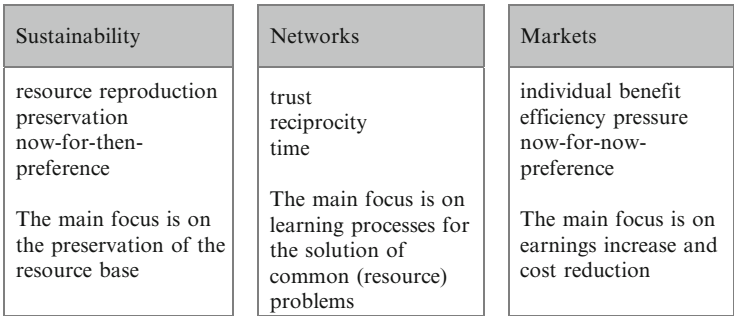

Fig. 8.3 Networks as linkages between sustainability and efficiency

sources it is dependent on. It is important to remember that sustainability in an industrial park is not a condition but a process in which progress is made from a less to a more sustainable status because industrial parks have different starting points and different resource problems.

Networks constitute the organizational structure that contributes the most to the accomplishment of **common tasks**. Figure 8.3 illustrates the challenges arising from the establishment of a sustainable industrial park. The major task is to mediate between the single business's striving for efficiency and the common challenge to preserve the resource base.

8.5.2 Human Resource Management and the Sustainable Treatment of Resources

Referring to personnel as **human resources** has led to an intensification of the economic rationality. The strategy of human efficiency is to give the existing staff the possibility to realize their full potential – but only for securing the business objectives. Nevertheless, the personnel management discussion provides several starting points for a sustainable development:

- The environment "personnel" (labour market) serves less and less as a pool of direct and purpose-oriented abilities and preferences (production factors).
- Businesses do not face the scarcity of employees but rather the scarcity of qualification, preferences and value systems.
- These can only be maintained by considering the autonomies of the resource personnel.
- Concepts dealing with the field of tension between individualization and flexibility broach the issue of the necessity to really consider mutual resource exchange relationships.
- Taking autonomies into account reduces the applicability of a purpose-oriented management. Means and ends have to increasingly be related to each other.

- The dual vocational education system precisely caters for the sustainability rationality: businesses have to invest in the supply of qualified employees early.

The necessity to care for business resources becomes apparent in personnel management: it is a fact that **the resource "education" is a scarce one** and that businesses have to cope with this scarcity. It is likely that personnel managers will have to demand a sustainable rationality and a modified decision-making behaviour earlier than environmentalists: away from a strict efficiency analysis and towards an equality of efficiency and sustainability as economic decision-making criteria for the treatment of human resources.

The **basic conditions for personnel management** have changed during the past decades. The aim of personnel management – the provision of qualified and motivated human resources, even under complex and dynamic conditions – has become more and more difficult to achieve. On the one hand, personnel management shall contribute to the **business objectives efficiently and effectively** which leads to rising demands on qualification and motivation. On the other hand, personnel heads are being forced to face altered organizational conditions such as a great diversity within the pool of workforce or a relative scarcity of qualified personnel. Because of this development, employees face **discontinuous careers** and high – sometimes even contradictory – demands on combining career and family as well as on the individual ability of self-regulation.

Scholars increasingly criticise businesses that tend to **consume human resources** rather than equally redeveloping them. This short-term success-oriented thinking leads to a lack of sustainability in personnel management, resulting in an endangering of the long-term problem-solving capacity of the business which refrains from making personnel investments.

In summary, **two problem fields** emerge. First, which are the organizational possibilities personnel managers have in order to secure the future supply of qualified and motivated employees? And second, how can the undesirable side effects of an intensive personnel deployment be prevented? (see also Ehnert 2009).

8.5.2.1 Sustainable Work Systems

With regard to management practice, scholars focus on responsibility when speaking of sustainability in connection with personnel and work. The central objects of research are sustainable **work systems**. Work systems comprise roles, responsibilities and relationships for getting work done. **Intensive work systems** consume human resources and dissipate them with regard to physical, cognitive, social or emotional aspects respectively. **Sustainable work systems**, however, imply the idea of allowing permanent regeneration and development of social and human resources by letting employees learn and develop and use their creativity. Sustainable work systems concentrate on an **individual perspective** and analyze the topics sustainability and personnel with regard to the assumption that the businesses are responsible for sustainable work systems.

8.5.2.2 Sustainable Personnel Management

Scholars from the University of Bern (Switzerland) have worked out a systematic, theoretic and empirically grounded concept for a sustainable personnel management. They have explored the prerequisites for a long-term supply of qualified and motivated personnel and have investigated the issue of responsibility for personnel management tasks. For them, sustainable personnel management implies those thinking and action approaches which are organized for the long term and which aim at socially responsible and economically convenient acquisition, development, conservation and release of employees. Businesses, employees and society share a collective responsibility for sustainable action. Personnel are referred to as resources and autonomous actors.

The main business objective is the lasting security of competitiveness and innovative capability through the **expansion of personnel competence**. The main individual objectives are an increased employability, grown self-responsibility (due to the participation in decision-making) and a balance between the different private and professional roles (work-life balance). By allowing personnel to take part in decision-making, it turns from an object into a **self-responsible subject of personnel management**.

Thematic focuses of a sustainable personnel management are trust-driven leadership, self-organization and self-responsibility, participation in decision-making processes, employability instead of security of employment and the perception of the employee as an entrepreneurial key member of staff.

8.5.2.3 Sustainable Management of the Resource Personnel

In contrast to the approaches outlined above, this perspective of a sustainable personnel management is based on the **resource-oriented perspective** and regards sustainability as rationality for the treatment of all relevant business resources, including human resources. The central research question is: what do businesses have to do within their environment if they want to be able to resort to qualified personnel in the future (Müller-Christ and Remer 1999:76)? The main object of research is the relationship between a business and those environments which are relevant for the reproduction of personnel resources.

A target concept for vital resources is being developed which regards sustainability as an economically necessary rationality or decision alternative. In this context, businesses are conceived as resource-dependent systems for which it is reasonable to preserve their sources if the sources' operational capability is in danger. Two possibilities exist. First, a system should foster the operational capability (secure the supply) and second, it should avoid disturbing the operational capability (reduce side effects). On this occasion, the sources' autonomies must be well-known.

An example: Today, the source "education system" does not work as it used to; it is difficult to provide the education businesses would need. More and more

juveniles do not get jobs because of their poor performance at school; and universities do not produce enough of the qualification businesses would need if they wanted to solve complex technical or organizational problems. In these cases, a sustainable personnel management would have to pay greater attention to the autonomies of the human resources to be able to lastingly access them.

Sustainability as an economic rationality makes a difference between human resource efficiency and human resource sustainability which actually has always been a major field of work for personnel management as well. This difference displays a contradiction which is hard to cope with (Müller-Christ 2003b) since human resource efficiency and human resource sustainability cannot be maximized at the same time; they mutually reduce each other.

8.5.2.4 Dilemmas of a Sustainable Personnel Management

There are significantly varying interpretations of sustainability among human resource researchers. Nevertheless, all concepts demonstrate efforts to address the **resource "personnel" and its autonomies**. The dilemmas manifest themselves in the contradiction between efficiency and sustainability: personnel managers have to decide whether to aim at short-term profit maximization or at preservation of the business's viability (or rather the regeneration and reproduction of personnel). Both decisions make good economic sense but they cannot be realized simultaneously. Personnel management has to actively organize this dilemma, has to pursue both paths at the same time and has to work out suitable solutions for coping with the contradictions (for an extended analysis from a dilemma perspective see Ehnert 2009).

8.5.3 Marketing and the Sustainable Treatment of Resources

The resource-based view – strategic management's attempt to explain market success by internal resources – states that resources must be intangible and may not be imitable and therefore focuses on the identification of such resources. It is less about the maintenance of resources but rather about their **exploitation and conversion into competitive advantages**. Actually, it is the problem of dependency that is to be dealt with.

The tendency to understand marketing as the organization of a mutual exchange process already includes a sustainability orientation. The concept of relationship marketing demands that market and business relationships are to be organized trustfully in the long run (instead of utility-maximizing in the short term), taking into account the market partners' autonomies. This tendency is an essential step in the process of perceiving and organizing market relationships as mutual resource exchange relationships.

8.5.3.1 Sustainability and Relationship Marketing

Very briefly, Kotler states that the objective of relationship marketing is first of all to build good relationships because these will automatically lead to profitable transactions (Kotler 2008). Common terms in relationship marketing are **exchange, mediation and relationship**. The term resource does not occur and therefore it is unclear if environments are seen as pools of resources that may be consumed or if there is a necessity to build mutual resource relationships.

Relationship marketing places emphasis on the exchange process between business and market and the necessity to organize it in a long-lasting way so that **stable business relationships** can develop. By building long-lasting relationships businesses can actively organize (not control) the dependency on their partners whose behaviour they can not anticipate.

With regard to the theorems about the treatment of resources (resource pool or resource relationships) the following conclusions can be drawn:

- Relationship marketing extremely focuses on **exchange processes** in which values are being exchanged.
- In the course of repeated exchange processes business relationships develop between the market partners. Actually, one should speak of **relationship management** instead of relationship marketing.
- The application of **interaction theories** to explain relationships raises awareness to the reciprocity and mutuality of relationships.
- This gives marketing a greater **process orientation**. In fact, the borderline between relationship marketing and the stakeholder approach becomes blurry as soon as the issue of manifold relationships to different interaction partners is raised.

All in all, the approach of relationship marketing can be seen as an impulse in the right direction, that is, to think in terms of sustainability categories. Long-lasting stable relationships can only develop if the autonomies and survival conditions of the interacting partners are taken into consideration. Thus, relationship marketing brings about a tendency that asks for the long-term prerequisites for corporate success and relationships become a control factor for success. If one designs these relationships as long-term resource relationships to customers, specific resources could be the customers' **ability and willingness to consume**.

8.5.3.2 *Digression*: Sustainable Consumption

In the original sense, consumption means the usage of goods for the satisfaction of needs. From a material-oriented point of view consumption is the transformation of goods into waste. Accordingly, **a high level of consumption requires a significant amount of resources** for the production of goods which either turn into waste or emissions directly (commodities) or turn into waste after a certain utilization phase

(durables). Moreover, production and consumption produce undesired side effects on man and nature. A sustainable consumption – i.e. a consumption that takes the future possibilities of consumption into account today – must therefore aim for the reduction of side effects and the reduction of consumption itself. This aim can be reached through higher quality standards, through an extensive use of products or by cutting back the own patterns of consumption.

Every consumption decision considering sustainability takes consequences or side effects into account which might occur with some delay. These effects could either affect the decision-maker him-/herself or other persons and can therefore entail potential for conflicts. Decisions for a sustainable consumption are decisions for the purchase of **products that have few social and ecological side effects** and whose consumption requires only very few resources. Such decisions are based on now-for-now-preferences (costs and benefits today) as well as now-for-then-preferences (respect for the own future consumption possibilities) and now-for-others-preferences (respect for the consumption possibilities of others today) and up to now-for-then-for-others-preferences (respect for the consumption possibilities of future generations). Taking into account all these preferences for decision-making highly increases the decision complexity individuals have to deal with.

Sustainable consumption can be **divided** as follows: Sustainable consumption in the broader sense includes those consumption acts in which the consumer tries to reduce undesired social and ecological side effects through product choice and product usage. Sustainable consumption in the narrow sense means general consumption that is intergenerationally and intragenerationally representative for every human and that does not destroy the sources of economic activity. Its benchmark is the absolute improvement of the status quo (Belz and Bilharz 2007:27).

Economically speaking, **consumption is always accompanied by income**. Consequently, less consumption automatically means less (national) income. Due to this **dilemma**, sustainable consumption researchers take a Solomonic position: they do not state that people should consume less but they demand that people consume in a way that maintains the conditions for future consumption for all generations (Belz and Bilharz 2007:16).

So, how can a single person contribute to sustainable consumption? Which competences does a consumer need if he or she wants to take part in a **responsible consumer policy**? Generally speaking, he or she has to cope with the following challenges:

1. Identify the best price-performance ratio.
2. Obtain information on product composition and production conditions.
3. Control product properties and product quality.
4. Cope with the trade-off between quality and quantity.
5. Identify daily routines.

Most decision-making processes are based on now-for-now-preferences: consumers want to match the best price-performance ratio with their income situation in order to satisfy their present needs. If consumers follow their now-for-then- and their now-for-others-preference respectively, they will buy a product of higher

quality – since quality implies the producer's promise to have made a product with less ecological and social side effects and/or a long-living product – and they will have to pay a higher price: longevity is the "for-then" element; environmental and social compatibility is the "for-others" element. As soon as consumers buy a product of higher quality, they reduce their personal income and can therefore spend less money on consumption. Hence, buying high quality products leads to a trade-off because sustainable consumption collides with the maintenance of the consumption level (quantity).

8.6 Management Studies on the Way Toward a Resource-Oriented Business Image

From the above-mentioned one could conclude that businesses are more and more forced to realign towards a resource orientation. Such a resource orientation requires that both science and practice focus their attention on the sources of economic success. **Classical business studies** described these sources as production factors that had to be combined in a suitable way in order to reach the business aim: profit maximization. This combination process is referred to as the organization of an efficient means-end-relation and it becomes more and more complex due to the autonomies tha need to be considered. Now what must a successful means-end-relation be like under current circumstances?

This self-reflection has just started which is why the rationalities that underlie the treatment of resources are hardly being reflected. Figure 8.4 shows the three theorems dealing with the **organization of exchange relationships** and having regard to the resource term. The rationality referred to as eco- or human efficiency is not mentioned because the task to establish an efficient input/output-relation is actually the core process of economic activity. Consequently, the intensification of resource productivity is the economic rationality par excellence. Without it, a business cannot survive.

Management studies' way toward a resource-oriented business image or even toward a resource-oriented paradigm described hereinafter differs from the way

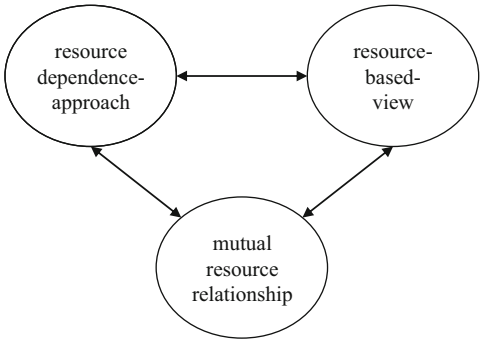

Fig. 8.4 Resource-based axioms in management studies

usually described in management studies (which is strongly based upon the resource dependence approach) (zu Knyphausen-Aufseß 1997).

The Starting Point: Resource-Based View and Resource Dependence Approach
The resource-based view has been the essential impulse for the establishment of the term "resource-oriented management" in literature. But this perception of a resource-oriented management focuses on resource dependence and does not give any recommendation for the treatment of resources apart from those mentioned in the resource dependence approach. The question remains whether the question of power blocks the access to an innovative resource-oriented paradigm.

Further Development: From the Resource Dependence Approach to the Theorem of Mutual Resource Relationships
Possibly, it is just this resource dependence approach that provides the crucial links for further theory development. The key step toward this direction would be the consequent mutual perception of the resource dependence approach: not only are the businesses dependent on their environments' resources; the environments are as well dependent on the businesses' resources. And what is valid for businesses is also valid for all other institutions and systems. Many of them serve as sources for each other without even being aware of this. If businesses noticed this fact, their perception of the environment would change significantly. The **lack of markets for immaterial resources** caused the resource-based view's emphasis on existing internal resources:

- As long as there is a **factor market** for each relevant resource and input factor of a business, the resource procurement is not a problem (e.g. materials and know-how).
- Obviously, there seems to be a **qualitative level of resources** that cannot be purchased with money only (e.g. organizational capabilities).
- This applies to manpower, too (especially with regard to preferences and value systems).
- A major problem is the conservation or earning of trust and public legitimacy respectively. **Legitimacy** can be referred to as a meta-resource because its existence governs the access to all other resources. A lack of trust and legitimacy might cause a considerable disruption of a business's resource exchange relationships.

Summarizing, businesses feel a significant **dependency on immaterial resources** because

- The focus is increasingly on the relevance or significance of resources wih restricted availability for the failure-free and long-lasting preservation of the business;
- Control of these resources is limited and
- (Market) power has limited influence on the access to such resources.

The scientific recommendations of the resource dependence approach can hardly be applied to **immaterial resources**. The rationality hitherto called the "theorem of mutual resource relationships" can help.

Conclusion: Can a Resource-Oriented Management Fill the Strategic Gap in Environmental Management?

Management studies' assertion that environmental management increases the operating profit might be somewhat optimistic. Neither cost reductions nor earnings increases are the most common effects of an intensified environmental management. The win-win-premise of strategic environmental management in fact only enhances the efficiency thinking and comprises a distortion of the fact that environmental and resource protection restrict economic activity. In a world of scarce resources, economic growth cannot be the only aim since it entails an increase in resource consumption. Still the question remains, where exactly the strategic gap in environmental management is located. Or, in other words: Where exactly is the place for the strategic environmental protection initiative?

The answer given here is: in the security of the resource supply. Respect for the natural environment will be easier to develop as soon as businesses realize that their environments are no resource pools that can discretionary be exploited. Businesses are rather resource-dependent systems whose survival depends on the operational capability of their sources. Consequently, a business must understand all its environmental relationships as resource exchange relationships which have to be organized strategically. Environmental management (in the broadest sense) therefore becomes a key topic of strategy research.

Further Reflection

The root of the considerations on the use of the resources term in management studies is rather a question of which rationality resource-oriented management concepts are based on than a question of the formation of reasonable resource categories or classification. Profit-oriented management studies that want to create income from the efficient application of production factors and the marketing of products need to ask primarily about the existence of crucial resources. Sustainable management studies, however, ask how the lasting supply of these resources can be ensured – for both immaterial and material resources. It is worthwhile to ask for the immanent rationality of a concept, whenever resources are mentioned in management studies: efficient application or reproduction?

The following suggestions are supposed to help you improve your awareness for the ambivalent rationalities as regards the treatment of resources:

The term resource:

- Make a list of resources businesses are dependent on. Try to classify them into performance factors, success potential and resources.
- Take a closer look at the resource-based view. Why is it often mixed up with sustainable resource management?

Axioms of resource application:

- Focus on the relation between resource property and power. Assess the use of fossil fuels from the perspective of the resource dependence approach.
- Growth is a fundamental principle of economy. Find explanations for the statement that an economy or a business should always aim for growth.

Perception of the term resource in the different business units:

- Concentrate on the concept of industrial ecology. What do the terms "industrial symbiosis" and "recycling network" mean? What is industrial ecology's perception of the resource term?
- Are the concept of relationship marketing and the aiming for increases in sales compatible with each other? On which points do the concepts differ the most?

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Chapter 9
Salutogenesis as Heuristic for Resource-Oriented Management Studies

Structure of the Chapter.
The rationality of sustainability gains even more persuasive power in the course of a connection of management studies and health psychology. If sustainability indicates a logical treatment of resources, then the findings of health psychology should lead to similar design recommendations as the findings of management studies for an institutional resource management do via an individual resource management. Interesting about this is the relationship between material and immaterial resources. This chapter aims to transfer of the salutogenic findings on the connection of health and resources to businesses.

After Reading this Chapter You Should.

- Be able to explain the concept of salutogenesis.
- Be able to outline the relation of health and sustainability.
- Know how to apply the individual-oriented resource transaction model to institutions.

9.1 Sustainability and Health

In sustainability research, there is an increase in the use of terms like **vulnerability, susceptibility, bearing capacity, health and strength**. There seems to be an increasing understanding that not only ecological systems have a limited operational capability, but also social systems. The concept of resilience turned out to become an independent analytical category for the description of this borderline situation. This concept is borrowed from ecosystem research. Here, it describes the ability of ecosystems to **maintain stability** in view of disturbance. An ecosystem with high resilience is able to return to their initial state (before the disturbance) quickly.

The **Resilience Alliance** – an international association of scholars and practitioners from different disciplines – define the concept as follows: "Resilience – the capacity of a system to absorb disturbance, undergo change and still retain essentially the same function, structure, identity, and feedbacks." (www.resalliance.org)

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_9, © Springer-Verlag Berlin Heidelberg 2011

Today, more and more social systems converge and mutually vitiate their operational capability. The concept of resilience therefore aims at an increase of a system's capacity. But which are the survival conditions of businesses in a modern surrounding? One of the main findings in this book is that the managerial perception of success needs to change. Businesses have to enhance their perception of success (survival through profit) by adopting a **broader perception of the survival problem**. They do not only have to pursue an end, but they also have to concentrate on existence.

Sustainability provides a solution for businesses' preservation of existence. The progress in the perception of sustainability manifests itself as follows: businesses do not have to ask what they can do for a sustainable development, but **how they can become more sustainable** themselves. This chapter aims at the creation of a lasting problem-solving capacity **from a resource-perspective**.

The rationality of sustainability seems to be difficult to convey. Here, the salutogenesis-oriented health psychology provides semantic and conceptual help. Health is referred to as equilibrium in the resource exchange relationships, caused by transaction and aiming at the maintenance of the individual problem-solving capacity. It is therefore based on a sustainable treatment of resources. Hence, sustainability and health provide two approaches for the conceptual substantiation of an individual and institutional resource management.

From the perspective of health psychology, the absolute scarcity of resources results in a **burnout**. Burnout describes a slow and undetected depletion of the human substance. In diagnosing the problem, only the symptoms can be treated. A burnout is caused by an imbalance between resources and demands due to transactions which retrench individual resources within the person's physical, psychic and external fields of resources (Kernen 1999:34). So, can this concept be transferred to the state of many businesses today?

Management studies have made use of the health term for quite some time yet. However, health is mostly mentioned in the context of the metaphor of a business as an ecological or biological system. Accordingly, a healthy business would have processes and structures analogous to ecosystems (De Geus 1998:208 ff.). In fact, due to a resource-oriented perspective, health psychology desisted from asking pathogenic questions like "What causes disease?" and started asking salutogenic questions like "What causes health?"

9.2 Health Management and Management Studies

For businesses, health management is a concept directed to employees' health care. So far, health management has been justified by the slogan: **"But it pays off!"** However, businesses should rather follow the motto **"business success *and* health management"** than "business success *through* health management". Recent deliberations on **work-life balance** show that health management representatives have started to translate the new motto: if work and private life are to be balanced, they

must be two independent factors (Kuhn and Sommer 2004). However, only few findings suggest that these factors can actually be **contradictory**. The transfer of health management to working life can only be successful if the resulting **trade-offs** may be made a subject of discussion. This openness is prerequisite for the active coping with contradictions (Müller-Christ 2007b).

Following the premise that **businesses are resource-dependent systems** receiving material and immaterial resources, transforming them efficiently and providing other resource-dependent systems with them afterwards, it is sustainable, or in fact healthy, to not consume employees' resources in less time than they need to recover. Management studies and health management could be reconciled by applying the salutogenic perspective to management: a healthy business is not only an institution with healthy staff, but it is itself a healthy entity that keeps investing in the supply of material and immaterial resources in order to foster its stability (Müller-Christ 2001).

This chapter aims at an understanding of the health of man and institution as a **management of resource relationships** following the same presumptions: salutogenesis and sustainability. On the assumption that an individual resource management could lead to similar findings as an institutional resource management, a mutual learning process should lead to radically new insights.

9.3 Pathogenesis: The Traditional Thinking Model

Systems theory and psychology as well as medical sciences regard social organisms as being disordered by external influences and therefore being hampered in the pursuit of their aims. However, different semantics are applied by different disciplines.

Pathogenic-oriented medical sciences see the human body as being under threat by pathological factors. Thus, the **causes of a disease** and possibilities of avoiding it are primarily researched on. The focus is on the pathogenic effects of risk factors and negative stressors. This way of thinking is based on the assumption that without external influences a human would be healthy (homeostasis). Consequently, pathogenic external influences must be kept away from humans or – if this fails – the diseased organism must be cured through external help (medicine and pharmacy) and self-healing. This way of thinking is called pathogenesis and its central questions are: What causes disease? How can diseases be avoided? The basic message is: a person is healthy if it is not diseased (Jork 2002:21) (Fig. 9.1).

Management studies apply the **stakeholder approach** semantics: environmental demands are perceived as survival-threatening stress which has to be fended off. Even if demands have a normative legitimacy the pathogenic perspective remains. This implicit way of thinking is frequently found in today's discourse on corporate social responsibility and social sustainability.

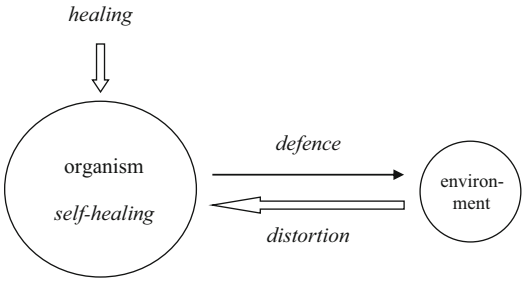

Fig. 9.1 The pathogenic thinking model

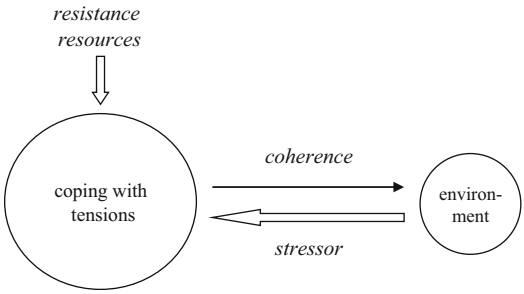

Fig. 9.2 The salutogenic thinking model

9.4 Salutogenesis: The New Thinking Model

Salutogenesis is the opposite of pathogenesis and is originated in medical sociology. Medical sociologists assume that humans are exposed to a myriad of stressors which lead them into an area of tension. In this connection, **health is the ability to cope with the tension** (Fig. 9.2). For this, humans need resistance resources. The central questions of salutogenesis are: Where does health emanate from? How can it be strengthened? Beyond medical sciences, the salutogenic thinking model is to be found in behavioural and social sciences which provide a firm knowledge base for further research.

9.4.1 History of Origins

It is thanks to the Israeli medical sociologist Aaron Antonovsky that the **concept of salutogenesis** became a central subject of health sciences' research and theory formation. He pointed out that salutogenesis should not replace but enhance the pathogenic perspective since both perspectives are important and insightful. It is remarkable that Antonovsky used the resource term when searching for an explanation for health: he identified resistance resources in form of a sense of coherence as the central cause for health (Fig. 9.3).

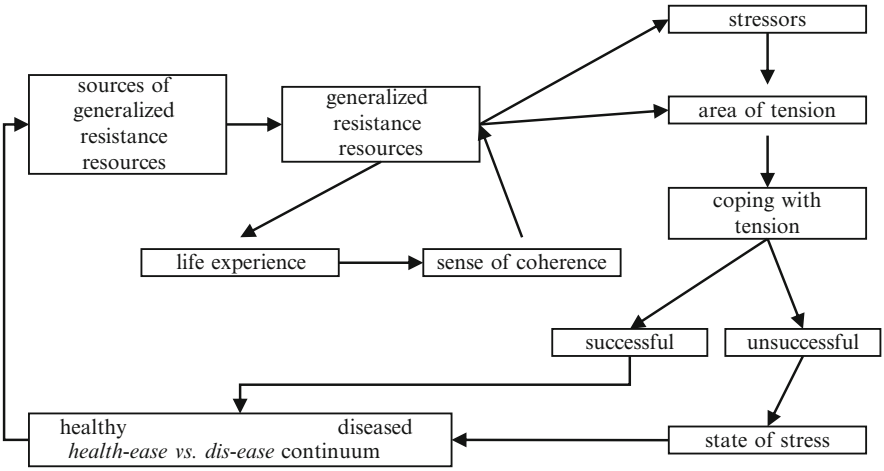

Fig. 9.3 Antonovsky's concept of salutogenesis

9.4.2 The Sense of Coherence as a Central Resource for Health

The central factor of Antonovsky's concept of salutogenesis is the sense of coherence which he refers to as a global orientation expressing the extent to which a person keeps an intense and lasting but also dynamic feeling of trust. The sense of coherence consists of three factors (Antonovsky 1997:33):

- Sense of comprehensibility allows for cognitive processing patterns with respect to controllability, regularity and understandability; it is a result of the perception of consistence: stimuli and experiences do not occur completely arbitrarily, contradictory and unpredictably, but can be classified, assigned and structured.
- Sense of manageability describes the optimistic confidence of being able to master life tasks and to mobilize resources for cognitive-emotional processing patterns; it is generated in the course of experiencing balanced stress (neither overworked nor underchallenged).
- Sense of meaningfulness comprises the assumption that life is meaningful and that it is worthwhile to enjoy life; it affects the emotional-motivational aspect of human experience and occurs due to the experience of being able to influence the organization of situations.

Such a coherent life experience results in **generalized resistance resources** which comprise social, cultural and individual resources, facilitating an individual's ability to effectively cope with tensions. The sense of coherence is indeed aligned with individuals. Possibly, it can also be aligned with institutions since management studies keep discussing the necessity of the condition that a system's characteristics are an actor's characteristics as well. In other words: Is a business healthy if its employees are healthy? According to health psychology, there actually are analogies between an individual and an institutional resource management.

9.4.3 Health and the Resource Term

Clear definitions of the resource term are hardly to be found among the medical and psychological achievements regarding salutogenesis. It is presumed that resources are understood very generally as a synonym for means, utilities or protective factors (Kernen 1999:43). However, a very clear definition is to be found in health psychology which, of course, focuses on health. Now, how are health and resources causally related? Which one is the dependent variable, and which one is the independent variable?

What is health?

Usually, health is seen as the **absence of disease**. As long as the organism is not exposed to pathogenic stress, no disease will occur. Diseased are considered to be cured as soon as the organism regains its original state. Following this perception of health, one cannot search for health factors but only for causes of disease.

Antonovsky introduced the **health-ease/dis-ease continuum**. Formulated abstractly, health is the state in which the **processes of coping with tension and stress** operate without the need of conscious working on it. This state consumes resources which do have to be re-added constantly. Therefore, health is not the result of equilibrium, but must be produced dynamically as a balance in the process of mental and physical human development.

Since the preservation of health consumes resources, the **organism's environment (the source)** comes to the fore. Health can be understood as a **transactionally caused balance** between the psychic and physical protective and defensive factors of the organisms on the one hand and the potentially-pathogenic influences of the physical, biological and social environment on the other hand.

Health psychology's resource transaction model

Hornung and Gutscher developed a salutogenesis-based resource transaction model aiming to explain that health is the result of an **appropriate regulation of resource transactions** between an individual and its environments (Hornung and Gutscher 1994). The resource transaction model (see Fig. 9.4) resembles the resource-oriented business image: the starting point is the system-theoretic perception of man as an active, target-setting and planning human being which can only live and survive thanks to many kinds of material and immaterial exchanges with its environments. This resource-oriented approach's strength derives from the assumption that environment can not only be seen as the cause of stress or demands but that it is also **individuals who produce stress for the environment**. Hence, resource-saving as well as resource-demanding transactions are mutually executed by the environment and the individual. Both transaction partners draw a distinction between renewable and non-renewable resources. Transactions are perceived as mutual relationships; the content of which is of course the supply of resources.

In this model, the utilization of resources is dependent on an individual's resources for action. If the individual does not possess declarative and procedural knowledge on how environmental resources could be applied, it simply cannot use

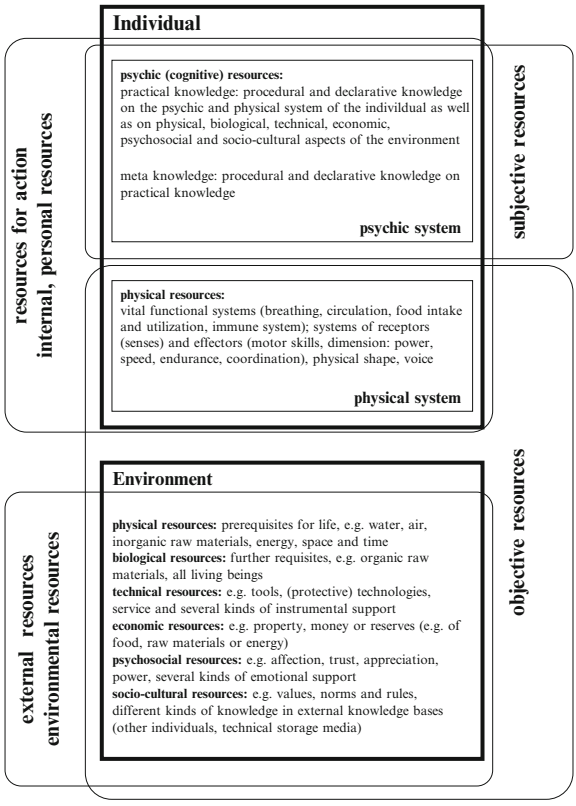

Fig. 9.4 The individual resource transaction model *Source*: Hornung and Gutscher 1994:83

them. The causal relation between resources and health seems to be: **resources for action moderate the application of environmental resources** with regard to their effects on individual health. So, how might resource application and health be generally linked?

Relationship of health and resources

The above explanation defined health as a process, the result of which is a successful coping with demands and stress. Prerequisite for this process of coping is the availability of resources. **But what is the causal link between stress, the use of resources and health?** Rimann and Udris developed a model based on the assumption that the sense of coherence is both a component and a means for health (Rimann and Udris 1998:351 ff.).

Possible links between stress, resources and health could be (see also Fig. 9.5):

1. Resources fulfil a **mediating role** for health as soon as stress affects the resources directly, consumes these and therefore weakens health.
2. Resources fulfil a **moderating role** as soon as stress affects health directly, but under the condition that resources can influence these impacts.
3. The **combination of the mediating and the moderating role** can succeed if a distinction is drawn between personal and external or situational resources,

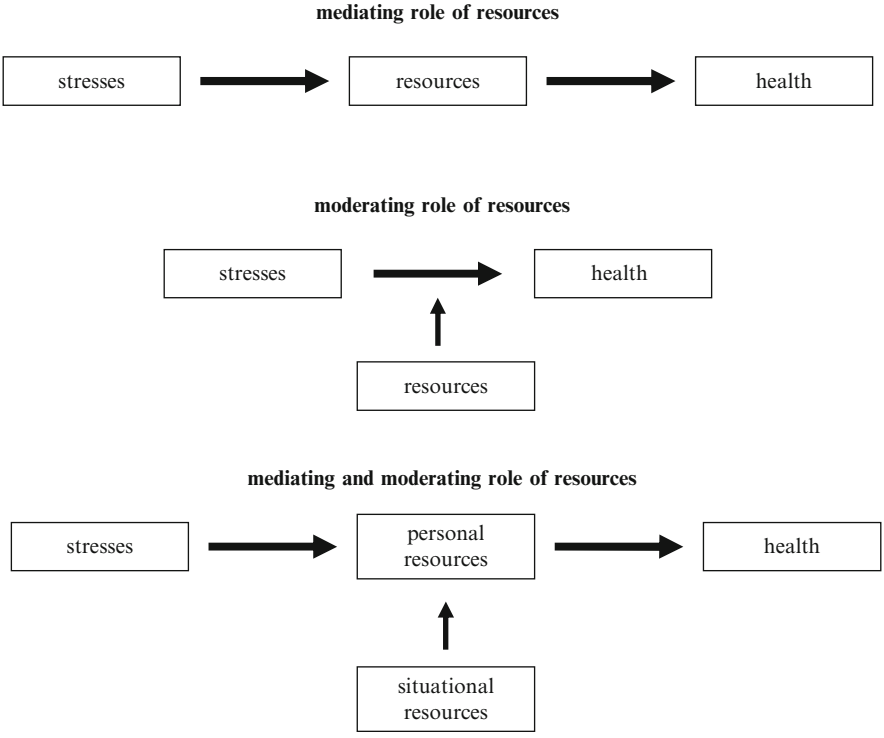

Fig. 9.5 Mediating and moderating role of resources
Source: Rimann and Udris 1998:361

following the assumption that stress directly affects personal resources; yet, this mechanism of action is controlled by situational or external resources.

The major finding of this model is the fact that there are **resources with different mechanisms of action** regarding an individual's health. Thereby, simple mechanistic cause-and-effect models of the stress-and-coping-situations can be negotiated. In management studies, similar assumptions are made: neo-institutionalists assume that the institutions surrounding a system (the environment) provide the system with legitimacy. Legitimacy as an immaterial resource provides access to all the resources needed and thus secures survival in the market. Implicitly, neo-institutionalists act on the assumption that immaterial resources play a moderating role and secure the access to material resources.

9.5 Insights for an Institutional Resource Management

The salutogenic resource transaction model regards transaction relationships between an individual and the environment from a resource perspective. Both environment and the individual are **sources** whose interplay reflects the individual's problem-solving

potential. Rimann's and Udris's answer to the question asked before (what is the linkage between resources and health?) is that different types of stress affect personal resources (resources for action) directly and consume them. Situational resources (environmental resources), however, moderate this process and control the consumption and supply of resources for action.

Linking the moderator/mediator-model to the rationality of sustainability results in the concept of a comprehensive **burnout-prophylaxis**. Burnout derives from an insufficient and distorted relation of an individual to his or her environment. This deranged relation becomes manifest in a perturbed resource-oriented interaction of an individual and its environment, leading to a creeping loss of substance. Therefore, a burnout-prophylaxis model implicitly follows the rationality of sustainability, because a burnout could be avoided by an adequate reproduction of individual resources (Kernen 1999:50 ff.).

9.5.1 From the Individual to the Institutional Resource Management

Can management studies learn from the concept of salutogenesis? If individuals as well as businesses are in command of adequate and sufficient resources, they become or stay healthy and carry a high problem-solving potential. The term resources circumscribes latent and abstract means needed for the coping with various types of stress which are not yet known. Regarding the sustainable treatment of resources, Hornung and Gutscher advise the individual to initiate those transactions that could safeguard and contribute to building up their own resources. But health can only be maintained if the required resources are reproduced over and over again. Thus, the individual must consider its sources' autonomies in order to not negatively affect their operational capability.

A great difference between health psychology and management studies can be found in the rationality of the efficient treatment of resources. Referring to the resource transaction model's assumption that resources for action control the access to environmental resources, it remains unclear how the concrete means are casually related to each other. This mechanism of action is quite complex and dynamic; a calculable output/input ratio – in the sense of an efficient use of resources – is hardly feasible.

However, the resource transaction model has an advantage over the business resource model: it nominates resources systematically and content-related, and it can resort to a multitude of theoretic and empirical analyses conducted by psychologists. To now, management studies lack such findings.

9.5.2 Approaches for an Institutional Resource Transaction Model

For the formation of an **analogy between an individual and an institutional resource transaction model**, the systematization of resources needs to be changed.

Businesses – just like individuals – possess resources for action and their environments serve as sources. The fundamental difference is that businesses are working institutions which usually buy resources on factor markets. However, it becomes clearer and clearer that businesses are also dependent on resources they cannot obtain at factor markets, such as trust, legitimacy or preferences. It therefore makes sense to differentiate between acquirable material and non-acquirable immaterial resources instead of subjective and objective ones (see Fig. 9.6).

One major finding of this institutional resource transaction model is the **rough illustration of the relationship between material and immaterial resources**. In current management literature material resources are less and less found. The focus is on immaterial resources and the role they play for a business's success, e.g. in the fields of business culture, knowledge management or cooperation management as well as in corporate social responsibility, social sustainability or corporate citizenship. A special role within the differentiation between material and immaterial resources is played by a **business's capital**. One might think of the material

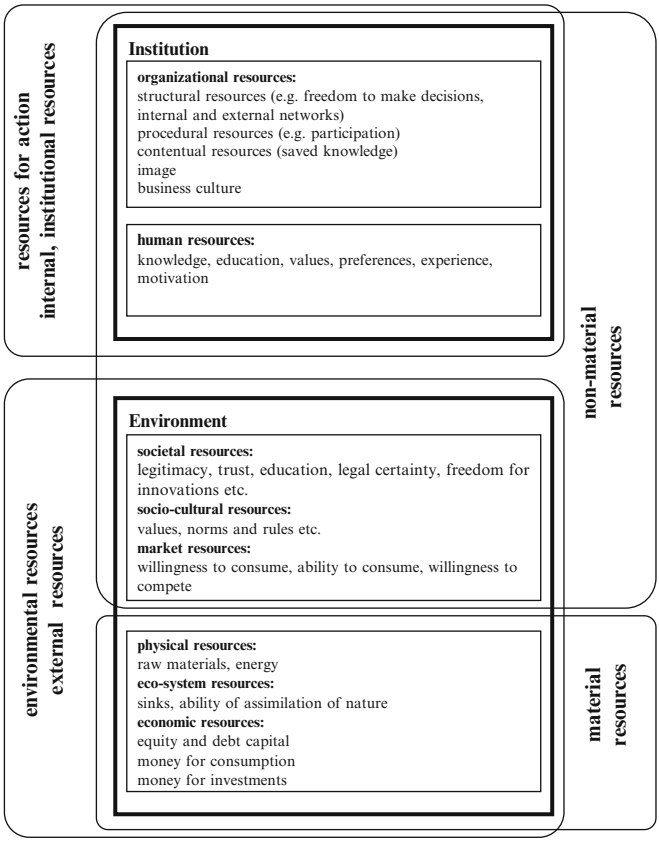

Fig. 9.6 The institutional resource transaction model

implications to capital first, but it is in fact also immaterial, considering capital as a means for value storage which implies the option on permanent problem-solving (see also Luhmann 1986).

9.5.3 Moderating Role of Immaterial Resources

From the mediating/moderating-model, initial considerations can be deduced for the **interaction of material and immaterial resources**. Material resources have a mediating role: only if the supply of resources is secured, businesses can fulfil their production or service tasks. Immaterial resources, however, control the interactive structure of the relationship between material resources and health: strong business cultures, great potentials for trust, broad knowledge bases etc. cushion the stressing effects on material resources and thus also on the business's health.

The combination of the mediating and the moderating role leads to the hypothesis that various types of stress directly affect the material resource supply. This mechanism, however, is governed by immaterial resources (see Fig. 9.7). The control of the interaction between a business's material and immaterial resources might therefore result in an increase of the system's general problem-solving capacity.

9.6 Contributions to a Sustainable Resource Management

The resource perspective provides a **friendlier image of the environment** than management studies have opted for. Environments are seen as sources of stress and support at the same time. However, this simultaneousness goes hand in hand with reciprocity: environments affect businesses and businesses affect environments. The stakeholder approach cannot explain this reciprocity in a rational and

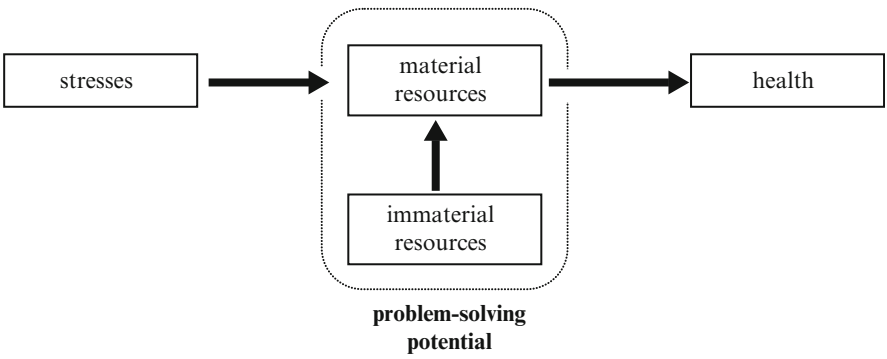

Fig. 9.7 Moderating role of immaterial resources

health-preserving way; it does not consider environments as a source of support for business problems.

Modern businesses need to perceive their **problem-solving capacity as a managerial task** in order to survive under complex conditions. The rationality of sustainability and the concept of salutogenesis contribute to this task. Linking **health, problem-solving potential, sustainability and resources** to each other leads to the following insights:

- Health is a cause for a high problem-solving potential.
- Health develops from equilibrium in the resource exchange relationships and is determined by transactions.
- The equilibrium is regulated by the rationality of sustainability.
- A high problem-solving potential necessitates the reproduction of resources.
- This can affect both material and immaterial resources.
- Immaterial resources moderate the access to material resources.
- Both material and immaterial resources are consumed by using them.
- For the reproduction of resources, the sources' autonomies need to be considered.

An **institutional resource management** does not aim at an intensification of the pursuit of business objectives. It rather aspires to preserve the business's existence by focusing on the permanent resources supply; resources which originate from the business's environments.

Thus, environments turn from being restrictive exterior conditions into associated systems and therefore make a contribution to the perception of relationships between businesses and their environments as system/system-relationships. There is a significant difference since speaking of system/environment relationships entails the thought of **hierarchy**. In system/system relationships, the autonomies and inherent values are of equal rank and demand consideration. **Equal systems** can only secure their own supply if they consider the supply of others at the same time.

Such a perception of resource management has the advantage that it justifies **respect to other systems no longer on a normative basis but on a rational one**. In order to fulfil the own survival conditions, a system must take the survival conditions of supplying and receiving systems into account. The major problem is that the effects on other systems are neither direct nor visible; they are indirect and invisible and can have a negative influence on the operational capability and stability of other systems in multidimensional cause-and-effect relationships.

Further Reflection

In this chapter, the new thought pattern for modern management studies has been broadened. Previous explanation focused on the resource term and the contrariness of the rationalities concerning the treatment of resources. The message of this chapter is that stress on resource supply is widespread. This perspective also

challenges business management. However, the fact that individual healthy treatment of resources (which every decision-maker has experienced before) can be transferred to institutions is supportive. Healthy people and healthy businesses can cope with normal stress due to their higher bearing capacity.

It is worthwhile to further think about this perception of health:

The concept of salutogenesis:

- Search the internet to find out how the concept of salutogenesis is adopted by medical advisory.
- Make a list of your personal stressors. Think about the effects of coping with them: which ones make you stronger, which cause disease?

Sustainability and health:

- Research on the health term of the WHO and compare it to the resource-oriented perceptions of health. Describe differences and similarities.
- Search for the idea of healthy businesses. What are the conditions for healthiness?

Resource transaction model:

- Search the business press for examples of businesses which – in spite of a good financial situation – have differences with material resource supply. Which immaterial resources do businesses lack?
- Think of examples from your everyday-life: in which situations did the absence of the immaterial resource *trust* impede the receipt of a material good?

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Chapter 10
Strategic Resource Management

Structure of the Chapter.
For the resource-oriented sustainability approach instruments are needed that provide information on the stock of resources, the sources' operational capability and the possibilities of influencing the resource supply. Such instruments have not yet been developed for management theory, nor can they be examined here. Their field of application is strategic business planning, which is a business planning that does not perceive strategies as market strategies only, but as management strategies as well. The following suggested instruments contribute to the active organization of environmental relationships in order to secure lasting survivability: strategic sustainability vector; business principles for management ecology; SWOT analysis for management ecology; management of resource regimes; and a resource-oriented sustainability monitoring.

After Reading this Chapter You Should.

- Know the difference between market strategies and management strategies.
- Be able to outline the framework of sustainability strategies in personnel management, in environmental management and in marketing.
- Be able to explain the organizational objectives of the proposed instruments of a sustainable resource management.

10.1 Sustainability and Strategic Management

This book aims at introducing new possibilities of interpretation of the business/environment relationships. The **paradigm of management ecology** (see Chap. 5) provides an encompassing orientation towards a firm's resources. All business/environment relationships are understood as resource exchange relationships. A sustainable resource management must therefore focus on the sustainable organization of environmental relationships and their internal effects for business. Such a resource management must contribute to the following questions:

- Which resources are crucial for lasting economic activity?
- Which sources produce these resources?

G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7_10, © Springer-Verlag Berlin Heidelberg 2011

- How do these sources function (autonomies)?
- (How) are these sources negatively affected – regarding their operational capability – by our economic activity?
- Which consequences are caused by a continuing disturbance of the sources?
- How can we contribute to the preservation of their capability?
- Which resources do we produce for our environments?

The implications of a theory of management ecology for strategic management studies lead to **two independent perceptions of success**, not reducible to each other: businesses have to be successful in the market and have to preserve their resource base at the same time. This double perception results in a double pressure to succeed for the businesses; maybe they must even experience a burnout before they really understand the necessity to treat their resources sustainably (see Chap. 9).

The resource-oriented, sustainable view of problems requires a reinterpretation of the image of the environment: environmental problems used to result from opposing interests. Demands, their legitimacy and the extent to which they were met made the actors turn into winners and losers. Accommodating to the objection that the abrogation of such opposing interests must be a political task since they result from market economy would be a **confession of failure for management studies** and a confirmation of the status quo: businesses strive for the optimization of their economic activity and society has to deal with the side effects (Beck 1996).

Schreyögg pointed out that the **novelty of the resource based view** is not in its content but in the mental reorientation of the perception of the origin of success (Schreyögg 1999). Strategic management has always acted on the assumption that businesses have different prerequisites. By now, strategic management focuses more and more on means-orientation which is a trend the resource based view follows as well. However, the origin of success is explored with regard to its causes by strategic management scholars; here, the resource based view cannot be of help since it paradoxically understands the *inexplicable* as the source of competitive advantage. This means that only those resources are relevant for the market strategy whose development is too complex for competitors to imitate.

A sustainability-based resource management can not only reply to the question of origin but also answer the question: *Where exactly is the place for the strategic initiative* or *How can the inter-business aggregation level where strategically relevant resources originate be explained*? The concept of household communities provides initial answers to both questions: the basis of the permanent survival of businesses and their environments is the preservation of their household or resource community. Meeting this challenge is defined here as the task of sustainable resource management (see Chap. 5.4).

This definition of success that concentrates rather on the external resource community than on internal resources has substantial consequences for strategic management studies: it disproves the traditional assumption that sustainability only has perspectives for the future if it makes a positive contribution to a business's economic objectives (Kurz 1997:89).

Such an instrumentalization of sustainable resource management can no longer be kept up. The **output-oriented perception of success (market success) and the**

input-oriented perception of success (preservation of the resource base) cannot be linked according to the assumption mentioned above. However, the independent pursuit of these perceptions results in significant mutual effects: the more important the necessity to actively preserve the resource base becomes the more effects on the output-oriented market success arise. In the end, business aim, self-conception and identity become an instrument contributing to a business's survival. Of course, this modification of the means-end relationships has effects on the strategic management process.

10.2 From Market Strategies to Sustainable Management Strategies

The strategic management process represents an image of the idea of what business success emanates from. Traditionally, the focus was on the output-side of the business. The business programme resulted from existing possibilities in the relevant markets. In compliance with Chandler's thesis "structure follows strategy" (Chandler 1962) the management elements organization and personnel were servants to strategies. Thus, business strategies were actually market strategies. However, if a business has to simultaneously react on output and input restrictions, it makes sense to speak about **management strategies instead of market strategies** (Remer 2004). When solely focusing on market issues, evolving contradictions cannot be coped with (see Chap. 7).

A management strategy is the attempt to distribute contradictory demands in the management system to its elements in a manner that the business keeps an eye on its purpose but also invests in preservation by the way it treats its resources (Remer 1997:409). The consequences are obvious: the boundaries between traditional management elements dissolve; the differences between planning and organization, marketing and environmental protection, personnel management and public relations become more and more unclear. Of course, the complexity of managerial performance increases once the effects of economic activity have to be reflected continuously with regard to the environments. Consequently, competitive strategies (concentrating on activity in the market) cannot secure survival, and therefore the purpose-oriented business strategy needs to be replaced by a **management strategy of system development** (Remer 1997:410). This system development is not only based on the pursuit of purposes but also on the respectful treatment of business resources and their development conditions (Hummel 2008). What this means for a business's functional areas is explained below.

10.2.1 Sustainable Resource Management in Human Resource Management

Among the functional business areas, human resource management is best-prepared for sustainable resource management. For quite some time, human resource management

has been exposed to the problem that adequate personnel is only available at any time if the reproductive autonomies of human resources are taken into account. However, even human resource management lacks concrete proposals for a sustainable treatment of the resource personnel. Which consequences arise if the **relationship between a business and the labour market is modelled as a household community**?

The idea that the labour market serves as a pool of human resources which are already conform and available at any time vanishes. This tendency can be observed in reality, e.g. regarding the lack of engineers. For this reason, businesses have to actively invest in the supply of human resources. Here, they have to take into account the autonomies of the labour market: if businesses immediately lay off unneeded qualifications (human resources), they will only find a limited offer in the labour market as soon as they need qualifications again. Neither the government (having the task to further educate the unemployed) nor businesses can precisely forecast future requirements. For this reason they need to invest in the employees' general problem-solving capacity and have to cultivate the resource employee in a sustainable manner.

Yet, employees' capacity is not only determined by their suitable qualification but also by the possibilities of playing various roles in business and society (this affects highly qualified staff in particular). In accordance with the discussion on the compatibility between work and family, the **human resource-oriented household community is as well a role community** (Remer 1993:463). The intensive consumption of the resources time, patience and motivation of employees does not only constrain their options for action in family life but also their social commitment. In the end, this way of organizing the working world causes repercussions on businesses: it is unclear if the very close relation to profession asked for by businesses creates characters that can solve future business problems. A novel management instrument is the audit "work and family", similar to an eco-audit: businesses allow external institutions to analyze their personnel policy and publicly set themselves innovative personnel policy objectives.

One of the major tasks of sustainable human resource management is the improvement of the compatibility between work and family resulting in the necessity to create new forms of organization for the division of labour. Moreover, human resource management itself needs to be reorganized: from a centralized human resource management to one which alternates between decentralization and centralization. The more individualized human resource management is organized, the more it must be returned to line responsibility. In fact, it seems to be the personnel manager him-/herself who is the crucial factor when trying to establish a family-friendly human resource policy.

Summing up, the task of a sustainable human resource management is the organization of a **household and resource community of businesses and the labour market**: in which way do businesses have to deploy personnel and how do they have to invest in the supply of personnel in order to avert scarcity of human resources, i.e. suitable qualifications and adequate motivation?

10.2.2 Sustainable Resource Management in Marketing

A look at the present tendencies in marketing (see Chap. 8.5.3) reveals that marketing has returned to define the relationships between a business and its environments as exchange relationships. Both relationship marketing and the resource based view broach the issue of in-depth causes for success; the former understands long-lasting business relationships as the source of future success, whereas the latter focuses on utilization of existing, primarily internal, intangible resources (organizational capabilities).

Marketing studies have not yet started to relate the contents of relationship marketing and the resource based view and to regard the quality of the relationships to market partners as an intangible resource. From the perspective of management ecology, this would be a rational approach. A starting point for businesses could be **to equip customers with consumption-competence**. Such an investment in the supply of the resource "customer confidence" implies the willingness to adopt products and service to the autonomies of the customer's behaviour. By this, the business/customer-relationship could be turned into a household community.

Such a community (in line with management ecology) could also be established for competitors as market partners. Hyper-competition is a current example for the development of business behaviour: traditional branch rules, accepted codes of honour or moral self-determination have become less important in an economy that employs any means for the weakening of competitors and the maximization of shareholder value. However, a tendency towards value creating partnerships is observable as well. The new relationship between trade and industry can be referred to as partnerships because the exchange is perceived in a mutual way. Here, the connection to household-thinking is found in the **long-term set up of relationships** and in the pursuit of advantages for both sides (see Chap. 5.1 for the development of market communities).

In spite of all these community tendencies, marketing has hardly started to consequently reflect the effects of their actions and arising repercussions for their own resource base. Nevertheless, this would be the task of a sustainable resource management in marketing. Partnerships with customers, competitors and suppliers may not only be judged based on the effects on profits but on their **repercussions on the common resources**.

10.2.3 Sustainable Resource Management in Environmental Issues

A closer look at the sustainability tendencies in functional areas led to the conclusion that environmental management hardly meets the challenge of a sustainable treatment of natural resources (see Chap. 8.5.1). A decrease of emissions is

technically resolvable and has already led to significant reductions of environmental pollution regarding air, water and soil. However, no considerable success has been yielded yet with regard to the total utilization of resources – neither on a micro-economic nor on a macroeconomic level. This is largely due to a single business's dependence on the macroeconomic environmental policy: how resources are treated is strongly affected by the market economy's framework. Anyhow, are there already initial management concepts that clear the way for a **household community of business and natural environment**? The problem of scarcity is coming closer and closer. Not dealing with this challenge today might lead to a withdrawal of businesses' material economic basis of tomorrow.

To cultivate the household community of economy and nature means to invest in the long-term preservation of natural sources. The idea of actively ensuring the supply of material resources has not yet been clearly defined. The most popular approaches – recycling, material flow management and circular flow economy – are still concepts which aim at extending the consumption period of natural resources. Their main criterion is eco-efficiency: gaining higher added value through less damage. Since increases in efficiency are mainly technical problems, the problem of preserving resources is therefore hardly perceived from the perspective of management ecology.

Principally, the sustainability discourse and the management rules for ecological sustainability already paved the way for a sustainable treatment of the natural environment. From the perspective of management ecology businesses act rationally if they start to regard their relationship to the natural environment as a mutual exchange process. It is actually a sense of fairness that asks for a compensation of the **consumption of material resources** through resource-saving measures which has been proved both by theoretical and empirical findings (Schelske and Seidl 2000:23). The motto is: the person who earns money with natural resources should use this money to ensure the supply of these resources. A prominent example in Germany is the mineral oil company Shell which – according to its managers – funds yearly studies about German juveniles because it wants to return something to society. This motive results from the idea that one may extract social or human capital from natural capital discretionarily. Strict sustainability demands the preservation of the capital substance. In this case: without compensation on a material level.

In fact, those businesses who convey resources at the beginning of a value chain ought to invest more in the preservation of their sources in order to implement the idea of a **household community of economy and nature**. For mineral oil companies, for example, it becomes more and more rational to place the profits from oil and gas conveyance systematically in alternative energies in order to remain able to supply energy in the future. Moreover, it is rational for all businesses to reflect the effects of environmental pollution on the very own resource supply. Especially with regards to the waste problem, the industrialized society starts to focus on a treatment of nature as a household partner. It is not only the absolute scarcity of material resources that will enforce economic rethinking; it is also the narrowness of nature's ability to absorb waste and emissions.

10.3 Strategic Sustainability Vector

Since sustainability constitutes a rationality reflecting a new decision-making premise for businesses (Which effects does a decision alternative cause for the future supply of resources?), the introduction of new instruments implies the question of their didactic quality. It surely makes sense to not start with complex instruments at the very beginning of the awareness-raising regarding sustainable management processes. Instead, an instrument is needed that depicts the problems that need to be solved through sustainable management and that intuitively allows for an assessment of a business's starting point. The strategic sustainability vector is well-suited for this purpose.

The Latin word "vehere" means "to carry"; therefore a "vector" is someone or something that carries. In physics, a vector is an arrow with a certain length and direction. In mathematics, a vector is an element of the vector space in which several vectors can be summed up. In the metaphorical sense, vectors depict a development in their width and their direction. Hence, a strategic sustainability vector is a didactic, visualizing instrument for strategic management that shows the force and the direction of a business's movement towards sustainability.

This instrument is used for functional simplification of the huge task to turn an efficiency-oriented business into an efficiency-oriented **and** sustainable business. Chapter 6 outlined the **contrariness of the economic rationalities efficiency and sustainability**. A systematic contradiction management is needed for a constructive coping with the incompatibility of these two decision-making premises (see Chap. 7). Decision-makers have to understand the rationality of resource-oriented sustainability and translate it into questions which will foster actions if the contrariness of the decision-making premises shall be demonstrated. These action-guiding questions have been defined as the major questions of strategic resource management at the beginning of this chapter:

- Which resources are crucial for lasting economic activity?
- Which sources produce these resources?
- How do these sources function (autonomies)?
- (How) are these sources negatively affected – regarding their operational capability – by our economic activity?
- Which consequences are caused by a continuing disturbance of the sources?
- How can we contribute to the preservation of their capability?
- Which resources do we produce for our environments?

The strategic sustainability vector serves rather as a didactic instrument than as an analytical one. Its illustration (Figs. 10.1 and 10.2) is deduced from the concept of values-centered leadership by Lance Secretan (see http://www.secretan.com/keynotes_vcl.php). The strategic sustainability vector reduces all the challenges of sustainable management to the two characteristics of a vector: its force and its direction. The picture of a bicycle shows the direction (see Fig. 10.1).

The **front wheel** depicts the direction; a business needs to be directed towards sustainability. The business *is* sustainable only if it manages to lastingly ensure the

Fig. 10.1 The strategic sustainability vector: the direction

THE STRATEGIC SUSTAINABILITY VECTOR

Competences	Score 0-10	*Sustainability objectives*	Score 0-10	Diff. A-B
Cooperation To which extent do we engage in cooperation for future supply?	A	*Resource supply* What are we to do in order to lastingly ensure our supply of resources?	B	
Repercussion control Can we control the effects of our actions by checking the repercussions on ourselves?	A	*Resource consignment* What are we to do in order to significantly reduce side effects of our actions?	B	
Corporate responsibility To which extent are we able to ethically reflect our effects on nature and society?	A	*Contribution to society* What are we to do in order to valuably contribute to humanization?	B	

Fig. 10.2 The strategic sustainability vector: the force

supply of resources, if it reflects the side effects of its actions on systems it supplies with resources, and if it contributes to a humanization of society – humanization as the connection between the resource-oriented perception of sustainability and the normative perception of sustainability of a fair and human world. The extent to which a business pursues a certain direction can be taken from the vector. A mathematic look at the vector would result in a splitting into three single vectors representing one task each. For many businesses the summation of the three vectors would result in an arrow pointing in the opposite direction and away from sustainability.

The **rear wheel** provides propulsion and acceleration. Its drivers are the autonomies of markets, the scarcity of resources, the embeddedness of a business in society, the networking with social actors and the global as well as the regional development. These drivers constantly generate pressure to change and force the business to realize innovations and organizational development. The basic direction is of great importance for the sustainability vector: it does not point to the direction

"sustainability through efficiency increases" but to the direction "sustainability **and** efficiency".

How can the vector's force – its length – be determined? The force equals the difference between the **extent of existing management competences** necessary for the realization of objectives and the valuation of the meaning of **resource-oriented sustainability objectives**. Figure 10.2 shows the relationships between objectives and competences. Since the strategic sustainability vector has a rather metaphorical character, the importance of objectives and competences are valued rather intuitively than analytically. However, information on a business's resource-oriented commitment is obtained which might lead decision makers into conversation. By this, the instrument of the strategic sustainability vector would already have fulfilled its purpose. For a systematic inclusion of the rationality of sustainability in the strategic planning process the following instruments may be of help.

10.4 Business Principles for Management Ecology

The first step towards a modified self-image is making it a subject within business policy. The self-conception of a business is formulated in the business principles which contain the role of the environments as well. By laying down principles a business manifests its commitment to certain general orientations. Today, several businesses stipulate their intended treatment of customers, employees and the natural environment. Finally, business principles are intended to explain that the business does not only pursue a profit-oriented economic logic but that it is willing to work on the side effects this utilitarian rationality causes. For this reason, business principles have been subject to an ethical assessment of business activity, as not pursuing this profit-oriented economic logic could only be explained by ethical motives. Business principles gain more power within the scope of corporate social responsibility. This development offers the opportunity to affiliate the terminology of sustainable resource management to the reformulation of principles.

A lot of businesses have already drawn up environmental guidelines which contain the confession to treat the natural environment in a protective manner. Not surprisingly, all businesses present the same postulates; they merely differ in their formulation or detailedness.

One of the best known examples is the environment-oriented code of honour of B.A.U.M. which has already been adapted by a great number of businesses (B.A.U.M. e.V. 1996:2). We will develop an **exemplary sustainability code** from this environmentally-focused behavioural code (see Fig. 10.3). This code consciously follows redundant systematic from practice because the theory of housekeeping should prove itself as a verbal system first which makes logical implications visible that could have been overlooked otherwise.

Business principles are not to be confused with business objectives. The principles form the normative superstructure for the definition of objectives which then bridge the gap to specific behavioural strategies. Business principles' effort of mediating

Preamble

(We perceive nature, society, economy and every single business as parts of a global ecological system whose balance and diversity of species is crucial for the survival of all life.)
We perceive nature, society, economy and every single business as partners in a household community. The preservation of the common resource base is crucial for the survival of economy, society and nature.

(We as businesses avow ourselves to our special co-responsibility for the protection of our natural basis for existence.)
We as businesses avow ourselves to our special co-responsibility for the protection of our household community's resources.

(We believe that the protective treatment of public goods like water, air and soil as well as flora and fauna needs to be secured with the help of market-economic instruments; that this requires close collaboration of economy and politics and that the general awareness of environmental protection must be strengthened conjointly through information and education.)
We believe that the protective treatment of common resources can also be secured with the help of market-economic instruments; that this requires close collaboration of economy and politics and that the general awareness of household communities must be strengthened conjointly through information and education.

(We see great chances for businesses in an environment-oriented freely designed and market-governed economic order which is capable of securing sustainable wealth for future generations, too. Such an economic order offers the possibility to solve the conflicts between economics and ecology. This insight makes us commit to this code for business behaviour:)
We see great chances for businesses in a household-oriented and market-governed economic order which is capable of securing the resource base for future generations, too. Such an economic order offers the possibility to perceive economic activity as a comprehensive process of production and reproduction again. This insight makes us commit to this code for business behaviour:

§1

(We assign environmental protection to the prior business objectives and integrate it in the basic principles for business management. Its realization is a continuing process.)
We assign sustainable resource treatment to the prior business objectives and integrate it in the basic principles for business management. Its realization is a continuing process.

§2

(We understand environmental protection as an important managerial task and make sure that it is transformed into specific goals and behavioural rules in all business functions and on all levels.)
We understand sustainable resource management as an important managerial task and make sure that it is transformed into specific goals and behavioural rules in all business functions and on all levels.

§3

(We see environmental protection as part of the line responsibility. Expertise is organized by appointing an environmental protection officer or an environmental protection council in a way that comprehensive information and inclusion in all decisions are guaranteed.)
We see sustainable resource management as part of the line responsibility. Expertise is organized by implementing a strategic resource controlling in a way that comprehensive information and inclusion in all decisions are guaranteed.

§4

(We integrate environmental protection as an independent criterion in the planning, governing and control system, if possible in a quantified way.)
We integrate sustainable resource treatment as an independent criterion in the planning, governing and control system, if possible in a quantified way.

Fig. 10.3 (continued)

§5

(We give periodical and detailed account of the status of environmental protection in our business in order to detect weak points, to initiate necessary activities and to document the achieved progress.)

We give periodical and detailed account of the status of general resource consumption in our business and of investments in the resource supply. By doing so, we want to detect weak points, to initiate necessary activities and to document the achieved progress.

§6

(We inform our employees in detail about environmental aspects; we motivate them to behave more environmentally friendly in their private lives as well; and we focus particularly on environmental protection in our education measures.)

We inform our employees in detail about sustainability aspects; we motivate them to behave thriftier in their private lives as well; and we focus particularly on the recognition of mutual co-evolutionary dependences of a business and its environments.

§7

(We make special use of research and development in order to continuingly increase the environmental compatibility of our products and processes. We sparingly apply raw materials, energy, water and other goods; and we consider the whole life cycle of products, including their disposal.)

We make special use of research and development in order to continuingly increase the household compatibility of our products, processes and organizational operations. We sustainably apply natural and human resources, i.e. we consider the reproduction autonomies of people and nature by taking compensation measures for our use of nature, and we give our employees the opportunity to play various roles in family and society.

§8

(We involve all our market partners in our efforts to increase environmental protection. We work out specific environment standards with our suppliers; we inform and provide advice for retailers, and we inform our customers about the environmentally protective treatment of our products and product disposal).

We involve all our household partners in our efforts to achieve sustainable resource treatment. We work out specific relationship standards; we inform and provide advice for retailers and customers about the sustainable treatment of our products.

§9

(We are poised for open dialogue with all societal groups; we provide the media with environmentally relevant information, and we work together with public authorities, associations and other institutions in terms of environmental protection.)

We are poised for open dialogue with all societal groups; we provide the media with information on our household community, and we work together with all our household partners on the identification of the relevant material and immaterial resource flows.

§10

(We perceive legal requirements as minimum requirements and aim for a higher level of environmental protection within our overall business.)

We know that a household community containing our business and its environments cannot be regulated by law. But we also know that only the lasting preservation of the common resource base of economy and society can guarantee the social, economic and ecological living conditions on earth.

Fig. 10.3 From the ecological to a sustainable business code for a sustainable resource management
Source: Müller-Christ 2001:369

between objectives and behaviour manifests itself in the fact that the principles often make statements on the intended orientation of business organization, human resource management and the internal or external communication. This is why they are apt to announce the orientations developed during the environment-oriented strategic planning period to both employees and public.

As, however, the orientation of the sustainability principles offers only very few possibilities of variation, the **process of formulation** becomes more important than the result itself. Participation in the process can have greater effects on the sustainable behaviour of employees than the text itself: employees take a close look at the meaning and significance of the business and learn about the importance of their occupation. They are encouraged to change behavioural patterns and thereby contribute to a learning organization. However, in the end it is the credibility that constitutes a crucial benchmark for the effects of sustainable business principles.

10.5 Strategic Resource Controlling

The implementation of controlling constitutes a response to an increasing complexity in internal decision-making. Originally, its goal was to efficiently coordinate decentralized organizational structures and centralized purpose pursuit (Horváth 1996:10). Using controlling to control the business in terms of resources benefits from the advantage that controlling is an established coordinating function which is part of day-to-day business and which aims at an alignment of the business with the business objectives. However, in practice, controlling is perceived rather as a supporter for increased cost awareness than for comprehensive view of control.

The major problem is that costs for environmental, human resource or public relations measures are easily identifiable, whereas their benefits are hardly quantifiable. For this reason a change takes place in the controlling philosophy: qualitative benefit factors (for environmental, personnel, knowledge or resource controlling) require different decision-making abilities than controlling the business exclusively by key ratios. Since subjectivity increasingly influences decision-making behaviour, it is often stated that it is up to controlling to ensure the **rationality of this behaviour** (Weber 1999:466). Primarily, the definition of this task aims at the assurance of the rationality of market success: value-oriented planning conduces to the maximization of goodwill which all other planning levels and planning areas must be subjected to.

The perception of controlling having the task to ensure rationality serves as the starting point for the idea to control a business by its resources. For businesses, it is not only rational to ensure market success if they want to preserve their existence; it is also rational to preserve their resource base. Hence, it would be the task of resource controlling to first of all turn the internal **preservation of sources into**

a decision problem and subsequently coordinate market-oriented and sustainable decision-making criteria.

For this purpose, resource controlling can resort to experiences gained within environmental controlling the new challenge of which is to solve the problem of monetary-material valuation: which effects does a measure for environmental protection cause on profit and how is the status quo of environmental protection affected by changes in profit? However, the tasks of resource controlling become even more complex because the objective to **ensure rational action within the household community** cannot be solved solely within the business. Resource flows between businesses and their environments as well as their sustainable orientation need to be operationalized thoroughly. The rationality of management ecology demands a reflection of the output-related repercussions on the operational capability of the resources base. Hence, the household partners must be made partners in the resource controlling process as well.

10.5.1 SWOT Analysis for Management Ecology

Thanks to the resource based view of strategic marketing, instruments for resource analyses have gained importance. The preliminary work for an identification of resources has therefore already been done. However, there is a great difference if scholars search for resources relevant for competition or if they look for (re)sources vital for survival. Since the resource based view is bound to the "potentials for success" approach, resources relevant for competition can only be identified by means of their usability on the market. From the perspective of management ecology, however, it is just as important to invest in the **shared stock of tangible resources**. But tangible resources do not meet the demands of the identification patterns of resources relevant for competition. However, they represent an important subset of resources vital for survival.

Due to its inside-out perspective, the resource based view suggests to regard the strategic resource analysis by the SWOT analysis as a complement for strategic environment analysis. By this, the business analysis (strengths/weaknesses) turns into a process of searching for intangible resources. Strategic planning according to management ecology must go beyond this approach and has to conduct a **comprehensive resource-oriented SWOT analysis** first. This includes the specification of resource or household communities by means of both business and environment analysis (see Fig. 10.4).

The business orientation towards its specific environments is a constitutive characteristic of strategic planning: environmental effects are perceived as either promising (opportunities) or threatening. The business situation is regarded as the sum of strengths and weaknesses. Besides this market-strategic business planning a **sustainability-oriented business planning** needs to be established before the two plannings merge for further steps. Such sustainable business planning can be built

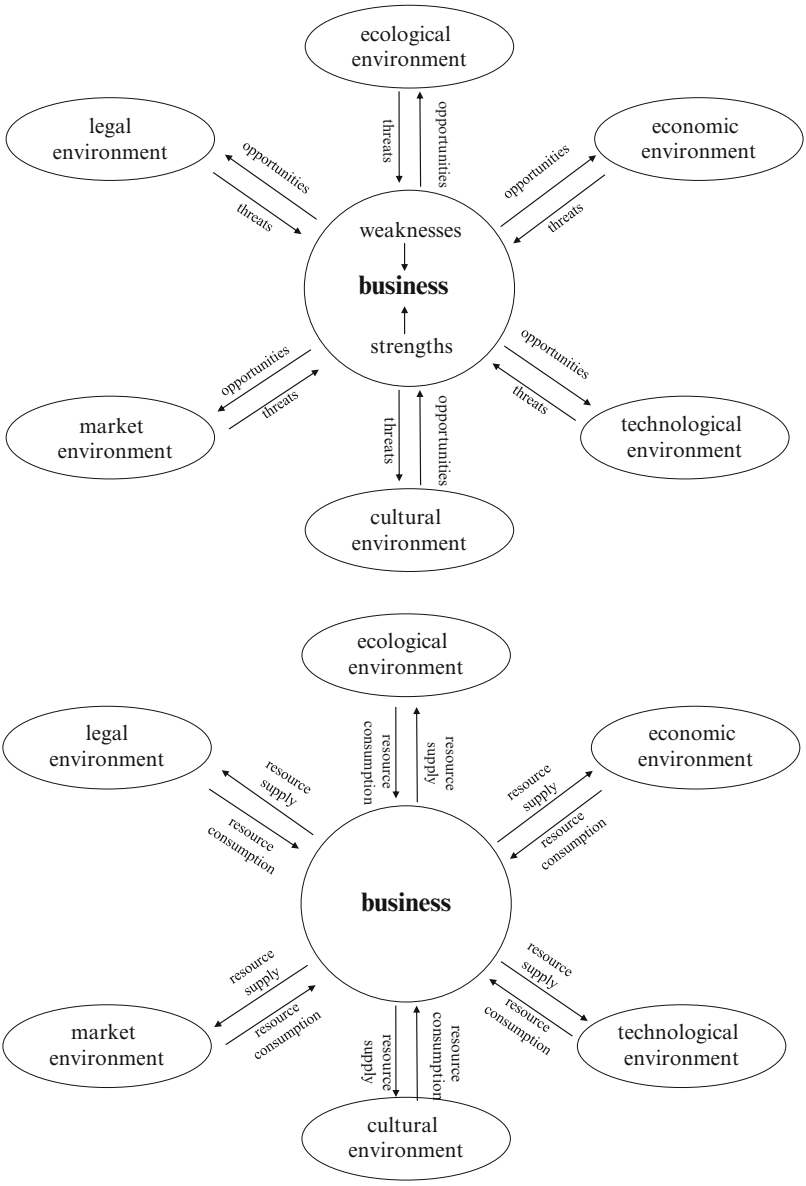

Fig. 10.4 Market-oriented (*top*) and sustainable (*bottom*) SWOT analysis by comparison
Source: Müller-Christ 2001:379

upon methods and instruments traditionally applied in business planning. However, it adds further criteria and questions to the analysis which pertain to the quality of relationships from an exchange-theoretical perspective. Consequently, it becomes quite difficult to analyze business and environment independently.

Strengths:	Weaknesses:
Highly-efficient use of resource A Extensive access to source B	High degree of dependence on resource C Intensive use of resource D
Opportunities:	**Threats:**
Member in an innovative recycling network for resource E High innovative dynamics for substitution of resource H	Instable source for F High level of competition regarding resource G

Fig. 10.5 Resource-oriented SWOT analysis

The figures 10.4 and 10.5 show that the analytical system remains. However, there is a difference between the perception of environmental relationships as mutual exchange relationships and the one-dimensional perception of environmental relationships as a threat. The question of the opportunities and threats environments might contain turns into the question of what kind of resources they provide and what businesses are able to do to support these resources' reproduction. The internal strength/weakness analysis turns into the question of resource dependence and of membership in innovative reproduction networks.

Plenty of information needs to be collected for a sustainable SWOT analysis. Business or industry representatives have to conduct comprehensive analyses which require an organizational framework. The classification illustrated above provides a first impression of the material and immaterial resources a business is dependent on. Deeper analyses need to be conducted in order to contribute to the assurance of the supply of material and immaterial resources. A further organizational or analytical framework is needed, which will be introduced in the following as the **analysis of resource regimes**.

10.5.2 Management of Resource Regimes

There have already been several attempts to describe the global availability of material resources. Often, the term **material or resource system** is used to describe resource deposits, resource conservation and resource productivity (Wuppertal Institut 2008).

The concept of resource regimes, however, emphasizes that long-lasting availability is not only dependent on raw material deposits or their technical handling

but also on the framework controlling the **sources' operational capability**. Here, businesses are referred to as actors that stabilize or change the rules of the framework through their behaviour. Analyzing resource regimes could lead businesses to the insight that they have great influence on the availability of scarce resources; that they can impact on resource supply (by themselves or in cooperation with other businesses or NGOs); or that they can contribute to an integrated resource regime (by themselves or with the government).

The term *regime* might at first sound unfamiliar in connection with management instruments since in everyday language a regime describes a dictatorial form of government and therefore the term has a negative connotation. However, according to political sciences a regime describes not only a form of government but also any social institution that contains a **framework** of rules, principles, norms and decision-making procedures. Regimes are no independent actors in this case, but actors make the rules. Norms and principles form the core of the problem which influences the rules. This means that rules can be modified without changing the core. Examples for regimes according to political sciences are human rights regimes and environmental protection regimes.

Up to now, the instrument of resource regimes has been used for political or regional-political issues. However, it can also be applied to the strategic sustainability problem of businesses: how can a business ensure the supply of absolutely scarce resources? To answer this question, businesses need to know exactly about the origin of resources, about property rights, about possibilities of protection and about allocation patterns. Hence, a resource regime describes the framework which controls the **availability of a resource** in a sustainable or non-sustainable way. The core of the problem – which the framework is based on – is the lasting availability of an absolutely scarce resource. The analysis of a resource regime provides a business with information on their possibilities of influencing the resource's availability. Typical strategic questions that can be answered by the insights of a resource regime concern vertical backward integration or cooperation with competitors aiming at the assurance of resource supply.

Three types of resource regimes exist:

1. Simple regime: the framework is being influenced by very few actors.
2. Complex regime: the framework is being influenced uncoordinatedly by several actors with uneven distribution of power.
3. Integrated regime: all rules are coherently geared towards the autonomies of reproduction.

It is assumed that in the end the lasting availability of absolutely scarce resources requires **integrated resource regimes**. The development of such integrated regimes cannot solely be assigned to politics; businesses are actors in resource regimes, influencing the framework by their behaviour. Businesses should therefore know about their effects on regimes and should control their impacts through repercussion control. Consequently, the analysis of a resource regime contributes to the systemic wisdom of businesses (see Chap. 5.2).

10.5.2.1 Analytical Framework for Material Resource Regimes

By applying the concept of resource regimes to material and immaterial resources, the traditional environmental protection-thinking is being replaced by a **consequent resource-thinking**. The currently action-guiding concern for protection is made subject to the thought of a lasting availability of vital resources. A sustainable treatment of resources can only be controlled if all rules and institutions (including their interaction) are known which influence the origin, property, utilization, allocation and protection of a material resource (see Fig. 10.6). The term **rule** serves as an umbrella term for any kind of rights, behavioural norms and natural regularities.

Rules of origin:
Rules of origin comprise all regularities and norms that are known about the origin of a resource. In most cases, this will be a collocation of the natural process controlling the origination.

Rules of property:
Ownership and possession are regulated by law. Rules for the transfer of ownership and possession are of special interest in this context. Even if the own legal system is well-known, international rules for the acquisition of property and ownership rights for sources might be quite meaningful. Owning a source is usually accompanied by an increased authority to dispose of it. The same applies to rights of ownership (e.g. mining rights).

Rules of utilization:
This category comprises what actors use resources for, which norms are applied and which social importance resources have. Here, different competitive ways of utilization will become apparent. Moreover, businesses might understand to which extent these competitive ways of utilization affect their own possibilities of accessing a resource.

material resources	content of the rules	initiators of modification	dynamics of actors	possible influences	consideration of autonomies of reproduction
rules of origin					
rules of property					
rules of utilization					
rules of protection					
rules of allocation					

Fig. 10.6 Analytical framework for material resource regimes

Rules of protection:
There are numerous legal provisions on the exploitation and utilization of resource categories. National law as well as national and international agreements try to govern a protective utilization of resources and to prevent damages of man and nature.

Rules of allocation:
Within a supply chain resources are allocated from their point of origin to several points of utilization. The longer the chain, the more economic interests arise and the more difficult is the sustainable allocation of resources. If a business purchases resources from suppliers, it is important for the purchasers to know the suppliers' norms and principles if they want to contribute to a sustainable resource management. And it is just as important to know about the contracts being signed by the partners in order to lastingly preserve a certain resource.

Analytical criteria:
As soon as the content of the rules is clear, they can be analyzed by means of the following criteria:

- Initiators of modification: Which actors and which effects are responsible for the modification of the respective rules?
- Dynamics of actors: (How) do actors and institutions interact? Are the rules often modified due to these interactions?
- Possible influences: From the modern management perspective, this is the crucial criterion since it aims at the reflection of the effects of a business's actions on the resource regime by means of the repercussions on the business itself (see Chap. 5.2.1.4).
- Consideration of autonomies of reproduction: To which extent do the different rules consider a source's operating mode? Do they take their lasting preservation into account? This criterion provides the essential insights for the type of resource regime and its sustainable need for development.

At the end of the analysis a decision must be made on whether the resource regime is a simple, a complex or an integrated one (whereas the last one will hardly occur). This analytical framework has the advantage that all knowledge on a resource category is systematically connected and prepared. A clearly structured explanation of the resource regime might contribute to the creation of a common understanding of sustainable resource management among all business departments.

10.5.2.2 Analytical Framework for Immaterial Resource Regimes

Immaterial resources have completely different properties than material ones. Especially the invisibility of resources like trust, legitimacy, legal security or education makes it difficult to discuss and organize the **regularities of these resources**. However, one can also say that immaterial resources have an origin, are in possession of actors, that they can be used in a stressing way, that they are vulnerable and destructible and that they can be proliferated (see Fig. 10.7).

immaterial resources	content of the rules	indicators	dynamics of actors	possible influences	consideration of autonomies of reproduction
rules of origin					
rules of property					
rules of bearing capacity					
rules of vulnerability					
rules of allocation					

Fig. 10.7 Analytical framework for immaterial resource regimes

Most rules are likely to be comprehensible by common sense. However, a plausible description of content seems to require **socio-scientific research**. Initial comprehensions of the rules are mentioned below.

Rules of origin:
Rules of origin comprise all regularities and norms that are known about the origin of a resource. The idea is to find out how confidence-building processes occur, how the product "education" is developed or which structure a legal system should have in order to transmit a feeling of functionality.

Rules of property:
Property of an immaterial resource can at the utmost be provided by patents and licenses. Trust and education are closely related to the actors. Immaterial resources can indeed change hands, but this usually entails their multiplication.

Rules of bearing capacity:
This category comprises what actors use resources for, which norms are applied and which social importance resources have. It is especially immaterial resources that are not consumed by utilization as long as consumption follows certain rules. By imposing a reasonable burden on an immaterial resource, it can even replenish; however, when overstraining an immaterial resource, it can also vanish.

Rules of vulnerability:
The resource trust demonstrates obviously that immaterial resources are vulnerable. Everyone is aware that trust must be placed first if it is to develop. Yet, everyone knows that certain behavioural patterns violate trust and therefore destroy the resource. Education is violated and consumed by non-use; legal security is reduced by certain behavioural patterns, and so is legitimacy.

Rules of allocation:
Immaterial resources need to be spread as widely as possible. Resources like trust, education, legal security and legitimacy however follow different rules of spread: education is dependent on the support of education systems; trust is dependent on the placement of trust; legitimacy is dependent on discourses.

Analytical criteria:
As soon as the content of the rules is clear, they can be analyzed by means of the following criteria:

- Indicators: Through which indicators can invisible immaterial resources be detected and observed for change?
- Dynamics of actors: (How) do actors and institutions interact? Are the rules often modified due to these interactions?
- **Possible influences:** From the modern management perspective, this is the crucial criterion since it aims at the reflection of the effects of a business's actions on the resource regime by means of the repercussions on the business itself (see Chap. 5.2.1.4).
- Consideration of autonomies of reproduction: To which extent do the different rules consider a source's operating mode? Do they take their lasting preservation into account? This criterion provides the essential insights for the type of resource regime and its sustainable need for development.

From first attempts to analyze the regimes of immaterial resources, businesses or industry representatives will learn how **complex the analysis will be**. However, preliminary information on how the supply of immaterial resources can be assured is deducible from these first attempts.

10.6 Resource-Oriented Sustainability Monitoring

Sustainability reporting (or sustainability monitoring) has already caused several discussions on primary concepts. Most concepts – including the widely-known concept of the **Global Reporting Initiative** (GRI) – act on the premise that businesses produce stress for the natural environment and society (http://www.globalreporting.org). Consequently, sustainability reporting must include all activities leading to a reduction of side effects caused by economic activity.

What is the difference between sustainability reporting and sustainability monitoring? Monitoring is the systematic and continuing acquisition, surveillance and control of a process (e.g. the sustainability commitment of an entrepreneurial unit). In contrast, reporting is a periodical publication of results which do not necessarily result from a monitoring system. The best-known reporting instrument is the annual balance sheet of businesses which is derived from accounting data and which is regulated by law. In environmental reports (known as antecedents of sustainability reports) monitoring is based on eco-controlling and environmental management systems.

Monitoring systems have the task to observe processes and to intervene as soon as the process is no longer on track. The focus is thus on the collection and valuation of data being integrated in businesses' decision-making processes. In this sense, financial controlling could be referred to as a monitoring system. However, the monitoring term has only gained popularity when **non-monetary management developments** were to be made visible and controllable. These include the side effects of economic activity on the natural environment and society which are to be monitored with the help of sustainability reports according to the GRI guidelines.

The resource-oriented sustainability approach developed in this book takes up this reporting premise on the treatment of side effects, but also integrates further innovative premises leading to a more focused way of reporting. With this approach businesses cannot only report to the environments; they can also **systematically observe and monitor their own behaviour as regards sustainability**. Summing up, the innovative perspectives for a sustainable resource management are:

1. The innovations of sustainability monitoring are developed from the perception of **sustainability as economic rationality** regarding the treatment of resources. If a business wants to operate constantly it does not only have to focus on an efficient application of resources, but also on the resource supply. It has to model its self-conception as a resource-dependent system (see Chap. 4).
2. As long as a system is dependent on another system's resources, it has to **invest permanently in the other system's operational capability** in order to secure resource supply. From this rational perspective the constitutive characteristics of sustainability can be deduced. These are valid for any economizing system (see Chap. 5).
3. Attention can be paid to resource supply and the operational capability of sources from two perspectives: The traditional perspective is the pathogenic one which asks for the factors which disturb a system's operational capability. This implies the assumption that a reduction of disturbance will result in a reconstitution of the operational capability. In contrast, the salutogenic perspective asks for the factors which – even under difficult circumstances – **maintain health**. Strengthening health complements the avoidance of illness. Both perspectives are needed for the preservation of a system's operational capability. This is why the monitoring model differentiates between salutogenic and pathogenic monitoring fields (see Chap. 9).
4. Economizing systems act rationally if they judge their own actions' effects on their sources by analyzing the **repercussions on themselves**. For this purpose, they need to consider complex cause-and-effect relationships. But since they have to evaluate their actions ex ante, they cannot await the effects. Consequently, they need to consider the causes – their commitment – for the operational capability of their sources if they want to legitimate today's decisions (Müller-Christ et al. 2005).

These innovations lead to the **structural logic of a resource-oriented sustainability monitoring**. Businesses observe their own and the external disturbances of the operational capability of relevant sources as well as their own and the external

measures for their support. This implicates that businesses have to better reflect the side effects of their actions. Moreover, emphasis is laid on the commitment regarding the central task of sustainable management: the reproduction of material and immaterial resources.

A business is not able to observe all its environments and sources to the same extent. It therefore has to define relevant observation fields as **monitoring fields**. Here, the analytical instruments introduced above (sustainable SWOT analysis, definition of resource regimes) can be of help: they both aim at the detection of the processes of resource supply and their influencing factors. Monitoring fields then include the systematic observation of these processes. Figure 10.8 reflects the logic of the monitoring model.

The explanation of the respective monitoring field will show that **supporting a system's health is far more complex than reducing disturbances**. This is due to the fact that disturbances tend to appear under a certain form (viruses, violence, poverty, pollution). On the other hand, the effects of disturbances are usually based on clear causes. In other words: the cause-and-effect relationships of the pathogenic monitoring fields are less complex because the *defective* and the *destroying* are easier to identify. The *destroyed* is obvious and so is the prevention of disturbance. Furthermore, it is not necessary to know the mode of operation of the whole system in order to detect destroying influences. For investments in a system's health, the sources' autonomies have to be known. These insights are gained when analyzing a source's resource regime (see Chap. 10.5.2).

The formulation of the monitoring fields' content should follow a certain taxonomy. For each monitoring field the following six points can be described:

1. Definition: Demarcation of the monitoring field and definition of content
2. Relevance for sustainability: Description of the effects of a monitoring field on the sustainable development of the respective source

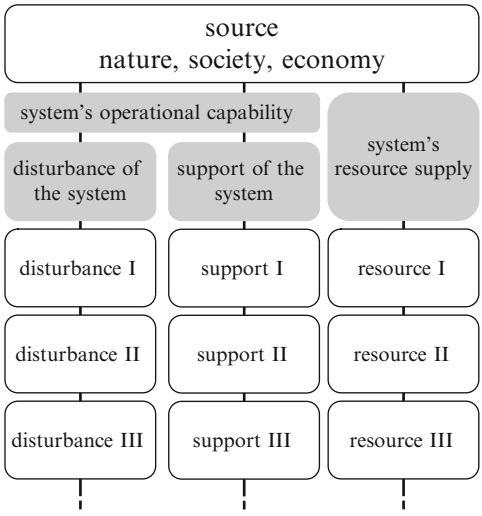

Fig. 10.8 Logic of the model of sustainability monitoring
Source: Müller-Christ et al. 2005:39

3. Status quo: How does the development of the monitoring field work within the chosen framework?
4. Actors and resourceholders: Who has access to the resource or who controls the resource's operational capability?
5. Indicators for commitment: Which actions, events, determinations or general causes indicate commitment to sustainability in this monitoring field?
6. Interrelations: Which other monitoring field is influenced by commitment to this monitoring field?

The term **resourceholder** is used as a modification of the term stakeholder in order to accentuate the fact that actors do not only make demands on organizations but that they also provide or hold back resources (Müller-Christ et al. 2005:47). A sustainable SWOT analysis or the analysis of a resource regime can provide answers to points 1–4. The points 5 and 6 are the results of a systematic sustainability management and therefore constitute the answer to the organizational possibilities derived from the analysis of the resource regime.

The following figures contain initial propositions for monitoring fields for the sources nature, society and economy (see Figs. 10.9, 10.11 and 10.13). The monitoring fields differ in accordance with the industry and the size of the business. Apart from that, the logic of observing the sustainability commitment is valid **for all economizing units**.

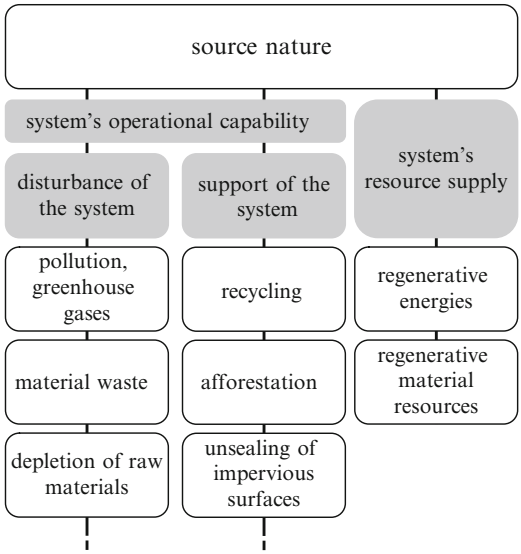

Fig. 10.9 Monitoring fields of the source nature

	Definition	Relevance for sustainability	Status quo	Resource-holders	Indicators for commitment	Interrelations
Pollution	List materials	Toxification of soil, water, air	Increasing?	Increasingly government , sometimes private persons	Investments in cleaning technology, energy saving etc.	
Material waste	See laws on recycling	Waste of raw materials	Increasing?	Laws on recycling		Recycling
Depletion of raw materials	Exploitation of raw material sources	Landscape destruction	Increasing?	Property of soil, government	Visualization for suppliers	Pollution
Recycling	Close raw material loops	Preservation of resource supply	Increase in recycled quantity	Businesses with licenses and know-how	Inspection of ways of disposal	Material waste
Afforestation	Increase tree population	CO_2 reduction		Forest and soil owners	Contracts with www.atmosfair.com or www.myclimate.org	Pollution
Unsealing of impervious surfaces	Remove asphalt and stones from surfaces	Preservation of ecological operational capability of eco-systems and soils	Increasing	Soil owners	sqm of impervious surfaces	
Regenerative energy	Biomass, wind, solar	Constant reproduction possible	Increasing	Providers on markets, businesses with know-how, politics	Contracts for green electricity	Pollution
Regenerative material resources	Biomass	Constant reproduction possible	Increasing	Agriculture, politics	Reorientation of R&D in businesses	Pollution

Fig. 10.10 Catch phrases for the description of monitoring fields – source nature

Each of these monitoring fields should be described according to the points listed above. It is the task of a **business's strategic planning** to define these fields. The systematic observation of the environment from a resource perspective is a task management studies define as strategic foresight. In Fig. 10.10 the content of the monitoring field description is shown.

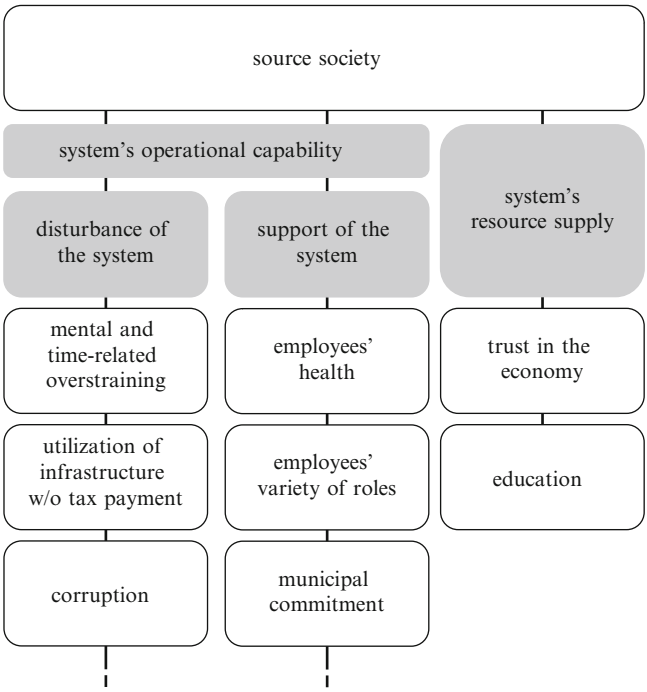

Fig. 10.11 Monitoring fields of the source society

Society provides businesses and economy with numerous **immaterial resources** which are becoming scarcer and scarcer. The causes therefore are complex. Businesses can no longer take society's trust in the businesses' problem-solving capacity for granted. Moreover, education is becoming a scarce resource and motivation is often called into question.

The choice and description of the monitoring fields for the observation of resource supply for society is more complex (see Fig. 10.11). In general, society provides social resources which do not obey the laws of nature but **social autonomies**. These can only be described in a qualitative way and are subject to individual and institutional interpretation processes. In the end, the actors have to choose which kind of interpretation of autonomies they would like to use (see Fig. 10.12).

The scarce resource *education* clearly shows the **difference between the economic rationalities regarding the treatment of resources**: as soon as qualification is missing in the labour market businesses can try to improve access to available

	Definition	Relevance for sustainability	Status quo	Resource-holders	Indicators for commitment	Interrelations
Overstraining of employees	Qualitative and quantitative increase of job requirements	Regeneration is not possible to an adequate extent	Increasing	Decision-makers, employees	Overtime compensation is possible, reorganization processes	
Utilization of infrastructure without tax payment	Parent/subsidiary-transfer abroad in order to reduce taxes	Government lacks means for reinvestments in infrastructure	Increasing?	Tax legislation, decision-makers		
Corruption	Generation of advantages through bribe payments	Destroys trust and competitive order	Increasing	Decision-makers	Codes of honour, internal auditing	Trust in the economy
Employees' health	Maintain physical ability	Assure high performance	Constant?	Employees, labour conditions	Health management	Overstraining of employees
Employees' variety of roles	Enable employees to play several social roles	Maintain operational capability of family life, assure civic involvement	Decreasing?	Employees, labour conditions	Audit 'work and family'	Overstraining of employees
Municipal commitment	Increase attractiveness of location	Assure supply of highly qualified employees	Constant	Local affairs, municipal administration	Cultural sponsorship	Utilization of infrastructure
Trust in the economy	Profits are not realized at public expense	Assure material resource supply	Decreasing	Decision-makers	Municipal commitment	Corruption
Education	Willingness and ability to solve complex problems	Assure supply of problem-solving capacity	Decreasing	Regional politics, educational institutions	Establishment of educational-economic foundations	Employees' variety of roles, Employees' health

Fig. 10.12 Catch phrases for the description of monitoring fields – source society

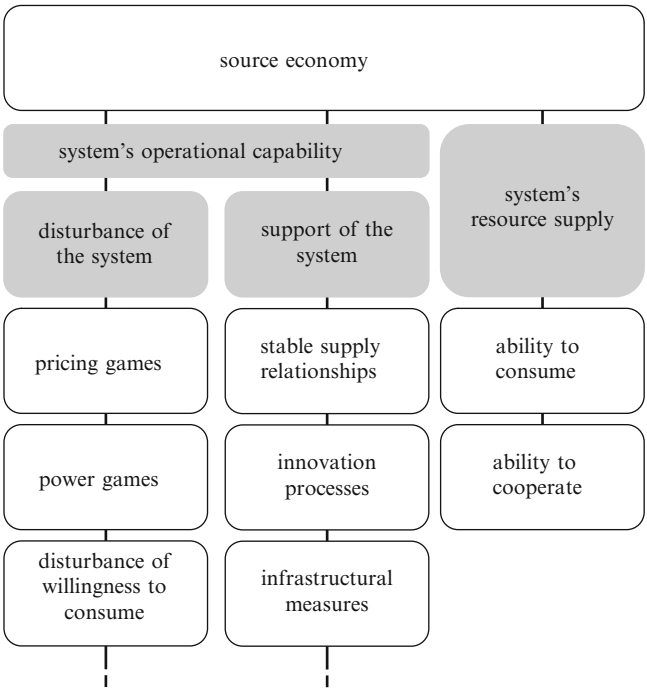

Fig. 10.13 Monitoring fields of the source economy

offers (increase in efficiency). They establish a personnel marketing department in order to enhance the business attractiveness to potential employees. But if all businesses establish personnel marketing the measures compensate each other. A sustainable human resource management takes the source as a starting point and invests in the supply of qualifications for the labour market (see Chap. 8.5.2) (Fig. 10.13).

Economy – referred to as the sum of all the institutions acting with commercial orientation in order to fulfil society's needs – is a highly relevant environment for businesses. Any business activity influences the economic conditions of other businesses. Section 4.4, Chap. 4 introduced the perception of a **business as a resource-dependent system** which is, on the one hand, dependent on several resources but which is at the same time a supplier of resources who serves adjacent systems with its output. Thus, a business's market behaviour influences the resource supply of other economic institutions. The monitoring fields for the source economy show the interrelations of economic institutions (see Fig. 10.14).

	Definition	Relevance for sustainability	Status quo	Resource-holders	Indicators for commitment	Interrelations
Pricing games	Ruin competitors and suppliers through inadequate pricing policy	Ecological and social side effects are being augmented	Increasing	Decision-makers	Long-term pricex-fiing for agriculture	Pollution, Employees' health
Power games	Impede environmental and social policy through use of power	Ecological and social side effects are not being reduced	Constant	Decision-makers, unions	Commitment on structural policy	Ability to cooperate, Trust in the economy
Disturbance of willingness to consume	Overstraining of consumers with product characteristics	Supply of income is being reduced	Increasing?	Marketing departments	Simplification of product usage	Ability to consume
Stable supplier relationships	Suppliers can rely on deals	Long-term investments are possible	Increasing?	Procurement departments	Conjoint quality management	Pricing games
Society-oriented innovation processes	Systematic R&D on side effects and regenerative use of materials	Sustainable products	Low level	Management	Budget for lateral thinkers available	Willingness to consume, Ability to consume
Infrastructural measures	Maintain and enhance basic configuration of the state	Effcient flow of goods and information	Constant	Government	Commitment to conjoint planning processes	Disturbance of natural processes
Ability to consume	Consumers can use more sustainable products	Avoid side effects caused by use of products	Low level	Marketing departments, consumers	Training for consumers	Willingness to consume, Innovation processes
Ability to cooperate	Coordination of environmental autonomies	More respect for the operational capability of environments	Increasing	Management	Cooperation with NGOs	Municipal commitment

Fig. 10.14 Catch phrases for the description of monitoring fields – source economy

Further Reflection

Instruments prove themselves during their application. The concepts presented above help understand and visualize the conditions of emergence of resources. How do sources work and how does economic activity affect their operational capability? Especially for decision makers in businesses it is worthwhile to describe the resource regime for a source and to search for approaches for controlling the lasting resource supply. Several businesses from the same sector should identify the common resource regimes in similar ways; they form a resource or household community and can together secure the resource supply. Businesses should therefore think about how to include new information on resource regimes in their decision-making processes and how to change decision-making routines in order to effectively control the impacts on the environment by checking their repercussions upon the businesses themselves.

The following suggestions might help here:

Sustainability and strategy:

- Look up the criteria for the audit "work and family". Does the promotion for a family-friendly business take place in a dilemma-sensitive way?
- How does the CO_2-compensation for flights function? How do flight operators strengthen their credibility?
- Search for products whose ability to be consumed is reduced by continuous use.

Strategic instruments for resource control I:

- Search the internet for environmental and sustainability guidelines. Compare one personally chosen guideline with the business principles for management ecology presented above: Which aspects appear and which ones are not mentioned?

Strategic instruments for resource control II:

- Choose a resource from your everyday life. Try either to describe its resource regime or to circumscribe it as a monitoring field.
- Describe in detail the resource regime "academic education". Which possibilities exist for businesses to influence the lasting resource supply?

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G. Müller-Christ, *Sustainable Management*,
DOI 10.1007/978-3-642-19165-7, © Springer-Verlag Berlin Heidelberg 2011