Wolfgang Lassl

The Viability of Organizations Vol. 3

Designing and Changing Organizations

Springer

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To Ulli, Veronika, and Armin
for their patience, ideas, and support

and

in tribute to Stafford Beer († 2002)
a brilliant, versatile, experienced
management thinker
who had the courage to explore new ways

Introduction

"There is nothing as practical as a good theory"[1]—the Viable System Model (VSM) is an insightful theory and valuable diagnosis instrument but is it suitable for designing organizations? Does it help executives and managers to develop good organizational structures and if so how? Can it also provide guidelines regarding the transformation of organizations?

In this volume, we aim to address these questions. Organizational design and change encompass a broad field of organizational activities and aspects at different levels: from micro-practices and personal collaboration in groups and teams, to fundamental questions regarding the organizational macro-level structures (e.g., organizational chart structures). While the micro- and meso-levels are well covered, the design of macro-organizational (chart) structures is a field that still has many open issues; the constant influx of new organizational models, particularly in the popular management literature, bears witness to the high degree of uncertainty and unclarity which still exists in this field. Here, the VSM developed by Stafford Beer might help us to close an important gap and enrich our understanding significantly, as this volume intends to demonstrate. This volume consists of three parts:

The first part, "Building the Bridge" (Chaps. 1–7), deals with the translation of the VSM into the language of the organizational chart structure and vice versa. In this part, we will lay some important conceptual foundations for the second part of this book and for the design of organizational (chart) structures. The circular journey that we started in volume 1, by leaving behind the standard perspective, is now coming to a close.

In Chap. 1, we will try to understand the familiar corporate functions in light of the VSM and how they operate from a systemic perspective. We will see how daily activities and skills that do not find their way into any official job description or are regarded as unimportant get a new and more profound meaning. From there, we will then show in Chap. 2 how the VSM and the organizational chart structure are related to one another.

The principles for designing jobs and units from the VSM's perspective will be discussed in Chap. 3. Through jobs and the units in the organizational chart structure, tasks become unambiguously assigned to individuals, and this creates

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[1]About the history of this quote: see Bedeian (2016).

transparency and focus. And yet, as one experiences it daily, job descriptions and defining the task areas of units cannot and do not settle everything. Chapter 4 deals with the general limitations of job descriptions and organizational units. This leads us then to Chaps. 5–7, in which we will investigate the question of how to restore the overall holistic view of the organization fragmented by organizational chart structures.

Chapter 3 and 4, on the one hand, and Chaps. 5–7, on the other, are thus complementary to one another as it requires both specialization and a holistic perspective. We express this complementarity through the image of the two wings that organizations need, like birds, to function, and that allow them to "fly."

The second part, "Designing Organizational (Chart) Structures" (Chap. 8–17), focuses on the concrete steps of how to model and design organizational (chart) structures. In Chap. 8, we shall first consider the objectives, fundamental questions, and limitations of reorganization projects, as well as outline the process of modeling an organization, as such. Chapters 9–15 then describe the modeling process in detail and thereby touch specific topics such as the possibilities and limits regarding the outsourcing of tasks and processes.

Chapter 16 summarizes the essential design and modeling principles, and then walks us through some typical reorganization scenarios (e.g., centralizing activities, creating new positions, inserting new hierarchical levels, or merging units). Matrix organizations and their derivatives (e.g., tensor organizations) are always a hot topic. For this reason, the entire Chap. 17 is dedicated to gaining a better understanding of their nature and limitations, and how their design problems can be mitigated.

The third part, "Implementation" (Chaps. 18 and 19), is devoted to the execution of organizational diagnoses and simulations (Chap. 18) and the implementation of reorganizations and change processes (Chap. 19). In this chapter, we develop some recommendations regarding the implementation of organizational transformation processes based on the theory underlying the VSM. These final chapters should open the way for you to apply the VSM in your organization more concretely.

As in the previous volumes, you can use the following fast-track reading plan to get a first overview (without the in-depth sections):

- Chapter 1–4.4,
- Chapter 5–5.2,
- Chapter 8,
- Chapter 10,
- Chapter 13,
- Chapter 14–14.1.2 and Chap. 14.2,
- Chapter 16,
- Chapter 17,
- Chapter 19.

For VSM experts or readers who want to understand certain aspects in greater detail, in-depth sections have been added and marked as such:

**Do you want to know more in detail about the various ways
how system functions can be composed?
If so, then continue reading here, otherwise, go to the end
of the chapter.**

5.3   The composition of system functions

Before we look more closely into the adaptation mechanisms and frame
of reference (see Chaps. 6 and 7), we should use the opportunity and deepen
our understanding of the VSM regarding the composition of a system
function. So far, we have used a functional segmentation in the

In volume 1, we set sail on a journey aimed at exploring the functioning of
organizations. Like the previous volumes, this volume also enters uncharted terri-
tory that will offer us new perspectives on organizations and on the VSM – both in
its theoretical conception as well as in its concrete application.[2] First and foremost,
it is aimed at gaining a better understanding of how to (re)design organizational
structures. Creating viable organizational structures must not be left to chance …

Paris, France   Wolfgang Lassl
June 2019

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[2]This volume represents only one of many ways to understand the VSM, and as such it does not
seek to replace but to enrich existing interpretations. Ashby's Law applies here too: Only with
enough choice of different approaches can and will we advance.

Review of Key Concepts

Since not every reader of this volume might have read Stafford Beer's works or volumes 1 and 2 of this compendium, we start by briefly reviewing some of the key concepts from the previous volumes, which we will need for this volume:

1. Ashby's Law and its application to organizations,
2. The viable system model (VSM) and the four management levels,
3. The principle of recursivity,
4. The axiom of the requisite vertical *eigen*-variety.

Ashby's Law

Unlike the organizational chart, the VSM does not view organizations as stand-alone entities but as being **embedded in an environment** for which **they create value** by processing its problems and needs. This relationship is constitutive for an organization and its purpose, livelihood, and functioning.

This relationship, however, is far from trivial, since the environment is diverse. The environment varies, for instance, regarding customers, their needs and demands, (infra)structural constraints, resources, or competitors. Organizations must be able to respond to this variety. For Stafford Beer, who developed the VSM, this relationship can be best characterized by **Ashby's Law of requisite variety** (Ashby, 1976), one of the fundamental laws of system theory and complexity science. Applied to organizations, this law means that organizations need to achieve an equilibrium state regarding the environmental variety that they are facing and need to process (see Fig. 1). For this, they require adequate *eigen*-variety.

An organization's *eigen*-variety (Schwaninger, 2006, p. 14) consists of all the factors that allow it to process the environment's variety such as the organization's resources, competences, patents, technologies, or behavioral patterns. In order to achieve equilibrium, organizations also use other means that aim at either attenuating incoming variety, the so-called variety attenuators (e.g., rules and regulations), or amplifying the organization's *eigen*-variety, the so-called variety amplifiers (e.g., marketing campaigns) (see Fig. 1).

The Viable System Model

This general equilibrium relationship, however, is not yet sufficient to fully explain viability. Indeed, the question is: what internal organizational processes are
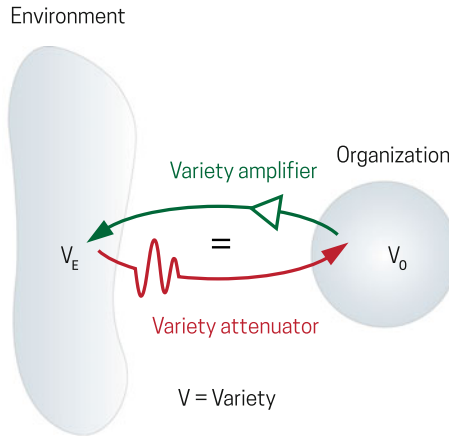
Fig. 1 Organizations need to maintain an equilibrium regarding the incoming environmental variety—adapted from Beer (1995a, p. 96, Fig. 21)

required to make organizations truly adaptive and self-determined? To answer this question, Stafford Beer developed the **VSM**, which identifies the **system functions** necessary for organizations to achieve viability (Fig. 2):
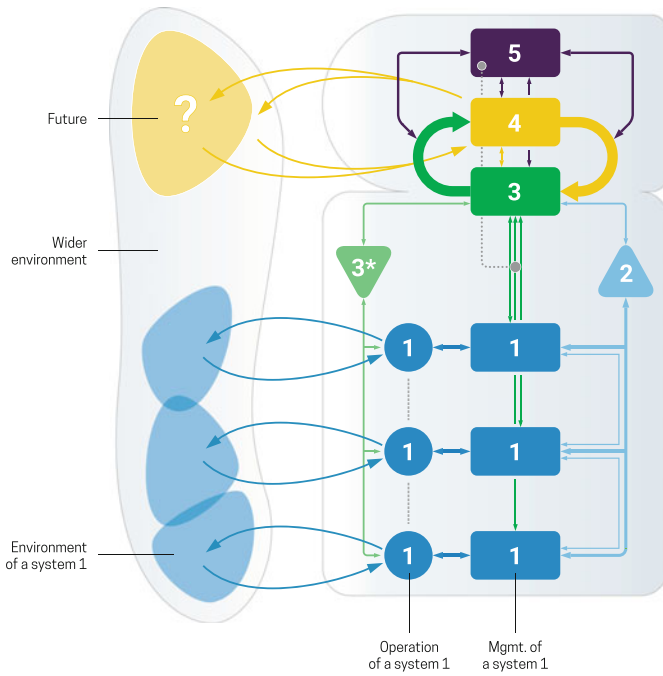
Fig. 2 Viable system model—adapted from Beer (1995b, p. 136, Fig. 37)

- **System 1**: Production and implementation of the organization's purpose. It consists of an operation (circle), its management (rectangle), and the corresponding environment (blue three-sided amebic shape on the left side) for which it creates value.[3]
- **System 2**: Coordination[4] and anti-oscillation of the interactions between the systems 1.
- **System 3**: Demanding accountability from the system 1 management, allocation of resources, and generating synergies.
- **System 3***: Auditing and improving the systems 1.
- **System 4**: Observing the wider environment and innovating.
- **System 5**: Defining long-term policies, principles, and norms.

As we have seen in volume 2, organizations must not only achieve equilibrium with the environment but must also balance out the internal equilibria that exist between each system function and recursion level (see below). Each equilibrium must comply with Ashby's Law.

The Principle of Recursivity

Another important aspect of the VSM relates to the **recursivity of organizations** (see Fig. 3). Recursivity refers first to the vertical structural dimension of an organization. It means that organizations can divide their tasks and responsibilities not only into units at one hierarchical level ("horizontal differentiation") but also across several levels ("vertical differentiation"). Both ways of differentiation help organizations to obtain an overview and distribute their tasks and responsibilities more evenly.

However, vertical differentiation does not suffice: As we have learned in volume 1, organizations must also establish **similarity between the recursion levels** regarding their systemic functioning to become genuinely recursive. All levels must be fully functional viable systems with all necessary information and control channels and share the same or similar control principles, language, and models to establish full recursivity.

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[3]In this book, we use the term "system 1" just for the triad environment-operation-management (which includes the local regulatory center, which are not shown in Fig. 3 for reasons of simplicity). The graphical representations of the VSM in this book thus show three systems 1. For Stafford Beer in his later works (1995a, b), system 1 comprises all triads and one triad is called "elemental organizational unit" or "operational element" (1995a, pp. 96 and 121). The reason for the narrower scope chosen in this book, which rather follows earlier terminology Beer (1984, pp. 14f; 1995c), is a more parsimonious terminology that facilitates the explanation of the VSM and highlights better the specific task of the metasystem to create unity out of individual elements. By calling all triads "system 1" and using the same color, I hope to sufficiently express also the aspect that they together form the operational core of the organization, generate its purpose, and belong to the same type of systemic function (so the "system 1" in the larger sense). Due to reasons of simplicity, we show in our two-dimensional graphical representation of the VSM only the channels between the system 1 management units and system 3 and not the channels between these management units.

[4]To better express the self-coordinating dimension of system 2 envisaged by Beer (1995c, pp. 127f), connecting lines (light blue) between the system 1 management units were added to the system 2 in the original model.

A corporation has three divisions

...

Each division has three business units
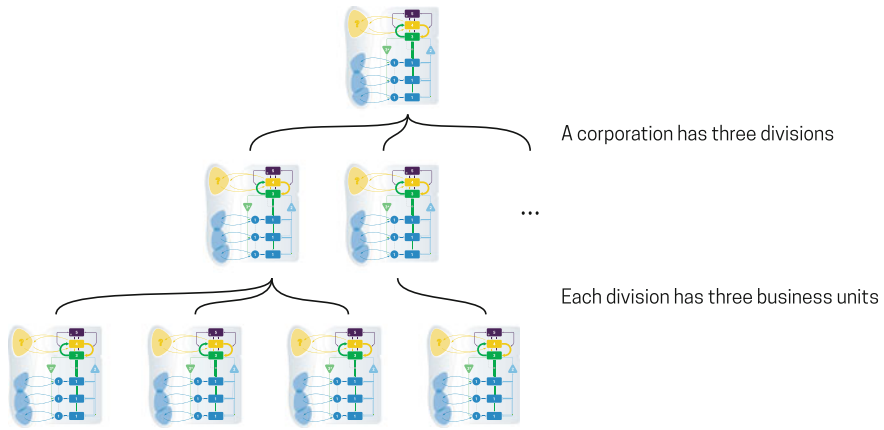
Fig. 3 Organizations are and should be recursively organized—adapted from Beer (1995a, p. 315, Fig. 51) and Leonard (1989, p. 189, Fig. 5)

The Axiom of Requisite Vertical *Eigen*-Variety

Finally, in volume 3, we will also make extensive use of the axiom of requisite vertical *eigen-v*ariety that we encountered in volume 2 (see Fig. 4). This axiom
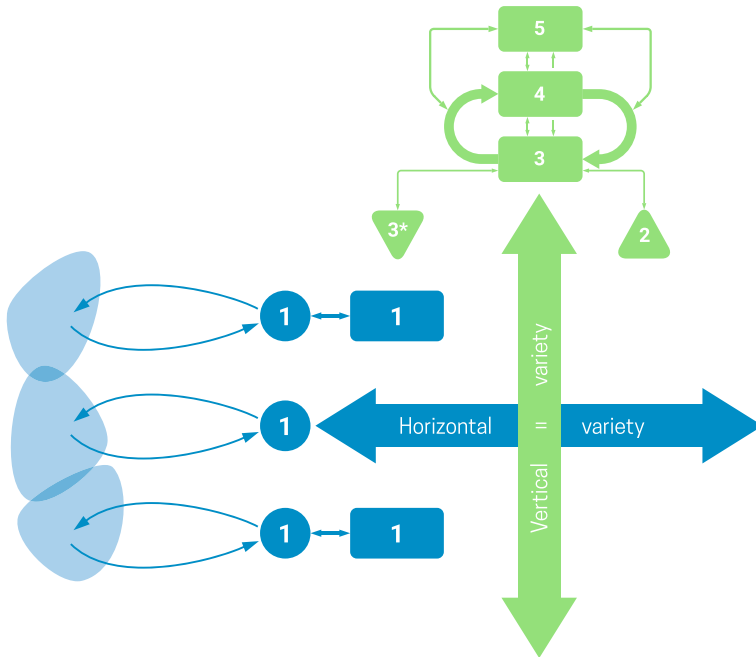
Fig. 4 Horizontal and vertical *eigen*-variety must correspond to each other—adapted from Beer (1995a: 96, Fig. 25)

states that the metasystem must have sufficient *eigen*-variety (e.g., competencies and resources), to control the (*eigen*-)variety of the systems 1 (the so-called horizontal (*eigen*-)variety). This means, in practice, that one can only integrate that amount of variety in the form of technology, markets, cultures, customer groups, resources (e.g., raw materials), or production technologies into the organization that can be controlled and coordinated adequately by the metasystem. If the metasystem is not equipped with sufficient *eigen*-variety, then it will be overwhelmed and, thus, cannot fulfill its function and add value. The operational organization consisting of the system 1 then escapes its control. For this reason, the metasystem's *eigen*-variety must be at least equal to that of its subordinated systems 1 (regarding the aspects that need to be controlled metasystemically).

With these four basic concepts in mind, we now have all the building blocks at hand to start the third volume….

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Contents

Part I
Building the Bridge

"Organization in 3D": Discovering the Systemic Dimension of Organizations

1

In the two previous volumes, we tried to understand the key aspects of an organization's viability through the lenses of the VSM. Until now, we have mainly moved within the conceptual language of the VSM, and you might have already asked yourself, where and how do we find the standard corporate functions in the VSM, such as sales, HR, and production?

Having mostly used VSM terminology has, thus far, been for one pedagogical reason: It allowed us to become more familiar with the logic of the VSM in all its depth and richness. If we had jumped too often between the VSM and the standard organizational language, this would have caused too much confusion. However, now that we have gained sufficient in-depth understanding, we should relate the VSM to the standard organizational language. We will soon discover how much we have gained from the VSM perspective. The VSM acts like 3D glasses (Fig. 1.1) through which one can discover the organization in its systemic depth.[1]

Let us now put on the VSM glasses and start viewing organizations in 3D:

Fig. 1.1 The VSM lets us see organizations with another dimension, like 3D glasses (© fotolia/stock.adobe.com—artist(s): nikkytok)

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[1]All figures in this chapter related to the VSM are or contain, and if not stated otherwise, adapted (detail) views from Beer (1995b, p. 136, Fig. 37).

1.1 The Systemic Dimension of Corporate Functions

When looking at organizational chart structures and comparing them with reality, one quickly gets the impression that they say relatively little about the actual activities within a corporate function. Employees seldom perform just the task that gives the corporate function or department its name. Purchasing, for example, is concerned with many other tasks than just purchasing, such as defining, standardizing, and checking product specifications, auditing the suppliers' compliance with contracts, scouting new suppliers, and maintaining the master data in the ERP system. All these tasks need to be accomplished before one can buy anything in a modern company. However, why are all these tasks, which are often hardly mentioned, necessary at all?

The organizational chart does not provide us a model to elucidate this question. Process charts and process descriptions, on the other hand, often have the opposite problem: So full of details one quickly loses the overview, and it is no longer clear what systemic function a process has for the entire organization. This is the reason why process maps often appear relatively flat, two-dimensional, and not very inspiring.

The systemic perspective of the VSM can compensate for some of these deficits, as we shall see later in this chapter. Based on the VSM logic, we can view the standard corporate functions more holistically and systemically. With the VSM, we will be able to recognize the systemic meaning of even simple, inconspicuous, and self-evident tasks and to view them again in the context of the organization's overall viability. For employees, the VSM thus offers the opportunity to find more meaning and value in their activities.

We will start with the corporate functions that are directly related to the product and actual purpose of the company; namely, sales, production, and R&D. Then follows engineering and maintenance (E&M), which reinforces the *eigen*-variety of production, and the controlling function, which is responsible for the organization's information systems and control models.

Subsequently, we will describe the functions that each organization needs to access the resources and environments not directly related to the product and purpose: money (finance), raw materials and primary products (purchasing), and people (HR). We will then look at the logistics function that controls the flow of goods, at IT that regulates the flow of information, and, finally, at corporate communication, which manages the communication (networks) within the company and to the environment. Finally, we will briefly describe the legal department, which embeds the company into the economic and societal environment and its regulative and legal framework.

You should read the descriptions of the various corporate functions at least up to the HR function to get a good idea of the systemic task profile of a corporate function. Then, you can jump to Sect. 1.2 or finish reading the remaining functions as it suits and interests you.

1.1.1 Sales and Marketing—More Than Just Door-to-Door Salesmen

The sales department is often reduced to selling; however, in fact, salespeople accomplish many other critical systemic tasks. One of the primary functions of the sales department is to find and prepare the **places where organizations and their environment can meet**. The department store, the marketplace, the individual seller, or the online shopping portal, for example, all bring together companies and their environment. As we know, this is not an easy task because these places are not God-given, and customers must first be convinced to visit the places provided for them. Customers will only do this if they gain the impression that their unprocessed variety (problems) will be solved and/or their *eigen*-variety (competencies, resources) will be enhanced. The places created by the sales department must radiate this promise through sufficient and adequate *eigen*-variety.

In addition to creating such meeting places, the sales department also performs an indispensable **translation and interface function** (see the concept of the transducers in volume 1). Already simple purchase orders require a translation of the customers' wishes into the "language" of the organization and, vice versa, product information need to be translated into the language of customers. The wake-up call "we have to speak in the "language" of the customer" clearly demonstrates the difficulty of finding the "language" of the customer. Thus, sellers must have a "fine ear" (i.e., the requisite *eigen*-variety) to understand the customer's variety.

Further, the sales department, as well as any other corporate function in direct contact with the environment, exercises a vital **membrane and sensor function**. They decide which signals are noticed, accepted and transmitted into the company and which ones are blocked. Their attentiveness and ability to receive and weigh signals are decisive success factors for the entire organization's ability to adapt. Corporate control, in a strategic sense, consequently, also means to watch carefully that these sensors exist and are appropriately calibrated. To what do we want and should we listen to, and what can we ignore?—this is not a trivial question, and should not be left to the individual's discretion but must be discussed and clarified at an organizational level.

On closer inspection, we also see that many core tasks of the sales and marketing department are, in fact, not operational processes, where the temporal sequence as used in process charts is essential. They are instead **variety amplifiers or attenuators** that calibrate the organization's relationship to the environment. Individual advertising campaigns and marketing measures, and improvements in the sales location, sales campaigns, and training of the vendors, for example, are amplifiers

applied by the sales department. The variety attenuators used by sales can also be manifold, for example, product catalogs with defined options, general terms and conditions, and the persuasive power of the sales staff, by which they try to influence customers toward the company's products and their functionalities.

Sales negotiations are the institutionalized places where the (*eigen-*)variety of the customer and the company meet. The transaction between both is successful, if a balance between the customer's and the organization's (*eigen-*)variety, as stipulated by **Ashby's Law**, can be achieved: Is the *eigen*-variety of the product (e.g., its quality) sufficient for the customer? If so, then the customer will buy it, provided she or he has the requisite *eigen*-variety, i.e., can afford and use it. If the product does not meet the customer's expectations, the sales department then tries to change the customer's expectations regarding what he or she wishes to achieve with the help of the product; for example, through persuasion, social pressure, and appeals to the psychological profile of the customer. The customer's preferences are then changed toward those aspects of the product that are within the scope of the company's *eigen*-variety.

However, the sales department not only works on the boundary to the environment but is also part of the **system 1 management**. Together with production, it defines, for example, the necessary product quality, the required product features, how the product needs to be produced, presented, or shipped so that customers will buy it (e.g., ecological raw materials and fair wages). The sales department uses various coordination instruments to align the sales activities of the systems 1 (e.g., pricing rules, rules for discounts, standards for how to treat returns, and sales controlling). It thereby exercises a vital **system 2** function.

However, the sales department is also part of **system 3**. It co-decides budgetary questions with other functions, for example, which resources should be invested into which product lines and how markets (the environment of the systems 1) are to be separated from one another. Mystery shopping is one of the many ways sales management performs its **system 3* function**.

The sales department is also active in **system 4**: By conducting market research, it tries to identify new trends and obtain guidance for the development of new products (sensors of system 4). Ultimately, the sales department also defines a substantial part of the sales principles and policies (**system 5**), such as the price policy, brand identity, advertising and sale rules, or the self-understanding of its salesforce (should the salesmen be very pushy and sell "no matter what" or instead act as a consultant helping the client?).

1.1.2 Production—Not Just Assembly Lines, Dust, and Noise

Production is represented in the VSM as the operation. At the lowest recursion level, the operation consists of the production process of the concrete product for a customer. The *eigen*-variety of the operation is determined, for instance, by its

production technology, the number of production lines, and the qualification and motivation of the production staff.

However, the corporate function "production" goes beyond the operation in the systems 1 and encompasses far more systemic activities: The production management must coordinate the individual customer orders or production batches via production plans and standards of various kinds (**system 2**). The production management also exercises the **system 3-function** for production related issues. It allocates the production resources (e.g., machines, raw materials, employees, and time) to the individual production batches and customer orders. The production management exercises its **system 3*-function** through audits and inspections or optimization projects.

However, production must also keep an eye on the overall environment and future: Changes in production technologies and strategies must be anticipated and developed in time (**system 4**). Production also needs to take care that production values and standards are developed and upheld, (e.g., "no waste," "cleanliness," "zero error"-tolerance). In this, it is part of the organization's **system 5**.

1.1.3   Research and Development—Not Just a University Institute but also Responsible for Management Tasks

R&D is typically regarded as the representative of system 4 in an organization. As such, it can operate at different recursion levels: at the purely operational level, where product-specific adaptations need to be made; at the market level, where it is concerned with product innovations; and at the top recursion level, where basic research is typically undertaken. R&D must capture new technologies and trends and assess their effects on the organization. R&D shapes the future of the organization and environment by its innovations. Together with the business development unit, R&D helps to develop a new system 1 until the start of production (see Fig. 1.2).

Occasionally, the heads of R&D departments complain about the administrative burden of their job: no wonder, because R&D does not only encompass system 4 activities. Especially in large organizations, it must also allocate the innovation budgets to lower-level systems 1 and their system 4 functions. In this **system 3 function**, it must negotiate the allocation of resources with the systems 1 (**resource bargain**). Furthermore, R&D must also coordinate research projects or activities (**system 2**) and monitor them (**system 3***). R&D must also develop guidelines, policies, and values (**system 5**), for instance, regarding the choice of research methods, the materials used in products (e.g., what are the risks to consumers' health and the environment?), the protection of intellectual property, and the testing procedures regarding new products or technologies (e.g., how far can tests with animals and humans go)?
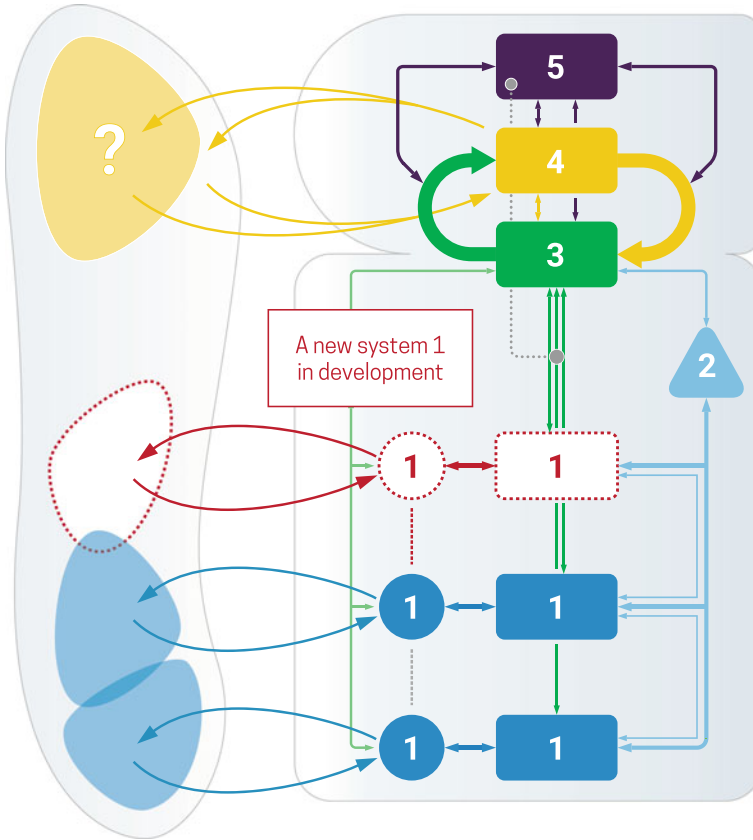
Fig. 1.2 New systems 1 are usually developed and founded by R&D and new business development

1.1.4 Engineering and Maintenance—Not Just a Workshop

Engineering and maintenance (E&M) supports the operation by continually upkeeping its *eigen*-variety (**system 1 variety amplifier**) such as by maintaining or optimizing its production lines, machines, and infrastructure. The safety guidelines developed by E&M and used by the production management are an example of the variety attenuators that regulate the behavior of all employees working in the operation so as not to cause hazards (see Beer, 1995b, p. 76). **System 3*** is also a vital system function that the E&M department needs to exercise: Inspections and tests provide crucial indicators of (future) problems, and the need for improvement. E&M also ensures that the production technologies are aligned with each other and that technical interfaces between the various operations function smoothly (**system 2**).

In most cases, E&M is also responsible for scouting, developing, planning, testing, and implementing new technologies (**system 4**). For the production

machines, it must develop production and "maintenance philosophies" (**system 5**) (i.e., principles that guide the staff on how to maintain the production machines to increase their longevity). It also provides the criteria on how to evaluate risks. The definition of these risk assessment criteria is often a system 5 task since it also involves ethical considerations and normative judgments about which risks to accept or avoid.

1.1.5   Controlling—Not Just SAP and Excel World Champions!

Controlling is often either associated with "control," in the sense of system 3*, or the generation of countless reports in Excel or from SAP. As much as this picture has become ingrained in the heads of all non-controllers (and some controllers), it is also a caricature of its actual scope. In fact, controlling performs far more systemic functions in an organization than the standard image suggests, and this can be made relatively easily transparent using the VSM:

First, a controlling department **controls and maintains the information network in an organization** (see also volume 1). It ensures that information can be exchanged and connected across content and time and that everyone speaks about the same issues (calibration of transducers). This is a great achievement if one considers how often even the most straightforward metrics or data input fields can be subject to different interpretations and causes of disputes.

Controlling also works very prominently within **system 2** (e.g., by standardizing key metrics, data, and reports, but also by defining and maintaining planning instruments and systems). As a result, controllers also function as a regulatory center for the system 1 management at the various recursion levels.

Controlling also adds value for the **system 1 management** by developing control models that help to create overview and insights into the organization's functioning (see volume 1). One of the most important advances in the self-understanding of modern controlling is the discovery of how much it contributes to the **development of these control models** (controlling here in the sense of steering). Through its intricate knowledge of data and information, the controlling department helps to uncover patterns and relationships within the variety that the organization is processing.

Many of its control models are concerned with the functioning and effects of individual variety attenuators and amplifiers as well as the calibration of various equilibria (e.g., between the environment and the organization). The guiding term "**effectiveness**" expresses this: A measure, action, or instrument is called "effective" if the target equilibrium state, i.e. the objective, can be achieved as intended with the available *eigen*-variety.

Controlling's ongoing search for "**efficiency**" addresses two other types of control models: On the one hand, the adjustment of the **organization's *eigen*-variety used in relation to the variety that needs to be processed**. "How many resources, machines, and processes do we really (!) need to perform a job?" On the

other hand, "efficiency" can also relate to the **calibration of internal synergies**, especially the sharing of internal resources: "How many synergies can we gain without affecting our responsiveness?" Viewed from this perspective, controlling works for and within **system 3** (monitoring synergies and allocation of resources) and **system 3*** (optimizing).

However, controlling is also part of **system 4**: It defines new measures and KPIs to capture new trends better and to model future scenarios. Controlling is always an invaluable help in strategy projects.

Controlling is also part of **system 5**: Defining the required level of accuracy, as controlling does, is not only a matter of mathematics and statistics but also of principles and convictions. Every company has developed a specific "number culture" and accuracy thresholds, which it believes necessary. Companies differ largely regarding how important quantification is to them and how much time they want to spend to reach a certain level of accuracy in their analyses. Some companies are generous in that regard, whereas others can spend hours in meetings on discussing one number and its third decimal.

Further, controlling also lays out the rules of what can be accepted as a "fact" and what becomes classified as "unproven" and "fiction." The definition of these criteria is not only a matter of science, but also a value statement, and the result of the dynamic interrelationship between the organization's self- and external reference—hence, a system 5 process.

> **Controlling verifies how data and information become generated and officially accepted. Do you want to know the specific challenges that this task entails and how it affects the organization's construction of "facts" and "reality"?**
> **If so, then continue reading; otherwise, go to Sect. 1.1.6**

> The controlling department faces **two challenges** when it manages the information household:
>
> The **first challenge** relates to the **interdependency between the generation of information and the development of control models**: Information is not only about bits and bytes, which exist objectively and independently of each organization. The environment as such has no information (Foerster, 1993, p. 123); only by applying measures and KPIs do organizations generate information. The key challenge for controlling here consists of the underlying **interdependency and circularity**: How controlling intends to measure reality determines the information it creates. This explains why a market signal can be noticed by one organization but overlooked by another one. "This escaped our attention!"—how often can one hear this sentence in an organization? However, why did one not notice something happening if the information was, in fact, already there in front of one's eyes?

"Information" is, and can never be, neutral to the models that it is supposed to confirm or falsify: On the contrary, information is only generated through these models. Our mental models determine what is remarkable and worth being observed and what not. Controlling, and with it the entire organization thus find themselves in a vicious circle: The models used also define what kind of information is captured, and at the same time, only the information captured allows the building of (controlling) models.

And this leads us to a **second challenge**: Controlling must always work with **complexity reductions**. Each model, measure, metric, information, and number represent a significant reduction of reality. This reduction can become dangerous if it omits essential aspects that could later jeopardize the way the organization intends to address and process complexity.

"We will consider this but exclude that aspect." This well-known decision, often taken too casually, determines in fact which information and variety become part of the organization's reality, and which do not. In its conscious or unconscious decisions of what becomes part of the organization's reality and what does not, controlling exercises a fundamental system 5 function (see volume 2); its principles decide what the organization accepts as reality and thus how the organization views its environment and future.

Controllers are often perceived as annoying because they continuously question existing data, figures, and metrics. However, this "critical questioning" is vital for the organization from a systemic point of view, as we can now better see and explain. By questioning data and models, controlling ensures that the organization does not forget the interdependency between information and models, as well as the complexity reduction caused by models and categorizations.

Controlling, therefore, assumes the inherently paradoxical function and responsibility for the organization **to "know" what the organization does not know**. A good controller can be recognized in that he or she has not only all the numbers in his or her head, but that he or she continually questions accepted numbers, information, assumptions, and models. Controlling must make the paradoxical step outside the organization. A good controlling department must protect its organization from taking its subjectivity as objectivity. It must question "facts," but at the same time, have the paradoxical courage to decide issues based on the available "facts," whatever their shortcomings might be.

1.1.6 HR—Not Only "Feel Gooders" and Payroll-Clerks

HR is entrusted with developing **contacts with another vital environment**: **the potential employees**. With instruments such as job advertisements, visits to job fairs, or headhunters, HR builds the interfaces to the labor market, where applicants

and recruiting organizations become visible to each other. Through interviews with prospective employees, company stands, or presentations, HR creates the (institutional) places where both can meet and establish first contacts.

However, not only the future but also the **current employees** form an environment for the organization: Every employee is only an "employee" as long as he or she works for the company. Outside the company, there exists the private sphere, where other interests and factors determine the employee's commitment to the company, such as family, friends, hobbies, or even competitors. Much wanted, but also unwanted variety can arise from these personal environments not controlled by the company.

It is, therefore, not surprising that companies try to build up interfaces and gain access to these environments, for example, by transferring private activities into the corporate area (e.g., friendships, leisure activities, etc.) or by providing support for "private problems" (e.g., kindergartens, coaches, psychologists). This can often go so far that one cannot separate the private from the professional life anymore. Whether this penetration into the "lifeworlds" of employees is ultimately beneficial to the employee or society can be quite rightly questioned (e.g., Habermas, 1995).

Through various **amplifiers and attenuators**, HR tries to regulate possible imbalances between the environment and the organization (e.g., too many or not the right job applications). Amplifiers can be measures to improve working conditions, increase salaries, or even change recruitment profiles to attract new talents. SAP, for instance, started to recruit autists, once it recognized their gift for finding coding errors (see: Teevs, 21.05.2013; SAP, 2018) as does the Wall Street bank Goldman Sachs (Horowitz, 2019). Conversely, HR can try to dampen the variety of the environment by using predefined application forms, for example. This restricts the "creativity" and "imagination" of applicants. HR can also increase the necessary qualifications or narrow the desired personality profile to limit the pool of potential applicants ("who suits us and who does not?")

Wage negotiations with applicants belong to the instances when HR tries to find an **equilibrium according to Ashby's Law**: In negotiations, HR needs to match the applicant's *eigen*-variety (i.e., their competencies and weaknesses) with the available *eigen*-variety of the organization (i.e., budget, benefits and personal services, expense account). The number of incoming job applications, and thus the attractiveness of the company, shows how well the company's *eigen*-variety corresponds to the variety of the job market.

HR plays an essential role in regulating (*eigen*-)variety through **internal training**. On the one hand, training increases the *eigen*-variety of employees, if they acquire new skills or improve their motivation, for instance. By setting up a young talent pool or young executive academies, HR also increases the variety of internal job applicants available to the organization for senior management positions and it consequently functions as a variety amplifier for the organization. On the other hand, training also acts as an important variety attenuator in the sense of **system 2**: Training programs determine and shape the behavior of people, their routines, as well as their decisions by instilling the so-called norms of rationality as defined by the organization (Simon, 1997, pp. 111f).

HR has a central regulating and anti-oscillatory role among employees (**system 2**): Uniform compensation schemes ensure peace within the organization, and the training of behavioral rules, etiquette, and norms generates a uniform social fabric, mutually adjusted expectations, predictability, and trust.

Depending on the extent to which HR is involved in resource planning, it can also exercise a **system 3 function**. Inspections such as those related to workplace health and safety or management audits and assessments are typical **system 3* tasks** carried out by the HR department.

Of course, the HR department must also monitor the overall and wider environment, its social trends (e.g., demography, educational levels), and the changes in the legal and social framework regarding labor laws and regulations (**system 4**) to induce long-term changes in the development of the employee basis and their competences.

HR also plays a vital role in **system 5**: HR is responsible for controlling and adapting the variety of social and personal behaviors found in an organization. To this end, HR takes care of system 5 issues such as defining and developing behavioral, cultural, and ethical norms, communication rules, and the identity and work ethic of an organization.

The **recursivity** of organizations makes HR a vital factor for the cohesion of the organization. Through training programs and management academies, it promotes the cohesion between the individual systems 1, other system functions, and between recursion levels.

<div style="text-align:center">

Do you want to know how other corporate functions operate from a systemic perspective?
If so, then continue reading; otherwise, go to Sect. 1.2

</div>

1.1.7 Finance—Not Only the "Uncle Scrooge" in an Organization

Finance monitors the monetary channels to various environments of the organization (e.g., customers, suppliers, banks). Its environmental interfaces at the operational level are, for example, bank accounts or payment platforms. Finance regulates the environmental variety to which the organization might be exposed. It decides which customers are creditworthy, which means of payment are allowed, and what the payment targets should be. Financially untrustworthy customers (i.e., unmanageable variety) are, thus, kept away from the organization.

Finance can thus **dampen the variety** of the environment but, conversely, can also **increase the organization's *eigen*-variety** by developing financial products, such as leasing models. Customers who cannot be attracted by the company due to insufficient liquidity now become accessible to the company through these financial products, since they can now afford to buy the company's products and services.

Finance, of course, plays a traditionally strong role in **system 2 and 3** (see also Beer, 1995b, p. 88). It decides how much money is available, and according to which performance indicators it should be distributed within the organization (budgeting process). Through planning systems (e.g., liquidity planning), finance ensures that no oscillation arises between the systems 1, for example, if a system 1 has too little liquidity available and might thus cause others to fail. An essential part of system 2 consists of various financial reporting standards, rules, and regulations that help to manage financial resources. Finance is also very prominent in **system 3***, particularly through audits.

Furthermore, finance also exercises an important function in **system 4** by clarifying questions such as how bond markets will evolve, through which the company can finance itself, and what kind of new regulations the company will face. Finance is not only about number crunching; it also has a creative and innovative aspect: What kind of new financing models can be offered to customers? How can "innovative" tax models improve the organization's tax burden? How can the company access capital markets better?

Finance also determines the allocation of resources between the present and the future: It decides through its guidelines where the current assets and revenues (managed by system 3) and future assets and revenues in the form of current investments and liabilities (managed by system 4) are in equilibrium. What is the right amount spent on innovation in proportion to the revenue?

As we can observe in various corporate scandals (e.g., Enron), finance also exercises a vital **system 5 function**: Valuations are always a matter of principles. Hence, these are the typical system 5 questions to which finance must develop a position: According to which rules do we value our assets? What are the limits set for the required profitability, and how aggressively should the tax system be used? Finance must define the principles and thresholds beyond which the organization should not go. There are not always clear guidelines by lawmakers or markets available, but rather the organization must decide for itself—with all opportunities and risks. Corporate scandals (e.g., Enron in 2001, WorldCom in 2002) provide vivid testimony of the role that the values and principles used in the finance department (and accounting more specifically) have on the organization, and its long-term viability.

1.1.8   Procurement—Not Just "Processing Purchase Orders"

Procurement develops and maintains the **environmental interfaces** to potential suppliers, for example, by requesting quotes, visiting (supplier) fairs, establishing contacts to suppliers, and other procurement market activities. Similar to sales and HR, procurement must also create places where the organization and its suppliers can meet and perceive each other.

Ashby's Law is also at the heart of some of procurement's other activities: Supplier certifications and product tests help to align the quality of the suppliers' products with the internal production requirements ("according to our standard"). The variety inherent in the supplier's products must, in the end, be absorbed by the operation's *eigen*-variety, that is, its machines and production staff.

Procurement thus also needs to carry out a vital **variety attenuating function** on behalf of the organization: Supplier audits, incoming goods inspections and audits on the production sites of the supplier are put in place to protect the operation against faulty preproducts and thus against unwanted variety.

Procurement might, however, also need **to increase the *eigen*-variety** of the organization regarding the supplier world: by actively marketing its organization and making it attractive to strategically important suppliers. A well-functioning procurement department also tries to broaden some of the specifications by its engineers or production so that more suppliers can be invited to submit a tender. By this measure, the organization's *eigen*-variety can increase: It receives more and more creative offers from suppliers. Supplier workshops can also be viewed as places where the *eigen*-variety becomes stimulated, for example, through the joint development of new ideas on products and technologies together with suppliers.

Ashby's Law is also well evident in **supplier negotiations**: Contract negotiations come to a conclusion if the (*eigen*-)varieties of both negotiating partners have adjusted to each other regarding the product specifications or the required minimum profitability.

Since in-house production today only accounts for 20–30% of the total value creation in many companies with the rest being purchased, procurement obtains a particularly vital position in **system 3**: Procurement must find synergies among the individual operating units' purchases, which it achieves, for instance, by bundling orders, standardizing specifications, and setting up a professional category management.

Due to its important role in system 3, procurement is also strongly active in the design of **system 2** of an organization. Synergies require a considerable degree of coordination instruments such as standard technology platforms and components, order-bundling mechanisms, and framework contracts. Purchasing control systems are implemented to induce (and sometimes: to force) the systems 1 to coordinate and reduce variety. However, procurement is also

active in the **system 3*-function**: Corruption, collusion between buyers and suppliers, and weak negotiation performance of its buyers are some of the issues which the head of procurement must watch carefully.

Due to its increasing contribution to a company's earnings, the profile of procurement has evolved from a purely operational to a strategic function. Observing the wider procurement markets and trends (e.g., commodity prices, new technologies, supply bottlenecks, the development of monopoly constellations of suppliers) has become an integral part of **system 4** in each company. Based on the information obtained, procurement must then develop strategies that sometimes are vital for the overall corporate strategy.

Ultimately, procurement must also develop procurement principles, guidelines, and policies (**system 5**), such as how to treat suppliers (long-term partnerships vs. the famous "squeezing" of suppliers). These fundamental procurement values also determine the long-term supplier portfolio (i.e., the choice of suppliers with which one shares the same principles, ethics, and values). The purchasing behavior and principles of the company also determine the organization's position on its procurement markets and whether suppliers are attracted to the company or instead tend to avoid it. Defining the rules and standards regarding environmental protection, labor and fair wages for its suppliers are current issues where procurement must exercise an important system 5 function.

1.1.9 Logistics—Not Just Forklifts and Truck Drivers

Logistics provides the **physical transport channels**: be it to the environment (inbound and outbound logistics) or between the systems 1 (e.g., in-plant logistics). Logistics either **dampens environmental variety or increases the *eigen*-variety of the organization** by the capacity it provides regarding transport routes, means of transport, lot sizes, and shipping times. If goods can only be accepted on Monday afternoons, this has an influence not only on suppliers but also on the organization's production. Through incoming goods inspections, acceptance protocols, or the handling of customs formalities, logistics controls the organization's interfaces to different environments and the necessary translation between them.

Warehouses have a critical systemic function: They work as stabilizers in the sense of Ashby's Law since they allow the **balancing of different (*eigen*-)varieties**. For example, a warehouse between the environment and the operation, such as one for receiving and storing incoming goods, allows adjusting the delivery times and lot sizes of suppliers with the production cycles of the operation; the warehouse regulates the variety flowing into the operation so that the latter can handle it.

The same also applies to the **warehouse for finished goods**, where the finished products are packaged in lot sizes and dispatched at times and in intervals as and when the customers need them, and transport companies can ship them. Here too, the key function of warehouses is to balance between the (*eigen-*)variety of the producing company and its customers. Large inventories might, therefore, represent a significant imbalance between the *eigen-*variety of the operation and the organization's environment. **Intermediate storage facilities** fulfill a similar function storing semi-finished products that wait to be further processed. These are necessary if the (*eigen-*)varieties of the operating units are not the same and must be balanced out.

Logistics controls transport and warehousing resources and tries to optimize their utilization. Logistics must decide how to best allocate the available resources to different systems 1 and customer orders. To this end, it must continuously negotiate with the business unit managers or sales representatives which customer orders are delivered in which priority—a **system 3 resource bargain function**. Logistics must also exercise a **system 3* function**: continuous inspections, as well as optimization projects, are part of its responsibilities.

Logistics is also involved in **system 4**: new transport and storage strategies need to be developed to increase the *eigen*-variety of the organization and to better meet the demands by the environment (e.g., reduction of delivery times or tied capital, increasing the delivery frequency to customers). But logistics is also called on to contribute to **system 5** of the organization, particularly regarding the policies of how to transport and store hazardous or valuable goods.

1.1.10 IT—Not Just Techies and Nerds

The primary function of IT is to provide the necessary technical information structure and processing technology to the organization as well as maintain its **information network**.

In today's world, where a substantial part of the environment can only be reached digitally, it is the task of IT to build the necessary **channels** to the environment. Not every environmental variety is desirable (e.g., viruses or hackers). IT hence restricts the environmental variety to the level the organization can process through various **variety attenuators**, for example, by specifying the interfaces, data exchange formats, bandwidths, or by implementing firewalls and virus protection programs. Conversely, IT can also try to **increase the company's *eigen*-variety**, for example, by renting additional bandwidth, improving the service levels of its servers and data centers, or implementing specific tools on the company's Web page (e.g., technologies to better present the products in e-shops).

Within the company, IT also influences the *eigen*-variety of the various system functions, for example, through making available software that facilitates the processing of information and analysis of data (are data still analyzed on the basis of Excel tables or with modern business analytics programs?).

IT also significantly influences **system 2** in ways that are often underestimated or even remain unnoticed. Software can only operate through standardized processes and data. Without standardized master data records, many processes in the ERP systems cannot function properly, not to talk about the effects on reporting and analytics. A new IT system, therefore, often also means higher investments and maintenance costs in the standardization of master data.

IT has a significant standardizing effect on the organization, and, as such, it does not only enhance the *eigen*-variety of an organization but also dampens it and reduces the internal flexibility and adaptability of the organization. The standardization effect caused by information technology can be felt the moment that unofficial workarounds are no longer available in a new operating system. The organization must then decide whether the standardization and dampening of existing varieties in processes and practices are useful or instead make procedures more complicated and lead to bureaucracy.

Of course, IT also exercises a powerful **system 3 function**; specifically, if it decides on the distribution of the overall IT budget. Depending on the business model of the company, this might even have strategic implications for the competitiveness of the entire company. IT must also fulfill a **system 3* function**, such as testing the performance of the IT systems, detecting abuse and misconduct, or continually optimizing the system.

In today's world, it is evident that IT needs to monitor new trends and software and hardware technologies continually. IT must then develop strategies and align them with the overall business strategy, especially if new digital technologies challenge existing business models. Thus, IT is also heavily involved in the organization's **system 4**. Furthermore, IT must also define guidelines, norms, and policy decisions about the correct use of information technology in the company, such as issues related to the privacy and protection of data or the necessary precautions for the stability of the IT system. IT, hence, is also an integral part of a company's **system 5**.

1.1.11 Corporate Communication—Not Only Chatterboxes and Colorful Web Pages

What IT manages from a technical perspective, corporate communication does for the social dimension of information: whether it be the information channels to the environment, the environment's perception of the company, or the internal information channels (e.g., the internal newspaper).

Corporate communication can **increase the company's *eigen*-variety** through its mastery of rhetoric and communication techniques: Through clever spins and communication strategies, problems become better presented and more easily sold to the environment. On the other hand, an effective communication officer should also help to **dampen the incoming environmental variety** for the company: In the event of a crisis, the company's management does not need to step immediately into the spotlight of the media but can, instead, send a press officer. The officer then provides breathing space and a buffer, allowing the company's executives to find an appropriate answer.

Corporate communication also has a standardizing effect in the sense of **system 2**: It influences how people communicate, and it determines, together with the metasystem, to which corporate image the employees should align. Corporate communication also contributes significantly to an organization's cohesion. It promotes **communication between recursion levels** through internal newspapers and company portals, which give employees access to essential information about the latest developments in the company. Corporate communication thus creates a widely distributed but yet coherent knowledge and picture of the current state of the organization.

1.1.12 The Legal Department—Not Only Pedants

The legal department is active in several areas of the organization: For example, it provides support regarding all environmental contacts (customers, suppliers, employees, and banks). Contracts define the obligations of the contract partners and thereby **dampen the potentially incoming environmental variety**; at the same time, they also define the rights and scope of action available to the company. The legal department thereby can even **increase the company's *eigen*-variety** ("what is legally possible?").

Within the company, the legal department often has a strong **system 2** function because it governs the interaction between systems 1, provides legal standards, and helps to resolve conflicts by drafting regulations and bylaws. Similarly, the legal department exercises a **system 3* function** through its audits. By regulating the legal relationship between the metasystem and the systems 1 (e.g., between a group and subsidiaries), it assumes a vital **system 3 function** (corporate intervention channel) and defines the legal boundaries and mutual obligations of systems 1.

The legal department is also important for **systems 4 and 5**: new legal developments must be anticipated and influenced (lobbying). It must translate the decisions of lawmakers, such as parliaments or courts, to the company and assess the implications for the company's internal governance principles. Further, the legal department often also plays a vital role in the definition of internal corporate principles and policies (corporate governance) (**system 5**).

1.2   Why You Should not Hang Your Organization on a Clothesline

These examples show how the corporate functions work systemically in many different places in the organization such as sensors to the environment, attenuators, amplifiers, or as part of a system function. These examples also describe how the corporate functions contribute to the overall balance between the organization and its environment, as well as within the organization.

An HR manager once complained in a seminar that no one in her company knows how much her department contributes, despite the detailed job, task, and process descriptions. The most likely reason for this was that her colleagues could not recognize the more profound logic and connection behind the many tasks. How do all these various activities belong together, and why are they necessary at all?

For this HR manager, one of the most valuable contributions of the VSM was that it made the systemic dimension behind the multitude of her tasks transparent and allowed her to explain all her tasks with a single model. In Fig. 1.3, we see, for example, where HR (orange box) is active and ensures the functional integrity of the entire system. As we said above, it maintains and develops the interfaces to labor markets and equips the organization with sensors to detect changes in the labor markets. It is also part of the system 1 management as well as the superior metasystemic functions, where it works together with other corporate functions to control the entire organization regarding HR issues.
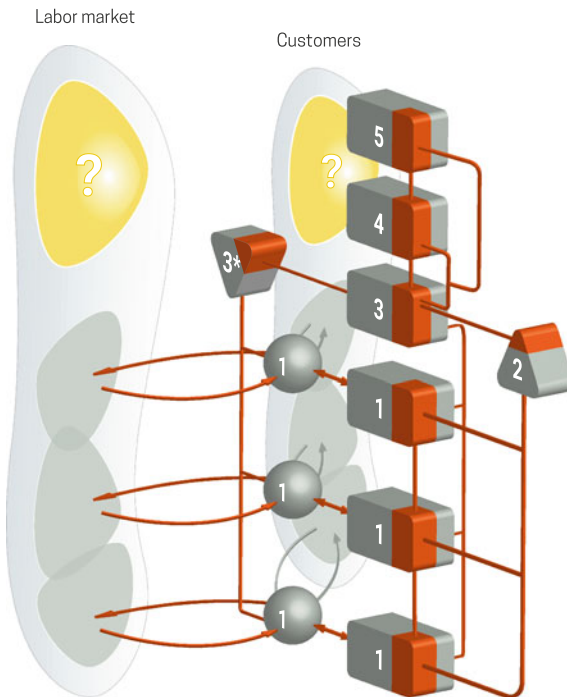
Fig. 1.3 Systemic tasks (marked in orange) exercised by HR in an organization (the channels to the wider environment and future are not shown due to graphical reasons)

Apart from specific characteristics, this representation applies to almost every corporate function and shows the range of activities of many corporate functions. **Each of these corporate functions simultaneously executes various systemic tasks**, assumes **different perspectives** on the organization, processes its **specific part of environmental variety**, and in this way contributes to the stability and viability in the organization.[2]

So far, we have worked with only two **recursion levels**; of course, corporate functions also work across many other levels. For the HR function, the operational process "recruitment," for example, takes place at different levels and thus faces different varieties. The recruitment of production employees and heads of departments or board members may be similar from a process perspective, but they differ sharply in the requisite (*eigen-*)variety needed. For an HR department, it is, therefore, a central challenge to address these different varieties as accurately as possible and change between the various levels smoothly.

Being forced to work for different system functions at different recursion levels with sometimes **logically opposite demands** (see volume 2) also explains the reason why one feels like wearing different hats and changing between different perspectives continuously (Fig. 1.4). If we contrast this image with the organizational chart—where all units seem to be hanging on the same level like on a

Fig. 1.4 Working for a corporate function implies that one must wear different hats due to the different systemic functions that they have (© fotolia/stock.adobe.com—artist: Lisa F. Young)

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[2]In some interpretations of the VSM, corporate functions are equated with a specific system function. While it can occasionally occur that corporate functions, such as procurement, need to focus on one specific systemic function in certain contexts and periods of an organization's life cycle (e.g., creating synergies in the case of procurement), we should not overlook the fact that the systemic task spectrum of a corporate function encompasses in most cases more than just one system function, as Sect. 1.1 showed (one exception might be the audit function). Reducing corporate functions to one systemic function might, thus on the contrary, lay the basis for dysfunctionalities (see also Sect. 15.2). Much caution should therefore be exercised when equating corporate with system functions.

clothesline and neatly sorted into silos—we can see how the image that is portrayed by the organizational chart is far away from reality and everyday experience.

1.3   About Organizational Units and Unity

In Fig. 1.3, we have considered only one corporate function (HR), but to a certain degree and as stated above, this representation also applies to the other corporate functions. They all take over multiple responsibilities across the entire organization: In Fig. 1.5, we see how and where production, sales, and R&D, to take a small example, operate across the entire system.

Figure 1.5 shows us one crucial consequence, namely, that the **system functions are often not composed of just one but several corporate functions**. System 3, for instance, consists not only of finance but also many other corporate functions (see Fig. 1.6 and Beer, 1995a, p. 475, Fig. 86, 1995b, p. 93, Fig. 24).
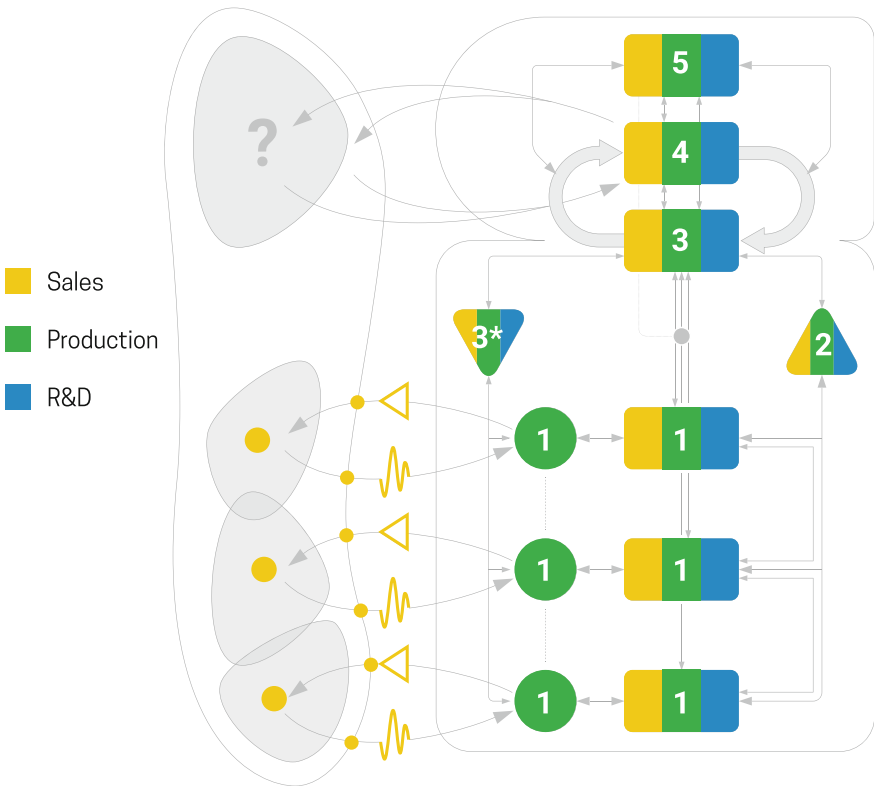
Fig. 1.5 The three corporate functions sales, R&D, and production exercise many systemic functions jointly (simplified and schematic representation)

For reasons of simplicity, the figure only shows relations between neighbouring functions
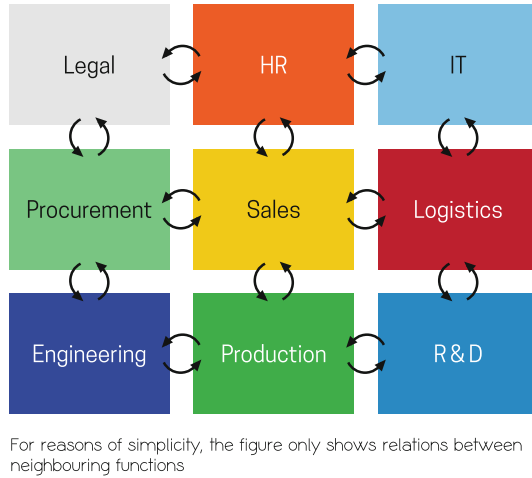
Fig. 1.6 Within a system function (e.g., system 3), the various corporate functions must coordinate with each other (adapted from Beer 1995a, p. 475, Fig. 86).

This also applies, for instance, to the equilibrium between the environment and operation: If we look more closely at this equilibrium, we then see how it is managed and regulated by various corporate functions (see Fig. 1.7):
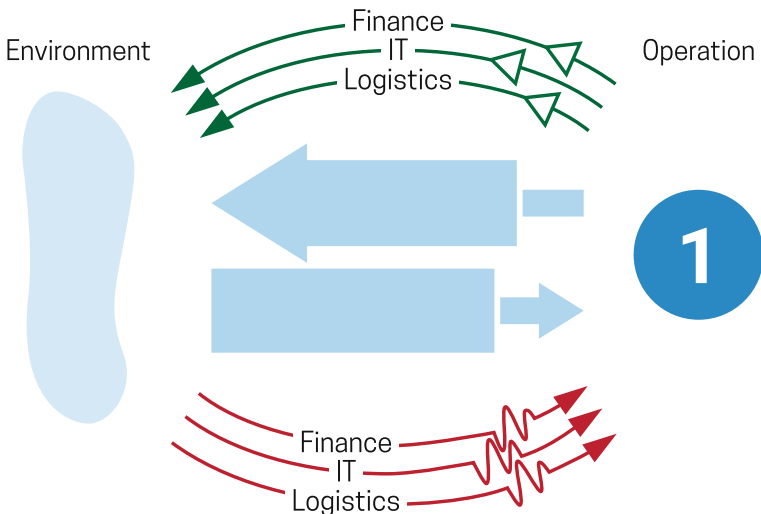
Fig. 1.7 Various corporate functions help to regulate the exchange of varieties between the environment and operation

The purchase of a product involves not only the sales (e.g., marketing materials and product descriptions) and production departments (e.g., packaging, product features, and product quality), but also the logistics (e.g., delivery schedules and means of transport), finance (e.g., export guarantees, payment, and financing models), and legal departments (e.g., contractual provisions and liability transfer).[3] Much like how a prism splits the white light into different colors (Fig. 1.8), the organization splits the environmental variety that it needs to process into different aspects and responsibilities. The organization does this because the specialization into corporate functions makes it easier to process variety. The various aspects of the environmental variety require different talents and competencies.

However, if the organization wants to function properly, the prism, in the form of the organizational chart structure, must also become reversed; the corporate functions must be brought together to process the variety optimally. The environment does not distinguish between the different aspects: The customer just wants a product or service. The challenging and yet vital aspect for organizations, thus, is to (re-)align the individual contributions of the corporate functions meaningfully and in time.

Unaligned corporate functions are then comparable to unsynchronized oscillation curves with different rhythms (see Fig. 1.9). These are the cases where the product does not hold to what has been promised in the catalog (sales and operation), where a great product is not delivered on time (logistics), or the legal conditions (legal) or lack of financing (finance) prevent the successful execution of an
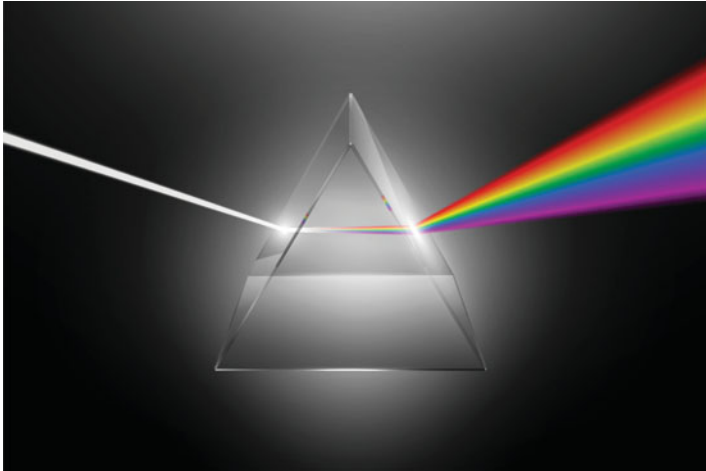
Fig. 1.8 Refraction of light through a prism (© fotolia/stock.adobe.com—artist(s): Oleksandr)

[3]For this reason, in this book we advocate for a more holistic definition of the system 1 management. The systems 1 are sometimes viewed just from a production perspective, whereby they become identified with individual production units such as workstations or plants. However, the system 1 management must also view the entire environment with which the operation is interacting. This includes all the sales-related, legal, or financial aspects.

Environment   Operation
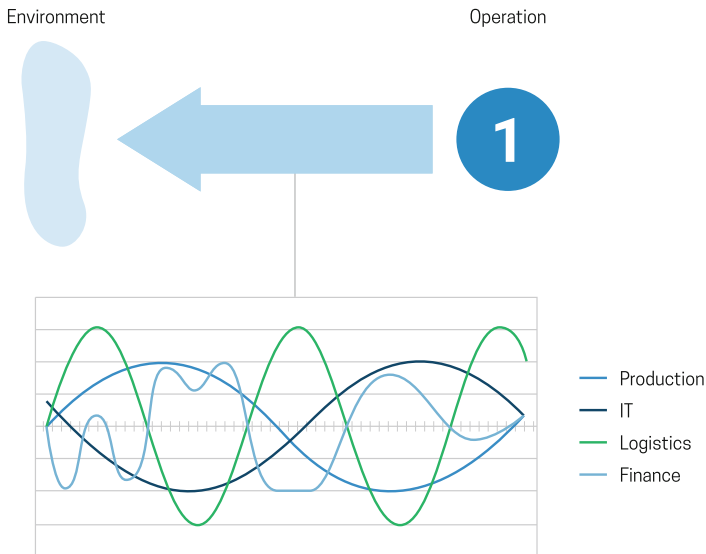
Fig. 1.9 Oscillations arise if the *eigen*-varieties of the corporate functions are not aligned (e.g., regarding the availability of resources due to different operating schedules)

order. Misaligned corporate functions thus lead to oscillations and reduce the *eigen*-variety in principle available to the organization. The function with the least variety might then become the bottleneck in the equilibrium between the environment and operation. We all know cases where the sale of a product stalled due to just one or two misaligned factors, such as delivery problems, bottlenecks in the production, or a malfunctioning Web site.

To use a frequently used example, an orchestra can only develop its full *eigen*-variety if all the instruments play in the same key and rhythm and if the variety of individual instrumental groups is adjusted to each other, for example, regarding their volume. Only then can the orchestra be perceived as one group of musicians playing together. If the interplay does not work, then one will only hear individual instruments, but neither the orchestra nor the piece in its entirety. The *eigen*-varieties of the corporate functions (e.g., competencies, machines, and infrastructures) must be made compatible and aligned with each other so that a functioning system emerges. This is one of the key tasks and challenges of organizations.

The VSM and its systemic perspective, thus, make it clearer than perhaps any other organizational model that **the individual corporate function cannot constitute viability on its own**. An organization can only become viable if the corporate functions act and decide aligned and united with each other. Only then can fully functioning system functions emerge. Consequently, the true "unit" in an organization is not the "units" in the organizational chart (i.e., the departments and units), but the united exercise of a systemic function through all involved corporate functions. In Chaps. 5–7, we will discuss some of the organizational processes and competencies necessary for this alignment.

Summary

- Corporate functions perform not just one but a wide range of systemic tasks on various recursion levels. In almost all cases, they are also involved in metasystemic functions.
- Executives and employees working for corporate functions are thus exposed to different and even opposing perspectives between which they must learn to switch. This leads to the phenomenon of "wearing different hats."
- Corporate functions emerge if an organization needs to divide the environmental variety into thematic subsets so as to better specialize and create synergies regarding the required competencies, processes, and resources.
- Conversely, system functions are usually composed of not one but several corporate functions.
- Consequently, no corporate function alone represents a viable system or metasystem, and no organizational unit can constitute viability on its own. The organization only becomes alive if the corporate functions act together and are aligned with each other in the exercise of the various system functions and systemic tasks.

Questions for Reflection

1. Create a systemic task profile of your area of responsibility or your department: What systemic tasks does it fulfill? To this end, go through the entire VSM and mark every graphical element where it is involved.
2. Between which different systemic functions and recursion levels do you need to change in a day or during a week? How do you bring these different "hats" together? Could a different combination of tasks or a reconfiguration of jobs within your unit help to reduce the number of "hats"?
3. Analyze with which other corporate functions you share, for example, a system 2, 3, or 4 function?
4. How much do the corporate functions in your organization cooperate with each other beyond their organizational boundaries (on a scale from 1 = no cooperation to 10 = strong cooperation)?

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The Organizational Chart and the VSM: How Does One Get from One to the Other?

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Once people have understood the VSM, their attention turns immediately to the organizational chart … and I suspect this also applies to you. How does the VSM relate to the organizational chart and, the other way around, the organizational chart to the VSM? Based on the last chapter, we can now answer this question with greater precision. We will address it on a more conceptual level in this chapter and discuss the technical aspects in Chaps. 8–17.[1]

2.1 Why Do We Need an Organizational Chart?

To clarify the **conceptual relationship between the VSM and the organizational chart structure**, we will first analyze the function and purpose of an organizational chart more closely: Why do we need an organizational chart at all? This question may sound a bit unusual, but less so if we consider that already today but even more in the future, many tasks will be executed by algorithms encoded; for instance, in ERP systems.[2] Furthermore, many daily tasks that emerge spontaneously are solved by people on the fly without reference to any kind of organizational chart. So, why does one really need an organizational chart? One wonders.

To start, one reason is that there are tasks that can only be **executed by people** and thus **need to be assigned to them**. "Jobs" or "positions" are the result of this assignment process of tasks to people, whereby tasks become grouped in such a

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[1]All figures in this chapter related to the VSM are or contain and if not stated otherwise, adapted (detail) views from Beer (1995, p. 136, Fig. 37).
[2]In the meantime, one might even assume that some of the standard management functions can be replaced by computer programs and that the "boss" might no longer be a human being but an algorithm dictating what to do (see O'Connor, 2016).

way that people can execute them in a meaningful way (see also Chaps. 3 and 4 regarding the principles and limitations in the job design process).[3]

Another and much more important reason for the organizational chart is that organizations need to obtain **accountability** and **overview,** and this necessitates stable **task-employee-relationships**. Since organizations must accomplish many tasks and employ many people in parallel, one of the key risks is to **lose the overview**. For smaller and less important tasks, it does not pose a problem if the people executing them vary. For the organization's core tasks, however, ad hoc assignments with randomly changing people lead to chaos and lack of transparency.

Also, the **size of the organization** may require more stable structures: Small organizations often do not need an organizational chart since everyone knows what everyone else is doing. For mid-sized and large organizations, this is more difficult or almost impossible. They need a structure that assigns people to tasks and interrelates the various job holders clearly and traceably, and, consequently, creates a **stable and transparent network of accountability** across the people employed by the organization. Only if tasks are assigned to people on a longer-term basis can organizations achieve **transparency, continuity, and reliability**. This is one of the key functions of organizational chart structures. One can easily observe this in practice: Too many personnel changes render the organizational chart as a graphical representation and orientation almost useless and increase the opaqueness of the organization.

To increase the overview and accountability, the assignment process does not stop with the definition of jobs and positions, but it also needs to interrelate them. Consequently, jobs become grouped to ever larger units, eventually ending in one position, unit, or group of people responsible for the entire organization. This grouping process then results in the known **hierarchical representation** of the organizational chart. Job holders and units then become connected through the lines of authority and responsibility (the so-called reporting lines).[4]

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[3]See Schewe (2018), for whom the job design is a process in the creation of the organizational chart structure, in which tasks are aggregated to be taken over by a human agent ("[die Stellenbildung ist ein] Vorgang zur Gestaltung der Aufbauorganisation, bei dem durch Aufgabenanalyse gewonnene Teilaufgaben im Wege der Aufgabensynthese für jeweils einen gedachten Handlungsträger zu einem Aufgabenkomplex bzw. zu einer Stelle zusammengefasst werden.")

[4]The deliberate choice in the organizational chart to reduce accountability to one line creates its inherent problems: Often, one finds that the responsibility for a specific decision and action is distributed among many employees, managers and executives. Decisions in organizations are usually the result of a collective reflection and discussion process than just of one individual. Organizations should thus be better viewed as "networks of shared responsibility." Here, the organizational chart masks an ambiguity that can result in residual variety (e.g., in the form of unjust accusations).

The VSM is sometimes criticized for not providing a place for the concrete employees. However, its purely systemic and thus somewhat impersonal perspective also has its advantages, since it reminds us that the exercise of a system function can be larger than just the nominated person in the organizational chart. A system function comprises all who exercise it or contribute to it and not just the person named in the organizational chart.

The organizational chart and related instruments, such as the RACI matrix, are the results of this assignment process of tasks to employees. They **document and make the assignment logic of tasks to people visible** and are intended to **create transparency, overview, and structure, especially among its employees**.

While being an important tool, we always have to keep the limitations of organizational charts in mind: they only provide us with a very rough overview of how the organization functions. Firstly, identical organizational charts can have completely different underlying organizational processes and even varying degrees of centralization. From an organizational chart, one can only roughly deduce which people are responsible for what kind of tasks, and thus, who needs to be asked first regarding a specific issue—but one cannot deduce how the organization as such functions. Secondly, the organizational chart, as well as its organizational units and departments, are only a very rough approximation of the organization's true task spectrum. In reality, employees need to execute many more different systemic tasks and sometimes ones that differ from the ones indicated in the organizational chart. The tasks assigned also vary often in specificity and detail due to their nature: for tasks which recur often, the assignments can be mostly specified in detail. However, for new and changing tasks, the organization can assign tasks and responsibilities on a general level only. It is then left more or less to the discretion and initiative of the employee to assume responsibility for the tasks that emerge in his or her "area of responsibility."[5]

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[5]The term "area of responsibility" that is frequently used in organizations merits a deeper analysis since it also is the source of numerous tensions. The term leaves the specific responsibilities of an employee relatively unspecified, and so, the employees must adjust their job profiles accordingly to the concrete needs and issues. The advantage for the organization is clear: It relieves the organization from the duty to continually (re-)adjust all job profiles.

It also alleviates the organization from its own incalculability and lack of transparency: It is one of the great fallacies to believe that an organization knows what it is doing (i.e., what tasks need to be accomplished). Unfortunately, this is not the case and the concept "area of responsibility" here helps the organization to temporarily regain some of its calculability. It leaves the incalculable and spontaneous part to the individual employee. Being the owner of an area of responsibility, he or she then becomes responsible for processing the spontaneously emerging issues that cannot be defined by the organization in advance.

The problem, however, is only deferred, since the understanding of what is part of an area of responsibility and what not might differ between the employee(s) and the organization. Widespread are the cases where no or, to take the opposite case, too many employees see themselves simultaneously responsible for a particular issue. The result of this ambiguity is conflicted. Organizations quickly resort to making the individual employee(s) responsible. This might be justified in some cases, but in many others not. They are only the visible symptoms for the underlying incalculability and lack of transparency that the organization tries to mask through the construct "area of responsibility."

At this point, a fundamental tension between two extremes in which organizations find themselves becomes visible: Either organizations formalize every task and responsibility and, consequently, become buried under their own bureaucracy, or they judge any kind of formalization as futile and refuse to keep track of changes in the job profiles. The latter extreme, however, increases the lack of transparency even further: No one knows who is doing what.

2.2 The VSM and the Organizational Chart

There exists one further problem with the organizational chart, though, and this relates us back to the VSM and the relationship between both: The **organizational chart does not specify which tasks and jobs are necessary for an organization**. The organizational chart structure is only a device to order tasks that are already known. Further, the organizational chart structure does not tell what an organization needs to do to become functioning, and it does not allow the organization to verify whether all the necessary tasks for its viability have been identified.

This is where the VSM can help. It specifies the systemic tasks an organization must perform (i.e., what system functions, channels, and equilibria are required). It describes the **minimum set of tasks** needed for a functioning and viable organization.[6] This does not mean that in a specific setting, other additional tasks are not necessary. The VSM does not stipulate an upper boundary of tasks but only a lower one: An organization needs to perform at least all the tasks that the VSM describes to become viable,[7] as the dysfunctionalities in volume 2 showed.

We now come to the point where we can discuss the conceptual relationship between the organizational chart and the VSM in greater depth, which Fig. 2.1 tries to visualize. As stated above, the VSM represents the organization as a system of interrelated processes through which variety becomes processed. The term "system" should not be viewed here too statically, but instead, as a process itself; namely, as **a continuous process that organizes the processing of variety** and through which emerges what we call the "organization." Metaphorically speaking, the VSM can be viewed as similar to the atomic model that details not only the subatomic particles, but also the movement, forces, energies, and interactions of the subatomic elements needed to constitute an atom. The VSM describes **the organization and its elements as a dynamic system and an ongoing process of processing and balancing (*eigen-*)varieties**.

What, then, is the organizational chart? The organizational chart structure functions as a **bridge** between this **system of tasks and processes** and **the employees** as one of the organization's most important resource bases. By using the organizational chart, the organization defines and documents to which group of tasks employees are assigned. The organizational chart can be viewed as an expression of the organization's "algorithm" allocating employees to tasks and assigning responsibilities. The VSM provides the map and list of the systemic tasks that need to be accomplished by an organization to become viable.

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[6]This does not imply that in specific contexts, other tasks might also be necessary.
[7]As a general model the VSM does not and cannot specify the tasks for each factual aspect and context (e.g., what specific audits are necessary for the finance department). This would exceed the nature of such models. The VSM only demands that, for example, there be an audit for each aspect of an organization, whatever this might be in the concrete case, such as for the finance, production, or procurement function. It is then the task of those designing the organizational structure to verify for each factual aspect (see Chap. 1) that all the necessary systemic tasks are defined, developed, and executed.
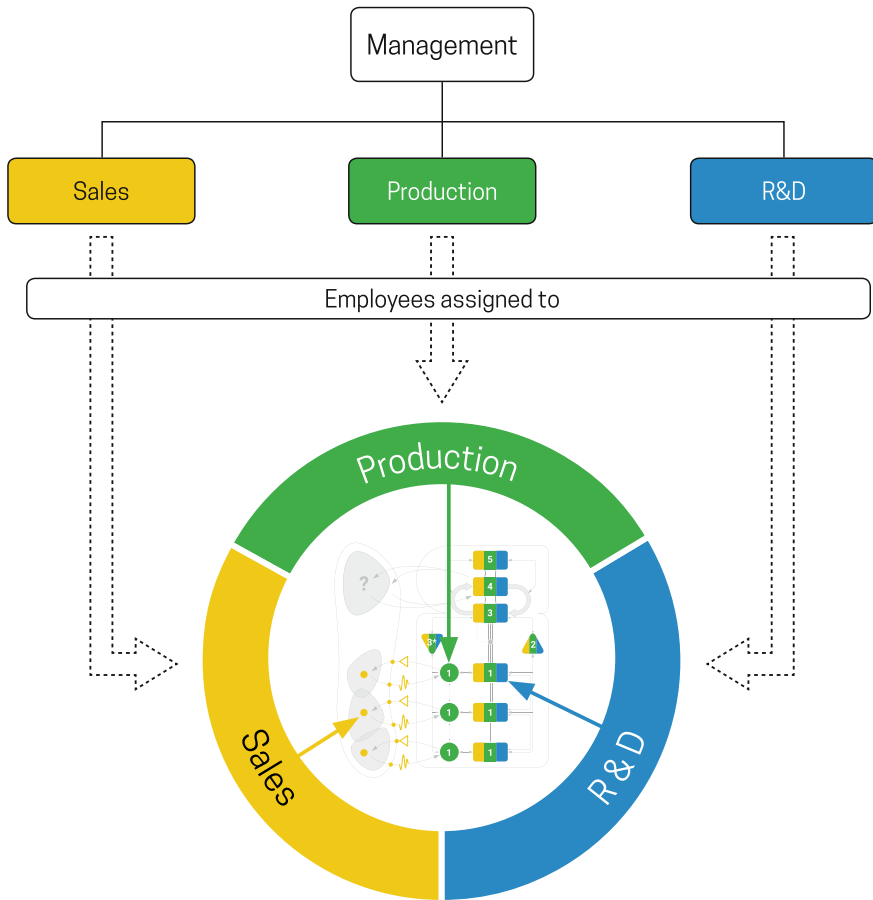
Fig. 2.1 Through the organizational chart structure and related instruments employees become assigned to various (systemic) tasks

2.3   The Configuration of Jobs and Units from the VSM Perspective

How then do we have to understand this process of configuring jobs and units more concretely from a VSM perspective? We will discuss the guiding principles in Chaps. 3 and 4, but to get a basic understanding, let us discuss some examples:

Interfaces to the organization's primary environment are often grouped by organizations into the **sales department** (see Fig. 2.2). Depending on the recursion level, this grouping can then lead to various jobs, positions or units: All operational sales activities dealing with customers might, for instance, become grouped into a
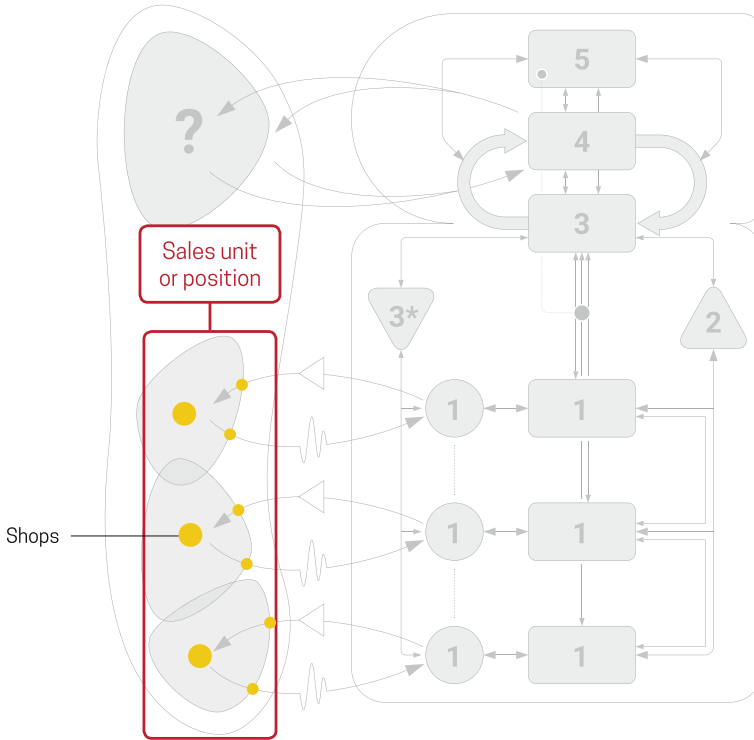
Fig. 2.2 The interfaces to the primary environment can be grouped to a job or unit in the sales department

position of a sales representative or unit (at the lowest recursion level). The rationale behind this is that taking care of the interfaces to the environment needs different skills compared to purely internal tasks, or that one can gain synergies if one instead of many employees (i.e., the sales representative) visits the customers in a specific region.

At the next higher recursion level, tasks related to the environment, such as managing entire customer groups (e.g., developing strategies, developing communities), can then become combined into a product management unit.

In the same way, the management and development of sales-side **variety amplifiers** and **attenuators** (e.g., marketing campaigns, price, and product policies) can be grouped into a marketing position or unit, depending on their size and scope (see Fig. 2.3). This position or unit can then be, for instance, expanded by adding tasks from system 4, for example, conducting market studies, developing market and price scenarios, and analyzing customer behaviors.

Fig. 2.3 A marketing job or unit takes care of all the PR-related amplifiers or attenuators of the systems 1 as well as of scouting trends (system 4)
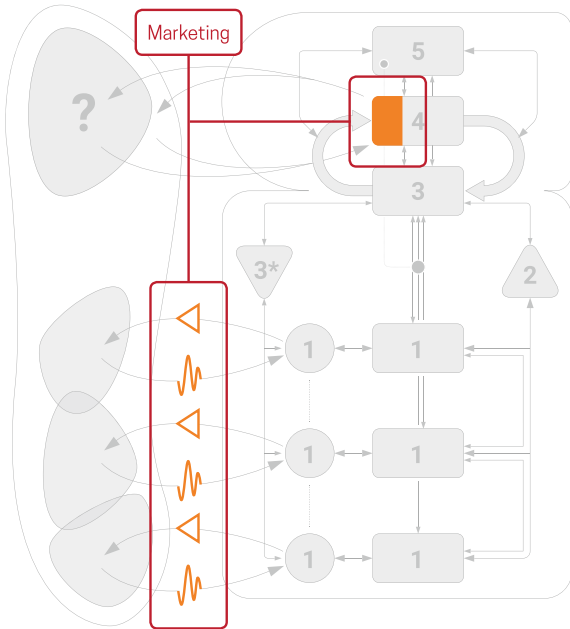
This grouping of tasks to jobs can also take place regarding the **system 1 management**; for example, the sales management function of several systems 1 can be combined into the position of a sales manager (see Fig. 2.4).
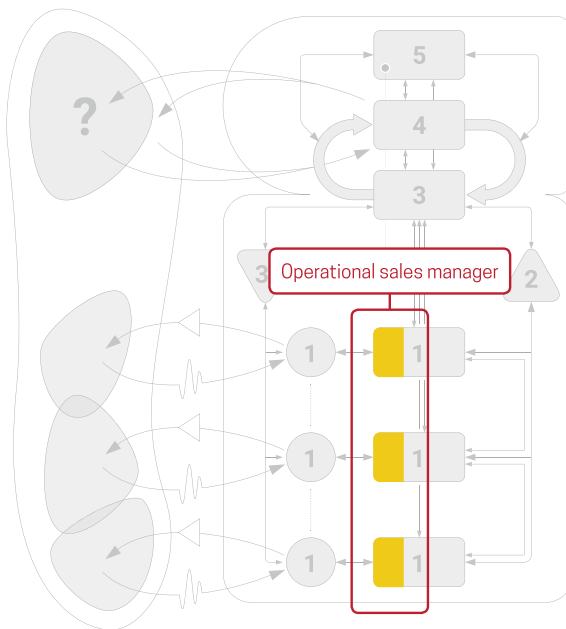
Fig. 2.4 The responsibility for managing various local stores or sales representatives can be grouped to a sales manager function
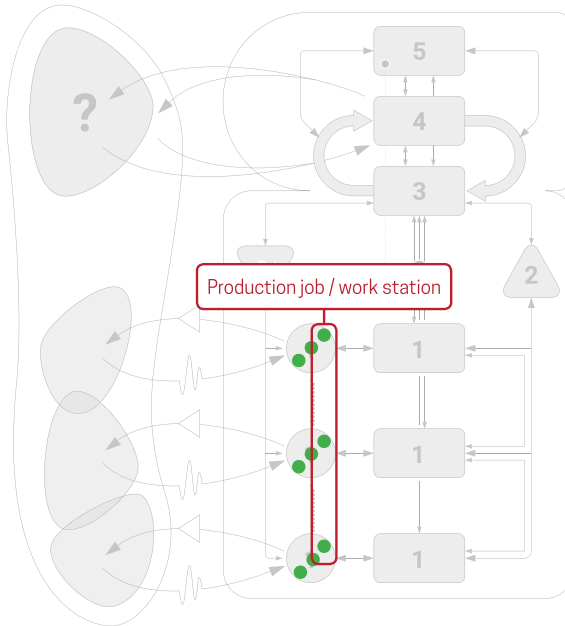
Fig. 2.5 Similar production steps across several products can be grouped to one workstation in a production (Color figure electronic book version)

The same applies to **production**: Similar production steps in different system 1 operations can be combined into workstations (see Fig. 2.5) if the synergies to be gained permit it.

Similarly, **R&D positions or units** can be formed by aggregating individual R&D activities for specific products or technologies (see Fig. 2.6). This applies to individual research activities (e.g., analytical tasks in a laboratory), as well as entire innovation processes and research projects (e.g., product development).

Many **expert positions** in organizations are, in fact, often centralized responsibilities for **specific variety amplifiers or attenuators**. The trend toward installing a "Chief Happiness Officer" (Messinger, August 26, 2015) belongs to this category: This position is an expert position responsible for calibrating all amplifiers and attenuators that affect the "happiness" of the employees. Whether "happiness" really is a good objective can be argued in both ways (see Carelli, 2019; Slaghuis, 2017; Spicer & Cederström, July 21, 2015), but the basic mechanism behind this is clear: Processes and variety amplifiers, which are all supposed to contribute to "happiness," are grouped across the entire organization to one job.

In the examples above, we have, thus far, only grouped similar processes and activities for the sake of simplicity. For synergy reasons, however, it may be necessary to combine different system tasks. For example, the operational sales management as shown in Fig. 2.4 might be expanded and include higher-level
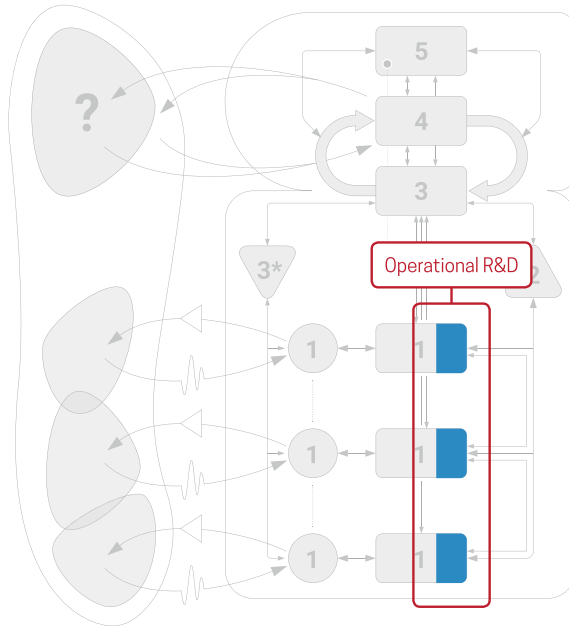
Fig. 2.6 Grouping of R&D activities into an R&D position

system 3 tasks: It must then simultaneously lead the total group as well as some individual systems 1. Furthermore, this job profile may be expanded to include system 2 (e.g., sales planning) or system 3* tasks.

How would the grouping of tasks, as shown in Figs. 2.4, 2.5, and 2.6, look in an organizational chart structure? Let us take the example of an organization that is divided into three regions, which form the viable systems at a lower recursion level (see Fig. 2.7). Then, the interfaces to the environment (i.e., the salespeople, shops, or sales offices in these regions) could be grouped into three sales areas. A central PR and marketing department manages the PR and marketing related variety attenuators and amplifiers for these areas. The R&D activities might be grouped into one central R&D department, and the three workstations (green circles) become integrated into one central production.

Now that we have roughly sketched out the interrelation between the VSM and the organizational chart structure, the question becomes: What determines more precisely how many and which tasks can be grouped to one job or department? Here, I ask for a bit of patience; we will discuss these technical questions more in
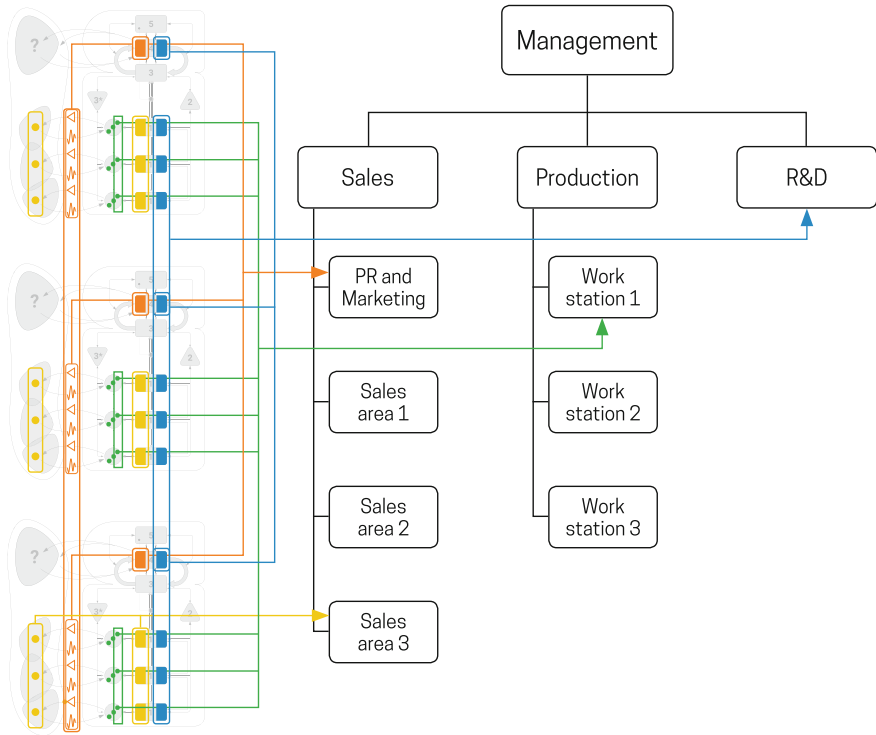
Fig. 2.7 In the organizational chart, groups of systemic tasks and functions become grouped to jobs and units

detail in Chap. 3 and from Chaps. 9 to 16 because, for now, we still need to better understand the general properties of how the organizational chart structure and the VSM are interrelated.

2.4   The Organizational Chart Structure—Creating Accountability but also Fragmentation

The organizational chart structure has its clear advantages: It assigns tasks to employees, creates overview and transparency and establishes lines of accountability and authority. However, it also creates some disadvantages, of which one must be aware when designing organizational structures. Based on what we have worked out in the previous subchapters, we can now illustrate the **deficits** that are created by organizational charts more clearly.

Let us take the example of a functional organization consisting of the three corporate functions: sales, logistics, and production. As we have seen in the previous chapter, all the organization's sales, logistics, and production tasks and processes become grouped into jobs or organizational units for synergistic reasons (see the schematic representation in Fig. 2.8). The job holders or organizational units are now in control of a specific segment of the organization's processes.

This segmentation is not yet problematic. More dangerous are the consequences: Being responsible for specific processes, the job holders and units start developing and adjusting the metasystemic functions entrusted to them according to their
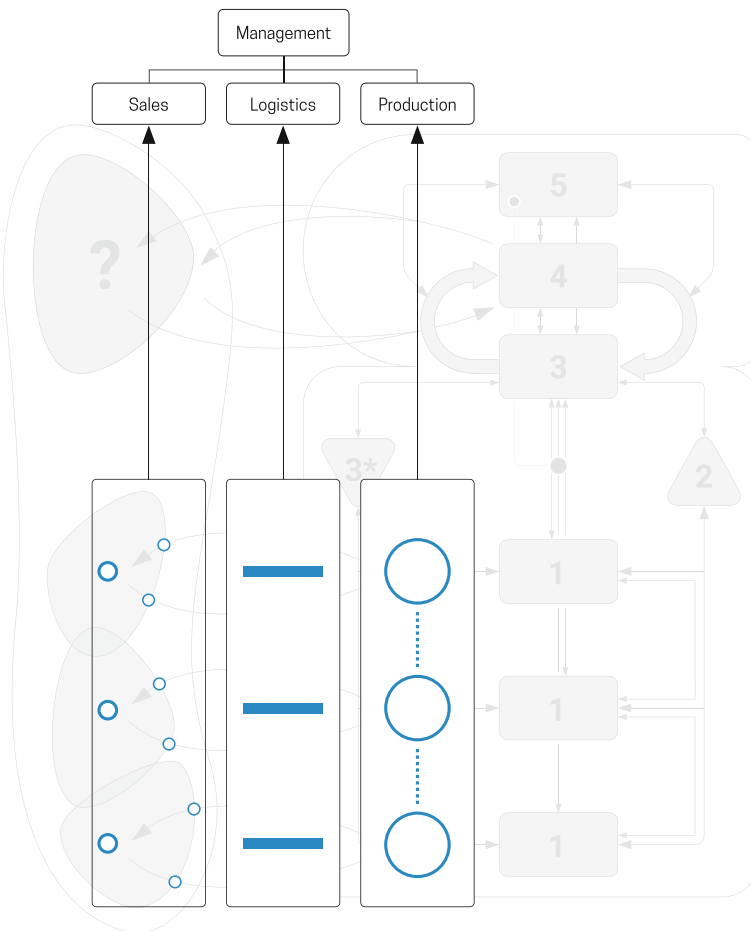
Fig. 2.8 Organizational chart structure emerging from grouping similar operational processes (schematic and simplified representation)

specific needs. This situation is illustrated in Fig. 2.9: Each corporate function develops its own metasystemic coordination, control, and innovation mechanisms, apart from all other metasystemic functions. People no longer necessarily coordinate according to the necessities of the overall system, but first and foremost, in view of their job or unit. Budgets are then, for instance, allocated according to the needs of the individual units and jobs instead of in view of the total optimum.
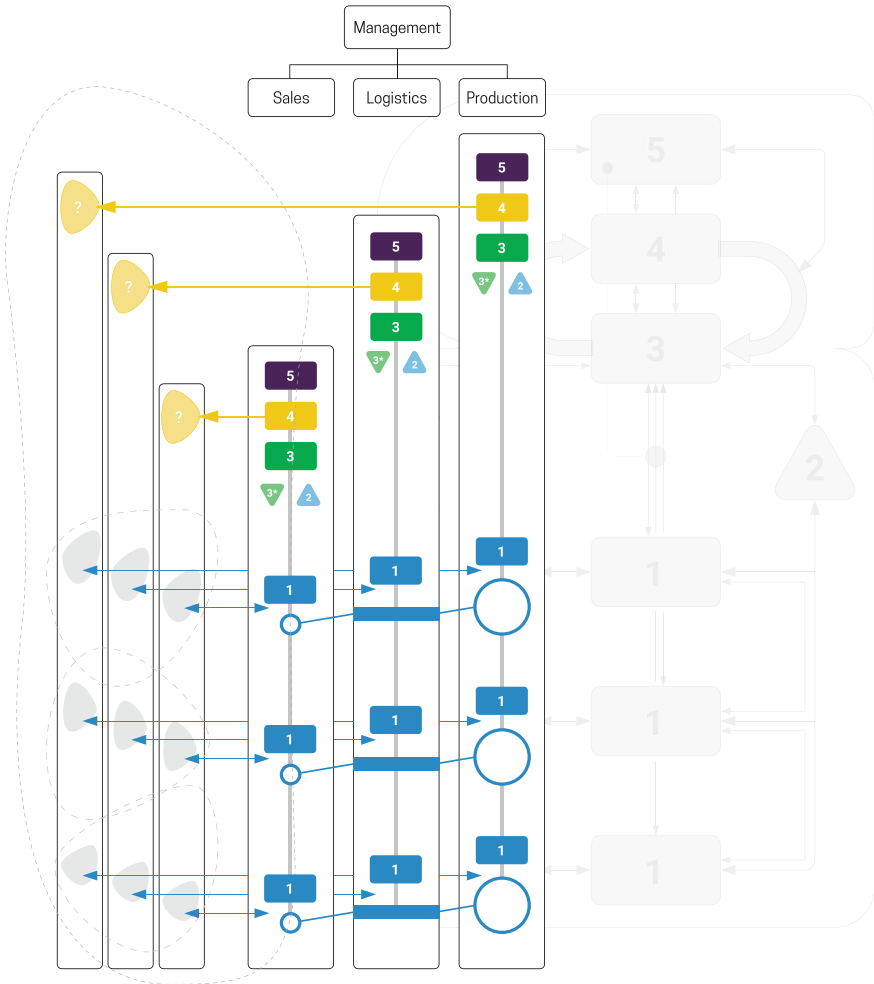
Fig. 2.9 By grouping processes into units, the metasystemic functions become partitioned among these units, thereby fragmenting the metasystem and losing the holistic view

The organizational chart structure catalyzes **three fragmentation dynamics** with which organizations struggle as a consequence:

1. **Fragmentation of the metasystem**
   Each organizational unit determines what and how should be coordinated, controlled, audited, and innovated, and what the guiding norms and principles should be. This fragments the metasystem, and especially the interaction between system 3 and 4, the "organ of adaptation" (Beer, 1995, p. 120). The seeds for internal political intrigues and struggles are sown.

2. **Fragmentation of system 1**
   As a consequence of the fragmentation, the system 1 in its entirety disappears from the perception of the employees, units and the organization. One's job and unit become the primary purpose. Consequently, the sense of responsibility and overview of the overall process from the customer and back to the customer get lost. In the end, the concrete purpose of the entire organization vanishes from the organization's focus.

3. **Fragmentation of the environment**
   Due to the specialization, each corporate function begins to narrow down the environment to its specific area, causing the environment to become fragmented. This is even worse for units that are cut off from the environment, where their own or neighboring unit(s) becomes the (only) relevant environment.

Due to these **fragmentation dynamics**, the **viable system disappears in its entirety from the consciousness and attention of the organization**. In Fig. 2.9, the viable system is, as an illustration, painted only in light gray to express its disappearance from the organization's radar. This reflects an everyday experience in many large organizations: The overall perspective exists only as a faint memory of earlier times (e.g., the "golden years" of the young organization). The holistic view of the organization ceases to exist in the perception of the organization.

If the viable system itself disappears from the consciousness of the organization owing to the three fragmentation dynamics described above, the organizational chart structure remains the only guiding model. One's own department, unit, or job becomes the main reference point and sole purpose. This dynamic, in turn, creates **multiple centers of purpose and identity** within the organization, and as a result, the organization loses its overall identity and cohesion.

Without clarity about the overarching purpose, the decisive criterion that determines the point at which the entire organization should be in equilibrium becomes unclear and even disappears (see also volume 2). It then becomes increasingly difficult for the organization to determine at what point it should balance horizontal and vertical *eigen*-variety, how much freedom and how many synergies are necessary. **The organization's only remaining reference point is the fragments of**

its organization. Balancing the different demands by the organizational units then turns into a political negotiation process between the power spheres of these units (Cyert & March, 1992). The internal (power) equilibrium between all units becomes the decisive criterion in view of which all decisions are made, whereas the overall purpose and the equilibrium with the environment are lost out of sight.

These considerations show us that the negative consequences of the organizational chart perspective are not yet sufficiently described if we just refer to them as "interface problems" and "lack of cooperation and coordination." Organizations often think that with a few lateral reporting lines, communication processes, or committees, the holistic view can be restored. "We just need to communicate a bit more," sometimes runs the argument. However, this falls short of the problem; what is missing is much more; namely, the true **exchange of perspectives** and **the (re)construction of what the enterprise as a whole** represents and intends to achieve. Every single person needs to start seeing again what the organization, in its entirety, should be about—**what value it creates, what its purpose is, and what is needed for the organization to become viable**.

This missing holistic view is difficult to measure quantifiably, but it can be sensed quickly, especially in large organizations, from its impact on operational processes (lack of circumspection and foresight) and the challenge to generate sufficient meaning for employees ("What is the purpose of all this and why do we do all this?"). This missing holistic perspective can hardly be repaired by simply setting up committees, meetings, or better communication infrastructures. These formal instruments offer only the spaces for the construction of a complete view, but they cannot create this overall view *per se*. Just because one meets, an overall picture does not emerge automatically; in the worst case, these spaces become the arena where the self-interests of the units are played out.

Consequently, the organizational chart structure should ideally be built in such a way that it supports the creation of the holistic view and fragments the viable systems as little as possible. And this leads us to an important principle for the design and modeling of organizational chart structures:

> **The organizational chart structure should be built as closely as possible along the structure of its viable systems.**

Dysfunctionalities concerning the interface to the environment, such as failing to respond to customers, usually emerge in those places, where the organizational structure no longer corresponds to the viable systems and their processing of variety. Thus, the formal organizational structure and job descriptions should be

designed in such a way that the employees can work along the structure of the viable systems and the actual variety processing as much as possible.

Sometimes, this might not be possible for synergistic reasons. Then organizations need to undertake counterbalancing actions, such as:

1. **Creating regularly a common view of the organization's environment,** its **strategy, and purpose**,
2. Refocusing the organization continually on the **operational processes that generate the concrete purpose** of the organization,
3. Creating a common perspective among those who exercise **metasystemic functions** (this aspect will be discussed in detail in Chaps. 5–7).

If one has these three countermeasures in view, one should be able to preserve the viability of the organization.

2.5 The Left and the Right Wing of Organizations

Considering this problem from a greater distance, a fundamental tension in the design of organizations becomes apparent that applies to every organization: On the one hand, one must assign tasks to persons and thus allow and promote **specialization**. On the other hand, organizations must also implement ways that allow organizations to create and maintain a holistic perspective going beyond individual jobs, units, and corporate functions. So-called **systemic consulting approaches** are known for this latter aspect.

Whoever has already been intensively involved with the design and modeling of organizations will also discover that neither the first, nor the second approach alone is truly fruitful: Organizations are more than tayloristically inspired workplace optimization programs, process maps, and function diagrams. They are **communities** that define themselves through a common purpose and in which the individual members need a reference to the overall purpose for their actions and decisions and from which they derive meaning for their lives.

However, we also know that **holistic thinking** alone is not sufficient, as advocated in many organizational approaches. Contrary to the now common rejection of **silos and silo mentalities**, one must state that **silos are also good** and have their advantages. Silos enable concentration, the creation of expertise and competencies, and the accumulation of knowledge. The organizational chart structure creates order and calculability, and it provides clearly defined areas and responsibilities for the employees. Based on Herbert Simon's concept of near-decomposability (1962, pp. 477ff), we can say that silos offer the advantage of interrupting interdependencies within an organization and thus of making complexity better understandable and manageable. Through organizational chart structures, not everything remains dynamically interconnected—the level of order and clarity increases.

The truth is thus not to be found in the famous middle ground, which blurs everything to an indefinable gray, but in the tension to keep up both poles. We have to master both: to divide tasks well into positions and jobs, but at the same time restore the holistic dimension that unites the organization and generates meaning and value (similar to this: Selznick, 1984). In the history of management theory, there have been many attempts to express dualities of that sort (for example, "management vs. leadership," "administration vs. institution," "anatomy vs. physiology, psychology"). However, all these terms and words again lead to definitional problems and contain implicit value statements (i.e., "is leadership better than management?").

To avoid these shortcomings, I prefer using the more neutral picture of wings, even if it is not perfect: Birds need two wings to fly, and both wings are equally important and must flap synchronized together. Following Fig. 2.9, I call the aspect of specialization in the form of the organizational chart structure the "**left wing**" and the holistic dimension of an organization its "**right wing**".

How to design both wings will be the subject of the following chapters. Regarding the left wing, we will first discuss the principles related to the design of jobs. The right wing will be the topic of Chaps. 5–7. The question of the right organizational structure in which jobs and positions should be embedded will be dealt with from Chap. 8 onward.

Summary

- Through the organizational chart structure, tasks become assigned to people, and the organization gains transparency, accountability, stability, and reliability.
- "Organization" is better viewed as a process of permanently organizing and processing variety to maintain the organization's viability.
- Unlike the organizational chart structure, the VSM can describe the minimum set of systemic tasks necessary for an organization to become viable. These systemic tasks are then applied to the specific factual aspects to derive the full spectrum of tasks.
- Organizational chart structures lead to a fragmentation of the organization's perspective on the environment, the systems 1, and the metasystem. They overemphasize the synergistic perspective of every individual job, position or unit at the expense of the overall organization.
- The organizational chart structure should be designed and correspond to the structure of the viable systems and the actual process of variety processing as closely as possible.
- Organizations must achieve both specialized and organizational synergies through the creation of jobs and units ("left wing"), as well as the creation of a holistic view, which ensures that the organization's purpose does not disappear from the awareness of the employees ("right wing").

Questions for Reflection

1. How much does the organizational chart help your organization to create transparency, accountability, reliability, and stability? If not, what are the reasons?
2. How well does the organizational chart structure of your organization mirror its viable systems?
3. How fragmented are the views in your organization regarding what constitutes the organization's environment and its purpose? How much are the metasystemic functions fragmented? How much has the organization's inner life become its environment and reference point ("inside view")?
4. How high are the temporal, social, and mental barriers that must be overcome until all people in your organization share the same awareness and understanding? What constitutes these barriers?
5. In your organization, how well are the left and the right wing balanced relative to each other?

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The Art of Designing Jobs and Units— The "Left Wing" of Organizations (Part 1)

3

One of the most fundamental building blocks and units of account in a modern organization and the organizational chart structure are "jobs" and "units" (e.g., teams, departments or divisions). However, what are the principles of how to group tasks to meaningful jobs and units (see also Malik, 2006)? The design of jobs merits greater attention, since how a job is designed and organizationally embedded determines the **effectiveness of people** (apart from, of course, their work motivation and work methodology). The design of a job decides whether people will flourish or despair with far-reaching effects on the organization's overall performance.

When jobs are designed, one focuses too quickly on the question of who can or should take over a certain job. While jobs must ultimately be so configured that they are compatible with the set of available employees and their competencies, this approach lets us often forget to ask whether a job makes sense and is feasible at all. A job must first and foremost help the organization to process its variety as efficiently and effectively as possible. Does a job add to the viability of the organization, or does it actually hinder it? This question is important also on a personal level because only jobs that enhance the organization's viability can create meaning and legitimacy for people. Non-jobs or impossible jobs can become hell on earth for their job holders.

This is why we want to dedicate the following two chapters to the configuration of jobs and units in general. In this chapter, we want to clarify within the VSM framework according to which general guidelines one should design jobs and units. In Chap. 4, we want to better understand their limitations. In both chapters, we are only concerned with the design of jobs and units as such. The question of which concrete organizational structure one should choose, for example, functional versus regional organization, will be addressed in part 2 of this book.

In this chapter,[1] we will focus on three major aspects that determine how jobs and units in general need to be defined: first, in respect to their way of processing

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[1]All figures in this chapter related to the VSM are or contain and if not stated otherwise, adapted (detail) views from Beer (1995, p. 136, Fig. 37).

variety (Sect. 3.1), second, regarding the competency profile of (potential) job holders (Sect. 3.2), and third, in relation to the systemic architecture of the organization and the various system functions (Sect. 3.3).

3.1   Grouping Tasks to Jobs and Units

3.1.1   Large Herds of Specialists or Small and Flexible Teams of Generalists?

If one wants to win customers, then everything must be in place and work together. However, the more players are involved, the more difficult this becomes. **Specialization in an organization comes at the price of orchestration**. This is particularly the case in large organizations that can specialize better since they have more resources available.

While specialization allows targeting the environment and the variety processing more precisely, the downside is a stronger fragmentation of the organization (see Fig. 3.1). Furthermore, the more people are involved in a process, the higher the **synchronization and coordination efforts** are, and the more delays and disturbances in the synchronization process can occur. The question with whom do you have to align and coordinate and who should not be overlooked then becomes a constant companion and source of errors.

If too many people are involved in a task then the coordination of a meeting alone becomes a nightmare. The date at which all finally have time might then be already too late for the actual customer and his/her case. But not only the timing but also the harmonization of the different knowledge and information that everyone has requires considerable effort and constitutes a constant source of errors. One gains more power with more cylinders in an engine, but only if all the cylinders work in synchronization. Large and highly specialized companies are, in principle, more powerful than small ones, but they often lose customers due to their higher need for internal coordination. This allows smaller boutiques to out-maneuver them.

We thereby return to the principle that we have already discussed in volume 2; namely, that the horizontal varieties must be allowed to adjust mutually to each other in the rhythm and timeframe of the environment. This adjustment becomes more and more difficult if too many, and too different units within the organization are involved, as the saying goes: "Too many cooks spoil the broth." The organization loses the overview of its processes, and even customer/s (cases) can be forgotten.

In such situations, organizations sometimes nominate so-called process owners (or "case managers"), who, like a steersman in a rowing boat, must ensure that everyone involved in an entire process chain or customer case strikes in the same rhythm and does not lose sight of the overall objective. The introduction of such a process owner is a countermeasure against the fragmentation of the organization and is designed to reinstate alignment in operational processes. In the VSM
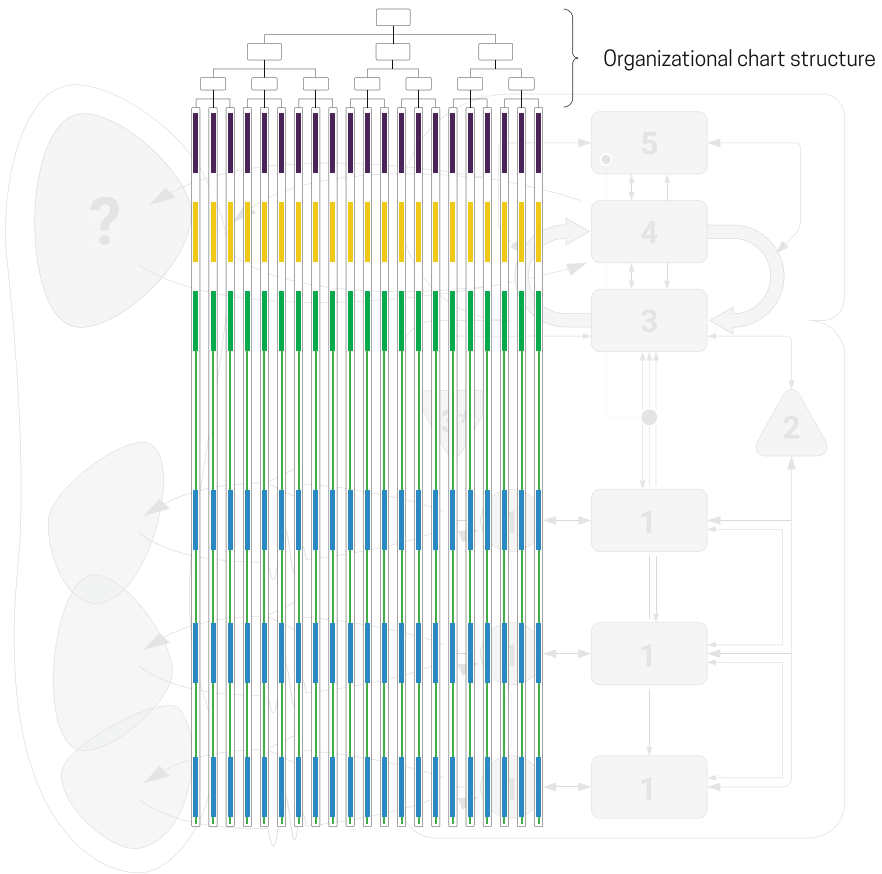
Fig. 3.1 A high degree of specialization into jobs and units (vertical rectangles) increases the fragmentation of the viable systems (simplified and schematic representation)

language, the installation of such a process owner can be viewed as an attempt to reinforce the system 1 management (see the blue part of the system 1 management in Fig. 3.2).

In reality, however, the installation of such process owners sometimes only cures the symptoms and not the underlying cause; namely, a too high degree of specialization and fragmentation of process chains. The creation of a process owner alone does not yet solve the underlying problem since the process owner still struggles with the question of how to establish a more holistic perspective among all other participants in the process and how to make them coordinate. If this underlying problem does not get addressed and the process owner does not receive the necessary means, then one ought not to be surprised that the creation of such a position remains ineffective. In such cases, one should instead try to reduce the fragmentation so that everyone can regain more overview; for example, by founding smaller teams that possess all necessary competencies to treat a customer case.
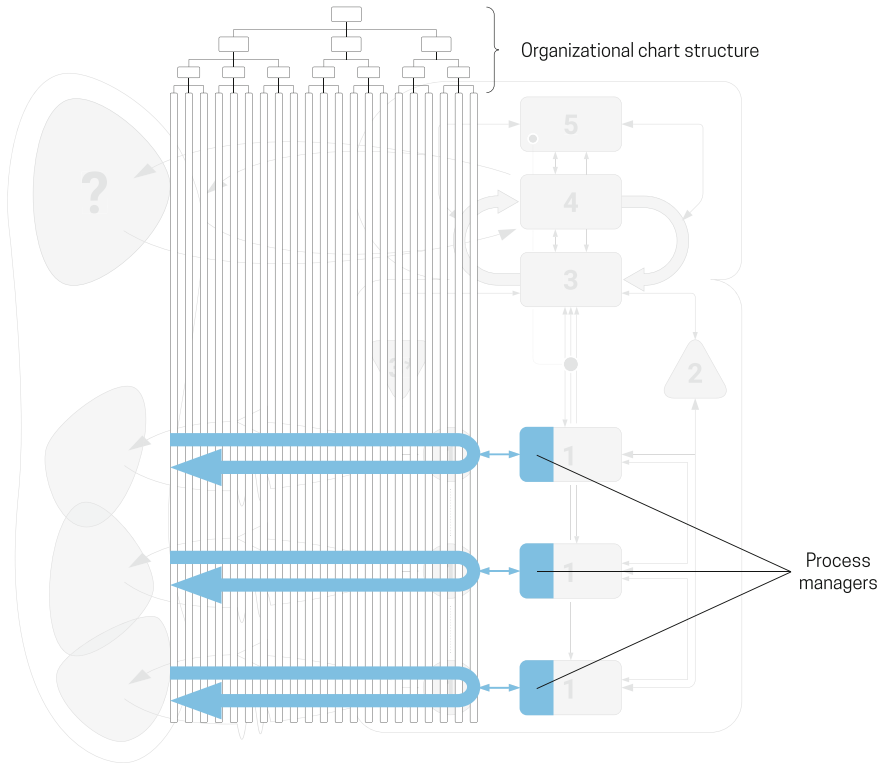
Fig. 3.2 By installing process owners (blue part of system 1 management) responsible for entire processes (blue arrows), organizations attempt to reverse the fragmentation induced by the division of tasks and regain a holistic perspective (schematic representation)

Principle 1

Jobs and units must be formed in such a way that they do not fragment the operational processes and mutual adjustment processes too much, especially regarding the environment. The coordination effort necessary to compensate for the fragmentation must not neutralize the advantages gained by specialization.

Apart from the lack of overview and synchronization of all activities, another problem emerges as a result of too much fragmentation: When processes are split up among too many jobs and, consequently, people, this also **reduces the direct responsibility of the individual employee**; it then becomes easier to make excuses and blame others.

A paper producer once had the supplier invoices checked by four different clerks before any payment was authorized. The assumption was that with more "eyes" involved, the accuracy would increase. Unfortunately, the opposite was the case: The accuracy did not improve, but the more people checked the invoices, the worse the quality of the checking procedure became. The reason was simple: One could always rely on others. Only by reducing the number of people who were checking the invoices and by introducing random audits by the superiors did the situation improve. This brings us to another important principle:

> **Principle 2**
> Jobs and units should be designed in such a way that the individual job holder or unit can be made truly accountable for a task or process.

3.1.2 "This Is Enough"—Respecting the Limits Set by the Available Vertical *Eigen*-Variety

The next principle for designing meaningful jobs or units results from the axiom of requisite vertical *eigen*-variety (see volume 2). Jobs or units always combine several activities, even at the lowest level, where, for instance, they process several customer orders. There are two limitations as to which and how many tasks can be grouped: a quantitative (also better known as span of control) and a qualitative one. Although both limitations influence each other, they must be kept apart for analytical reasons, as we shall see below.

The quantitative upper boundary of tasks ("span of control")

The quantitative boundary is relatively easy to understand: How many tasks can be grouped meaningfully so that they do not overload the job holder or unit leading to a bottleneck? On a slightly higher aggregation level, this aspect reemerges in the question of the right **span of control**: How many employees can a manager lead and manage? Often, five to seven employees are mentioned as an ideal span of control, but this is not always necessarily so.[2]

As indicative as this number might sometimes be, there are also cases where it is wrong and where four to five people are perhaps the maximum span of control, or where managing 15–20 employees is still feasible. If taken as an absolute principle, the 5–7 span of control rule might lead to wrong job configurations since whether a span of control is feasible does not only depend on the quantity but also on the underlying variety of tasks. The more diverse tasks are, the fewer synergies are

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[2] For those employees who are not in a management role, the relevant metric is, of course, not the number of employees, but the number of incidents that need to be handled (e.g., customer inquiries, contracts, products, projects).

possible, and the more time is needed to understand and process a task. Make-ready times are not only necessary for machines, but the human brain also requires them. The more varied tasks are, the longer the brain needs to switch between tasks. This leads us to the qualitative aspect.

The qualitative boundary of tasks

The reason why the qualitative aspect (i.e., the **heterogeneity of tasks**) is important for the design of jobs or units we visualize in Fig. 3.3: if we represent a task by a box and jobs (and units) as a vertical combination of boxes, then the qualitative differences between the tasks of a job can be represented by differently colored boxes (see Fig. 3.3). In the left image of Fig. 3.3, the individual job holder must process many different colors. In the right image of Fig. 3.3, the tasks are more homogenous and can be more easily grouped. The similarities are greater, and hence, the synergies higher. Consequently, the adaptation effort needed for switching between different tasks is also lower. When designing jobs, not only does the number of tasks count but also their heterogeneity.

Does this all sound strange? Unfortunately not, because companies often mix tasks without paying attention to the underlying heterogeneity. "Anyone who can 'sell' can sell anything," was the reasoning of a utility company. So why not combine products and demand the salespeople sell not only electricity but also
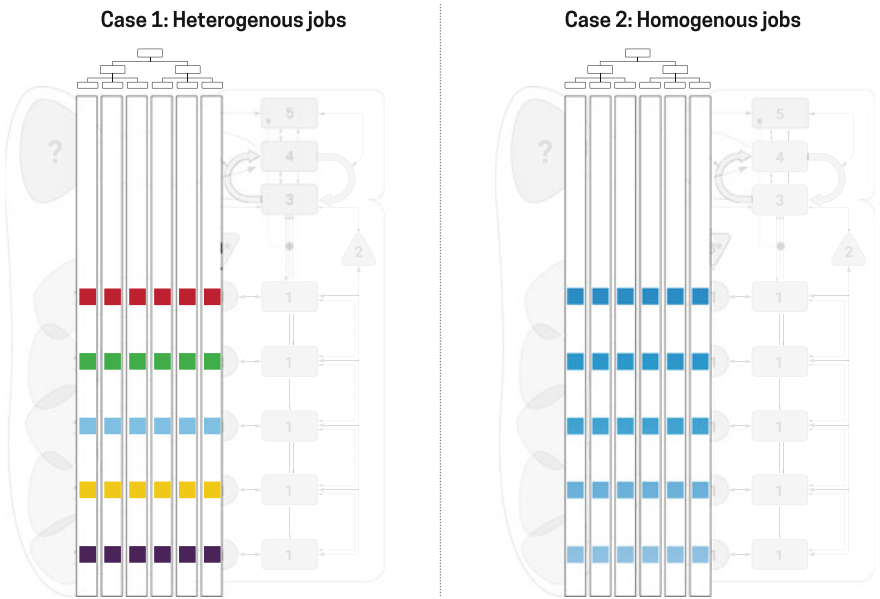
Fig. 3.3 Jobs (vertical grouping of boxes) with a highly heterogeneous and homogenous task profile (represented by the differences in the color spectrum of the boxes)

heating systems or internet connections to business clients, was the logical conclusion drawn by this company. It is all about "selling," isn't it? Unfortunately, this was not the case, as the utility company was to discover later when it was wondering why sales did not increase, and not every salesperson was selling all the products equally well.

Companies often underestimate the differences in tasks and their impact on the efficiency and smoothness of processes, and this applies not only to employees. The daily life of many executives today is characterized by the fact that they must quickly change between very different tasks (Mintzberg, 1973). Good results, however, need good thinking and reflection, and this again requires time, starting from a neuropsychological point of view; otherwise, superficiality and inaccuracies will result. More homogenous jobs or units make it easier for employees to concentrate, train competencies, and reduce (intellectual) make-ready times between tasks.

> **Principle 3**
> When combining tasks to jobs and units, it is important to achieve a high level of homogeneity or complementarity so that the coordination and adjustment efforts between the tasks remain low and synergies can be gained.

3.1.3 "This Is Historical"—Avoiding Obsolete Jobs and Units

Jobs or units that require processing too much variety, as discussed in the previous section, is one extreme. The other extreme comprises jobs or units with little or no variety to process. Nature is very efficient: Functions that are no longer needed usually recede during evolution to make room for others. The same should happen for organizations too: Jobs or units that organizations no longer need should be abandoned.

For organizations, however, this catharsis appears to be more difficult to execute than for nature. Jobs or units are linked to people, and so, jobs continue their life in their job holders, although the organization no longer needs these jobs. A typical example of these jobs is the "permanent provisional," meaning jobs that were created in response to an immediate challenge but have not been abandoned after the disappearance of this challenge.

"You must look at it from a historical perspective…," one often hears managers saying when asked about the scope and purpose of a specific job or unit, and the interviewee finds it difficult to recall the reasons for a job or unit. If one can explain a job or unit only through past causes and no longer by current needs and benefits, then one has probably arrived at the point where one should be brave enough to leave "history" behind and let the current status finally become the past. Jobs or units, where the variety to be processed no longer exists or is already processed better by someone else, should be abolished.

The costs for not abandoning obsolete jobs or units are often underestimated: unnecessary jobs or units not only fail to make a contribution but they also produce (organizational) complexity (sometimes out of pure self-preservation). To counteract this danger, each organization must consistently go through a **systematic self-purification and abandonment process** as already described by Drucker (1993, pp. 93f). One should ask oneself regularly: Why do we undertake all these activities, and why do we afford these jobs or units? In the language of the VSM, this cleansing process means that the organization finally adapts its *eigen*-variety to the variety required by the environment, even if this means reducing it.

This is particularly important in today's rapidly changing environment in which agility is required. Jobs profiles and establishment plans must become more flexible and change more quickly than before. Consequently, today one should perhaps attach an expiration date to jobs, positions, and organizational units. Once the date is reached, the organization should be forced to assess whether they are still needed. Was the objective of this job a short-term improvement (i.e., reinforcing *eigen*-variety) or does it address a fundamental necessity that still exists?

This leads us to a principle that is easy to understand but seldom applied in practice.

Principle 4
Jobs and units should only be created if they can process variety meaningfully and if no other job holder or unit can process the variety better and more efficiently. Existing jobs and units should be regularly reviewed in that regard.

What are the places where one typically finds redundant jobs and units? Do you want to know some examples? Then continue reading here, otherwise, go directly to the end of this in-depth section.

Typical cases in which the variety left to be processed is too small for jobs or units are abundant. Let us briefly discuss three examples:

1. **Communication channels and translators**
   Some jobs or units are often just transmission channels or translation mechanisms between different job holders or units. Here, the question to be asked is why these job holders or units fail in communicating directly with each other.

2. **Hierarchy levels**
   A bit more challenging to discover are obsolete hierarchical levels (see volume 2). In many cases, these levels are often nothing more than pure communication channels between levels that do not process variety (i.e., solve issues) but only transmit information from one level to another.
3. **Coordination jobs or units**
   We remember that the size of the coordinating activities and the metasystem, in general, depends *inter alia* on the variety left unprocessed or generated by the operational units (see volume 2). Much coordination work can be avoided by reducing the need for coordination, such as clarifying interfaces, reducing overlaps, or improving the self-coordinative forces (see volume 1).

So, before creating a new job or unit, one should ask oneself: What is the underlying variety that cannot be processed by the current job holders or units and why? Moreover, how can we achieve the same effect without additional units and jobs? If one asks these questions seriously enough, one might find that some jobs or units might not be necessary anymore or even harmful if they create additional work.

3.2 The "Jack-of-All-Trades" Trap—The Art of Matching Jobs with Employees

Jobs and positions must be assigned to concrete people and their skills. Otherwise, the design of jobs becomes a purely theoretical exercise. Many jobs remain vacant because the combination of skills does not exist within the company or in the labor market. We thus come back to Ashby's Law. Each job must be defined in such a way that an equilibrium between the job descriptions and the available competencies on the labor market can be achieved (see Fig. 3.4).

However, finding this balance is not so easy; if one reads job advertisements from companies, one feels reminded of the dialogue about the perfect man in the movie "Groundhog Day." Companies search for the perfect employee who has all the factual and social skills needed to solve the upcoming problems and who can, nevertheless, blend wonderfully into the company. What one needs as a company is a "jack-of-all-trades." And, like the main actor of the film, the weatherman Phil Connors, we can only say with a smile, "Luckily, I am all that!"

The reality is, of course, quite different: we are good in only two or three tasks, and in all other respects, rather average. While companies identify the challenges of a job fairly accurately, they then make the mistake of transforming any identified challenge of a job into a required competence. Thereby, they only transfer their shortcomings to the "should-have" page of the applicants. The result is a long list of
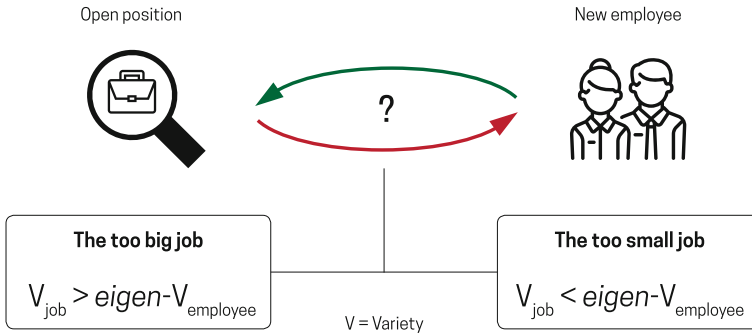
Fig. 3.4 The variety of a job (“V_{Job}”) and the employee’s *eigen*-variety (“$V_{employee}$”) do not match in the case of a too big or too small job

desired competencies, which, however, require very heterogeneous and mostly incompatible **personality profiles**. In the end, however meticulously the job profile has been drafted, the attractiveness and even credibility of the organization that posted the vacancy suffer: It deters applicants with honest prospects who surrender faced with such demanding profiles and leaves the field to bluffers.

For this reason, it is better first to understand what matters in a job and what kind of competencies are missing and cannot otherwise be compensated by the organization. In most cases, there are no more than two or three tasks, for which the current organization does not already have the necessary competencies, or which it cannot develop itself (e.g., training the new job holders). Finding out these two to three core competencies is what distinguishes a good from a superficial job description and makes it more credible. If one does not pretend to expect the jack-of-all-trades, one will undoubtedly get more and above all many more realistic applications.

Paradoxically, the opposite case exists as well: imagine the “jack-of-all-trades” actually applies. Will you take him or her? It would be a pity to miss such an opportunity, would it not? The problem is, of course, the fact that these employees either get bored quickly, will quit, or have their competences shriveled, with neither outcome desirable.

So, one should not configure the jobs to be too monotonous. Every job should offer sufficient **development potential**. The motivation for a task is also influenced by the opportunity to improve and develop something new and oneself. Does a job provide sufficient potential to develop oneself further? How must a job be enriched to offer opportunities to create something new, even with very operational and routine tasks? As Malik rightly observed, **jobs can be too big or too small** for people (see Malik, 2006, pp. 298ff and Fig. 3.4). This leads us to two principles for the design of jobs that are almost self-evident, but not always respected:

> **Principle 5**
> The tasks of a newly designed job should correspond as much as possible to the competencies available in the organization or in the labor market. A job should neither be too big or too small.

> **Principle 6**
> Jobs should have sufficient possibilities to learn, develop, and to become creative.

We usually only look at the factual, professional, and social competencies required for a position. However, the tasks grouped to jobs often entail the exercise of different systemic functions ("**systemic profile**"), which in turn require different skills and personality profiles:

- Jobs at the **interface to the environment** require different personality traits than the ones occupied only with internal tasks. People working on the boundary of the environment must have developed good sensors for changes in the relevant environment and the ability to build information channels into their environment (e.g., to the decision-making centers of other companies, in the case of sales or purchasing). The competencies related to internal administrative and managerial tasks are less relevant for these jobs; more relevant is the capability to adapt and connect to the environment quickly.
- Also, tasks for **system 2, 3, and 3*** require specific personalities:
  For system 2, integrative personalities are needed who are able to engage others in cooperation and the resolution of conflicts. System 2-type persons should not want to dominate unnecessarily.
  This distinguishes them from system 3-type people who are not afraid of decisions that may even hurt others. System 3-type personalities must be able to say "No" and accept not being loved by others.
  Applicants for system 3* positions, on the other hand, must be able to gain the trust of people so as to get insights into how the job holder or unit to be audited operates in reality (see volume 1 and Espejo & Reyes, 2011). They must also have a fine eye for the small inconsistencies and details behind which "dirt" might unexpectedly be looming. They must be the type of people who become suspicious because they observe that "the number in column AJ and row 1345 does not match the one in column K and line 189."
- There are also people who are more likely to flourish in the organization's **strategic metasystem** than in the operational sphere, or who, instead, love to work in the management of the current and well-established operational processes (system 3) than in the area of the new and unknown and uncertain decisions (System 4).

It is not difficult to imagine that there are hardly any applicants who can cover all these different personality traits at the same time. For this reason, it is recommended to group tasks according to the systemic functions, so as not to slip into one of the dysfunctionalities described in volume 2.

> **Principle 7**
> The tasks grouped into one position or job should be as homogenous or complementary to each other as possible regarding the systemic functions exercised and the personal competencies required.

3.3 You Cannot Be Your Own Auditor—Preserving the Systemic Polarities

Let us now briefly return to volume 2, which showed us that the **system functions form opposite pairs within the organization** and that these opposite pairs are needed for an organization's stability to counterbalance the continuous reduction of complexity. One of the most important tasks is, therefore, to **uphold these polarities** and to avoid situations in which a system function or recursion level dominates others.

We have already learned many examples of such dysfunctionalities: Systems 4 and 5 should not coincide with system 3, and system 2 should also be able to act as autonomously as possible from system 3. System 3* also requires autonomy from other functions. Once one begins to control one's actions, the functioning of the organization's system 3* is in danger: It might be weakened or even forced to turn a blind eye to issues. The financial crisis made it clear that the supervisory and management boards in banks must remain separate from each other so that the risks taken by the management board of a corporation remain within the guidelines of good governance (see International Monetary Fund, 2014, p. 122).

The better one can separate system functions and recursion levels, the more easily one will avoid schizophrenic situations of "wearing different hats" among employees, in which they must consider the demands of different roles in parallel. We know well that seldom does one satisfy the demands of every "hat" that one needs to wear.

> **Principle 8**
> Jobs and units should be designed in such a way that the systemic opposites in an organization are not abolished but rather continue observing and correcting the systemically opposite side.

Summary

Tasks should be grouped into jobs and units according to the following principles:

1. Tasks should not be specialized in such a way that this leads to the fragmentation of operational processes and insufficient adaptation of varieties. The advantages gained through specialization should not be outweighed by the coordination effort needed.
2. Jobs and units should be designed in such a way that the job owners or units can be held accountable for their decisions and actions.
3. When grouping tasks to jobs and units, one should seek to achieve as much homogeneity as possible to make concentration and the formation of competencies possible and to minimize make-ready times between tasks.
4. The variety processed by jobs and units should be valuable to the environment and organization and should not be processed better by other job holders or units. Existing jobs and units should be regularly examined and subjugated to a systematic simplification process.
5. The competencies demanded in a job profile must be in equilibrium with those available on the labor market (Ashby's Law) and adequate to the job holder (neither too large nor too small jobs).
6. Jobs should offer sufficient room for personal development, learning, and initiatives on the part of the job holder.
7. The tasks of a job should be as homogenous or complementary to each other as possible in their content and systemic function.
8. Jobs and units should be designed in such a way that the systemic opposites within an organization that observe and correct each other are not abolished.

Questions for Reflection

1. Work through the principles in this chapter and verify whether your job and those of your employees are in line with these principles. Where does the actual configuration of tasks violate one of the principles mentioned above?
2. How much is your organization aware of these principles when designing and installing a new position or units and how much is the viability of new positions or units verified beforehand?

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The Limitations of Jobs and Units— The "Left Wing" of Organizations (Part 2)

4

Through jobs and units, organizations want to create order and transparency. Job descriptions, units, and organizational charts are indispensable planning and structuring instruments, and yet one must also be aware of their limitations. To merely group tasks to jobs and units and assign them to individuals is not enough to make the left wing of the organization work. One also needs to take care of the limitations that come intrinsically with the creation of jobs and organizational units. Only if organizations have the right expectation of what jobs and organizational units can and cannot accomplish, will they become more attentive to the necessary supplementary mechanisms.

In this chapter, we will now discuss some of these limitations, such as …

1. … that jobs and units cannot correct underlying organizational and systemic dysfunctionalities (Sect. 4.1).
2. … that organizations cannot define and assign all tasks in advance (Sect. 4.2).
3. … that reporting lines do not automatically create the necessary authority (Sect. 4.3).
4. … that the execution of a task entailed in the description of a job's or unit's responsibilities requires more people than just the job holder or unit named in the organizational chart (Sect. 4.4).
5. … that descriptions of jobs and units are not self-adapting (Sect. 4.5).
6. … that reporting lines do not create the necessary cooperation among job holders and units (Sect. 4.6).

These inherent limitations of jobs and units must be taken into account. What these limitations entail more specifically we will elaborate in this chapter.[1]

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[1]All figures in this chapter related to the VSM are or contain, and if not stated otherwise, adapted (detail) views from Beer (1995, p. 136, Fig. 37).

4.1   New Jobs and Units Are no Landfills for Organizational Problems

Too often the following situation in organizations occurs, if no solution can be found to a problem: "we have a problem here, so we need someone to take care of it!" In such a context, jobs and units are not places of meaningful work, but rather function as **"landfills" for organizational problems and power conflicts**. The new job holder or unit must solve the problems that the whole organization cannot solve.

This brings us back to the organizational dysfunctionalities described in volume 2. A well-known example is that of the "coordinators" who have to mediate between units but often do not possess a real lever (e.g., in the case of the dysfunctionality "Principalities"). They sit between chairs.

In these cases, one should, consequently, rethink the creation of a new position or unit and ask how the potential job holder or responsible unit can contribute to the improvement of the situation. Not only does the new job or unit cost money and create additional interfaces, but it will also soon lead to frustration on the side of the job holders and the rest of the organization if expectations cannot be fulfilled.

> **Principle 9**
> Jobs and units should not be created instead of correcting and resolving systemic organizational dysfunctionalities at their roots.

4.2   "No One Responsible …?"—Taking Care of the Empty Space Between the "Boxes"

Another problem inevitably arises from the fact that descriptions of jobs or units can never specify all tasks: not only because of the scope and constantly changing contexts of tasks and task areas but also due to the continuous emergence of new and thus unforeseeable tasks. If people rely too much on their formal job descriptions, no one will take care of the variations of existing tasks or new tasks. "Why didn't anyone take care of this …?" is an often-heard comment in companies suffering from a too formal approach to job descriptions, and the answer is known: "because nobody told us that…"

Customers who confront the organization with a new problem often find themselves quickly in an "organizational nirvana," such as the endless loops in a call center show, into which one falls if no person responsible for a problem can be identified. In the organization chart, the spaces between the "boxes" are generally shown as empty, but this may not be true: Perhaps they contain the many tasks for which no employee can be found because no one has been assigned to them?

To avoid these "empty spaces" between the jobs and units in the organizational chart, it is necessary to take countermeasures: How can one ensure that no problem falls through the boxes? Organizations often believe that other formal instruments, such as the RACI matrix or process flowcharts, can help out here. Unfortunately, this works only to a limited extent because employees can hardly remember what has been specified, and a burning issue often requires a fast response. Furthermore, one cannot foresee and formalize every case and situation. As an executive or manager, one comes rapidly to the conclusion that the **employees' attitudes, mentalities, and virtues** such as **circumspection**, **mutual responsibility, and concern for the whole** are more helpful and decisive to close these gaps than formal instruments.

These virtues may sound somewhat old-fashioned and are rarely found in modern management literature, but they are still very effective if put into practice; only, whoever is circumspect by nature, or has trained this ability, considers and tries to understand the implications of his or her actions and decisions on other jobs and the customer. He or she will then watch and try to minimize the "empty space" between jobs and units as much as is feasible. Whoever has accepted **responsibility for others and the organization** as a guiding principle will ensure that the person on the other side of the empty space will not be left alone and will help to process the new tasks. Anyone **who cares about the whole organization** will notice the tasks that might fall into the empty space between jobs and units. He or she will take care of these tasks until a responsible person has been found. It is amazing how little attention and appreciation this mutual support finds in organizations. This attitude, often regarded as "self-evident," is the oil that keeps the organization running smoothly and is often far from obvious.

In the end, the problem of a too narrow focus on one's job description calls for a paradoxical attitude: namely, the "flexibility" on the part of the job holder to ignore their job descriptions and **go beyond the division of responsibilities**. Jobs and units only become fully useful if their holders or members are allowed and encouraged to reach out beyond their defined "boundaries."[2] The readiness to go beyond one's job and the boundaries of one's unit if no one else is responsible is essential for an organization to become functional and agile. It should thus become the core element of an organization's culture and behavioral repertoire.

Therefore, job holders and units should not only work on their lists of defined tasks but they must also observe and take care of the inflowing variety even if not directly related to their specific task area as much as is feasible for them. For this to happen, the organization must ensure that all job holders are equally aware of their duty and that examples of circumspection and showing responsibility for others are praised publicly; it cannot and should not be taken for granted.

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[2]The only limitations of reaching out are of course the cases, where it risks interfering with the areas of responsibility of other job holders and units and dilutes or even eliminates clearly defined responsibilities and duties.

Principle 10
The boundaries and division of responsibilities created through jobs and units need to be counterbalanced by a culture of circumspection, responsibility for one another and the entire organization. This requires the will to go beyond the boundaries of one's job description. This attitude must be demanded, exemplified, and appreciated by the whole organization and its executives and managers.

4.3 On the Omnipotence and Impotence of Reporting Lines

An important element in the design of jobs and units is the definition of the relations between the various jobs and units. In everyday life, these relations are often reduced to the question of authority or, in our everyday language, the famous "reporting line": "Who has a line to whom and in what form: solid, dotted, dashed, etc.?"

Certainly, it needs clear responsibilities, but some companies have become world champions in the differentiation of reporting lines. In practice, however, such elaborate graphical distinctions have only limited value and hardly ever lead to significant improvements. The factual responsibilities are usually too complex and too variable in order to be fixed forever by individual types of lines. On the contrary, one must instead assume that conflicts increase exponentially with the number of line types. The connecting lines thus have the opposite effect as to what they are intended for: **Instead of connecting they separate**.

Many executives and managers believe that reporting lines suffice for their positions to become legitimized and corroborated. A clear definition of reporting duties is important, no doubt, but a closer analysis of real life also quickly reveals that too much belief in the power of lines is illusionary. If one wants to "sue" someone on the basis of "lines," one will usually find no court within the organization that gives the plaintiff the right to do so. Unlike courts, no one in an organization has the time and the desire to deal with the past and conduct a thorough analysis of who is to blame. In fact, in these cases, the reporting lines reveal their impotence. For this reason, caution should be exercised especially by those who place too much emphasis on lines and rely too much on them.

Reporting lines are only a snapshot of a more multifaceted and complex (power) relationships between jobs or units: An executive wanted to know whether or not a final solution exists in terms of reporting lines for what he then called the "watchdog problem." In this problem, the question is how a superior unit can get hold of everything that is going on in subordinated units, without disturbing their autonomy too much. The problem of this executive was, more concisely, that he wanted a relationship of authority and egality simultaneously.

The unfortunate message is that there exists no "line construct" to solve this paradoxical problem. Drawing lines does not help here. Much more decisive than the correct line type is another factor, which we already discussed regarding system 2 and 3* (see volume 1); namely, what could be called the "**driving style**" (see also volume 2). A line is a line, but how is it practiced? This is a matter of style and how one deals with each other.

Just as the best racing car does not come to full power without a trained driver, likewise the best formally differentiated and defined line construct will not come to life without a good and experienced "driving style." As a job holder or unit head, we are, in a way, the drivers for the tasks and responsibilities entrusted to us. Just as good drivers adapt themselves to the situation (e.g., weather, carriageway), so too must job holders and units adapt the exercise of their position and their powers to the individual context and situation. In some situations, one can and should drive with a more authoritarian style, but in some cases, one will have to deal with other stakeholders in a rather advisory, forthcoming mode and even charming way—all within the same line! A well-configured job and unit will only work if it has a "good driver"; that is, someone who knows how to "drive," i.e., use the reporting lines.

The art required is, therefore, to be aware of the different challenges and situations and to adapt one's leadership and working style to them skillfully. Whoever masters this art will give the individual reporting line, in the sense of Ashby's Law, the requisite *eigen*-variety and help it to become what it is designed to be: an important leadership instrument that, instead of separating connects, unites, and thereby engages others.

On the contrary, a job or unit—even if it has all the necessary solid lines—can quickly become a debacle if it is filled with someone who does not know what the required style should be toward other people. If there is no "suitable driver" available, then one should probably better reconfigure the job or unit. When describing the tasks and responsibilities of jobs and units, one should, consequently, not only consider the factual tasks but also with which styles a job or unit should be "driven," and what social and managerial competencies as well as organizational support are necessary for it.

> **Principle 11**
> For each newly created job and unit, one should reflect and define, which "driving style" is required and whether it can be "driven" at all.

4.4   Jobs Are Not Biotopes for "Hermits"—The Need to Reach Out Beyond the Boundaries of One's Job and Unit

Perhaps you have already heard the following reply: "For this issue, it is better to ask Mr. or Mrs. XYZ. They are more knowledgeable on it." Through creating jobs and units, organizations not only group and assign tasks, processes, and

routines, but also create "addresses" in the organization for issues, questions, and problems. However, while searching for the person who is supposed to answer one's question, it quickly transpires that these "addresses" work only to a limited extent: One asks a job holder or unit and discovers that someone else or different unit is actually more involved in this problem or is much better qualified to assist.

The organizational chart and job titles in the organization's directory hence provide only a first address for unresolved issues to which one can turn for an answer (Luhmann, 2000: 316). They are only the first points of contact and "visible" nodes of a far more extensive and hardly perceptible information and task networks. This is also logical: knowledge and information processing cannot be limited to specific persons but are, rather, the property of an entire network.

Stafford Beer has, therefore, always demanded not to equate the VSM with the organizational chart and the establishment plan. The **system functions are always more extensive than the jobs that are associated with them**. The jobs and units designated for a specific issue are always only a small part of the information network related to an issue. The management board performs most of the system 3 functions, but not all: Harvard professor Bower (1970) showed how lower-level experts already prepare decisions so far in advance that these decisions have *de facto* already been made even before the so-called top management discusses them. Decisions are then often taken in a place different from the one shown in the organizational chart (see also Beer, 1994a, p. 286).

This also applies to other functions such as innovation: Is "innovating" just the task of the R&D department or is system 4 not larger than R&D (see also volume 1)? Do we not experience it that ideas do not actually belong to anyone and often arise in the heads of employees, where one would not have suspected it? System 4 is larger than the specific job or organizational unit responsible for it on the organizational chart. An R&D unit or employee is, therefore, not necessarily the place where all new ideas arise. The individual unit or employee instead might, consequently, need to collect ideas also from people outside of its boundaries and ensure that they become known to the organization and be processed formally within the framework of innovation and strategy processes.

System 2 is also always more extensive than any coordination department and everyone who has worked in such a department knows the challenge to be always aware of what has already been arranged and coordinated without the direct involvement of this department. Coordination is an instrument the systems 1 use to organize themselves, and for this, they do not always need a "coordinator;" they can also do it by themselves.

What does this all mean in the end? First of all, one must be conscious of the limitations of the construct "job" or "unit." When designing a job or organizational unit, one should always ask oneself which other persons deal with similar questions or can contribute to the solution of this question and how these people can be won for a task even if it does not belong to their original responsibility.

Besides defining the tasks for a job or unit, one should consequently always consider how the position(s) can be opened and become a platform for other knowledge holders to contribute to. All **job holders or units need to go beyond**

their boundaries and reach out to others who are potentially also working on the same kind of task. This is not always a given: We all know employees who work like hermits behind the boundaries of their job descriptions and responsibilities, and who are no longer accessible to the organization. This should be avoided at all costs, and it is thus important to create sufficient awareness among all employees about the need to engage with others.

On a larger scale, one might need to set up **platforms and processes**, such as workshops, in addition to a specific job or unit so that other individuals or units with similar or related activities can meet and exchange ideas. For system 3, this could be extended decision-making committees. For system 4, these are, for example, idea marketplaces or workshops with participants from different areas, where ideas are born and exchanged. For system 5, these are, for example, employee surveys or workshops with huge groups that engage in the development of a vision and business mission for the company.

> **Principle 12**
> Every job holder and unit must go beyond the boundaries of their defined task area. They must create the social processes, platforms and fora that allow integrating other decision-makers and knowledge holders relevant to an issue.

From all these considerations, four essential conclusions can be drawn for the design of jobs or units:

1. One must think carefully about what one wants to make a person responsible for. Is "innovation" or rather the "coordination of innovation processes" the task of Mr. or Mrs. XYZ? **What should the real and concrete responsibility of the job holder or unit be**?

   This question becomes a delicate problem, especially in the case of "coordinators," where the knowledge about the actual coordination often lies with those who must be coordinated and not necessarily with the nominated coordinator (see volume 1). The appointed coordinators then can only be held accountable for facilitating the coordination process and for providing a supportive framework that allows others to coordinate. The responsibility to achieve a coordinated result must then, however, remain the responsibility of those who must be coordinated.

2. In some cases, one may not even be able to create a job or unit at all because the responsibility for a system function is too large and too evenly distributed among several people. Here, instead of nominating individuals, one will better use **groups**, such as teams, which are made accountable.

3. For cases in which other individuals or units must be involved and cooperate but are not directly subordinated to a job holder or unit, it is necessary to consider what particular **social competencies** the job holder needs to engage and motivate these individuals or units.

4. In the cases mentioned above (see item 2 and 3), it is important not to **leave the job holder or unit alone**. Jobs and units that only function with the support of others, and that are, in that sense, very open, need the **institutional support** of the organization. The organization must declare its will and support of the job holder or unit to the entire organization if it wants the job holder or unit to achieve the desired results. Collaboration is not an automatism.

Principle 13

When designing jobs or units, it is important to reflect on what the precise duties of the job holders or units are, and what kind of results they can produce and can be made accountable for. One must also consider the institutional support needed from the organization and the required social competencies of the prospective job holder or unit.

4.5   Jobs, Positions and Units—A Stone-Age Construct from a Pre-VUCA World[3]?

A further weakness of the "job," "position," or "unit" construct is, of course, **its temporal fixation of assigned tasks, responsibilities, and authority**: Jobs, positions, and units normally are task combinations with a long-term perspective. The advantage of this long-term horizon is that the relationship between different jobs, positions and units does not need to be constantly renegotiated. Each task has a specific place within the organization, and everyone in the organization knows relatively well where this place is. This gives organizations **stability and reliability**.

However, the drawback of the construct "job" and "units" as well as the establishment plan is, again, their stiffness: Sometimes, the accomplishment of a task requires different and faster information and decision paths than the establishment plan and the organizational chart structure provide. In the case of high variability and volatility, fixing the tasks in job descriptions can be disadvantageous. Has the VUCA world brought an end to the age of jobs, establishment plans, and organizational charts?

Finding an answer to this question is more difficult than often claimed because one must include the price to pay for **the higher temporal and factual flexibility** of task assignments. If tasks are reassigned continuously and shift throughout the organization, then the transparency of the assigned responsibilities within the

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[3]VUCA is an abbreviation for volatility, uncertainty, complexity, and ambiguity and was introduced by the US military in the 1990s to describe the requirements for leadership, decision-making, and planning processes.

organization, and thus its predictability and reliability, are diminished, especially the larger an organization is. One will then hear the question "Who is responsible?" more often, while it will also become more difficult to answer this question if no establishment plans and organizational charts are at hand. So, organizational charts and establishment plans also have their advantages: They make the organization more transparent and calculable.

Perhaps these opposing poles of standard organizational-chart-type versus newer organizational models can be resolved by looking more closely at reality. Even today, standard organizations are already working on a wide range of temporal durations for jobs: On the one hand, we find "positions" with a long-term fixation; on the other hand, we see organizations continually assigning tasks on an ad hoc basis. In between, we find projects and assignments that are created for the medium time range. Organizations work, in fact, already on a wide range of different time horizons within which they define tasks. It is not about being either long-term oriented or spontaneous, as is sometimes portrayed in the popular management literature. Instead, using the **entire bandwidth of possible time horizons** seems to be the key to a functioning organization. Not the dogmatic decision for one type of temporal fixation, but its differentiated use, is the key to an organization's viability.

The decisive point in organizational design, consequently, is not whether one wants to abolish jobs, positions, and units or not. Instead, the challenge today is to analyze, more precisely than before, what **degree of temporal fixation** should be assigned to specific tasks. Does one really want to create a formal job, position or unit out of different tasks, or should one just leave it as a project or temporary assignment? Jobs, positions, and units will, therefore, not disappear, but they will perhaps not become institutionalized as quickly as they used to be. They will also need to become more open to changes in their content and degree of responsibility. Current employees need to prepare themselves that their assignments might change faster and more radically than envisaged. Perhaps one will also have to introduce a kind of "expiry date" for jobs and units, which, when reached, are checked for their further need and utility.

For the VSM and the design principles of jobs, positions or units that we have identified so far, this flexibility does not pose a problem: The principles derived in this and the previous chapter also apply to more short-term task assignments, such as projects or agile teams. They differ only in their degree of temporal fixation. What is essential from a VSM perspective is to find the right degree of temporal fixation so that the system can adapt to the environmental variety with the necessary speed.

Principle 14
When configuring tasks to jobs and assigning them to people, the time horizons and "expiration dates" of these newly created jobs also need to be determined.

4.6   "We Just Need to Cooperate …"—On the Levers to Promote Cooperation

Finally, an excursion on the subject of "cooperation," which has already become a topic on several occasions in this chapter and which is undoubtedly one of the key questions in organizations today: **How does one get other stakeholders to work together**?

We have already discussed some facets of this problem in volume 1 and 2. Job holders or units often perform a coordination task comparable to a system 2 function, and they need to bring other job holders or units together to achieve a better overall optimum. What induces other job holders or units to join this coordination initiative under the guidance of another job holder or units? What can the VSM tell us in this regard, and how can its systemic perspective complement other approaches, such as those from psychology?

To understand how cooperation can be encouraged,[4] we can use the framework of the six channels of the operative metasystem to derive the available systemic options (see Fig. 4.1 and volume 2). One possibility to increase collaboration exists,
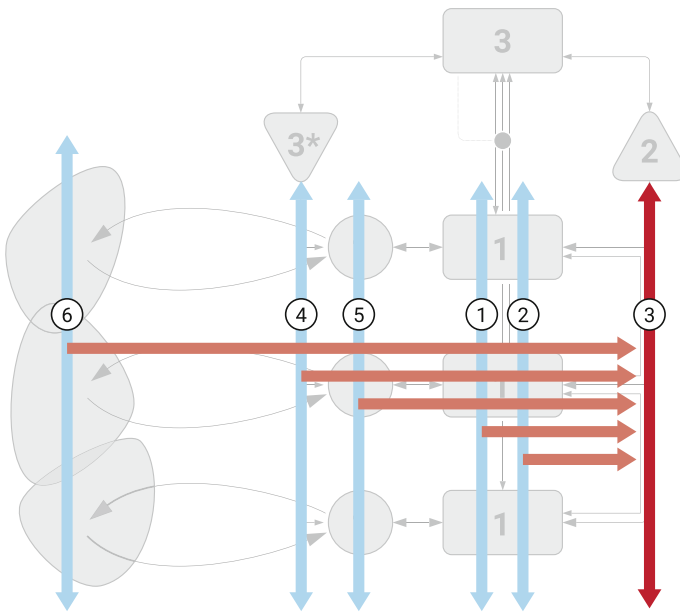
Fig. 4.1 To increase collaboration and coordination one can use the other five channels of the operational organization (see also volume 2)

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[4]Here, we limit ourselves to the organizational and systemic dimension within the VSM framework. Psychological aspects or reward systems are important factors and should not be overlooked but are not within the scope of this book.

undoubtedly, through the **system 3 channel** by either using the "command channel" or by allocating, respectively, withholding resources. The latter is practiced by distributing or withdrawing all kinds of rewards or resources. However, we have already seen in volume 2 that the system 3 channel should not be used too often.

Another possibility is offered by the **system 3* channel.** By checking who has already contributed and collaborated, one can increase the moral pressure. However, this also creates more unwillingness. The **environment** presumably offers the most effective channel just as often. It is always easier to convince people to cooperate if cooperation allows them to master their challenges better or allows the creation of concrete benefits.

But this is not all since it is also possible to influence the will to cooperate through the other **metasystemic functions** (see Fig. 4.2). For whoever begins to understand better the broader context of the organization, the new challenges (**system 4**), or whoever can see one's action as part of a larger process that contributes to the values, identity, and meaning of the organization (**system 5**), will be more willing to cooperate than a person who only knows his or her current small section of the world.

This also follows from our understanding of man as intrinsically searching for **purpose and meaning**. Based on this assumption about the human nature, the willingness to coordinate could be promoted by allowing other people, for instance, to participate in strategic planning (i.e., system 4) and fundamental decision-making processes (i.e., system 5; similarly Drucker, 2006, p. 307). The reward generated is meaning and belonging, and this we can experience in practice: Whoever has the feeling of working on something more significant and essential will usually be more willing to contribute than if the overall context of the cooperation remains hidden.

From this perspective, the **inter-recursive channels** (see volume 1) become very important in the design of jobs or units. The more a job holder or unit can offer access to higher recursion levels to others, the easier it will be for that person to generate "voluntary" cooperation from others.

Fig. 4.2 Giving access to the higher metasystemic functions through, for instance, the inter-recursive channels, can strengthen the meaning and purpose for cooperation
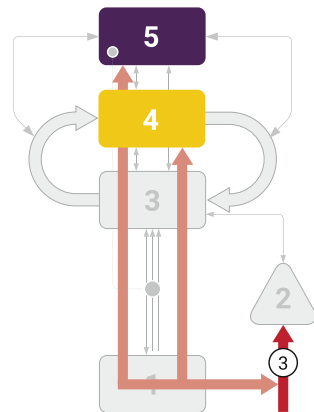
This can also be seen in everyday life: employees and executives who have this kind of privileged access to the board of directors or management, and who can offer access to potential volunteers, are more likely to win collaborators than those who cannot and do not do so. Being involved in the considerations of the top management (as far as possible) is in principle motivating. Thus, a job holder or unit that is highly dependant on cooperation should also grant access to higher recursion levels to collaborators.

However, this connection to higher recursion levels should not only relate to the cognitive aspect but must also include the realm of action and implementation. It is not sufficient to be informed by higher recursion levels; one also needs to be acknowledged by their representatives. The observation of an employee that, "You make a suggestion, but then you do not hear anything later about your proposal …" starts the spiral of dissociation from the organization and the refusal of any voluntary cooperation and collaboration.

Man is a **dialogical being**: what one is, one also experiences through others. Volunteers, therefore, want to avoid one thing happening: that the organization and the much-evoked "benefits for all and everyone" exist only in their imagination and that, consequently, their cooperation was naive. Anyone who signs up for voluntary cooperation, hence, also wants to enter into a dialogue with those representing the overall organization as such and wishes his or her voluntary contribution be acknowledged as helpful and necessary.

The individual job holders or unit that asked initially for cooperation suffices only to a limited degree; usually, they cannot represent the entire organization sufficiently. Based on these considerations, **the "thank you"** by the managing director or members of the management board to the relevant employees for their engagement and collaboration becomes vital since it fulfills this crucial systemic function. Their **"thank you" is not just a courtesy** but instead, **an important systemic process** through which the whole organization becomes visible to the volunteers and acknowledges their contribution to the entire organization. By thanking, the organization returns the energy invested by the volunteers to them and accords them the necessary satisfaction for the work done. The "thank you" closes the organization from the top to the lowest level (see also "circular leadership" in volume 2).

The challenge for the management of an organization is then to express this "thank you" with sufficient credibility and conviction. Since saying this "thank you" happens very fast, one must prepare oneself thoroughly and with all necessary attention so as to convey it effectively. After all, one has only one chance, and the touchpoint is very small. Nothing is more embarrassing and demotivating than a "thank you" that needs to be repeated because the first attempt did not express it sufficiently convincingly. Failure to say honestly "thank you" creates the foundation of a culture in which everyone remains distanced and waiting for the cooperation to pay off, mostly in monetary terms—probably the most expensive and risky way to establish cooperation.

Principle 15

To encourage others to cooperate and collaborate, one should primarily use common challenges in the environment or access to higher recursion levels and metasystemic functions to promote cooperation. Compared to the command and control channel, these levers have the advantage of creating meaning, involvement, and cohesion.

Summary

Based on the limitations discussed above, we can identify the following additional design principles for jobs and units (continued from Chap. 3):

 9. Jobs and units should not be intended to replace attempts to correct underlying systemic dysfunctionalities. Dysfunctionalities should be resolved before a new job or unit is created.
10. To counterbalance the fragmentation induced through jobs and units, organizations need to develop a culture promoting circumspection, mutual responsibility, and care for the whole organization.
11. Decisive for the success of a job and unit is the way and manner in which they are exercised in relation to other jobs or units. In addition to the description of a job's or unit's task area, one should also reflect and specify what kind of "driving style" is required.
12. Also, one needs to specify how a job or unit needs to be opened to the entire organization and by what social processes, platforms and fora other decision-makers and knowledge holders can and should be integrated by the job holder or unit.
13. When designing a job or unit one should reflect what the specific contribution of the prospective job holder or unit can consist of and what the contributions of other job holders or units can and should be. In addition to the job profile, the organization should thus also reflect and specify which social competencies and institutional support the job holders or units require to win the cooperation of other employees.
14. When creating jobs or units, the organization should also define their time horizons and expiration dates and when their prolongation should be reviewed.
15. To win other people for cooperation and collaboration, one should use the common challenges in the environment as primary motives. One should also create access to higher recursion levels and metasystemic functions so that volunteers can generate meaning and purpose for their contribution and cooperation.

Questions for Reflection

1. Go through the principles and mechanisms mentioned above. How much do
   they resonate with you? How much are they followed in your organization, and
   if not, why?
2. How are volunteers in your organization won for collaboration? Which channels
   mentioned in Sect. 4.6 are primarily used and which ones not? What are your
   experiences regarding the application of these channels? Which channels should
   be used more intensely in your organization, and how?

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The "Right Wing" of Organizations—Overview (Part 1)

The human brain receives various stimuli from its environment through different sensory organs. One of its most difficult tasks is to transform them into a coherent image and then decide the next step to take. This is similar to organizations—they too continually receive various signals, of which they need to make a selection and based on which they need to decide their next action.

The design of jobs and organizational units should allow employees to specialize in perceiving different environmental "stimuli" and to transform them into information and calls for action ("we should do this!"). However, as with the human brain, this multitude of heterogeneous pieces of information and implicit calls must also be coordinated. An organization, therefore, needs something comparable to the human brain.

Because of the graphical representation of the organizational chart, one might assume that the very top of the organization thinks holistically since all information converges there. If one is familiar with CEOs and their daily lives, one soon learns that the reality cannot be farther away from it: the "boss of bosses" must very quickly take over the role of a mediator between the different departments, units, and corporate functions. Hence, it is no surprise that one of the hottest topics in leadership literature is the question of how to forge a team. The top level sometimes operates rather like an arena of **political power struggles and coalitions** (Cyert & March, 1992) than a council of elderly statesmen or friends who decide in harmony and unanimity. In addition, this overall view is not only required at the top but must also be present at every lower level due to the recursivity of the organization.

Consequently, the analogy to the human body finds here an abrupt end because, while in the human body there exists only one brain, there are many in organizations which, metaphorically speaking, need yet to become one "organizational brain." Organizational structures and jobs allow specialization, but they also fragment the organization, as we said earlier. This fragmentation must now be counterbalanced by integrating mechanisms within the organization so that "the left hand knows what the right is doing."

5.1 "You Are Responsible to See that Everything Works!"—Which, in Most Cases, Does not Work …

One possible and too often practiced strategy is to solve this fragmentation problem in the logic of the organizational chart. One creates a job or position for the generation of an overview and makes one employee responsible for it: "You are the overall responsible person!" As we all know from everyday life, this "strategy" helps only to a limited extent; coordinators do not lack goodwill, but ultimately fail because of **cognitive and inner-political reasons**.

First, the reflex to create a job or committee responsible for a holistic and integrative perspective is problematic because it cannot solve the underlying logical problem: One cannot, strictly speaking, "outsource" the creation of a holistic and integrative view to a person or a unit responsible for it. This view can only be achieved if all people create and share it … and not just one person. This view must be the result of a collective cognitive process, during which the perceptions, interpretations, and evaluations of all the relevant members of an organization adjust to each other and merge. Otherwise, the holistic view will continue to exist in only one or a few individuals, which is not yet the solution.

Second, in a complex and rapidly changing world, no single human being can process all the information: decision-making needs to be collective. What constitutes reality needs to be found out in the exchange with other people. The man or woman at the top very quickly becomes the cognitive bottleneck if he or she stays alone. One easily notices that mechanistic organization or leadership approaches, which are too tailored around the individual, no longer meet the requirements and the need for cooperation, exchange, and community necessary in today's volatile environment (Mintzberg, 2006, 2015).

Consequently, top management levels become equipped with "extensions" to the office holders, such as an "executive board," "extended board," "management teams," and "advisory councils." This is no coincidence, but instead clearly indicates the organizations' growing awareness of their "right wing" and the necessity to develop it; even if this does not fit into the image of a tightly and logically organized structure with single command channels.

Third, setting up such "extensions" to counterbalance the formal organizational structure is indeed the right step, but just to establish councils, boards, and committees and let them work, does not lead to a holistic and integrative view. Instead, such committees can prolong decision-making procedures (danger of too many committees), and furthermore, they can become the places where power struggles are carried out with even greater fierceness: Instead of being ruled by one autocrat, now organizations turn into arenas full of gladiators! Then, it would be better if just one decides alone, some might think quite rightly …

However, how do organizations get to this overall view (see Fig. 5.1), and further, how do they develop their right wing? It needs a more thorough understanding of what the influencing factors are.

NB: for graphical reasons, no frame
was drawn around all systems 2 and 3*
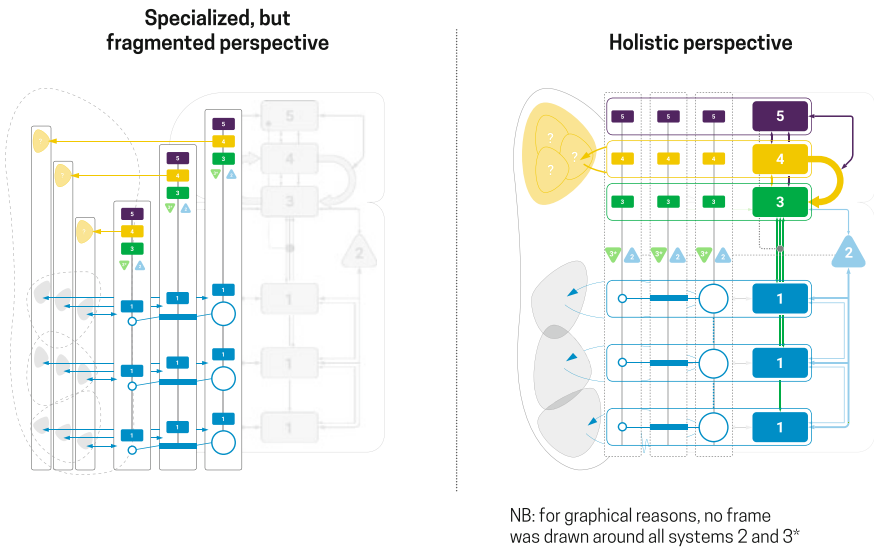
Fig. 5.1 Organizations need to stimulate and promote a holistic perspective to counter the fragmentation induced by the division of tasks (VSM: adapted from Beer 1995b, p. 136, Fig. 37).

We will dedicate this chapter and the next two to this question. To prevent misunderstandings or false expectations: This holistic and integrative view has **eschatological quality** (i.e., they can and never will be fully achieved). For theologians, this holistic view will have most likely existed only twice in the history of humanity: at its beginning, the so-called "paradise", and at its end, known as "heaven." In between, we can only try to improve the factors that further the creation of this holistic view.

This also implies that in the meantime, we also need to prepare for how to deal with (personal) failure and what to do if someone fails or stands in the way of a more holistic and integrative view. We will return to this issue at the end of Chap. 7 .

5.2 The Inner Life of the System Functions

We already saw in Sect. 1.3 (for a recapitulation, see Fig. 5.2[1]) that the system functions consist not only of one but of many different aspects (usually represented by different units).

To generate a holistic and integrative view requires two processes when we look more closely at Fig. 5.2:

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[1]All figures in this chapter related to the inner composition of a system function are or contain and if not stated otherwise, adapted (detail) views from Beer (1995a, p. 475, Fig. 86).
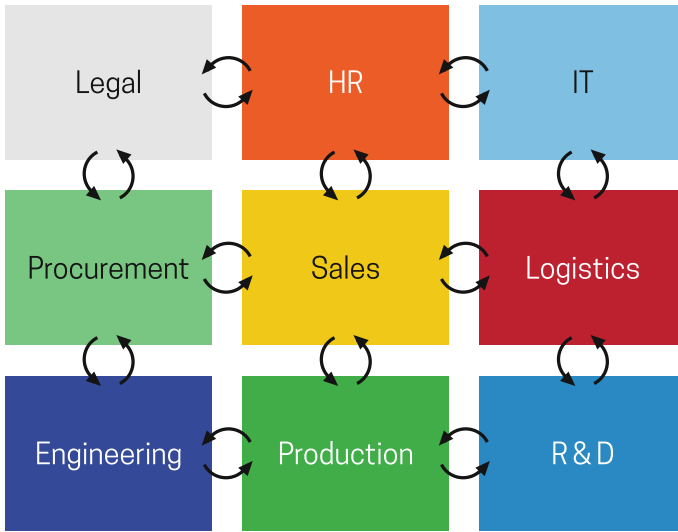
Fig. 5.2 The inner life of system 3 consists of a continuous adaptation process between the corporate functions (here: the system 3 of a functional organization)

1. **Mutual adaptation of the different (factual) aspects**

A system function, such as system 3, consists of a continuous adaptation process between the different factual aspects represented by the corporate functions (see Fig. 5.3).[2] One of the most well-known adaptation processes and equilibria is undoubtedly the one between sales and production.

   One can also observe these adaptive interactions very well in budgeting processes where the demands of the various departments must be coordinated and negotiated with respect to the available resources. This is also the case in strategy projects in which different business units must align with each other and in which business strategies be coordinated with the functional strategies. Strategies are robust only if the varieties of the various units are coordinated to each other: a digital business strategy that does not take into account the requirements of the IT department will probably be stopped halfway.

   If the adaptation process within one system function fails, this has consequences for the interaction with others. In the case of system 3, this means that a failed adaptation might lead to the emergence of multiple command channels from system 3 to the systems 1, typical for matrix organizations. The disagreement then radiates into the rest of the organization (see Chap. 17).

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[2]For reasons of simplicity, Fig. 5.2 only shows the adaptation mechanisms between neighboring factual aspects (units). Of course, adaptation mechanisms and equilibria also exist with all other factual aspects within a systems function.
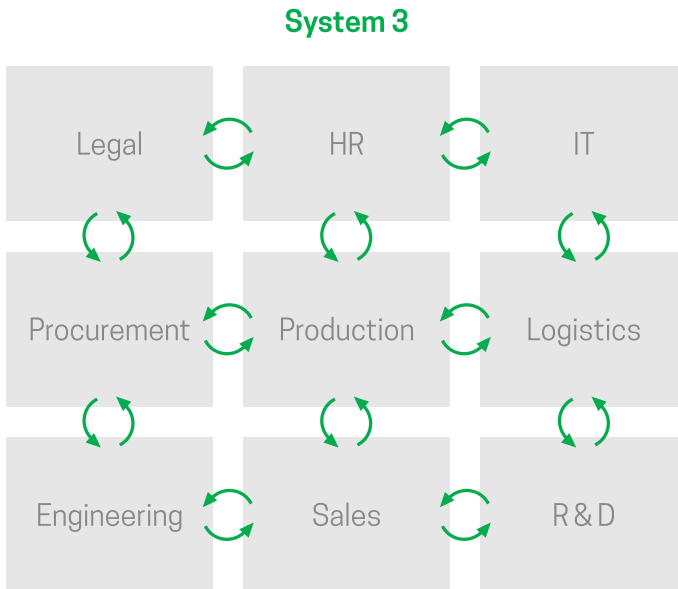
System 3

Fig. 5.3 Selected equilibria and adaptation processes within system 3

2. **Orientation toward a broader common frame of reference**

Adaptation mechanisms alone are, however, not sufficient, since already a minimal consensus allows one to find equilibrium, even at a very low level. The inner-systemic adaptation process hence also needs a **frame of reference** that specifies how far and where to the mutual adaptation must go. This common framework we can find expressed graphically by the frame around the various factual dimensions (see Fig. 5.4).

For system 3, establishing a common frame of reference means that all department representatives must first learn to understand each other as system 3 of the entire organization (and not just the lobbyist for their unit). Second, they need to develop a common picture of the purpose, objective, role, and tasks as system 3 toward the entire organization. If the members of a management team have a different understanding of their system 3 function and what kind of responsibility it entails, then system 3 will quickly become dysfunctional. Perplexity and paralysis will spread rapidly and the remaining organization will exploit this internal division.

Both aspects, the adaptation processes and the overall frame, must be developed in a system function. As we said, if only the adaptation mechanisms are present, then one runs the risk that the mutual adaptation becomes a self-purpose and settles at the lowest common denominator. The main objective could then be just to understand each other! Only a demanding goal and frame of reference regarding
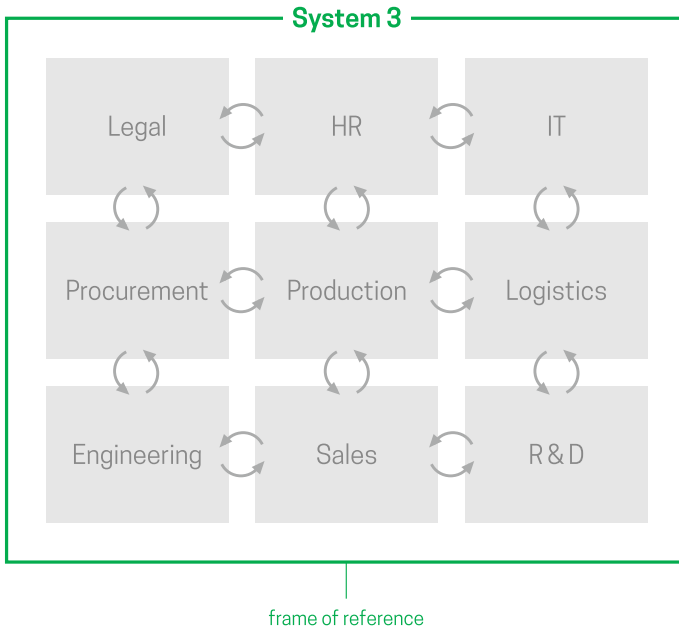
Fig. 5.4 All factual dimensions within a systems function need a common frame defining their greater responsibility and duty toward the entire organization

one's function, purpose, and duty toward the entire organization can drive the adjustment process to deeper integration, and hence, better results.

Conversely, if one only specifies a large framework without having developed suitable adaptation mechanisms, one will not be able to create a unified and holistically working system function and achieve the objectives. Placing people in one room and merely demanding a certain objective might not suffice. Especially in large organizations, the people also need (formal) instruments and processes that allow them to align their varieties in a synchronized, logical, and efficient way to each other. Otherwise, they still need to develop them. "Team development" often encompasses these two aspects: a new team needs to develop both a frame of reference (i.e., specification of its purpose and function toward the rest of the organization) and the processes through which the team members can adapt to each other (Fig. 5.5).

The adaptation processes will be at the focus of Chap. 6; the constitution of the frame will be discussed in Chap. 7. What we will discuss from Chaps. 5–7 does not only apply to the system functions as such, but also to a large degree to the relationships between system functions and the entire organization.
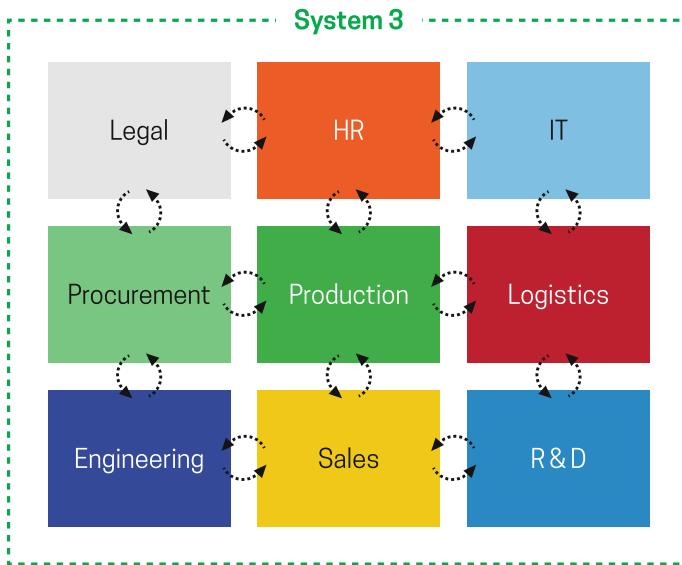
Fig. 5.5 Typical starting position: the various corporate functions are present, but a common frame, as well as the mutual adaptation mechanisms, are missing

Do you want to know more in detail about the composition of system functions? If so, then continue reading here, otherwise, go to the end of the chapter.

5.3   The Composition of System Functions

Before we look more closely into the adaptation mechanisms and frame of reference (see Chaps. 6 and 7), we should use the opportunity to deepen our understanding of the VSM regarding the composition of a system function. So far, we have used a functional segmentation in the representation of system 3. However, this does not need to be always the case: in a product or business unit-oriented organization, the system 3 at the next higher level might be composed of aggregated market areas or industries (see Fig. 5.6). Most of the standard corporate functions such as sales or production might then be located in the system 3 of the lower recursion level, i.e., within the
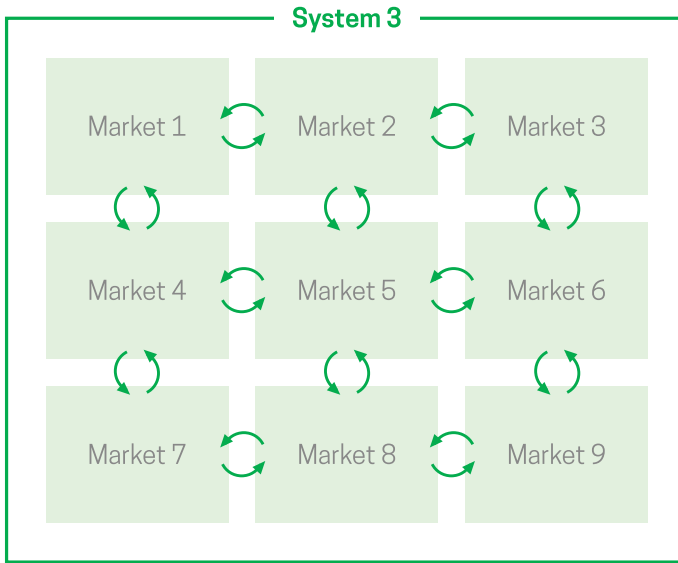
Fig. 5.6 System 3 of a business unit organization is segmented into more aggregated market areas covered by its business units

business units. These two cases are, of course, pure forms; in fact, combinations are also possible where some central corporate functions (e.g., finance, legal) and the business units together constitute system 3 at the top company level.

The decision regarding which aspects should be present in a system function therefore depends on the distribution and allocation of tasks across the recursion levels—an aspect which we will discuss later in Chap. 10. Here, we only want to highlight that the composition of system 3 can vary.

In the representations above, we have only chosen the **official self-description** of an organization. However, it is always necessary to look at the *de facto* composition of a system function, especially if one wants to diagnose an organization. The participating parties in system 3 might not always be composed of the official heads of units and departments as portrayed in the organizational chart, but sometimes might include individuals or companies not belonging to the organization (see also volume 1).

Life is colorful and diverse, and therefore, one should not be surprised by who might actually exercise a system 3 function in an organization (see Fig. 5.7). It could be, for example, the external tax consultant who takes over
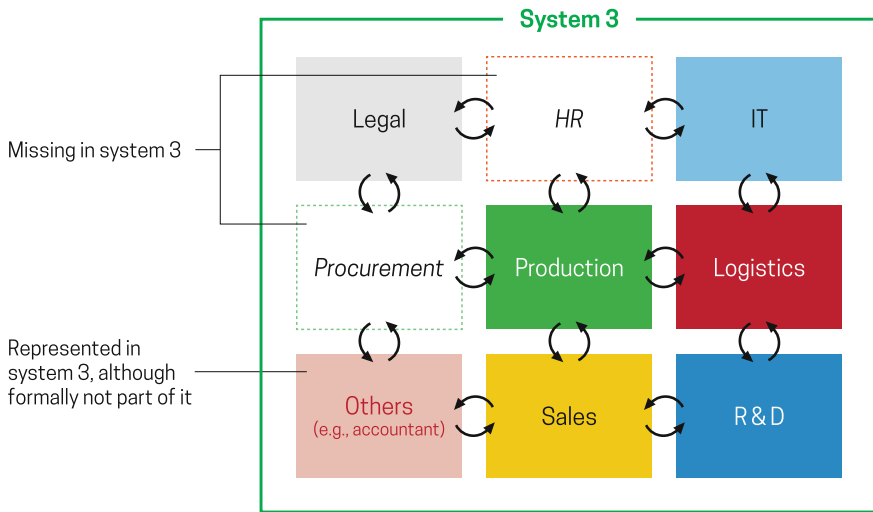
Fig. 5.7 The unofficial, but sometimes the real composition of system 3 (adapted from Beer 1995a, p. 475, Fig. 86).

the role of the financial controller in the management board committee, or the office manager who becomes part of a so-called kitchen cabinet of the CEO.

So far, we have assumed that all aspects will adapt to each other at the same time. This might not always be the case: Different aspects might need to exchange with each other more often or need more specific processes, infrastructures, and instruments than others. For this reason, one will divide a system function into **subgroups of adaptation processes**; for example, a supply chain council or a product development team that focuses on product- and production-related questions (see Fig. 5.8).

The challenge, then, of course, is to counteract the fragmentation of the system function, since interrelated topics are discussed in different committees and no one will take care of the links between these committees anymore. For this reason, it is also vital to set up meeting platforms where all the aspects can be regularly exchanged in a structured process (for example, on a monthly to quarterly basis).

Sometimes, the number and complexity of the internal adaptation processes become so overwhelming that an individual or a group of people must be nominated to be responsible for managing them. Strategy units or assistants to the CEO typically take over this function. At the country level, the Cabinet Office for the UK government is an example for a body entrusted with this task (UK Government, 2019).
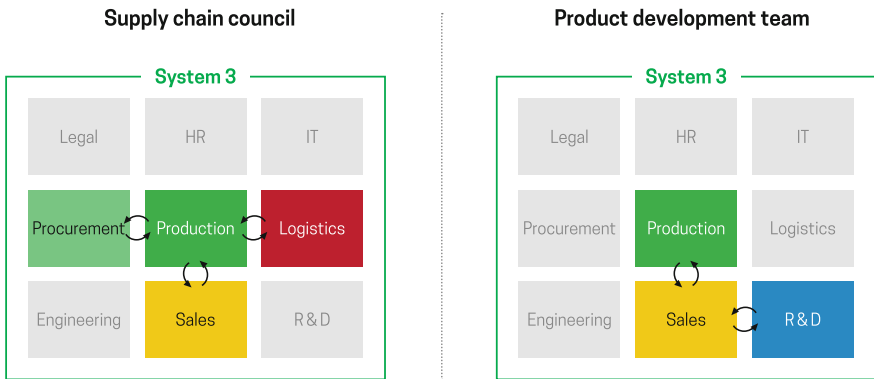
Fig. 5.8 Depending on the issue to regulate, system 3 can meet in subgroups, such as a supply chain council or a product development team

While sometimes such jobs or units are necessary to facilitate the adaptation process and to ensure that the necessary level of coordination, cohesion and overview is achieved, one should not overlook the dangers involved. By such measures, the management of the adaptation processes becomes entrusted into the hands of a few, which might create the basis for an internal power monopoly. The organization then risks becoming manipulated by a small inner circle of people holding all information in their hands (the so-called kitchen cabinet). One should thus always ensure that such posts or units view themselves as a service to the organization and its adaptation mechanisms, instead of viewing themselves as a clandestine elite directing the entire organization.

Thus far, we have looked at system 3 only[3]; these adaptation processes also take place, of course, **within the other system functions**, such as in system 2 (coordination of different standards) or system 4 (integration of the different futures perceived or generated by the various corporate functions).

Sometimes, one can or needs to **combine several system functions to one committee**. System 2 and 3, for instance, are often thematically interlinked since they depend on each other. Thus, on the so-called operational level, it often makes sense to treat both system functions together; for example, in a weekly planning meeting (see Fig. 5.9), which discusses the

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[3]Among these, the adaptation process in system 3 is particularly important because, as we remember from volume 1, system 3 is the only system function that is connected to all other system functions. In everyday life, we can experience this: budgeting processes and their decisions influence everything in an organization. In this way, the adaptation process between the corporate functions in system 3 is decisive for the other system functions.
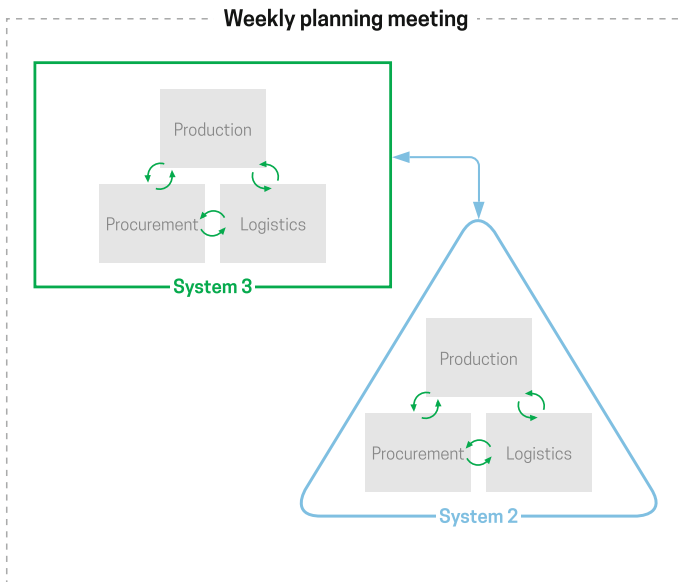
Fig. 5.9 A weekly planning meeting can consist of system 2 and 3 agenda items

most pertinent issues for the coming week. However, if it becomes too technical and detailed, one can single out the system 2 aspects and have them discussed later between experts.

At the top management level, meetings will perhaps mainly focus on system 3 issues only because the time is often too scarce to delve into planning, coordination or standardization issues. Also, the time of top executives should rather be spent on deciding open issues than on operational details that can be left to experts (system 2).

Thus, how the adaptation meetings between the various aspects of a system function are composed depends, on the one hand, on the importance, urgency, and frequency of the issues, and on the other, on the available time and competency of the participants who represent the various aspects. Generally speaking, system functions at lower levels tend to become grouped into single meetings, whereas in the upper levels meetings will be more strongly differentiated according to system functions.

Summary

1. The formation of a holistic and integrative view cannot be delegated to individuals; it must be constructed together by all those who need to obtain it.
2. To counterbalance the fragmentation by the organizational chart structure, it is necessary to put processes in place that enable the organization to generate a holistic and integrative view.
3. Each system function is constituted of several (factual) aspects that need to become aligned with each other through mutual adaptation processes and a common frame of reference.
4. Without a common frame of reference that specifies the target state of the system function, the adaptation processes between the inner-systemic aspects risk not reaching a sufficiently ambitious level.

Questions for Reflection

1. If you consider Fig. 5.1, how much is your organization still in the particularistic mode (left picture) or how strong has the holistic and integrative view (right picture) already become present in your organization on a scale from 1 to 10?
2. How much does your organization feel the need and responsibility to produce a holistic and integrative view, or how much is left to the individual?
3. How well do the adaptation mechanisms between the various factual aspects of your organization function? How strongly are they guided by a common understanding and sufficiently ambitious objectives to reach the best possible level of adaptation? How well are common objectives and the frame of reference articulated?
4. Are all representatives of the key aspects of your organization integrated into the adaptation processes or are some of them excluded (see Fig. 5.7)?
5. Create a cross table with the corporate functions on both axes. Then, evaluate the quality of the adaptation mechanisms between the different pairs of corporate functions.

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The Inner Adaptation Processes—The "Right Wing" of Organizations (Part 2)

6

The US state seal expresses the wish of every organization: "*E pluribus unum*"—from many to one. But how does one get there? This is probably one of the most pertinent questions of organizational design. As discussed in the previous chapter, there is no automatism or button that one can press to generate unity (Fig. 6.1). Here, modesty and honesty must prevail and we must accept that we can create only the conditions that favor unity and the holistic and integrative view. We can never force it to happen.

This and the next chapter are dedicated to some of these conditions. In this chapter, we will discuss the **inner adaptation processes**; in the subsequent chapter, we will explore the aspects of the **frame of reference** needed to direct the adaptation processes.

Stafford Beer did not comment on this subject in detail. However, on the basis of his Syntegration method (Beer, 1994), it is possible to deduce what kind of dynamics and framework he had in mind. Since not everyone has experienced the Syntegration process, we will use the example of a jazz combo to highlight and discuss some of the principles.

Fig. 6.1 There exists no magic button that creates unity instantaneously and automatically—(© fotolia/stock.adobe.com—artist(s): ArtemSam)

Jazz musicians are a popular model and image for collaboration in organizations, especially when it comes to improvisation. Magically, they are able to play spontaneously together without any conflict; if only this could work in organizations as well, one wishes. As a layman, one often attributes this to the "genius" of the musicians. This may be partly true but to a greater extent, it is also the result of consciously developed and applied organizational design elements and training.

To use jazz bands as a reference model is, by the way, not so farfetched: organizations face many difficult decisions in uncertain conditions—and these real decisions are often less a matter of clear deduction and analysis but, rather, of "improvisation", i.e., variations of earlier decisions following a "selective trial and error" process (see Simon, 1962, p. 472). We will now look at six different major aspects of this adaptation process.

6.1   "G Major or E Minor?"—The Need to Have Formal Rules, Principles, and Processes (Aspect 1)

What is often unclear to many people is that improvisation is, first and foremost, only possible by its opposite; namely, by the rules of harmony and musical patterns that have evolved during the history of jazz and music in general. These rules create **predictability and alignment** and thus provide us the freedom to improvise. Playing together is no coincidence and does not happen by chance; it needs and follows strict logic!

Organizations must also find a "harmony" that they want to use for their internal mutual adaptation between those who represent different aspects of the organization (for instance, as expressed through the corporate functions). "What are our rules, processes, and principles regarding how we cooperate?" Every organization must find an answer to this question. A prominent example of a process with a defined "harmony" is the organization's budgeting process. Its procedures and rules specify how the functional areas find a common budget together. Balanced scorecard systems are also devices that help to coordinate the various aspects of an organization by breaking down objectives into subobjectives, and interlinking them. Also, the statutes of the management board describe the "harmony" that the board needs to follow to achieve harmony … or, at least, arrive at an acceptable decision for all.

The **degree of formalization** can, of course, vary: in some organizations, decisions are made quickly and without formalities; in some cases, extensive documentation is required—here, every organization decides differently. Formalities are, above all, intended to ensure that everyone is aware of the decisions taken but also that one can track and trace responsibilities later.

The intricate question for organizations is how strongly one should formalize rules and regulations. Perhaps the quantity of rules and the degree of formalization are not as important as one might think; instead, the question should be, how **simple** a rule can be and still fulfill its purpose. One can have as many formal rules and regulations as one likes, provided that they are simple and intuitive to follow.

The objective of designing[1] rules is that they are followed, and this is almost an art and requires reflection but also observation and intuition. The simpler the rules are, the more people will follow them, and the less one needs to formalize them and verify that everyone in the organization complies with them. Thus, before creating a rule, one should ask oneself several times how one can simplify the existing rules even further—and there are always possibilities.

How can one systematically design this aspect of the adaptation process? For this purpose, the following **matrix between the corporate functions** might be a help and starting point (see Fig. 6.2). For each relation between functions, the mutual interdependencies and influencing factors are first determined. After that, the objectives of each relationship are defined (i.e., what needs to be achieved). In the case of system 3, these are primarily questions related to the optimization and allocation of resources.

Subsequently, one defines the necessary rules, coordination processes and institutional spaces (e.g., committees), information exchanges that are necessary for their adaptation. In the end, one obtains for each relation a description of how the adaptation process should work. We do not go any further into detail about this topic because there exist sufficient established instruments available to work these elements out.
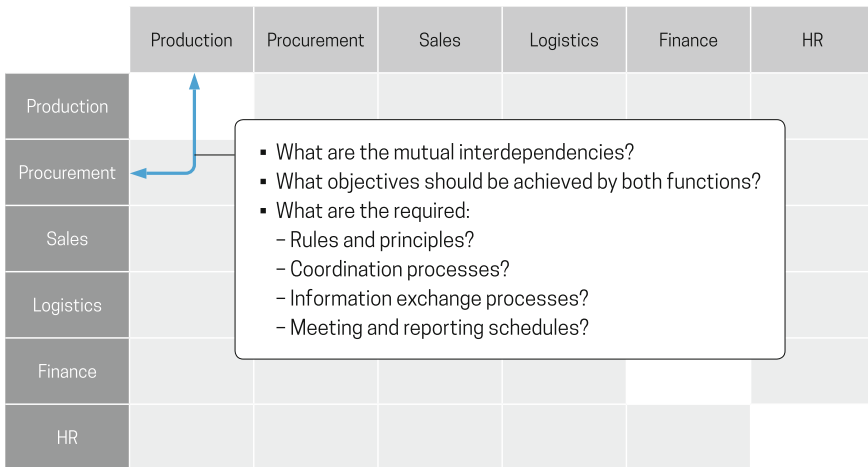
Fig. 6.2 To specify the formal aspects of the adaptation processes, one can use a cross-functional matrix

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[1]We purposely use the term "design." The popular image of rules is that they need to be commanded. This obfuscates that the most important and intricate part of a rule is its design. It must create as few as possible exceptions, and yet should help people to alter their behavior and not require much energy.

This matrix can also be used as a starting point for **an organizational diagnosis.** One goes through every interrelationship and identifies possible problematic issues and whether the rules and instruments used correspond to the variety that needs to be processed.

6.2 "We Know Each Other"—The Function of Culture (Aspect 2)

If one looks at jazz groups, one cannot get rid of the impression that the musicians must have known each other for a long time and that their mutual understanding is the reason why they can play together so well. However, this is not always the case; often, they have met just before a performance. They can create this impression of familiarity due to a strong **common culture among musicians**. This common culture makes it possible to evaluate and predict the behavior of other musicians, at least when it comes to music.

"One knows each other," is a commonly heard phrase about good management teams; respectively, it is said that "they are one heart and one soul." In the context of the more technical management language, one also likes to refer to the "**common DNA**" of an organization. To have this common DNA is very important because it helps the group to accomplish two things: firstly, to align the variety that individuals bring into an organization, and secondly, to rid the participants of the necessity to regulate every aspect formally. Some cultures regulate contracts by a handshake, and others require a contract of 1000 pages. **Mutual experience and knowledge about other's behavior** help to define implicit rules and to adapt even though no formal rule has yet been defined.

Thus, besides the formally fixed rules and processes, as discussed above, **culture** is an essential aspect in organizations to facilitate mutual adaptation. It emerges out of an invisible network of shared values, language, mutual experiences, and behavioral patterns. If one lacks the knowledge about an organization's culture, then misunderstandings and false expectations can arise.

For this reason, organizations often find it hard to recruit someone from the outside into a leadership position; and vice versa, outsiders struggle to understand and connect to a new organization and its leadership team. One notices how well culture helps us to adjust to one another, if the culture does not function anymore. Without culture, the behavior of people becomes less predictable and bewildered observations such as "I would not have thought that this could happen" more frequent. They express surprise that the culture of the organization was not as comprehensive and established as assumed. Surprises in the behavior of others can always happen, but fortunately not very often, thanks to culture.

6.3   Circumspection and Being Attentive to Others (Aspect 3)

Mistakes can occur in every music group; hence, the professionalism and quality of a jazz band can be judged from the fact that it is able to correct errors so fast and accurately that nobody in the audience notices them. However, this is only possible if the jazz musicians are in constant eye (or rather ear) contact with each other and feel responsible for the group's overall performance.

Rules and culture are ambivalent: on the one hand, they increase the degree of predictability, reliability, and routine. On the other hand, however, much can be overlooked by rules, and if one relies too much on the past behavior of others, acquired rights, and established practices, one becomes imprudent. The viability of an organization depends not only on a clear definition of responsibilities but also on whether every unit keeps an eye on the tasks covered by other units (see also Chap. 4). The voids created by the specialization and division of responsibility can only be reduced if units are also watching each other and drawing each other's attention to issues overlooked or helping them out. Whoever relies only on rules, procedures, and established behavior misses the not-anticipated, and thus unregulated, issues almost with certainty and loses adaptability and viability.

Such behavior requires a specific competence, which is crucial for the agility of the internal adaptation processes: **circumspection**. Circumspection is a virtue that is rarely mentioned in textbooks on management, organization, and leadership, and yet, it is a very critical attitude. If circumspection is lacking in organizations, people do not take into account how their decisions might affect others and the entire organization. Corporate simulation games, for instance, are instruments to raise the awareness among participants about how other corporate functions operate, how they are interrelated, and how they are affected by the decisions of other corporate functions.

Circumspection in the context of organizations means:

1. knowing and being aware of wherein the **requirements and challenges** (i.e., varieties) of the other functions lie,
2. to be open to **new developments** outside one's own (mental) framework,
3. to **integrate the other functions** in one's deliberations, plans, actions, and decisions.

The Latin origin provides us with a fitting definition: circumspection essentially means "looking around" and not being focused on oneself. Figure 6.3 illustrates the systemic function of circumspection[2] graphically: to be circumspect means that an individual corporate function replicates the other functions and the relevant adaptation processes into itself and makes it a part of its decision-making.

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[2] We do not have sufficient space to elaborate this aspect, but it could be argued that circumspection is what constitutes a social system. Without being aware of the others and mirroring them in oneself, no functioning organization or society could probably emerge.
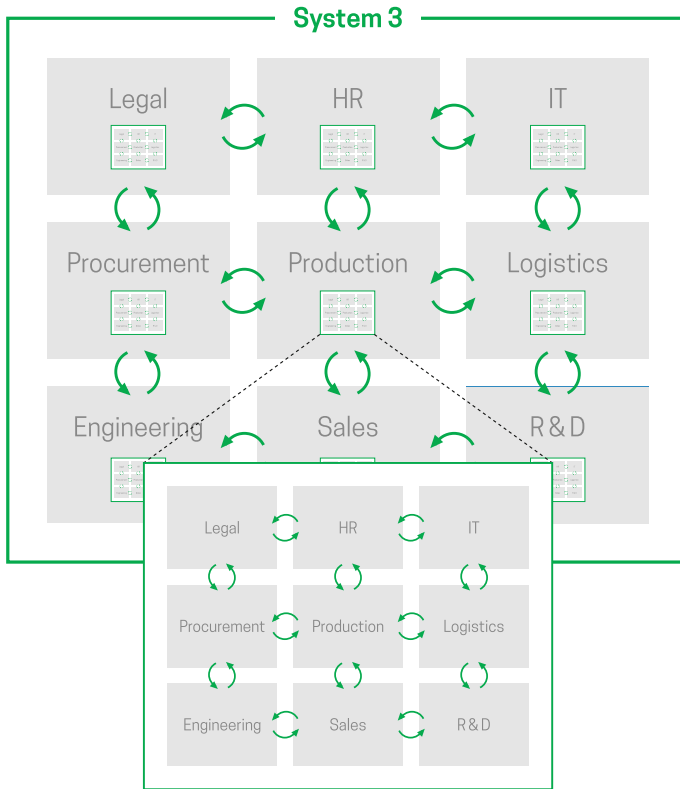
Fig. 6.3 Circumspection: every function needs to mirror the other corporate functions and the adaptation processes in itself—contains adaptation from Beer (1995, p. 475, Fig. 86)

Only if we know the needs of others and integrate them into our deliberations, can the adaptation process start fruitfully and have a chance of being successful. Only then can a good compromise emerge, because to achieve a win-win situation, one must have understood beforehand wherein the "win" of the other side lies. Circumspection is, thus, an essential prerequisite for rapid and effective adaptation.

Circumspection and care for another do not come by themselves but must rather be **trained and practiced**. This is best achieved through participating in the key processes of the other corporate functions from time to time; for example, when a production manager participates in sales pitches and experiences the difficulties of selling a product, and vice versa, when a sales manager witnesses the technical challenges in production. Consequently, here we are not referring to short presentations with some PowerPoint slides; instead, what is required is to enter each other's (mental) world. Joint problem-solving and involving the other corporate functions in the challenges of daily life help here: "what would you do in our place?" or "which option would you choose?" Only these kind of questions force one to engage actively with the other function, its "world," and its challenges.

6.4 "For the Common Goal"—Responsibility, Performance, and Loyalty (Aspect 4)

However, circumspection alone is not enough. People might understand a lot, but how are they made willing to adapt to each other? Personal motivation is very quickly named as a factor required to achieve the holistic and integrative view. One must only motivate people, and then they will assume overall responsibility. However, is that so? Is it not amazing how much people undertake and achieve without being extrinsically motivated?

If one watches a jazz band, one can observe that they have fun playing, simply because they like playing well and their performance motivates them to continue playing. And if this is the case, the band plays well. No jazz band needs an external motivator; its **performance is motivation** enough. Playing with people who master their instruments equally well or even better creates motivation. Nobody wants to spend time with people who are not able to do their "job." It is joy in **one's work, performance, achievements, and those of others that motivates them to continue playing**.

In today's popular management literature, **bonification** plays a very important role in orienting people toward the organization's objectives. Bonuses, however, are extrinsic and reductive and increase the complexity of the adaptation process by at least one factor (bonification, honor, etc.). Then, the calculation of one's bonus accompanies every internal adaptation process: how does the result improve my bonus? For this reason, intrinsic motivation is preferable.

For good music groups it is, firstly, of less importance how much each member earns, because they would rather keep their common objectives of performance and musical expression in the foreground. On the contrary, as soon as a group begins to think primarily about the distribution of money, one can well predict its descent.

Good management teams, therefore, draw their primary motivation from **developing and moving the company forward**, creating **achievements** and **expressing themselves through their work**. The success of the company becomes an expression of their performance (almost like a piece of art) and of their will to create something new (often, and not entirely coincidentally, referred to as their "baby"). Motivation is then not the result of motivation techniques but rather stems from the genuine will to achieve something.

This presupposes, however, one constitutive principle that the group must uphold: it must learn to **define itself by its work**. How often does the group remind every member what the piece in its entirety is? How much does it make the whole piece visible to itself? How much is everyone checking his or her motivation in that regard? These are also central questions in the design and diagnosis of organizations.

Last, but not least: **man is also a playful being**. Even though our educational methods have weakened this, the love for playing around and the desire for something new are ingrained into us from birth. People often lose their motivation because they do not experience anything new in their job or environment. Like jazz

musicians, they need the possibility and the freedom of improvisation and of trying out something new. That is why we find improvisations so appealing: they open new spaces and worlds that stimulate the creative side in us.

The adaptation processes between the corporate functions should, consequently, also offer this possibility and invite participants to think about something in an entirely new way without having to fear the frowning and raising of eyebrows. In this way, the adaptation processes should also arouse the interest of the *homo ludens* in us, who happens to be not only a *homo sapiens et faber* (see Huizinga, 1955, c1950; Schiller & Berghahn, 2000).

Finally, life is not always as playful as one wishes, and finding a compromise in the adaptation processes is hard and burdensome. Not always does one proceed as quickly and easily as desired, as every musician knows. Here, a group of musicians, but likewise, organizations too should not forget a number of other virtues needed for performing well; namely, a sense of **responsibility, determination, and perseverance to accomplish a task**. And, this reveals to us what **true loyalty** might mean, in the end, and something which is an important factor in holding the adaptation processes together: being loyal to a cause and the group that tries to accomplish its mission and objectives, even in difficult times. Without this kind of loyalty, the group disintegrates as soon as it faces the first serious challenges, and this kind of loyalty is what executives and managers rightly demand from the organization or the employees.

6.5 Time and Space—Often Overlooked Organizational Dimensions (Aspect 5)

The success of a jazz band also depends on how often it practices and how far apart the individual members live. Whether the adaptation processes are successful, and a holistic and integrative view can emerge also depends on how organizations structure their time and space.

This may sound somewhat philosophical, but it has a tremendous practical impact: does the arrangement of offices allow people to cross each other's way, or does it prevent them from meeting each other? Are there "spaces" available where people want to and can meet? Does the office architecture invite people to get to know each other? In a company whose premises consist of offices of just one or two desks and that have thick walls and massive wooden doors, it will be more difficult to develop social proximity than in offices containing several desks or workstations and glass walls.[3]

We must become more sensitive about the spatial distances between the departments (especially in the case of much-decentralized companies): how much do they favor or inhibit exchange? Should not employees from other departments

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[3]Of course, there exists an upper limit of how many employees in one room are still beneficial to proximity (regarding the adverse effects of too large open workspaces on communication and social interaction, see Bernstein and Turban (2018)).

also sit at least temporarily in other departments and office buildings to reduce silo mentalities? **Spatial structures mark social behavior,** and one could say in reference to a quotation by Christian Morgenstern: "Show me your office, and I'll tell you which organization you have!"

Also, the **interior design of spaces** influences behavior and social structures significantly: old office furniture from the 1970s might be a symbol for economy and cost-consciousness, but also of neglect and certainly dampens the ability to sense the future and the willingness innovate. The design and arrangement of spaces also affects social relationships: A client company experienced a significant divide between the production ("The Workmen") and the administrative ("The office people") functions. As it emerged during a project, one reason for this divide was the differences in the working environment and interior design: here, the production area, where it was hot and noisy and where one had to follow security standards strictly; there, the quiet administrative area equipped with modern office furniture and IT. For both functions, the other function lived in a different world, to which they needed to orientate themselves and overcome a feeling of alienation: for the administrative people, the production area and its machinery were as strange and alien as the PC and its software were to the people from production. One cannot eliminate such differences, but one should be aware of them. Fear can only be overcome by proximity. Organizations must ensure that the boundaries and walls
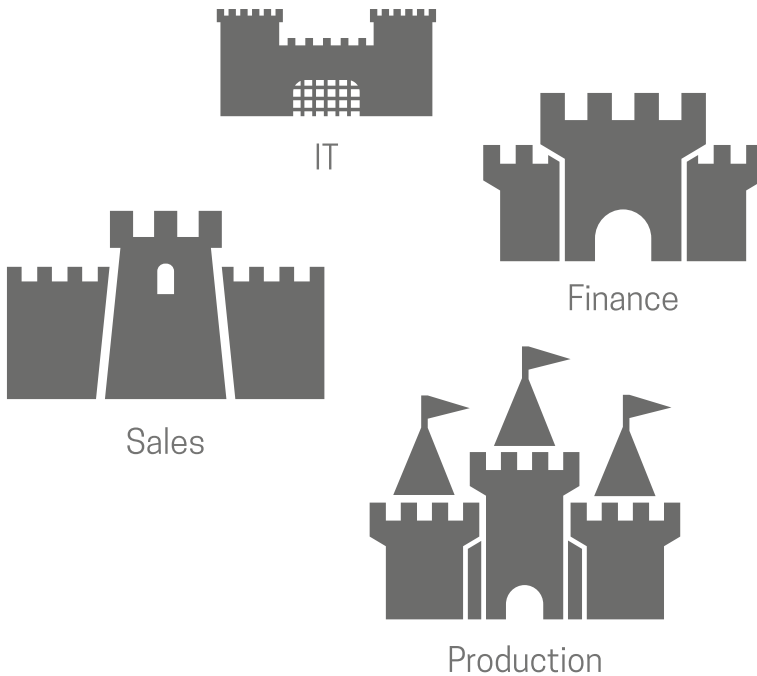
Fig. 6.4 A typical problem in organizations: everyone retreats into his or her fortress

between functions or units are lowered. The "fortresses" that exist inside of an organization must be razed to the ground (see Fig. 6.4).

However, not only the spatial but also the **temporal structures** of a company shape its social behavior: how much time do we plan to spend together? How well does this time remain reserved, even if the customer is calling? Further, how much time do we reserve for building up personal relationships?

Today, we are subject to the dictate to save time, even if this is, in a strict sense, not possible because time as such cannot be "saved." We often forget, however, that time invested in relationships, is only "lost" time from a superficial perspective; long-term, time spent together can also help "save" time. Whoever has problems, questions, and conflicts will be able to solve them more easily and quickly with friends or acquaintances than with strangers. The solution to a problem is often only a door knock or a telephone call away, but the challenge is to know which head it is who offers the solution, and how to address and win this head for one's cause. In this respect, investing time in inner-organizational relationships saves time.

For Beer too, the spatial and temporal proximity of all relevant decision-makers was one key design factor, especially where minimizing centrifugal and parochial tendencies and power politics within an organization is concerned (1995, p. 476). Is politics not often possible, precisely because a group as such spends not enough time together, and makes it possible that individual members develop secretive coalitions?

The Versailles Palace is often seen today as an architectural monument and an expression of great luxury. For Louis XIV, however, it was also an organizational measure, because, through the institution of the royal court, he forced all nobles to stay in one place, and this allowed him to keep them under control. The Catholic Church has also adopted a similar trick: to leave politics as far away as possible from the election of a pope and to arrive at a decision the Cardinals are effectively imprisoned in one place: the conclave, which locks cardinals out from the rest of the world. These are, of course, drastic measures that one wants to avoid, but they only remind us of the importance of space and time in organizations.

Organizational design and diagnosis needs, therefore, pay particular attention to whether the spatial–temporal structures of an organization allow the adaptation processes to process the variety adequately and in a timely manner.

6.6 Topics, Not People, Should Lead

Ultimately, the organization is also made of personalities who influence the adaptation processes directly through their personal variety. This increases the variety that needs to be processed. Many internal negotiation processes in organizations become so burdensome and challenging, not due to factual intricacies, but because the personalities involved and their sensitivities play too important a role.

A culture that forces one to focus on **topics or problems** instead of people can make adaptive processes easier because it reduces the variety to be processed. This does not mean that one should ignore personalities; on the contrary, they can

enrich the process. However, dealing with personalities should not become the primary pre-occupation; the art of teamwork consists in liberating participants from personal issues so that the factual issues of the organization can be addressed, and the group can reflect what is best for the organization.

Looking at a jazz band, we then also notice that their focus is not on the people but on the piece. It is the piece and the will to perform it as well as possible that brings and holds these people together. The musicians subordinate themselves to the performance of the piece and its theme: even when improvising their attention is focused on the basic theme of the piece that they are playing. The piece brings the musicians together and assigns them their role. Only by subordinating themselves to the general theme of the piece, can they then improvise and add their personal touch and ideas to the theme.

This should also apply to organizations: the focus of the adaptation processes should be the tasks to be accomplished and not personalities. The environment is often indifferent regarding who makes what kind of contribution. The environment only decides on the basis of concrete results, the product, the decisions, and the behavior of the entire organization. Organizations must, therefore, also train their members to let them be guided by the tasks and information, and not vice versa. The **desire to solve a problem** must constitute the underlying dynamic in these adaptation processes.

This requires, finally, one specific but somewhat old-fashioned attitude that keeps adaptation processes efficient: **modesty**. Modesty is very difficult to observe and easy to overlook due to its very nature, but one just needs to imagine a room full of braggers and how difficult it would then be for them to reach an agreement. Knowing how to restrain yourself and not put your person and personality in the foreground are very important qualities for a discussion to proceed and to come to a successful conclusion. Modesty is rarely mentioned in leadership books, but for this reason, organizations need to demand it even more explicitly and should reward people who demonstrate it. Only then can it become part of an organization's culture.

6.7 The Logic of the Internal Adaptation Processes

There are probably more than the six aspects mentioned above, but these certainly are among the most important ones to influence the exchange and adaptation processes between the various corporate functions present in a system function. They reflect a specific logic:

Aspect 1 ("formal rules and procedures") and **aspect 2 ("culture")** address the **procedural and behavioral dimension** of the adaptation process, i.e., the "how."

As we have all experienced, procedures are, however, not enough—people need to understand each other's issues. Adaptation also is a **cognitive process**. For this, the members of a system function must be sufficiently open and willing to learn how the various issues relate to each other and why certain aspects are essential to

other corporate functions. Seeing the issues from different perspectives and how they are interrelated is the required attitude **at the cognitive level**, i.e., the "what." This we find expressed in the **need to be "circumspect" (aspect 3)**.

To know what is right is good but not sufficient; people must also be made willing to engage in an adaptation process. **Responsibility** for the success of the adaptation processes is the pushing, the **objective**, and **performance** the pulling (i.e., attracting) force. **Aspect 4 deals with the factors that can help stimulate intrinsic motivation**.

Adaptation processes are also influenced by the organization's **spatial–temporal framework** (**aspect 5**). Adapting to others becomes easier, the closer one works, and the more room the internal schedules and calendars allow for meeting others, at least occasionally.

Aspect 6 addresses the aspect that in every adaptation process, **personalities and their sensitivities** play a role but should subordinate themselves to the topic.

The causes of many **deficient adaptation processes** can be traced back to one or more of these six aspects. Often, one of these aspects is missing or is not adequately developed: if the cooperation among corporate functions does not work, organizations resort to formal procedures and agreements. However, do formalities help, if the conflicts have their source at the interpersonal level instead? Here, we need to work on the other aspects such as culture, closeness, or the role of personalities (aspect 2, 5 and 6). Conflicts can also have factual causes, and then "holding hands" will not be enough. In this case, formal processes and circumspection must be strengthened (aspects 1 and 3). These six aspects thus provide a map that can be used to identify the most likely causes for malfunctioning adaptation processes.

Summary
The mutual adaptation processes require …

1. … formal coordination mechanisms, instruments, and structures.
2. … a common culture through which participants get to know each other better and align their behaviors and mutual expectations.
3. … circumspection for one another as a key attitude among the participants of the adaptation process.
4. … to put performance and responsibility at the center of participants' attention so that the adaptation does not become an end-in-itself.
5. … that temporal and spatial structures facilitate the quality, speed, and efficiency of adaptation processes.
6. … a culture in which people focus primarily on issues and not on the people involved.

Questions for Reflection

1. How adequate are the formal rules and procedures of your organization for the mutual adaptation process? Does the adaptation of issues in your organization proceed in a structured way or instead on an ad hoc basis?
2. How well do people in your organization know each other and have developed a common culture? How often are people surprised about each other's behavior?
3. How many detours must one take for a decision due to personal sensitivities?
4. How well is circumspection developed in your organization on a scale of 1–10 (1 = not at all, 10 = well developed)?
5. How much do passion and joy for performance and achievements prevail in your organization and form a core element of its culture?
6. How much room do the adaptation meetings in your organization leave room for (thought) experiments, fun, and playing around?
7. How well do the spatial and temporal structures favor an easy and fast adaptation between units and people? How likely is it that employees get to know each other personally?
8. How often does your organization grant too much room to self-promotion and how often is modesty appreciated and even rewarded?
9. Does your organization spend too much, or too little time on coordination and mutual adaptation?

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The Greater Frame of Reference and the Need for an "Organizational ABS"—The "Right Wing" of Organizations (Part 3)

As discussed in Chap. 5, the adaptation processes within a system function are not sufficient: Too easily, they become an end-in-themselves and do not go beyond a minimum compromise (see also volume 2). "One does not want to hurt anyone" or "one only wants to accord mutual favors" is often heard from the rest of the organization.

This is a problem that one can observe not only in organizations but also in politics, where maintaining the equilibrium in political power balances is more important than solving actual problems. However, in organizations, as in society, people then distance themselves, and frustration spreads as a consequence.

The individual aspects of a system function thus need to be framed by a **broader perspective** than just the mutual adaptation. This broader frame of reference (see Fig. 7.1) must provide guidance to all members of a system function regarding **its purpose, responsibility, and concrete contribution** for the whole organization. What we call "frame of reference" means, in the end, that every system function and its members must generate a self-understanding regarding its **mission** for the entire organization.

This frame of reference must provide answers to **four different questions**:

1. What is the **vision** (i.e., the state) toward which a system function should develop? With which issues should a system function be concerned and with which ones not?
2. What **perspective** on matters should all members of a system function have in common?
3. **How demanding** should the frame of reference be?
4. How do the **inside and outside dimension** of the frame of reference correspond to each other ("for us and others")?

Fig. 7.1 Every system function needs a frame of reference for its activities
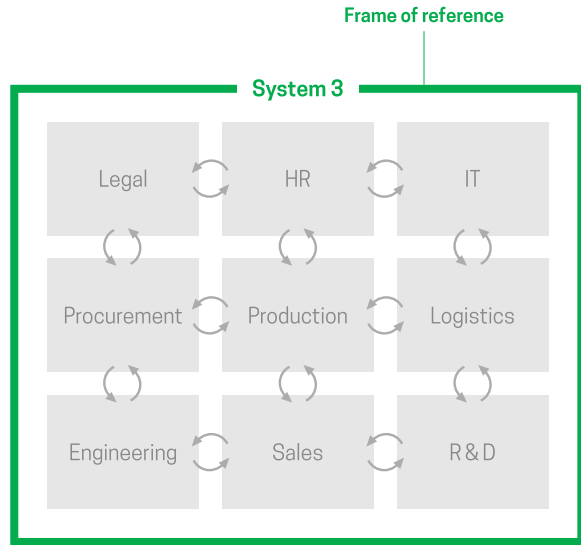
This distinction still sounds perhaps a bit abstract, but it captures many issues in organizations, for instance, regarding the functioning of teams as we shall see.[1]

7.1 A Common Perspective Must Point to Something in Common

When one hikes, one usually has a clear idea of where one wants to get to such as the summit of a mountain or a cabin to spend the night in. This clear picture is also needed for the frame of reference of each system function. The members of a system function need guidance as to what (!) the **objective of the adaptation processes** consists of content-wise. What do we want to achieve? What should we achieve innovation-wise in our organization (system 4)? How can we develop a budget that provides our organization sufficient freedom for innovations and yet sufficient financial stability (system 3)? What should the audit function in our company accomplish in the coming five years, such as the adherence to certain compliance standards (system 3*)?

How important a clear and agreed-upon picture of the target is for the inner adaptation processes can be seen from the evolution of the balanced scorecard method (BSC). The BSC method is one of the instruments we use to formalize the adaptation processes between different corporate functions, as discussed in the previous chapter. In the course of time, BSC practitioners discovered that the BSC process was not sufficient; it also needed a target image right at the beginning of the BSC process. In this "destination statement," the organization describes roughly

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[1]All figures in this chapter related to the inner composition of a system function are or contain, and if not stated otherwise, adapted (detail) views from Beer (1995, p. 475, Fig. 86).

what and where it wants to be in three years. By beginning the process with a description of the future state, it became easier to focus discussions, prioritize, and better calibrate the individual goals and interdependencies between the various factual aspects (Lawrie & Cobbold, 2002, pp. 9ff; Lawrie, Kalff, & Andersen, 2015; Marwa Rabe Mohamed Ali, 2019).

However, finding such a common target that will be acceptable to everyone is difficult for two reasons.

The first **challenge** results from the **difficulty to differentiate sufficiently between the desire to reach an agreement** and **the agreement content-wise**. What do we mean by that?

You will have certainly already witnessed it yourself: After a long negotiation process, a compromise has been reached, but time hardly passes before the old positions and trenches reappear again. So, why was it possible that a compromise was reached in the first place? Did the participants not fully understand the issue, or did one persuade oneself sufficiently enough that an agreement had been reached, although one secretly knew that one still disagrees on many issues? Was it a weak and shaky compromise?

The desire for an agreement and unity, on the one hand, and the creation of common (factual) ground, on the other, are different issues. One should not be overwhelmed and misled by desire: A sound compromise needs a common basis. "Are we really talking about the same issues?" one should ask oneself. Does one want "agreed issues" or only an "agreement"? The desire for an "agreement" can be the catalyst for seeking an agreed basis (i.e., agreed issues), but it cannot replace it.

The **second challenge** consists of making and painting the objective **sufficiently concretely** so that it can become a sustainable and attractive source for deeper integration. Many visions are often ineffective because they are too vague to function as truly integrative target images, as Malik once pointedly observed (2004, pp. 41–44). Mission statements (see Kellaway, 2016), in which companies set goals, such as "to improve humanity," "to help each person and organization to achieve more," or "to improve the lives of people" are too general. Anyone can agree on them. The challenge always is the "specifics," and hence, such statements quickly lose their integrative force in the face of concrete problems. Reality shatters these "dreams" quickly like soap bubbles.

The **importance of concreteness** was already a source of intense discussions in the Middle Ages. Thomas Aquinas argued against Avicenna that the human intellect is orientated primarily to sensuous inputs and not toward intellectual and abstract principles.[2] And this is what we experience too: The more concrete the objective or target image, the easier it will be for a group to gravitate toward it. Part of an organizational diagnosis thus is to investigate, for instance, how concrete and detailed this overall picture of the organization's mission and objectives already is.

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[2]Thomas of Acquinas argued with his "conversio ad phantasmata" against a position attributed to Avicenna that did not consider the sensual as necessary "conversio animae ad principium in intellectum" (s. dazu Goris, 1996, p. 200; Nissing, 2006, p. 214, footnote 422).

The need for concreteness also explains why **catastrophes**, unfortunately, are, usually those moments where it is the easiest to find common ground: It is then clear for all as to what needs to be done. Thus, after the attacks on Charly Hebdo in Paris in 2015, it is reported that the French Minister of the Interior could more easily intensify the collaboration between the various intelligence services, which was previously very difficult (Morin & Meigneux, 2016). In the case of the manufacturer of consumer goods, a scandal related to product norms also provoked a cultural change: "Are we only acting and changing, if we experience a crisis?" a member of the management board asked thought-provokingly.

It would be better, of course, if one could achieve a robust common framework and common ground without disasters. This is why, as an executive, one should always look for specific incidents and make a note of them as they help to concretize the overall objective. Walking through the factory or visiting customers and trade fairs visits are essential for this reason: They provide the necessary examples and stories for making clear and concrete what the overall objectives should be.

7.2 "I Have Never Seen It that Way!"—The Challenge to Generate a Common Perspective

One of the causes of many hours of debate is that an incident can be interpreted differently. The factual basis is the same for all, but the perspectives on its meaning diverge. The metaphor often used to illustrate this problem is the elephant and the blind men, who touch "physically" the same animal, but intellectually apprehend something completely different (see Fig. 7.2). Everyone interprets incidents differently, depending on the experience, education, and interpretive patterns that one has developed. If one hikes, the top of the mountain is easy to spot and agree on; however, this is less so for organizations who first have to construct together a common worldview. Organizations often want to become "first-class" and "the most successful companies," but what do these "visions" mean? Are they clarifying or rather obfuscating the fact that everyone has different notions about the meaning of these terms (e.g., about "success").

We often discuss at cross-purposes, because we use different interpretative patterns and experiences. In these cases, it does not help to discuss the subject matter, but one also needs to become aware of the different perspectives of looking at the same issue. Viewing things the same way hence requires a competency to which organizations do not pay sufficient attention: namely, the ability to distill the specific characteristics of the different perspectives and find a common logic (or "denominator") with which to combine these different views.

This requires a specific capability, namely, to relate the different perspectives to each other and bring them into communication with each other. Unity and mutual adaptation require the art and intellectual ability to **translate between different perspectives**. In contributions such as "When you say this, he understands that …" these translation processes between perspectives become apparent.
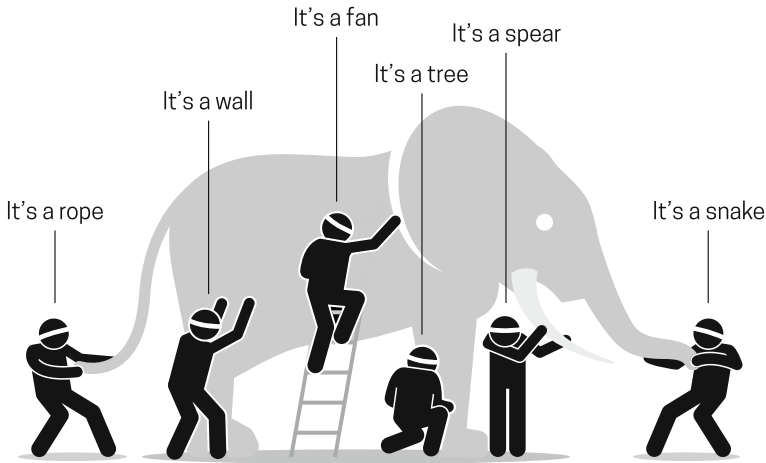
Fig. 7.2 A common problem in organizations is that, for instance, corporate functions do not share the same perspective, and consequently, interpret reality differently, like in the parable of the blind men and the elephant

It is not difficult to see that this ability to translate between perspectives is an essential competence for the **agility of decision-making processes and organizations** in general. Agility does not only mean to decide quickly (temporal aspect), but also the ability to relate perspectives that are in conflict with each other (factual and formal aspect). This is not so much a process that can be defined as part of an organizational structure but is instead a cognitive competency that needs to be trained in organizations. How many meaningless discussions could one have avoided if one had consciously worked on the differences between perspectives and the ways how to relate them to one another, in order to bridge them?

This competency **must be trained actively**; it is not given. Moreover, it must be ingrained deeply into an organization's debating culture. Thus, an organization should regularly confront its employees with new and different perspectives; for example, through lectures and seminars from different disciplines. **Philosophy** is often perceived as an intellectually stimulating pastime, but somewhat useless for the practical world of organizations. This might be the case, but philosophy is also an invaluable school in which to train one's thinking and reasoning. Proper training in philosophy increases cognitive maneuverability, flexibility, and ability to recognize and identify the common denominators across different perspectives. It facilitates finding a common perspective and thus an agreement.

7.3 "Pull or Push?"—Why It Needs a Demanding Frame of Reference

The adaptation processes need a frame of reference that holds the people and perspectives involved together and specifies the objective and purpose of the adaptation process, we said. Having such a frame around the adaptation process is, however, not enough. Equally important is to make it **sufficiently demanding** (see Fig. 7.3). Movement requires the tension of muscles. If the frame of reference is not sufficiently ambitious and too close to the current level of adaptation, then too little tension is exerted on the adaptation process, and it remains at a low level. One needs a challenging vision, a big frame of reference to generate momentum.

Those who demand ambitious objectives will achieve more than those who have only defined weak ones. Pulling tends to be easier than pushing, especially with regard to employees: Objectives move people, whereas orders and instructions only push them. A demanding frame of reference has another advantage: It helps internal politics to diminish or disappear. Where politics prevails, the objectives for the group are often not sufficiently ambitious. The group then has too much time to deal with itself and where everyone stands on the power ladder.

A robust frame of reference and objective also correct narrowing tendencies which occur over time. In the previous chapter, we discussed the importance of culture or organizational "DNA." The German sociologist Niklas Luhmann rightly
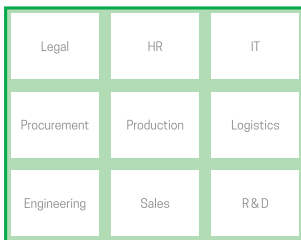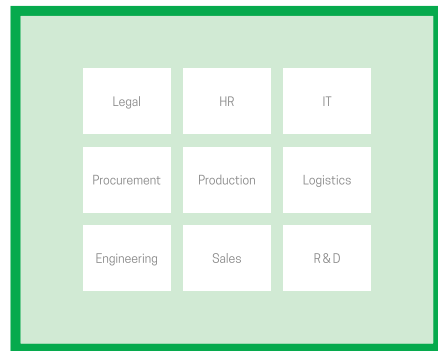
Fig. 7.3 The frame of reference should be demanding, (i.e., opening up space into which a group can and must develop)

pointed out that culture (1997, p. 588) "prevents (…) from reflecting of what could be done differently from what is customary."[3] The well-known quote attributed to Peter Drucker strikes a similar vein: "Culture eats strategy for breakfast."

So, if, for example, system 3 evolves into a "buddies club" that only accepts similar personalities into its circle, the *eigen*-variety of system 3 decreases. An ambitious goal can help to prevent these dangers: Due to challenging goals, a "circle of friends" will be forced to pay more attention to its *eigen*-variety. It must, therefore, also include those individuals who might not be wanted from a personal perspective, but who are indispensable for attaining the objectives due to their specific competencies.

For this reason, it is necessary to ask during an organizational diagnosis, whether the various aspects of the organizational "DNA" (i.e., language, culture, behaviors, and patterns of thinking) keep the adaptation process at too low a level and whether the objectives are sufficiently demanding to break with established patterns. By increasing the targets' difficulty, one can break up these patterns and thus force the adaptive processes to process variety better.

From there, the crucial question then arises, who should define these goals? Usually, the group itself, but here we face the problem that groups often find it difficult to define an ambitious goal for themselves. At this point, the concept "self-organization" reveals its limitations: One can only rarely pull oneself out from the mud of one's mediocrity, like in the German tales about Baron Munchausen.

This lets us return to an issue that we already discussed earlier (see volume 2 and Sect. 3.3): the **multi-perspectivity** within the organization and the importance of having developed **opposite perspectives** within an organization. One of the special aspects of the architecture of the VSM is that the "Self" does not mean "self-identity," as if an organization were an undifferentiated self-identical Self. The VSM highlights that the organizational Self consists of the dynamic interplay of different poles in the form of system functions and different recursion levels, which cannot be reduced to one another. In organizations, one is always confronted with the "other" that forces one to reconsider and adapt one's perspective. **Otherness**, as already pointed out in volume 1, must be part of every healthy organization.

Thus, if an adaptation process does not have sufficiently ambitious goals, it then belongs to the responsibility of the other system functions or higher recursion levels to make them more ambitious again. Ambitious goals are necessary to stimulate agility and viability. Only if one encourages one another to strive for more, can the organization again become dynamic, fully functioning, and self-organizing.

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[3]Translation by the author; original quote: "Kultur verhindert (..) die Überlegung, was man anstelle des Gewohnten anders machen könnte."

7.4 Matching the Outside and Inside Vision: Creating Purpose, Identity, and Authenticity

Do you also know the executives who are great foreign policy-makers in their organization, but lead their teams internally badly and vice versa? The overall frame of reference always has two sides: an inner side and an outer side. Both sides must be developed if one does not want to suffer shipwreck but, instead, become effective.

The **outer side** of the frame describes the task and purpose of the adaptation process regarding the rest of the organization and its viability: What do we contribute as decision-makers to the entire organization? The **inner side** describes how the participants of the adaptation process view themselves as a group. It is the image of how the participants want to see and experience themselves as a group. Both aspects must be defined as part of a solid framework.

Often, however, the overall frame of reference remains only one-sided, for example, if only the inner side is fully described. This can happen in teambuilding workshops, where the team is only concerned with its **internal relations and adaptation processes** and chooses a mainly **inward-looking perspective and objective** ("we want to be a great team that holds together"). Its impact and usefulness toward the rest of the organization are secondary.

The opposite case occurs, for example, when a committee defines itself mainly by its **role for the organization** (e.g., "the board/government determines the course of the company/country"), without a clear image of how this committee should work internally, what it values, and what constitutes its identity and self-understanding, and also what its members have in common. Without this clear vision of its internal relations, it can easily become susceptible to internal frictions that it cannot cure on its own.

Both the inner and the outer side must be worked out, and they must be mutually supportive: A self-image which does not explain what benefit the team is generating for the whole organization is hollow and vain. An outside image without a vision of how the team should work together and develop does not allow it to generate cohesion and to develop a protective space for the internal adaptation mechanisms and their stability.

7.5 Problems in the Design of the Frame of Reference

Taken together, we can identify the following problems that can occur in the design of the frame of reference:

1. Not to sufficiently distinguish between the desire for commonality ("agreement") and the need to establish a common (factual) basis,
2. Not to provide a sufficiently concrete overall picture,
3. Not to distinguish between content and perspectives,

4. Not to integrate and relate adequately the different perspectives within an organization to one another,
5. Not to define sufficiently ambitious overall objectives as a frame for the adaptation processes,
6. To define the overall frame only regarding one of its sides, i.e., the outer or the inner side.

7.6   Why We Need an "ABS" in Our Organizations

"To err is human"—but this is only the cognitive aspect. "To act (morally) wrong," whether intentionally or unintentionally, is unfortunately human too. The so-called holistic and integrative vision is, ultimately, an asymptotic point and, theologically speaking, reserved to heaven. No management method and no organization will ever be able to attain this point. The problem not only concerns errors and their consequences as such but that people are reluctant to admit errors and to revise their earlier decisions. Instead, much effort in organizations is spent on finding ways to conceal or justify mistakes. Mistakes thus generate deep-seated blockades in the organization's processing of variety—and this is the true tragedy of mistakes. They do not let an organization do what it is supposed to do and they hinder its ability to process variety and change for the better.

Not to expect errors and the resulting blockades and not to make provisions on how they can be removed is thus grossly negligent from a governance viewpoint. Every car today has an antilock braking system (ABS), why not organizations? The only question then is how to get such an "organizational ABS"? Each organization should, therefore, include in its repertoire routines, methods, and techniques that resolve these blockages on the way to the holistic view.

"Agility" is today the objective of many organizations and almost on the way to becoming a fashion. However, agility must not be reduced to small, flexible teams and quick decision-making, as if agility is only a matter of speed and thus a temporal category. The ability to be agile is tested in the final analysis of how one deals with past mistakes, misconduct, and the need to change past decisions.

For this, one first must learn how to say goodbye to old thinking and mistakes, which is hard and painful. Organizations need "pain-relievers" for this process to happen (i.e., routines that make it easier to reverse past actions and decisions).[4] Many of these routines are already known, so we list just a few of them here:

- A **positive culture toward mistakes and learning**, which does not negate mistakes, but helps to eliminate the blockades building up from errors and the unwillingness to admit them,

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[4]This does not imply removing personal responsibility, on the contrary, asking for forgiveness requires having recognized and acknowledged one's mistake.

- Routines of **forgiveness and "joining hands"**,
- A culture upholding **a positive image of one another**,
- A culture of **not taking issues not personally**.

One might think that these routines (and it is only a selection) are self-evident and trivial. From an intellectual perspective they are, but the challenge does not lie in making them known to employees since they already are "common sense." The challenge lies rather in turning them into "**common practice**" and in **implementing them**. "Agile" is nowadays a commonly used word but becoming agile and adaptive is not only a matter of speed, flat hierarchies and the right structure but also of practicing the behaviors that allow organizations and their employees to correct themselves (fast). We called the items on the list "routines" but to become such requires overcoming many emotional and personal impulses, behaviors, and hurdles (e.g., related to saving one's face). These hurdles require self-assessment, constant reminders, training, and setting good examples to others. This does not come by itself but must continually be demanded and promoted.

Sometimes, however, there remain cases where one cannot resolve blockades. Then one will have to separate from the people causing blockades. There are always employees, who, for whatever reasons, misbehave and do not learn. There is and will be no method for changing these people, one must state in all honesty. Even the Bible, one of the "holiest" books of humanity, speaks of cutting off bad branches. To separate from these employees is also a constituent ingredient to the "hygiene" of organizations.

One decisive factor is, though, to have enough **self-discipline and correctness**, to say "goodbye" to one another in a good way. Separating from each other should leave minimal wounds (i.e., unprocessed variety) on both sides. Anyone who does not carry out this separation process professionally, as well as humanly, will cause this unprocessed variety (i.e., the wounds) to feedback in line with Ashby's Law: be it in the form of acts of revenge, lawsuits or depression, and self-doubt. Even separating from employees and colleagues requires experience. Organizations must help their executives and managers to get prepared for separation processes by developing and training appropriate protocols.

As we said at the beginning of Chap. 5, many of the aspects that we have discussed in Chaps. 5–7 also apply to the relationships between system functions. They too need to adapt to each other and develop a frame of reference for their role in the organization.

Summary

1. A common frame must have a common basis. Differences in the content should not be covered up by the desire for unity and commonality.
2. The common frame in the form of a joint objective or target image should be formulated very concretely and without compromises.
3. A common framework also requires a convergence of perspectives or, at least, the knowledge of how to translate between these perspectives.
4. Agility requires the versatility to switch between different perspectives and to interrelate them.
5. The common frame should be defined in such an ambitious way that the mutual adaptation and integration process deepens continuously.
6. The (self-)image about the internal as well as the external relations of the system function must correspond to each other.
7. Each organization needs mechanisms to overcome (self) blockages as a result of wrong decisions, errors, or moral misconduct.

Questions for Reflection

1. Analyze the self-image of some of the committees or teams in your organization: How concrete is their target image, especially regarding their contribution to the entire organization?
2. Evaluate these committees or teams on a scale from 1 to 10 about how much they are already so satisfied with minimal compromises ("1") that no one bothers or attempts to tackle difficult and controversial issues ("10")?
3. How well can your organization differentiate between the content and the different perspectives that people have? How well can people in your organization build bridges between different perspectives?
4. How much room does your organization provide for excessive self-promotion of teams without verifying their internal functioning?
5. How well and fast can your organization liberate itself from blockages resulting from errors, mistakes, and misconduct?

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Part II
Designing Organizational (Chart) Structures

An Organization Is not a Model Railway—Thoughts About the Design of Organizational Structures

<div align="right">8</div>

We have now clarified some of the essential concepts and principles for the functioning of organizations. The next most burning question for many is then: "Which organizational chart structure should my organization have and how can the VSM help me in finding the right one?".

Developing or adapting the organizational chart structure is one of the most important objectives in many reorganization projects. From Chaps. 2 to 7, we have only discussed some of the basic design principles. These principles, however, do not tell us yet whether we should choose a functional or a business unit organization or whether we should divide it into regions. What is still missing is the way to the concrete organizational structure. Can the VSM help us in that regard? The following chapters up to Chap. 16 are dedicated to this question.

Before we jump into this question directly let us first look at some of the fundamental aspects of organizational modeling in this chapter since designing organizational structures is a delicate task and requires the right understanding about the design process itself.

8.1 The Main Objectives and Guidelines for the Design Process

Before one begins to model an organizational structure, one should remind oneself always of what should be achieved by the new structure at the bottom line. The perspective often narrows too quickly to purely political questions (in the sense of reporting lines).

An assistant to the finance director once complained to me that most board decisions on new organizational structures or jobs are made based on political grounds: "My task is then to find a logic behind the board decisions once they have been made." It is evident that this "method" is not only highly error-prone but makes the decisions easily appear ill-founded, illogical, meaningless, and politically

motivated to the rest of the organization—an ingredient for further demotivation within the organization.

To avoid this kind of problems, one should always remind oneself of the essential objectives and guidelines before designing or changing organizational structures.

> **Guideline 1**
> Try to create and promote the emergence of eco-systems.

A key concern of the VSM is to allow ecosystems to emerge in which the varieties can exchange and balance out freely between the environment and the organization, and within the organization respectively, according to Ashby's Law. This is, as we recall from volume 1, a key aspect regarding the functioning of the systems 1. It also coincides with today's efforts to set up teams and (user) communities acting with more agility and adaptability.

In the organizational design process, one should consequently pay attention that the systems 1 are equipped with all that they need to adjust to their customers and so that they can form ecosystems with them. The more the systems 1 have all the necessary skills, resources, and decision-making power at their disposal to respond to the variety of their environment, the easier they can adapt and accomplish their purpose. In practical terms, this means, that, for example, the team processing a customer case must be able to access all the necessary information and resources that it needs to solve a pending case quickly and easily. To make this possible is the task and responsibility of the overall structure.

> **Guideline 2**
> Promote self-control instead of external control.

Creating ecosystems also demands that we model the organizational structure in such a way that it can achieve a high degree of **self-control**. This was, as we recall, one of the main intentions of the **recursivity principle** (see volume 1). Without self-control at the lower levels, the vertical differentiation, i.e. the insertion of levels in the organizational structure, remains fruitless. The decision-making competencies must be as close as possible to the units dealing with the environment concerned by a decision (see also Mintzberg, 1979, pp. 182ff). Otherwise, the system 1 cannot become adaptive, and the upper levels will not be relieved. Anyone who must wait ten days for approvals from headquarters probably comes too late in today's culture of 24/7 availability and real-time feedback. **Decentralization** must, therefore, be encouraged as much as possible to increase flexibility and shorten information and decision-making processes (see Drucker, 1992; Mintzberg, 1979: 182ff).

Self-organization, however, does not only mean to possess the necessary free-dom and *eigen*-variety, but it also requires the capacity to guide oneself. For this, one needs to know the overall objective, the limitations as well as the control mechanisms, much like a pilot. Self-organization thus also requires mechanisms that create and disseminate sufficient clarity about the **purpose and business mission of the entire organization**, as well as about the required **control models, values, and policies**. Otherwise, the various parts of the organization will march in different directions. The constant formation and training of all recursion levels is thus essential for an organization to remain cohesive and united. Whoever designs a new organizational structure must consequently also pay attention to the design of the **inter-recursive channels**.

Finally, we should not forget that **self-organization is not an end-in-itself**: the objective must be to provide the necessary prerequisites for the systems 1 to become genuinely adaptive; they must be endowed with the necessary freedom and requisite *eigen*-variety (Ashby's Law), we said, but not with more. Autonomy should, therefore, only be granted in those areas that are necessary for adapting to the environment; everything else can be the object of synergies.

Guideline 3
Let information flow, and the organization develop a shared "mindset".

Organizations are also **information processing systems**. The VSM highlights that information and its flow keep an organization together (Jackson, 1989, p. 418) and that information needs to flow as freely as possible without structural or political obstacles between the various system functions (see volume 1). "If we had been aware of the things that we already unconsciously knew" is an often-heard phrase in organizations. Information often becomes blocked due to structures, social barriers, lack of time, and spatial distances. The design of new organizational structures must thus target **the removal of any obstacles** to the **free flow of information**.

In this context, we should not understand the terms "information" and "infor-mation system" too narrowly. As we have seen in volume 1, the VSM specifically draws our attention to the **conceptual models** prevalent in an organization which have been developed in the course of an organization's history and which control and shape an organization's decision-making. The individual metasystemic func-tions only operate based on these control models[1] that define firstly, which data are considered as relevant and worthy to become "information" and facts, and sec-ondly, how these data are processed (see Chap. 1).

It is, therefore, no coincidence that especially "practitioners" like to emphasize the importance of "**mindsets**" for the functioning and viability of organizations. Whoever does not change the "minds" in an organization will find it difficult to induce the necessary changes and adjustments. Organizational design must,

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[1]These control models are, for instance, present in the form of rules, procedures, or decision-making guidelines.

therefore, promote not only the flow of information but also, more importantly, the **convergence of mental models** and **perspectives** between all system functions (including all the factual aspects represented by the corporate functions) as well as recursion levels. Only if a unified view and mutually shared control models emerge throughout the organization, can it function well (see volume 1 and 2). Organizational structures must be designed in such a way that they promote this **exchange of perspectives and models**.

Guideline 4
The structure needs to follow the variety to be processed.

An organization (i.e., the specific arrangement of tasks and processes) is primarily an **instrument to process variety**. In processing variety, the organization achieves its primary purpose and generates value (see volume 1). The required structure of an organization should thus always reflect the way variety needs to be processed best. As a modification of Chandler's dictum, one could say that structure should follow not only strategy but also the variety that needs to be processed.

To illustrate this point: The capacity of a highway or fiberoptic cables needs to reflect the amount of (data) traffic that is supposed to flow through it/them if one wants to avoid delays and bottlenecks. The same is true for organizations: their structures and *eigen*-variety must reflect the variety that they are supposed to process. They must provide sufficient "bandwidth" for this variety. Although this might sound obvious, it is rarely put into practice. Too often, organizational structures are designed without paying attention to their operational needs as well as to the complexity, and size of their tasks. Organizations then put units that are too diverse under the same management or fail to provide sufficient resources and necessary competencies for a task.

Consequently, an organizational design process should thus always begin with the **analysis of the variety that the organization is supposed to process**. Only if one has obtained a solid understanding can one design robust organizational structures.

Matching the structure to the variety to be processed can also necessitate adjusting the latter. Not everything that an organization has done so far is needed any longer, perhaps, to generate the intended purpose. Reorganizations should thus also become the opportunity to **question the variety** that has been processed so far and to **seek ways to reduce it**. What should not be done anymore? Reorganizations are also chances to simplify the organization and make it "slim" again.

8.2 How to Design the "Design Process"?—The Three Decisive Questions Regarding the Design Process

Seldom do organizations reflect explicitly on the process of redesigning and changing their organizational structures as such. However, the **elements and sequence of a process** can severely affect its outcome. Thus, before we start, we

need to know what the critical issues to be considered are and what the right sequence should be.

This brings us to **three central distinctions** that follow on from the VSM, and which help us to determine the right process sequence.

8.2.1   About Primary and Secondary Functions

If one looks more closely at the activities and processes of an organization through the lenses of the VSM, it becomes clear that they can be divided into **two groups** (see also Beer, 1995b, pp. 10–13; Espejo & Reyes, 2011, p. 94; Hoverstadt, 2008):

1. into processes which are **directly related to producing the purpose** of the organization, and
2. into processes which **only indirectly serve this purpose**, and which solely support the processes producing the purpose.

The first group of processes is the so-called **primary functions**. They are the processes that one typically finds in the corporate functions production, sales, marketing, and R&D. These functions all directly refer to the **customer and the product**. The purpose producing processes are, for example:

- Manufacturing products for a production company,
- Teaching and learning in a school,
- Healing and caring in a hospital,
- Cooking in a restaurant,
- Flying for an airline,
- Shipping for a transport company,
- Providing advice in business consulting,
- Designing a poster or an advertising campaign for a PR agency.

The second group consists of so-called **secondary functions**. They include functions that are mostly in contact with other environments (see volume 1), such as purchasing, finance, HR, legal, or functions that facilitate the internal functioning of the organization (e.g., the mail room). The secondary functions are, therefore, those that support the primary functions, and as such, exist only due to the primary functions.

Since the primary functions serve the purpose of the organization, they form **the core of the organizational structure** and **should determine its structure**. The secondary functions are subordinated to the primary functions and need to follow the structure of the primary functions. We find this distinction expressed in the principle that organizational decisions, especially in secondary-type units should "follow the business." Even if purchasing, accounting, and IT are essential to the organization, they are not the purpose of most organizations: they are only there due to the product that the company produces. This also means that most organizational units or corporate functions are, in fact, not independent viable systems, even if their functioning can be described along the processes and principles of viable systems (see Chap. 1).

To make this vital distinction more explicit, let us use our example of the soccer club from volume 1: the purpose of the club is that the soccer team plays soccer games. The football stadium and its maintenance, however, are not primary processes because the stadium is only the interface between the club and the environment and the place where both meet, as well as the infrastructure necessary to play the game. The purpose of the club changes if it enters the business of letting the stadium to event organizers (which would have to be discussed in system 5). The club would no longer then be just a soccer club but also a landlord for the stadium.

Are the masseurs, physiotherapists, and fitness trainers a system 1? They too do not form a system 1 either because they only support the players, or more precisely, they improve the *eigen*-variety of the players (variety amplifiers). As such, they do not constitute the club's purpose. Also, the purchasers of sports clothes, shoes, or equipment, as well as the scouts for new players do not represent a primary function of the club. While the purchasers and scouts are important because they monitor and control the access to critical raw resources, and hence, significantly influence the *eigen*-variety of the team, they do not form the operational core of the team. Also, the administration of the club is not a system 1 since it exists only because of the soccer team and not vice versa. As a fan, one wants primarily to see one's team play; all other activities are largely irrelevant.

The same applies to companies and their customers: only the product is relevant and thus, how well the product is produced (production), sold (sales), and developed (R&D). These processes form the core of any organization and its structure. How the product is shipped, how the recruitment process works, or how the raw materials are purchased is normally irrelevant to the customer (except if these aspects become an essential product feature such as it is with ecological products).

There exists only one important exception to what we have just said; namely, the organizations where the above-mentioned secondary business functions indeed do constitute the purpose and the systems 1 of an organization. These companies, however, are pursuing a different business model. They are, for example, a retailer, where purchasing and selling are the core business processes and purpose, and hence, represent the system 1 activities. In an engineering company the R&D (because developing and designing plans is its product), in an IT company the software coders, and in a purchasing cooperative the purchasers represent the systems 1.

The distinction between primary and secondary functions is relatively easy to understand at first. In practice, it is, however, sometimes difficult to uphold because every department and function naturally likes to be at the center of the company and to see itself as a primary function. This is nevertheless dangerous since it blurs the purpose of the organization, and hence, its structural requirements. Consequently, the primary functions must always come before the secondary functions in the organizational design process.

8.2.2 Modeling Organizations: Top-Down or Bottom-up?

Reorganization processes are sometimes carried out top-down by shifting units and reporting lines around in the organizational chart. This approach is understandable

insofar as decisive structural questions often concern the top levels in the organizational chart. However, we remember from volume 1 that one of the key functions of the hierarchy are to provide employees at the "front" additional maneuverability and overview and that the VSM intentionally starts with the systems 1 (see the book structure of Beer, 1995a, 1995b).

The way in which the top is organized can therefore only be rightfully determined if one knows what variety needs to be processed at its "baseline"—at the interface to the environment. Starting with the top does not generate an understanding as to what kind of variety the company needs to process across the hierarchical levels and how the various levels can assist specifically in this task. If one does not know the composition of the ground and soil, then one might build on false foundations. The top of the organization then risks heading in the wrong direction like the leaning tower of Pisa.

This is why organizations should be designed, starting at the bottom and moving up to the top level, or, better formulated, from the environment to the highest levels of control just as one builds a house.[2]

8.2.3   Or Better not Top-Down?—The Relationship Between the Organizational Structure and Purpose

"Well, but one cannot just design an organization bottom-up," many people, especially executives, might have thought to themselves as a reflex to the last section. This is true, but we must define "top-down" more precisely here. Here, the "top-down approach" does not refer to the top of the organizational chart, but to the **definition of the purpose, objective, and strategy** of the organization. Since the highest recursion level considers the overall environment and its relation to the partial environments, it is rightly the top-level's responsibility to make the final decision about the organization's nature and purpose.

"Top-down" thus means to define the objectives of the organization that it needs to achieve and to determine the relevant section of the environment that it needs to target. More specifically, the highest recursion level must specify the following issues in the environment-organization equilibrium (see Fig. 8.1):

1. What **part of the environmental variety is relevant to us** (e.g., which purpose, markets, customers, customer needs)?
2. **How much and which *eigen*-variety** does the organization need, for example, in terms of product quality, production technology, infrastructure, and competencies?

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[2]As we will see in Sect. 8.2.3, this does not question a top-down approach. On the contrary, as Ríos (2012, p. 86) rightly states that without knowing the purpose and nature of the organization "it does not make sense to delve into the operational units". For the design of an organization, however, I argue that it also needs a bottom-up approach complementary to the top-down approach that takes into account how variety is processed operationally.

Fig. 8.1 Aspects of the environment-organization relationship that need to be defined—contains adaptation from Beer (1995a, p. 96, Fig. 21)

Environment

V_{EWider}

①

Organization

V_O

=

②

V_{ESys1}

Equilibrium point

③

V = Variety
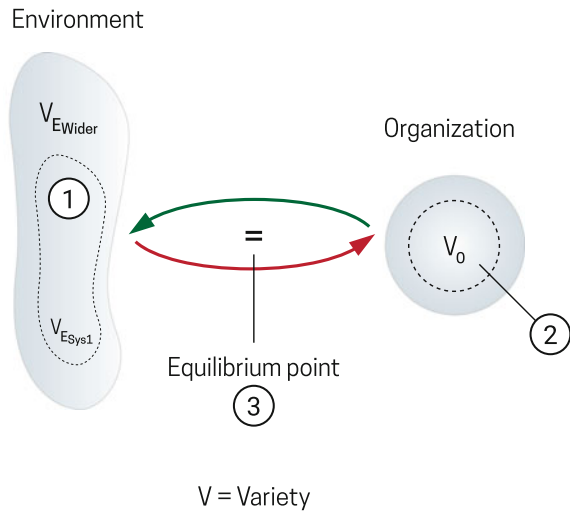
3. Where does the **desired and required equilibrium point** lie in the environment-organization relation (e.g., how much profit do we need and how good should the customer feedback be?)

Finding an answer to these questions is, strictly speaking, not the primary task of an organizational design process. Rather, it is an **act of self-determination** by the organization, and which becomes expressed, for instance, in the organization's strategy.[3] Every organizational design process depends on this preceding definition of the organization's equilibrium relation and strategy; the organizational structure is merely an instrument helping to reach the targeted equilibrium.

In this respect, **analyzing the strategy also needs to be part of the organizational design process**: the strategy determines what the organization must be able to achieve. If the purpose and strategy are not defined, one cannot model an organization. These are the cases where "one waits for decisions from above" and does not dare to change anything in the organization. From this perspective, a top-down view clearly comes before a bottom-up perspective.

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[3]Of course, this self-determination is limited by the existing structure that determines the options available to the organization.

**Do you wish to know more about the dialectic nature
between the top-down and bottom-up view?
If so, then continue reading here, otherwise, go to Sect. 8.3**

While this may sound straightforward, on closer inspection, we face two contradicting aspects: First, the **top-down view must always include a bottom-up perspective**. Every strategic decision must verify that it is operationally and organizationally feasible (see volume 2). The strategy has its limits in the form of Ashby's Law and what one can expect from an organization, its structure, and the organizational design process. **No organizational structure or design process can correct strategic errors**. Just as in real life, one does not give a friend a screwdriver and ask him to drive in a nail; likewise, from organizational structures, strategies cannot expect to achieve what they have not been designed to do. Therefore, strategies must be verified regarding whether the organizational structure can support them.

Second, and in slight contradiction with the first aspect: taking the top-down approach also requires **liberating oneself from the bottom-up perspective**. "Top-down" might suggest that one is completely free at the top of the structure. Unfortunately, this is not the case. Due to the dependency on the current organizational structure, organizations tend to prefer the strategies for which their current organizational structure is best suited. New strategies are then often not considered or viewed unfavorably. Not only does "structure follows strategy," but the phrase "strategy follows structure" also applies (Hall & Saias, 1980), i.e., strategy is determined and often restricted by current structures.

A social service provider was structured in regions. However, times had changed, and a specialization in business units would have made more sense. Since the second hierarchy level still consisted of regional managers, the organization continued to draft and plan regional strategies, even though they no longer made any sense. Current organizational structures thus also influence the mental framework and range within which options are developed for top-down decisions.

"Top-down," therefore, also means to leave the current organizational structure aside, to expose oneself anew to the variety of the environment and from there, to review and question the existing structure and its *eigen*-variety critically. Consultants like to call this the "greenfield"-approach: if you could build the business and its organization from scratch, how would you then position your organization again? This question provides the freedom to challenge many established practices and structures in an organization and thus become the catalyst to self-renewal.

8.3   Designing an Organization—What Are the Steps?

From what we have discussed above, we can distill the following principles for the design process. One designs …

- … the **primary before the secondary functions**,
- … the **lower before the higher recursion levels,** and
- … the **fundamental equilibrium between the environment and the organization before all structural questions**.

This results in the following process model, as shown in Fig. 8.2. The design of a new organization, therefore, **does not begin with the organizational structure itself**, but with the analysis and, if necessary, the design of the fundamental equilibrium between the environment and the organization, its purpose and strategy (step 1). We must next examine the operational business processes to obtain an understanding of what the organization does and how its basic (operating) model functions (step 2). We then define the various management processes and recursion levels needed to govern the entire organization and to control the operational business processes (step 3). From here, we derive the organizational (chart) structure (steps 4). Finally, we can then add the various secondary functions that are needed to support the core business processes (step 5).

Let us discuss the steps in greater detail: In the **first step** (see Chap. 9), we thus start by reviewing and sometimes even clarifying the organization's **purpose**. The purpose defines the activities of the organization regarding the relevant environment and its boundaries and how and when the equilibrium is achieved (see volume 2).

Regarding the organization's **strategy**, we need to capture what kind of environmental variety the organization wants to process (e.g., customer groups, customer needs), how it wants to influence the variety of the environment (e.g., changes in the value chains); and what kind of *eigen*-variety it needs (e.g., resources, synergies). We also need to understand how the organization **segments its environment** from a strategic viewpoint since the organizational structure needs to reflect the environmental structure as closely as possible.

The final point in the agenda of this first design step is a **critical review of the internal complexity**. What an organizational structure should look like always depends on the variety that it is supposed to process. Consequently, before starting the design process, one should critically review and question the variety with which an organization should concern itself in the future (e.g., markets and customers). This also applies to its *eigen*-variety: What parts of its *eigen*-variety should the organization keep and to which parts should it, instead, say "goodbye" (e.g., unprofitable products, resources, skills, and processes)? This review should be carried out compulsorily before one even starts to design the actual organizational structure.

① **Clarifying the purpose, strategy and varieties to be processed**

Clarifying the:

1. **Purpose and objectives**
2. **Strategy** of the organization (esp. regarding the variety equilibrium)
3. **Segmentation of the environment** in the organization's **strategy**
4. Potential to relieve the organization from **unnecessary variety** ("spring cleaning")

② **Defining the structure of the basic model**

Defining the:

1. **Basic systems 1**
2. **Equilibrium point(s)**
3. **Aggregation logic** for each recursion level
4. **Final structure of the basic model**

③ **Detailing the basic model ("interior design")**

Defining the:

1. **Operational processes** that generate the purpose of the organization
2. **Metasystemic functions** at every recursion level
3. Necessary and affordable **synergies**

④ **Designing the organizational chart structure**

Defining the:

1. **Organizational chart structure** ("left wing")
2. Mechanisms ensuring the **holistic perspective** ("right wing")
3. **Connections between the recursion levels**

⑤ **Organizing the secondary functions**

Defining the:

1. **Operational tasks** of the secondary functions
2. Required **metasystemic functions**
3. **Synergies** regarding secondary functions
4. **Organizational chart structure** for the secondary functions
5. **Interfaces between the secondary and the primary functions**
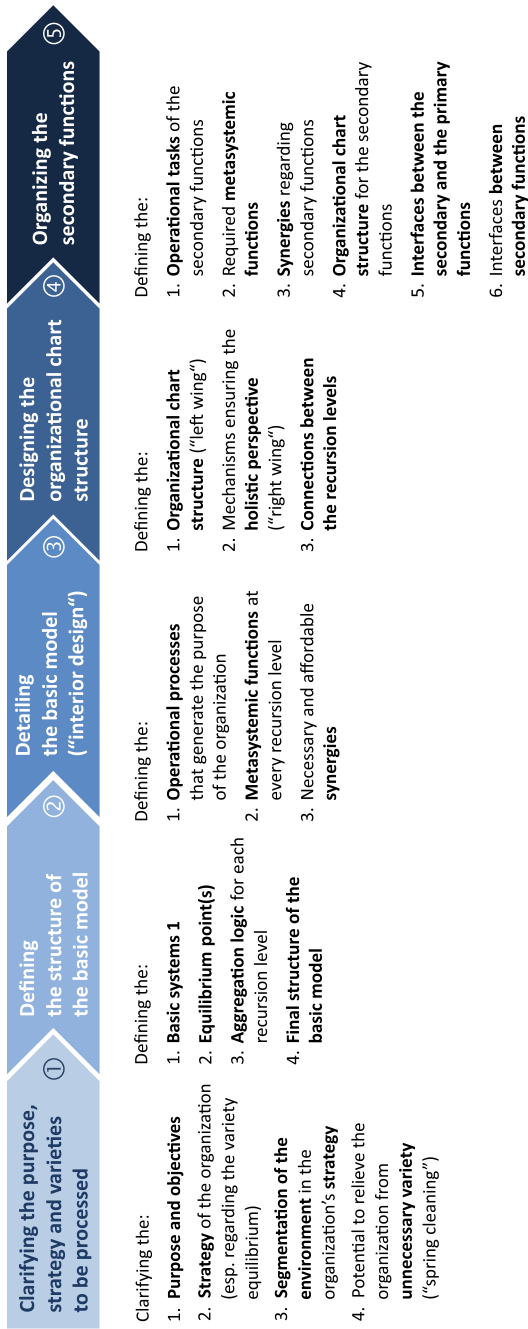6. Interfaces **between secondary functions**

Fig. 8.2 Process steps for designing organizational structures

The **second step** in the design process consists of designing the **basic structure** of the primary functions (i.e., the **basic model** of the organization) (see Chap. 10). The key guiding question here is: how do we structure the relevant environmental variety and divide it up between the various systems 1 and recursion levels so that as little internal complexity as possible is generated that needs to be processed by the metasystem? This basic model is the "**master plan**" that describes through which organizational structure the variety should progressively become processed. We start the process with the basic systems 1 (i.e., the systems at the lowest recursion level), and work upward from there through the various recursion levels to the top level.

If necessary, **the basic model becomes defined in greater detail in a third step** (what we call the "**interior design**" of the organization) (see Chap. 11). To this end, we first need to look at the operational processes that the organization requires. Concretely, how do we make and sell our products and services? What kind of variety do we face in all our operational processes and what kind of *eigen*–variety do we need?

If this operational core of the organization has become clear, it is time to specify concretely how it becomes managed and controlled. The next step thus concerns the specification of how the **metasystemic functions** across all recursion levels should function (see Chap. 12). At this point, one must also address the question, from which recursion level the resources (or *eigen*-variety) of the organization need to be controlled, to obtain the necessary **synergies** (see Chap. 13). Every decision in that regard must be made in view of the principle of mutually adjusting horizontal varieties and the axiom of requisite vertical *eigen*-variety (see volume 2).

As a **fourth step,** one then defines the organizational chart structure (left wing) and the necessary integrative processes (right wing) to prevent the fragmentation of the organization and uphold a holistic perspective (see Chap. 14).

In the **fifth and final step**, the **secondary functions** are added to the organizational model (see Chap. 15). The addition and configuration of the secondary functions mostly follow the same design process as do the primary functions.

The aim of this process model is to lay out the entire sequence and assumes that the organization needs to be designed from scratch. In most cases, however, organizations want to change only specific areas or issues in their organization. Then, one limits the design process to these areas—with one exception: one should never skip step 1 and 2, i.e., gaining an understanding of the organization's purpose and strategy as well as sketching out roughly the basic model of its functioning.

This model is presented as a sequence of steps. Real organizational modeling is often, however, not only a targeted but also an iterative process, due to the many unknowns of which one only becomes aware in the course of the design process (see below). So, perhaps the best image for the design process is "doing a painting" (Hoverstadt, 2008) where one starts with a sketch, which becomes refined but sometimes also redrawn in several iterations until the final painting (or in our case: organizational model) emerges.

8.4   Limitations Regarding the Design of Organizational Structures

Finally, a bit of precautionary "consumer advise": we have seen through the VSM that an organization does not consist of boxes and lines only, but is, instead, a system of viable systems with numerous variety equilibria, control, and information loops. The functioning of an organization, therefore, depends on the extent to which these different system functions and recursion levels are connected and aligned with each other. From this perspective, the organization can also be viewed as a **network of explicit and implicit rules and mutual knowledge** where every element of this network knows how it should connect to the other elements and what its function is.

The challenge is, however, that organizations consist not only of known but also many **not-explicitly known rules and information** that develop during the life of an organization. Following the famous economist and social scientist Karl Polanyi (1982, 2009), organizational theorists speak of the so-called **tacit knowledge**, i.e., the "implicit" and "unofficial knowledge," which is larger than the documented knowledge of an organization. Not for nothing, a famous metaphor used to describe organizations and its tacit dimension is the iceberg (Fig. 8.3). How the organization organizes itself precisely is often not fully known even to the organization itself. The challenge for the organizational design, therefore, is that the way an organization operates can never be fully captured and will remain mostly unknown.

Fig. 8.3 Most of an organization's *eigen*-variety is invisible and unknown like an iceberg (© fotolia/stock.adobe.com—artist: Romolo Tavani)

To make matters worse, this **knowledge about the functioning of an organization is continuously changing**: organizations are subject to evolutionary processes, during which new rules are created and existing ones altered or forgotten. For this reason, one must bid farewell to the idea that one can design an organization completely. Even if we all liked to know what an organization knows, this dream can never materialize. It would probably even be a nightmare since the recording and updating of the abundant information and knowledge stored in an organization would simply paralyze the organization. The supercomputer "organization," which ensures an entirely transparent organization, will never exist. An organization is not a model railway since one never can plan or design it completely!

This is, however, fortunately not required, because we only need to know the necessary **framework conditions and guidelines** within which the life of an organization should develop. We humans also live well without knowing the metabolism of our body precisely. We only need a basic understanding of how the body works, how it reacts to specific inputs, and when not to surpass certain limits or thresholds. The same is true for organizations: here too, we only need to know the basic mechanisms, how these react to specific changes in environmental complexity, and how we are warned so that we can prevent damage in time.

The objective for an organizational design process is, therefore, not the **design in detail** (see also Malik, 2008, p. 76), but to identify only the issues that are crucial to the organization's overall viability. Many aspects of an organization develop independently and often without our intervention. The organization and its employees have sufficient intelligence to organize themselves without detailed planning. **Organizations are learning systems** and we can rely on this property and people as long as we demand and promote this **willingness to learn and improve**. **Organizational design is thus a continuous process** that starts with a new organizational model but then continues to evolve through an ongoing learning and adaptation process (see also Espejo & Reyes, 2011 and the VIPLAN method described).

What are the practical consequences of this? Organizational design means, first, not to describe the whole organization to the last detail, but rather to distill the three to five essential aspects in the processing of complexity that are critical to its success and to define the essential organizational processes or activities from there.

Second, this also means that during the design process the circle of participants should be enlarged progressively so as to involve enough knowledge-holders. You can start to develop the basic organizational design options with only a small group. However, the design processes should leave the quiet chamber as soon as possible, and then seek to involve more people. Only then does one have a chance to let the hidden knowledge surface over time and avoid design errors.

The hidden nature of organizations also explains why **benchmarking** is only useful to a certain degree: each organization processes variety differently and possesses a differently configured *eigen*-variety. Even in the best benchmarking projects, it is difficult to distill the factors that explain why specific processes or structures work well, except in the case of highly standardized processes. Even the organization that is used as a benchmark often does not know precisely why some

of its structures and processes function well. This means that one must think through and design one's organizational structure oneself. No one else can and should take over this task. **Copying organizational structures** does not work; the whole structure must be thought through comprehensively when considering its design. In that regard, reorganization processes also offer an excellent and exciting opportunity to get to know one's organization.

Summary

- A (new) organizational structure should achieve the following objectives and guidelines:

  1. Create and promote the emergence of ecosystems.
  2. Promote self-control over external control.
  3. Promote the flow of information within the organization and the formation of a common mindset.
  4. Build structures and competencies adequate to the variety that needs to be processed.

- The core of an organization is its primary functions, which are necessary for the implementation of the organization's purpose. The organizational structure must reflect them and place them at the center of its structure and attention. The secondary functions only follow the primary functions.

- Organizational modeling begins

  - by identifying and describing the equilibrium between the environment and the organization as expressed in the strategy,
  - with the primary functions before the secondary functions,
  - from the operational interfaces to the environment at the lowest level upward to the "top level."

- How an organization functions is often unknown. For this reason, an organization can only be defined along broad guidelines. Consequently, the circle of the participants in a design process must be extended progressively and as quickly as possible to avoid overlooking essential but hidden aspects of the organization.

Questions for Reflection

1. How much does your present organizational structure correspond to the guidelines mentioned above in Sect. 8.1 (on a scale from 1 to 10)?
2. Which corporate functions are at the center of your organization, and do they belong to the primary functions?
3. How much does the current organizational structure impede courageous and innovative approaches?
4. To what extent are organizational change processes in your organization based on a sound understanding of (1) the strategy, (2) the necessary equilibrium between the environment and the organization, and (3) the required *eigen-*variety? How much does your organization force its executives, managers, and employees to implement strategies with the wrong organizational structure or metaphorically to "hammer the nails with a screwdriver?"
5. How much does your organization understand itself as a learning system?

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What Kind of House Do We Want: A Bungalow or a Villa—Why and to What End?

9

Organizational design is like building a house: before starting, one needs to define its future purpose. Should it become a place of recreation, close to city life, an investment or an opportunity to show-off? Similarly, we need to ask regarding the organization that we want to design what it should achieve and what its purpose should be. Depending on its purpose and strategy, the organization, and similarly, the house will take on different shapes.

Consequently, the first phase of the organizational design process consists of clarifying the purpose and primary objectives that the organization should achieve, what belongs to its essential tasks, and what not (Fig. 9.1).

Fig. 9.1 Step 1 in the design of organizations

Clarifying the purpose, strategy and varieties to be processed ①

Clarifying the:

1. **Purpose and objectives**
2. **Strategy of the organization** (esp. regarding the variety equilibrium)
3. **Segmentation of the environment** in the organization's **strategy**
4. Potential to relieve the organization from **unnecessary variety** ("spring cleaning")

9.1   Clarifying the Organization's Purpose and Objectives

As experienced project managers know: a project's success depends primarily on how precisely the project's purpose and objectives are defined. Often though, they are not clear, even in the best-formulated project scope statements. The first step in planning each project is, hence, to detail and clarify its purpose, and the same is true of the design of a new organizational structure.

Consequently, the immediate question to be asked in a reorganization process is what the **purpose of the organization and reorganization** is, or to use a famous question by Drucker (1993, p. 77): "What is the business in which we are?" This question must not be skipped. It is not a theoretical but a highly practical question, which if not answered thoroughly, renders the design and functioning of the organizational structures highly error-prone.

It is a crucial question since the answer decides not only what the real product and thus the organization's primary functions are but also where the boundaries of the organization and environment need to be drawn ("who are our customers as well as non-customers?"). It defines the final shape of the organization.

This question is, unfortunately, also difficult to answer. It can be addressed from at least four different perspectives that are sometimes not aligned with each other and can even contradict each other at the beginning of a design process (see also Beer, 1984, pp. 16f or Espejo & Reyes, 2011, p. 116ff and the VIPLAN method (*ibid.*)). Unfortunately, each of them influences the organization's functioning and thus cannot be ignored. Concretely, we are talking here about the perspectives[1] of:

1. the organization as such,
2. the organization's environment, i.e., its customers,
3. the individual employees, and
4. the top recursion levels.

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[1]Espejo and Reyes (2011, p. 120) list as relevant perspectives the ones from "actors," (i.e., those producing the product) customers, suppliers, owners, and "interveners" (i.e., those who influence the context of the company). What the relevant perspectives are depends, of course, on the context of the organization and needs to be decided on a case-by-case basis. In our approach, we limit ourselves to the stakeholders, who are directly related to the organization's primary functions and are its most pertinent ones. Suppliers and organizations that influence the organization's environment (e.g., the public sector institutions) can also be relevant but only if they exercise a dominant position over the organization, such as in centrally planned economies, or in the case of state-owned enterprises or enterprises delivering services and products mainly for the state.

**Do you wish to have these perspectives exemplified
and discussed in more detail?
If so, then continue reading here,
otherwise, go to the end of this in-depth section.**

Let us explain these four perspectives and their intricacies in greater detail:

1. Typically, **each organization** defines a purpose for itself which becomes expressed through its strategy, vision statement, business mission, or global objectives. This should be the reference point for the organizational design process.

   However, there is one problem: Are these statements a true reflection of the organization's de facto intended purpose? The challenge with these "official self-images," is that they do not always correspond to the reality of the organization. In some cases, they are wishful thinking or even a PR-product, either to the outside (e.g., the customers) or inside (e.g., employees).
     So, one needs to investigate how much these purpose statements are supported by what the organization really does. Do decisions, values, priorities, actions, and the culture support the purpose or rather point toward a different purpose?
     Does this mean that such official purpose statements are irrelevant? Not at all—they are the expression of a wish and target toward which the organization wants to develop. And, as such, they provide valuable information and can be used as a stimulus and reference point that allows questioning the status quo and current practice.

2. **Customers** sometimes see a different purpose in the product than the company does. It is not without reason that one of the central and never fully answered questions in marketing and sales is why the customer wants to buy one's product.

   A manufacturer of industrial paints, for example, saw the primary purpose in the production of paints. During a customer survey, however, it turned out that the customers were more interested in his knowledge of how to adjust their coating and painting lines. The key product was the knowledge of the systems engineers of this manufacturer that helped

the clients to adjust their machines and not so much the paint itself. The manufacturer thus created a purpose that he did not recognize and consequently did not exploit well.

Realizing there was this gap not only caused a change in the manufacturer's strategy but also in the organizational structure. It brought the system engineers and technicians into the spotlight; they now became a primary function and moved closer to the center of the organization's focus.

3. The purpose that **employees** (often at the lower recursion levels) see or wish to see realized by the organization often differs significantly from the company's declared purpose. The lack of identification with the company bears witness to the discrepancy between the individuals' purposes and the organization's. Instruments such as target agreements and bonuses linked to the company's objectives provide ample evidence for the tremendous effort needed to reconcile the individuals' motives with the company's purpose.

4. The **top recursion level(s)** might also pursue their specific purposes: for holding companies or private equity investors, the primary purpose is not always the product produced by the company but instead its contribution to an investment portfolio. Similarly, if companies are owned by a person or family, their vision of the organization's purpose might incorporate highly personal aspects anchored in the biographies of the owner(s). Such "purposes" might be, for instance, the effort to "prove" something to someone else (e.g., the father, the family) or to have a social status in the community and society in which the company is located.

For some members of supervisory boards, it might be the case that their personal purpose is not identical with the organization's purpose. Instead, cases are known where the mandate is primarily viewed as a networking platform, to sell the products and services of one's own company, or to gain prestige.

These kinds of personal "purposes" are and will always be present. The decisive factor, however, is how strongly they determine the organization's ability to fulfill its initial purpose. As soon as these personal aspects start to dominate, the organizations' focus and preoccupation also change, and with it, the type of variety that it processes. These deviations then

become manifest, for example, in prestige projects or the sponsoring of institutions that are only advantageous to some stakeholders but not to the entire organization. What is more, they also add complexity to the organization, thus preventing it from processing the variety related to its original purpose.

To illustrate this **incongruence of purposes** further with an example: a manufacturer of Swiss quality watches can be regarded as a watchmaker. However, one can also view watches as fashion accessories and luxury items whose value is the prestige created for those who wear them and not so much the mechanics per se. At the same time, the owners of this company might view the organization as a purely speculative investment for quick profits.

Finally, the organization can be viewed by the employees primarily as a way to spend time meaningfully and pursue personal relationships and interests. The purpose of the company, then, is not to sell a product to customers, but rather to offer the employees as many exciting tasks and activities as possible, as well as a platform for socializing and developing relationships.

As we can see, the "products" produced (i.e., watches, prestige, speculative gain, personal relationships) and their environments (i.e., customers, competitors, colleagues, investors) can vary widely within an organization and this affects the organizational structure. Depending on the purpose, the nature and scope of the systems 1, and thus the elementary building blocks, also vary. For a watchmaker, the systems 1 are the watchmakers; however, for a luxury manufacturer, the system 1 will primarily be the designers and PR professionals who create the image and prestige that is purchased and for whom the watch serves only as a medium. From an investment perspective, systems 1 are those activities in the company that make the company "pretty" to investors. As we see, the choice of the purpose affects the type, content, and boundaries of the systems 1, and thus, what kind of activity is at the center of the organization (see Fig. 9.2).

Fig. 9.2 Watch: is it an instrument to measure time, a luxury item, an investment, or a hobby? (© fotolia/stock.adobe.com—artist(s): haveseen)

Organizations might sometimes be torn apart by different purposes due to **different underlying primary activities**. The case of the German automobile club ADAC is an illustrative example in that regard: originally founded as a non-profit organization, it expanded over time into commercial activities. This led to problems with oversight. The non-profit and commercial activities pursued different underlying objectives and purposes that interfered with each other and had not been sufficiently organizationally separated. Since a convergence of purposes was therefore not possible, the activities ultimately needed to be separated into different units (ADAC, 2014; Stalinski, 2014).

From this case, we see how crucial it is to clearly define and distinguish the different purposes prevalent in an organization to arrive at a sound and viable organizational structure. One should try to reconcile purposes as much as possible, but where this is not possible one needs to reflect these differences structurally. Otherwise, the divergence of purposes might become the source of organizational dysfunctionalities and lead to an increasingly conflict-laden and sometimes "schizophrenic" situation within the organization (see also Espejo & Reyes, 2011, pp. 239f).[2]

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[2]The reason is easily explained: As we said in volume 2, the purpose determines the equilibrium point of the organization and the way it processes variety. Different purposes entail different perspectives on the environmental varieties as well as different selection and prioritization logics, governance and control models. Diverging purposes thus lead to different equilibrium points and ways of processing variety. This heterogeneity or even contradiction of purposes consequently impedes the organization from processing variety optimally: The organization becomes paralyzed and a place of continuous conflicts. Diverging views on the primary purpose and objectives should therefore be addressed and solved before the design of the new organization even starts, without any exception. Any ambiguity in the purpose avenges itself in the aftermath.

Sometimes, however, it does not suffice to merely consolidate or separate more distinctly the different purposes of an organization, but **one even needs to question them**; for example, in a turnaround. In 2004, Knudstorp, Lego's then-new CEO, was confronted with the challenge to quickly find a way to turn around the company that had become a victim of a too aggressive expansion strategy. The first thrust led him to the reorganization of the operational activities; the second even more vital task consisted of finding out what the identity, roots, and purpose of the company should be. For Knudstrop, "[Lego] had lost its way in terms of **understanding its own self-identity**. What is Lego uniquely about?" and understanding the identity and uniqueness was the prerequisite to return Lego to a healthy growth path.

However, how did he find the identity and purpose of Lego? He and his team went on a journey and questioned customers such as children or fans, retailers, employees, or suppliers (Tweed, 2013). At the end of this process, the identity of the company and its real purpose—that it should and could create—crystallized for Knudstrop and Lego. This process of searching and redefining the purpose finally laid one of the foundations for an unprecedented success story (the net profit Legos increased to € 1 billion in 2018—see Lego A/S, 2019). This example shows how the **purpose of the company sometimes also needs to be developed in a dialog with the various stakeholders** and how the convergence of purposes and objectives is the basis for sustainable success.

9.2   Connecting the Organization to the Strategy

If we know the purpose and objectives we want to achieve with a house and what constitutes its specific identity, we must then consider in which place it should best be built and how it should be designed, equipped, and adapted to the environment so that it can achieve its purpose. In the standard management language, this is the task of the strategy. The strategy describes which part of the environment should be targeted (e.g., markets and product segments), and how the organization should position itself and its products in view of its capabilities, environment, and competitors.

For the organizational design process, it is equally important to understand all these aspects. As we said earlier, the organization is "just" an instrument to process environmental variety and to implement the strategy. Without a proper understanding of the strategy, one cannot design an organization. To this end, one needs to know the answers to the following questions:

- What is the **reference environment** of the organization toward which it needs to find an equilibrium (e.g., customer groups, markets)?
- What kind of **environmental variety** will the organization face and be required to process?
- What is the **requisite *eigen*-variety** needed for the organization to meet the environmental variety? What will the necessary competencies and resources be?

- Toward which **target state** should the organization evolve, for example, regarding its position in the environment, future size, and *eigen*-variety?
- What **kind of synergies** need to be generated and to what extent?
- And finally, what **strengths and competencies** does it need to promote so to make it competitive?

9.3 "What Are Our Markets?"—Reviewing the Organization's Segmentation of Its Environment

One particularly important aspect to understand is **how the strategy chosen by the organization segments its environment**. Since the organization must mirror the environmental structures as closely as possible, the way the environment has been segmented in the strategy decisively influences the functioning and internal variety processing of the organization (see volume 2). Here, we touch a crucial interface between the strategy development and the reorganization design process. The strategy must not segment the environment solely in view of the outside potentials or threats but also in such a way that the strengths of the organization can be played out and synergies gained as much as possible. Consequently, one should always cross-check a strategy from an organizational perspective: Is the segmentation of the environment (e.g., in markets and customer types) feasible and viable for the organization?

The **environmental segments are sometimes already predetermined** by geography, available infrastructures, and technologies or markets structures. In these cases, it is relatively clear how the environment is or should be structured. However, the more heterogeneous the customers, the less clear their preferences, and the more channel available to reach these customers, the more difficult it becomes to identify the right environmental structures.

Not all is predetermined and the environment does not usually conceive itself in segments: as customers, we often only learn through products and marketing campaigns under which customer group we are categorized by companies; for example, age group. Organizations are not only passive but they also "organize" (i.e., segment) the environment (see Fig. 9.3).

**Fig. 9.3** Every environment can be segmented differently

This is why the **same "environment" can be segmented very differently** by competing companies that, nevertheless, operate in the same environment. The environmental segmentation is rather "created" by the companies rather than a given. As a result, market boundaries may be drawn differently by companies from the same industry. Indeed, those who are well versed in the art of drawing boundaries can even gain a strategic advantage by better identifying and describing an ecosystem. For this reason, the process of drawing the environmental boundaries ("What is our market?") is an essential part of the strategy and reorganization process.

Since there are many possibilities to segment the environment, such as geography, markets, product features, customer preferences, value stages, or demographic characteristics, how does one get to these "segments"? This is, of course, above all the task of strategy; but one should not forget the organizational perspective. The segmentation logic of the environment must reflect the available *eigen*-variety. Otherwise, it becomes utopian. We will come to this organizational aspect in greater detail in the next chapter, but in a summative way, we can say that one will choose the option that best allows balancing between the environmental variety and the company's *eigen*-variety while still protecting the organization against competitors.

When segmenting and drawing boundaries in the environment as part of the strategy process, one should also pay much attention to potential sources of conflicts (e.g., overlapping markets) (see Fig. 9.4) and the need arising for coordinative mechanisms (see volume 1). If not clarified in the strategy, these conflicts must then be compensated by the organization and can easily become a source of constant irritation.

The segmentation into private and corporate customers by an insurance company repeatedly caused disputes between the corresponding business units. The employees of its corporate customers fell under both categories since they also had access to the frame contracts of their employers. Both business units—private and corporate clients—thus simultaneously approached these employees, and thereby stepped on each other's toes. This and similar cases show us how the drawing of boundaries in the (market) strategy affects the internal complexity of the organization.

**Fig. 9.4** Overlapping market segments lead to conflicts
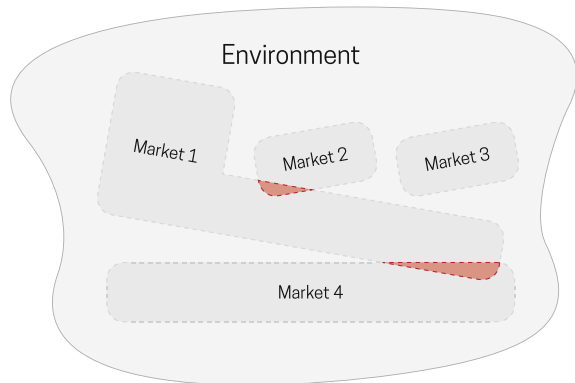
The process of designing organizational structures should, consequently, not focus on the organization alone but always start with the strategy and try to understand how and according to which logic the organization segmented its environment in its strategy.

9.4   "Spring Cleaning"—Simplifying the Organization

After having clarified the organization's purpose and strategy, which already provides many clues about the basic structure of the future organization, one should briefly pause and ask the question: what kind of variety do we need at all and which part can we abandon? Especially, in the case of already-existing organizations, one should conduct a "spring cleaning" at this point, in the sense of reducing variety such as giving up customers, products, services, and purposes that represent only a burden without any clear benefit. One effective way to improve organizations is to reduce the complexity they need to process—this is obvious, but not often implemented with sufficient rigor.

An "80:20"analysis at this point (see Fig. 9.5) can help by providing a first indication as to which part of the variety can be reduced without losing or endangering the current strategic position. To what extent are the 60–80% of the products and customers that generate only 10–20% of the sales revenue still needed? Such a "spring cleaning" can take place at the operational level regarding
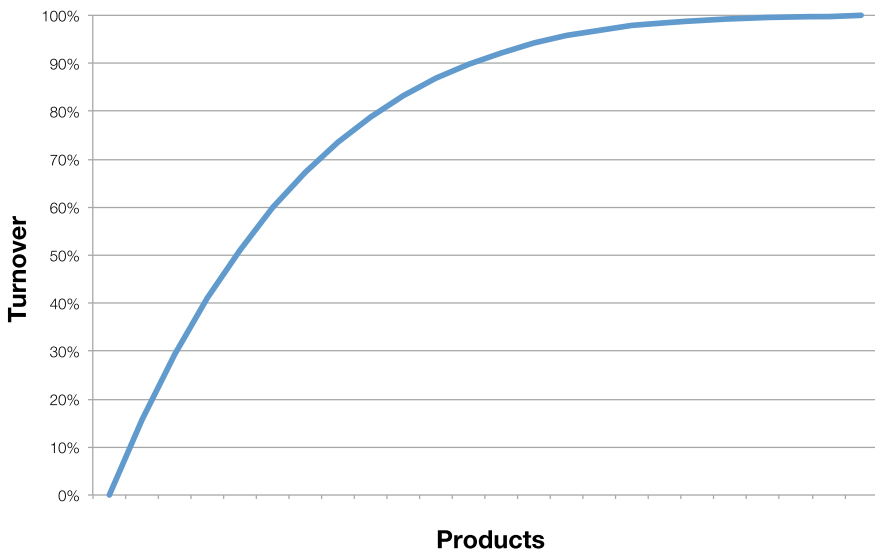
Fig. 9.5 Pareto analysis of the sales turnover can help to question the necessity of certain products

customers and products, but also at the top level, for instance, regarding how many different subsidiaries, branches, and markets should be kept.

To question the variety to which we have become accustomed is never easy, emotionally or cognitively, since we cannot imagine a world without it. Accomplishing this task often entails more intricacy than it would initially seem. There might be cases where the less useful 80% are necessary (e.g., for network effects—see also: Beer, 1995, pp. 14–17). For this reason, one should not rush decisions but dedicate sufficient time to this task, and only then should one move on to designing the organizational structure itself.

Summary

- Before designing the organization, it is necessary to identify which purpose the organization should achieve from the perspective of the relevant environment (e.g., customers) and its various stakeholders. These purposes should be reconciled before the new organizational structure is designed. If the convergence of purposes is not possible, these different purposes should be structurally separated into different viable systems and units, since otherwise conflicts will permanently arise.
- Organizational structures should reflect the environmental structures as much as possible. When segmenting the environment, one should choose the segmentation logic that offers the most appropriate and effective way to achieve an equilibrium between the environment and the organization.
- Overlapping areas between environments should be reduced as much as possible to minimize the necessary compensatory activities that the organization must undertake (e.g., higher coordination and control efforts).
- Before designing the organization, one should first try to free up the organization from unnecessary and non-strategic variety ("spring cleaning").

Questions for Reflection

1. What purposes are imputed to the organization? How much do the purposes that your organization, customers, the higher recursion levels, and employees see in the organization, converge?
2. To what extent has it become an established practice in your organization to clarify its purpose and strategy, and their impact on the organization before deciding a new organizational structure?
3. How do your competitors segment the environment? Are there any differences to the boundaries that your organization has drawn, and if so, why?

4. Where do the environmental segments that your organization is addressing overlap, and how do they affect the internal complexity of the organization? How well are these overlaps managed, or do they cause much coordination effort and are a source of constant conflict?

5. How much unnecessary (*eigen-*)variety does your organization process/have? How courageous was the last "spring cleaning" and how long ago did it take place?

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The „Plan" and „Structure of the House": Developing the Basic Model

10

A dream house should not just remain a vague dream. For the house to become reality, a plan is required that takes into account the future needs and lifestyle of its residents and that specifies, for example, how many floors and what kind of rooms are needed, what the layout of each room should be in view of its intended purpose and functionality, and finally how the rooms and floors should be interconnected.

This also applies to the design of organizations: organizations also need a **blueprint** that defines how the environmental variety should be processed by the systems 1 and across the various recursion levels. This is the task of the **basic model** and phase 2 in the organizational design process (see Fig. 10.1).[1]

Fig. 10.1 Step 2 in the design of organizations
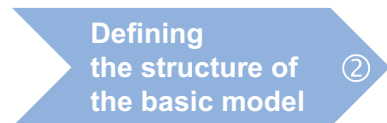
Defining
the structure of   ②
the basic model

Defining the:

1. **Basic systems 1**

2. **Equilibrium point(s)**

3. **Aggregation logic** for each recursion level

4. **Final structure of the basic model**

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[1]All figures in this chapter related to the VSM are or contain and if not stated otherwise, adapted (detail) views from Beer (1995, p. 136, Fig. 37).

One can also compare this phase with the planning of a project: here too, based on the project's objective, the project manager must define the main organizational components of the project's structure such as the different subprojects, work packages, and tasks. The challenge here consists of arranging the tasks in such a way that the objective can be reached and that the various subunits …

1. … can work as autonomously and independently as possible, and
2. … at the same time, still understand and adjust to each other, and
3. … require as little supervision as possible.

For this, the project manager needs a good understanding of the tasks to be accomplished, their challenges and interdependencies. While there are sufficient methodologies on how to design a project plan, the process for designing an organizational structure is less clear. So, how do we get to the organization's basic model?

10.1 Building the Basic Model—Where Does One Start?

In earlier graphical representations of the recursivity of organizations, we have displayed only the top (see the review of key concepts), and this reflects the traditional approach of "breaking-down tasks." However, this approach assumes that one already knows the intricacies of the operational tasks beforehand. This can nonetheless turn out to be a fallacy. The challenge in reorganization projects is the fundamental lack of transparency in organizations and the increasing level of abstraction the further one climbs up to the top of the organization. This causes one to overlook crucial details.

A Chief Operating Officer of a company regularly "helped out" in the company's many shops: he did this not only to verify the quality of the company's products and services (system 3*) but also to experience the challenges as closely as possible (Drucker, 1993, p. 681). Only this way, he was able to assess the operational needs and how the organizational structure can and should best support the operational process. On-site visits allowed him to sense more accurately the company's reality than any report and to make more informed decisions.

If we want to build an organization where the customer and the product indeed are at its center and where the basic systems 1 can develop into **vibrant ecosystems** (see volume 1), then we need to start from the customer and the ecosystem that the organization tries to create for and around the customer. And from there, we can then develop the overall structure that provides the necessary support and guidance to these ecosystems. To know how to build the right structure, one must know its foundations (see Sect. 8.2).

What is the right methodology to develop a meaningful structure? How do we find the right criteria for aggregating the systems 1 (see Fig. 10.2)? And more importantly, what is the foundation of the organization at all? Where should we start?
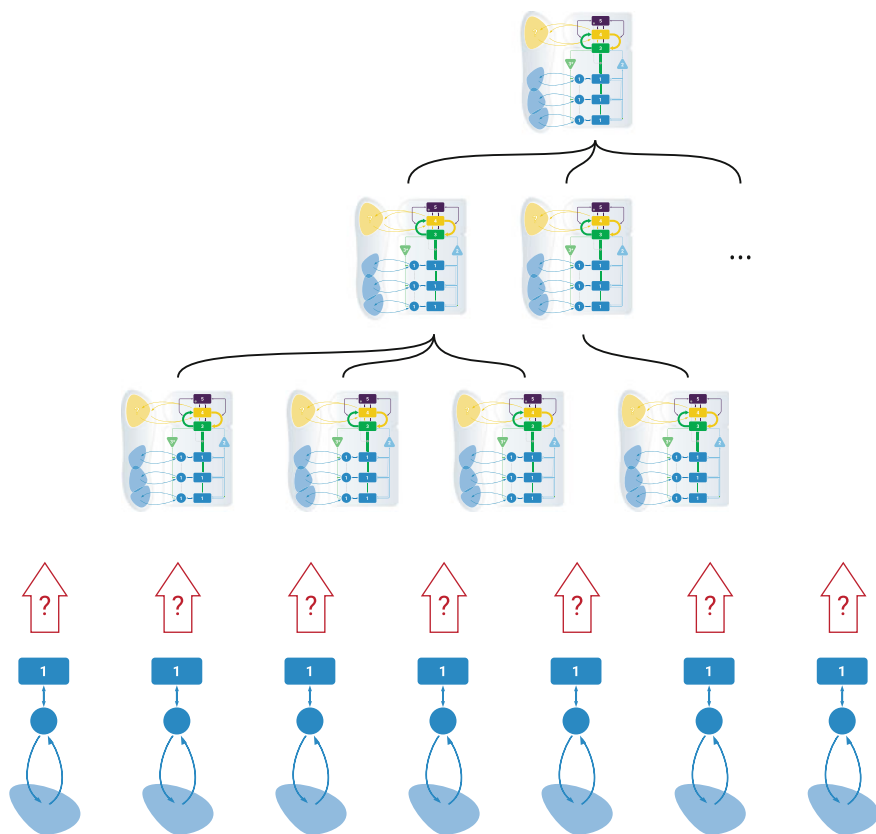
Fig. 10.2 The basic model needs to describe how the viable systems are aggregated from the bottom to the top level of the organization

To this end, we must accomplish two tasks: The first step toward the basic model consists of identifying what we call, **the "basic systems 1"** and gaining **sufficient insight into how they create value and are supposed to achieve an Ashby-conform equilibrium with the environment**. We need to understand what the basic systems 1 must accomplish and what constitutes their requisite *eigen-*variety. We will discuss this point briefly in Sect. 10.2 and in greater detail in Chap. 11.

As a second step, we must find the best logic of how to **recursively aggregate the systems 1 to ever greater viable systems** (see Sect. 10.3). As we have already said in volume 1, the primary purpose of the higher recursion levels and meta-systemic functions is both **to guide and control** as well as **relieve and support the lower levels** and, in particular, the basic systems 1. The structure must **allow obtaining overview and control** on the one hand, but on the other hand, it must also **support these basic systems 1 or ecosystems** and **not stand on them**.

The guiding principle for choosing the aggregation logic is that this logic must best facilitate the support and control of the lower-level viable systems as well as the generation of synergies. To this end, we must **evaluate the various aggregation options** regarding their ability to process the variety in the most efficient and effective way. Once we have understood what constitutes the organization's best way to **process the variety,** and thus its **basic model**, we can then develop the well-known organizational (chart) structure (see Chap. 14) and define jobs, i.e., assign the tasks to people.

10.2 Identifying the Basic Systems 1 and Understanding Their Value Creation

The "frontline is the baseline (of the P&L)" is a well-known adage. Only through the product, can an organization become visible to the environment and create value for it: in the form of a concrete car (for a car manufacturer), flight (for an airline), insurance contract (for an insurance company), building (for a construction company), strategy (for a consulting firm), and seminar (for a management training institute). And only in its products, and more precisely, in fulfilling the purpose for its environment, does the organization become "real." The organization lives from what it produces and sells. Only through its customer orders, can an organization exist. As the German entrepreneur Würth put it pointedly: "We are the employees of our customers" (Würth-Gruppe, 2019). The organization's foundation is its customer orders.[2]

Viewed from this angle, we can now better understand the basis of the organization that we showed in Fig. 10.2. The "bottom" of the organization does not consist of fixed units as we might assume. If the processing of customer orders is the livelihood and core of an organization, then the organizational structure is built on this continuous flow of customer orders (see Fig. 10.3 and Sect. 10.6 for an in-depth discussion). The processes that are necessary to attract and process an order (i.e., produce and deliver a product or service) then form the organization's foundation and core. They are in our terminology its **basic systems 1**.[3] They are the basis for its livelihood and the elementary ecosystems from which the organization lives.

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[2]We choose here the private sector terminology to make the point as concrete as possible. For all other organizations, the term "customer order" needs to be adapted to the organization's specific purpose such as caring and healing patients (hospitals), teaching (schools or universities) or issuing specific documents (e.g., citizenship certificates), providing information or funding (civil service or agencies). Alternatively, we could also use the term "customer case" in these contexts.

[3]The recursion level, from which one starts building the basic model is to a certain degree also a matter of choice. In principle, other levels can also be used as a starting point. One could begin, for instance, at the top recursion level and then break it down into several levels (see, e.g., Hoverstadt 2008; Pérez Ríos 2012). Alternatively, one could start at a lower level than the customer order, namely, for instance, at the level of the individual (production) processes.

However, one faces certain disadvantages if one chooses a recursion level other than the customer order (customer case): starting at levels lower than the customer order (e.g., the level of individual production steps) risks fragmenting the organization and its purpose. The customer does not buy a part of a TV but the entire TV, and this is also what a TV manufacturer wants to produce. The individual assembly step does not yet constitute the purpose, product, and identity of the
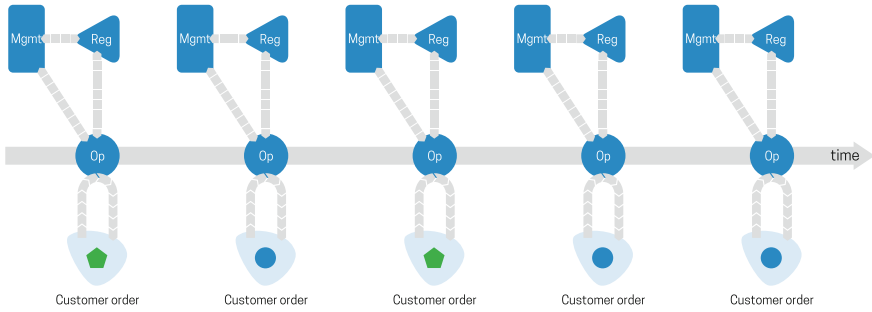
Fig. 10.3 An organization's foundations consist of processing the customer orders that it receives across time (here: for two products represented by green pentagons and blue balls)

A basic system 1 thus consists of all the operational primary functions and processes necessary to produce and sell a concrete product as well as all the necessary immediate control processes (in VSM language: the management and regulation processes). Borrowing from the business process language, a basic

organization. The organization, which is more than the sum of its elements, escapes our attention. Only through the production and sale of the TV does a TV-producing company express itself. Without the purpose as a reference point, one risks choosing structural options that do not place the purpose at the center of the organization.

Viewing individual workstations or production units as basic **systems 1** also **risks** in my view, overlooking differences in the products that are produced by them. The essential variation occurs at the level of the individual customer (order) and products delivered. An industrial bakery, for instance, produced different kinds of pastry for different customers on the same baking lines. Focusing just on the abstract production processes could thus have risked neglecting the variety that comes along with each customer.

However, starting at higher levels than the customer order/case also has its disadvantages: one risks overlooking the variety that needs to be processed (as we already pointed out earlier) and to choose pre-existing organizational units such as departments or plants as the building blocks. One always needs to keep in mind that the current organizational structures reflects earlier structural decisions on how to group existing processes, tasks, and activities. These need to be questioned beforehand. Even the "product" as such might already be an aggregation of many customer orders hiding important variations decisive for the organizational structure. If one wants to get a fresh perspective on the organization, one needs to decompose these "aggregations" into their actual processes.

Choosing the level of the individual customer order has the advantage, on the one hand, to view the organization's purpose creation in its entirety and systemic interconnectedness and on the other, to remain sufficiently close to the process level and watch the organization in its actual performance and processing of variety. The organization becomes then visible as the continuous processing of customer orders and cases. This renders pre-existing organizational structures fluid.

This does not mean that the other levels are not relevant for the analysis and design of organizational structures: if one wants to generate synergies across processes, e.g., the production process, then one needs to decompose the basic systems 1 further into their process components, e.g., the various steps in the production process (see Sect. 11.2). In other cases, such as mass markets with standard products, it might indeed be more practical to move up the recursion levels such as to the product level. Then, the "products" constitute the starting point for the design of the basic model.
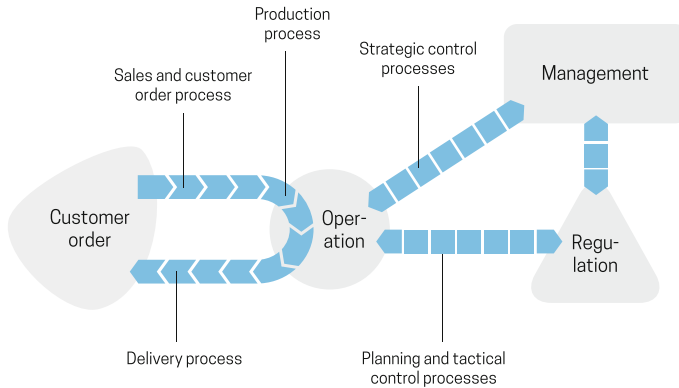
Fig. 10.4 The core operational processes needed to process a customer order (schematic representation)

system 1, as we defined it, is composed of the organization's operational process starting "from the customer to the customer" (see Fig. 10.4), i.e., from receiving to delivering a customer order.[4]

To identify the basic systems 1, it is important to draw their **boundaries** correctly. The VSM generally takes a **holistic process perspective,** and this means that one should not let oneself be guided by organizational chart-type divisions and boundaries (Beer, 1995, p. 10), and this poses one of the key challenges and confusion for many novices to the VSM: the departments or legal units in the organizational chart are, usually, not the systems 1. Typically, departments encompass only segments of a system 1 and draw artificial boundaries across the natural process flow in the systems 1. Sales alone cannot sell anything since it does not produce the product (see Beer, 1995, pp. 10f). The same applies to production and R&D. Only through the **interconnection of all these primary business processes** can the purpose of the organization be created and value delivered. Only if the corresponding departments or units interact together and are aligned with each other, will these systems 1 come to life (see also Chap. 1). Only together do all the primary processes that are necessary to create value for the environment form the systems 1.

After having clarified the boundaries of the systems 1, one needs to obtain an overview of how the systems 1 process variety and create value. This means one must understand more closely how the basic systems 1 work, their challenges, and the key success factors regarding their basic operational processes. Put more concretely: one needs to examine the following four core components that constitute the variety equilibrium between the environment and the operation (see Fig. 10.5):

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[4]If we focus here on the customer order, this should not be understood too narrowly and only limited to the purely transactional process of signing an order. In our understanding, the interactions with the customer (e.g., attracting, informing, convincing) that eventually lead to the order are also part of the order process. One might also use the term "customer case."

Fig. 10.5 Components of the variety equilibrium of a system 1
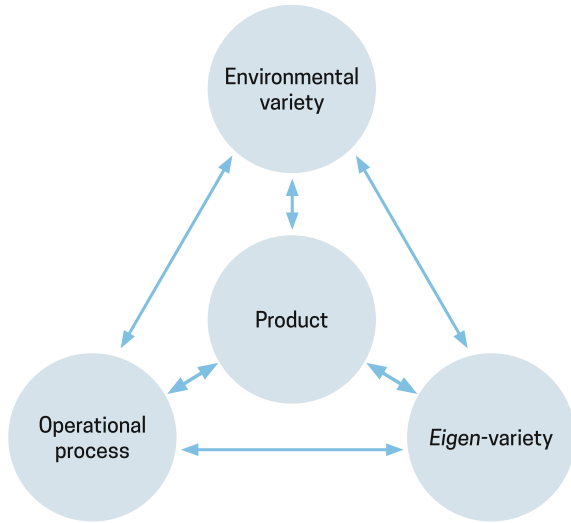
1. The **environment and its variety**, i.e., the **customers, their wishes, profiles, and behaviors**.
2. The **product**, i.e., the value generated by the systems 1 for their environments.
3. The **main primary operational processes**, i.e., the specific sequence of tasks and actions executed by system 1.
4. The **eigen-variety of the systems 1**, i.e., the competencies and resources required to produce the product and interact successfully with the environment.

For each of these four components, one tries to distill the key factors (3–5 points) that determine the success and viability of each system 1. These factors are important to identify the right aggregation logic for the higher recursion levels (see Sect. 10.3).

> **Sounds straightforward, but many traps may lie around the correct identification of the systems 1. Are you interested in understanding the specifics? If so, then continue here, otherwise, go to Sect. 10.3.**

Identifying the basic systems 1 is sometimes a bit complicated, and one typically encounters the following questions:

1. **What does "environmental variety" encompass, and who are the "relevant" customers that one needs to consider?**

The **environmental variety** can entail many aspects related to the specific circumstances under which customers are encountered (e.g., countries, culture, infrastructures, natural challenges). As mentioned above, the art in this step consists of distilling the main points and patterns that emerge in the majority of interactions with the environment and that are relevant to the design of the organizational structure and its processes.

Regarding the **customers**, one will try to understand their various preferences, behaviors, and wishes to which the organization needs to respond. If we are referring to the "customers," then one should not apply too narrow a perspective. Companies always intend to reach a wider circle than actual customers. Thus, we also need to consider those customers whom the company would like to win but has failed to reach so far (i.e., the non-customers). Moreover, one also must consider the customers who have decided against the product, (i.e., the "not-yet-convinced customers") (for further details, see Sect. 11.1.2).

2. **What are the organization's products?**

This question sounds trivial at first but less so if we define a "product" more generally as a process or an item that adds value to the target environment. Viewed from this angle, the output of a basic system 1 and by which it can be identified, might then not only be the concrete product as such but can encompass all the outputs along the life cycle of a product. "Products" in this wider sense can then also be, for example:

- A **planning or feasibility study** that generates a purpose for a customer by clarifying his questions and plans.
- The **act of prolonging** (e.g., insurance contract), **repairing a product, or providing spare parts** also creates a benefit to the environment and thus constitutes "products" and systems 1.
- The **disposal of a product** can also be a "product" and thus form a system 1.

All these different stages in a product's life-cycle can be a "product" through which an organization creates value and a concrete purpose for the environment.

Cases of products that entail several process steps or address different needs simultaneously represent a delicate issue for the design process. A telecom company can sell broadband access and charge an additional fee for the equipment such as a recorder or sell both as a bundle and one product.

Similarly, if a patient is hospitalized, the surgery and the patient care after the surgery can be viewed either as different "products" of a hospital or as elements of one process, namely, restoring health.

In the first case, the result is two different systems 1; in the latter case, one obtains only one basic system 1. Both are, in principle, possible, and the decision regarding which option is best largely depends firstly, on which option creates the best value, secondly, on the operational interconnectedness of the processes, and thirdly, on the intended objectives and strategy. If the strategy distinguishes between two different products for strategic reasons, then one will mirror this differentiation in the organizational structure. In the second case, one will keep the various elements organizationally together as elements of one system 1.

3. **What is the *eigen*-variety to be considered?**

As part of the analysis, we also need to understand the **key aspects of the *eigen*-varieties** needed in a system 1. Guiding questions in the analysis are, for instance, what kind of equipment, technology, resources, and competencies are required and which quantities. Here, one should not only look at the individual components of a system 1's *eigen*-variety but also at their interplay. Speed, flexibility, and adaptability (see dynamic capabilities approach; insert quote here) often rather depend on the configuration of the network of elements and less on the individual element only. Part of this inventory-taking is also the analysis of the management's required *eigen*-variety.

4. **How detailed must the analysis be and what should one do with a too large number of systems 1?**

A delicate question in the organizational modeling process is, of course, which and how much variety one should consider since the variety that the company is facing and processing is in principle unlimited. Depending on the type of the organization's activity, the number of possible ecosystems or systems 1 can range from a few (e.g., niche players with only a few customers and one or two products) to a myriad of basic systems 1, especially in end-customer markets. World Disney Parks and Resorts receives more than 157 million visitors in 2018 according to TEA/AECOM (Robinett et al., 2019). Here, a **summative approach** is needed. One will thus group the customers into typologies (i.e., in systems 1 that have similar characteristics regarding the environment, customer/s (preferences), products, processes, and necessary *eigen*-variety).

To limit the scope, one consequently focuses only on the key factors that determine the **functioning of each system 1** and the **kind of support and guidance** that the systems 1 need from higher recursion levels. Thus, our

concern are only the factors that are critical for the design of the organizational structure. To rephrase this task in more colloquial language: the aim is to understand "how it works" and what it takes to be successful at the operational level in its essentials but not in all details.

10.3   How Should Recursion Levels Be Formed and According to Which Logic?

Once we have understood sufficiently well how the systems 1, i.e., the basic ecosystems of an organization function and are formed, we can then start grouping them to larger structures over multiple recursion levels. This always entails two spheres: the environment and the internal organization. Consequently, if we want to form recursion levels, not only are the operational processes of the systems 1 grouped but also their respective environments (see Fig. 10.6).

Ideally, the aggregation logic for both spheres should coincide, though they often might not: whereas the environment follows a certain customer typology, the organization best functions internally with a geographic aggregation logic. It is thus important to consider both spheres, so that one can notice possible differences as to what constitutes the best aggregation logic. This then allows a more accurate estimation of the adverse effects of not reflecting the environmental interdependencies and structures appropriately.

However, before we start with the aggregation process, we need to understand better or even identify the **equilibrium points between the organization and environment** (see Fig. 10.7), i.e., the point(s) where the organization sees itself in equilibrium with the environment. How the equilibrium point(s) is defined determines the scope of the relevant environment, the necessary *eigen*-variety and, ultimately, the entire organizational structure. Then, we can proceed to the question of what constitutes the best aggregation logic for the environment (Sect. 10.3.2) and for the organization (10.3.3).

Fig. 10.6 Each environment is part of a wider environment
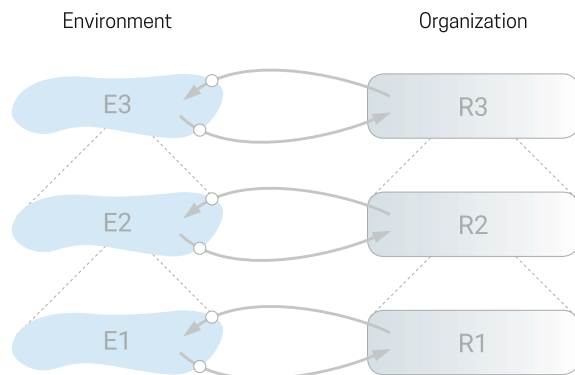
Fig. 10.7 The chosen
equilibrium point decides
what environmental variety
is relevant and which
eigen-variety is needed
(see also Fig. 8.1)
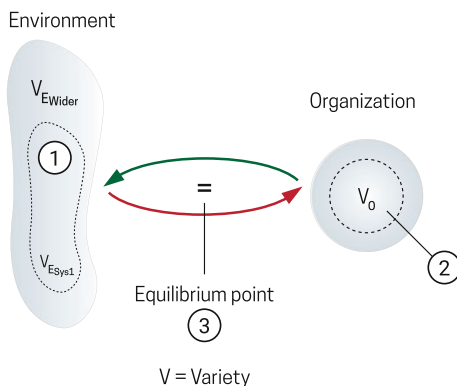
10.3.1   The Desired Point of Equilibrium—"What Do We Want to Achieve?"

To investigate at which point the organization wants to be at equilibrium with the environment appears to be unusual at first since one typically assumes that there exists only one equilibrium point. However, this is incorrect—organizations can choose from a wide range of equilibrium points similar to the cohesion corridor that we have already discussed in volume 2.

What do we mean by "equilibrium point" more concretely? Each organization needs to develop a notion where it sees itself in equilibrium with the environment. On a formal level, this occurs through a strategic planning process, but the equilibrium points can also emerge from the ethos that develops informally across the entire organization and the organization's history. Norms and values regulate not only behavior but also express aspirations and expectations of what one wants to achieve.

Organizations typically use so-called **key performance indicators** (KPI) to specify the dimensions in which they want to achieve an equilibrium. Typical examples for such indicators are customer satisfaction, service level, delivery times, response times, or customer reach and loyalty. However, the KPIs might also include more strategic ones such as the innovation rate, brand awareness, or profitability. For each KPI, an organization defines a **target value** at which it sees itself at equilibrium with the environment. The range of feasible target values is partly imposed on the organization, for example, by the performance level expected in a certain market ("industry standard") or by its competitors; but partly, it is also the result of the strategy chosen by the organization and its self-understanding.

The target value can hence vary between organizations: Some companies are satisfied with 4 stars in the average customer rating; others are unhappy when they get only 4 and not 5 stars. For some companies, a response time to customer calls within some minutes is the target, whereas for others, one day or even more suffice. The equilibrium point might also differ qualitatively: with certain customers one does not want to conduct business at all (e.g., those that are corrupt), whereas other

customers are sought after because they are prestigious and difficult to win. The choice then is often not only a question that can be solved analytically as part of the strategy but also becomes contingent on the organization's self-defined purpose, identity, and values.

Depending on where the organization sets its target value for specific KPIs, the **relevant environmental variety that needs to be processed and the *eigen*-variety that is required changes**. More ambitious equilibrium points will most likely require more *eigen*-variety (e.g., more staff and infrastructure or better skills) and perhaps an even more selective approach regarding the target environment. If the equilibrium point is less ambitious, one might need fewer and less skilled resources and can target more heterogeneous environments. Those who are happy with 80% customer satisfaction can perhaps address a larger and more heterogeneous market or can invest less in their employees and infrastructure than those who aim for a 90+% customer satisfaction since the latter most likely requires a higher degree of specialization and attention.

Not only does this have implications for the design of the individual systems 1 but also, and more importantly, on the configuration of recursion levels. The chosen equilibrium points define the limits regarding which and how many systems 1 should and can be grouped ("span of control") and what kind of *eigen*-variety the upper recursion levels need to support those at the front of the environment.

Concretely this means that one makes a list of the key (operational) KPIs and the to-be achieved target values against which the various organizational models will then be evaluated.

10.3.2   "From Customers to Markets and Industries"— Finding the Best Aggregation Logic Regarding the Environment

The environment of one basic system 1 is embedded in a wider environment: the single customer is part of a larger customer group with similar tastes and preferences, and they again are part of a market. The question is which systems 1 share the same wider environment and consequently, how should one draw the boundaries of the wider environment around the many systems 1 at the next higher recursion level (see Fig. 10.8)?

To answer this question, one needs to find out which system 1 environments belong together because they are either interrelated, similar or complementary to each other or share the same wider environment and future. In many cases, there are several structural logics and aggregation options feasible.

The most common aggregation dimensions are:

- **Geography**, such as countries or regions based on economic, legal, and cultural commonalities,
- The **product and its contextual use**, for example, certain product features such as size (small versus large appliances),

Fig. 10.8 What is the best common boundary around the environments of the systems 1?
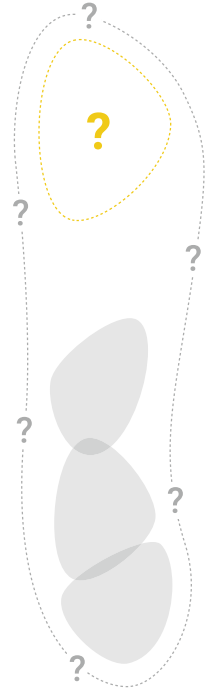
- The **customer types, their needs,** and **characteristics** (e.g., gender, age, preferences, level of education),
- The **product medium, distribution channels** (e.g., print and online newspapers), **or stages** in the **value chain** (e.g., retail and wholesale).

Thus, facing multiple options (see Fig. 10.9), the crucial question becomes: which one is the right one? The key criterion for the aggregation must be the **creation of eco-systems or communities with customers**. The guiding question is hence, which aggregation criterion creates the best coherent wider environment in which ecosystems can develop and flourish and which are compatible with the company's overall strategy and objectives?
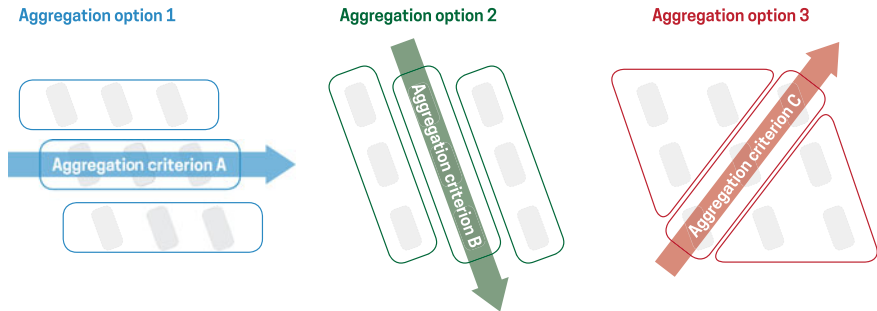
Fig. 10.9 The environments of the systems 1 can often be aggregated in different ways
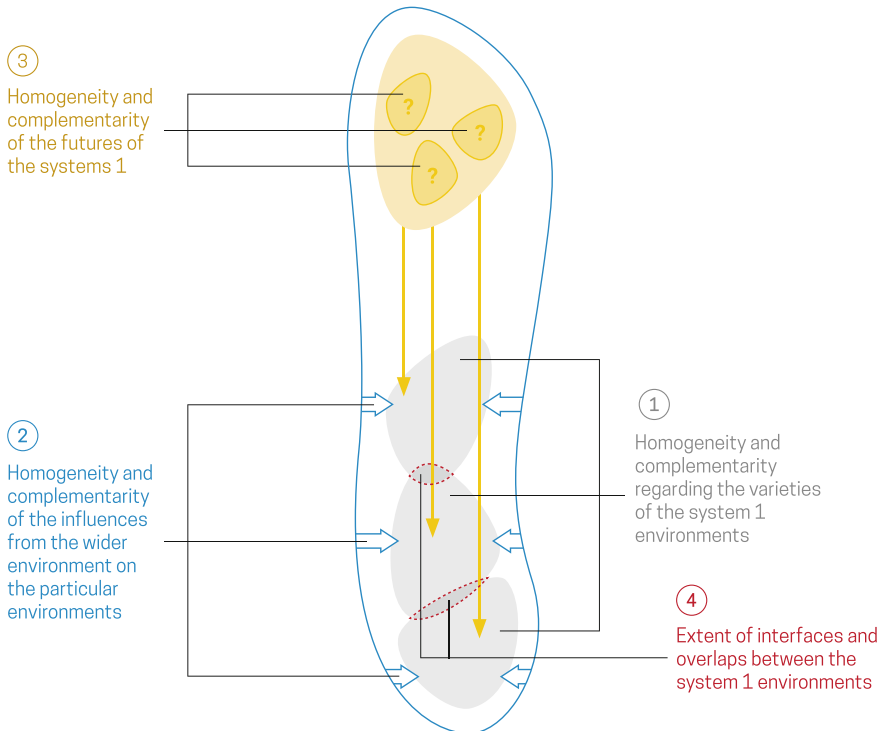
One should evaluate the various aggregation options (see above) according to the following four aspects (see Fig. 10.10); namely with which aggregation criterion does one achieve …

1. **… the most homogeneous or complementary grouping of individual system 1 environments?**
   The more similar customer needs are, the more easily one can control these individual environments from a higher recursion level. However, homogeneity does not need to be the only goal: one can also combine different individual environments if they are (strategically) complementary. Complementarity of customer needs can be an important source of innovation and added value. Users of trains, cars, bikes, and scooters are different markets, but if it can combine them by facilitating the change from one means of transport to the other, an organization can create new products with a distinct competitive advantage (e.g., managing the entire "mobility chain" of individuals).

2. **… the most homogeneous or complementary wider environment?**
   Each system 1 environment is embedded in a wider environment, but these wider environments (i.e., macro trends) can, in turn, diverge. The basic systems 1 thus might belong to different wider environments. To simplify the metasystemic control, one will consequently also seek to combine the individual environments whose wider environments are similar or complementary to each other.

③ Homogeneity and complementarity of the futures of the systems 1

② Homogeneity and complementarity of the influences from the wider environment on the particular environments

① Homogeneity and complementarity regarding the varieties of the system 1 environments

④ Extent of interfaces and overlaps between the system 1 environments

Fig. 10.10 Factors relevant for defining the wider environment and thus next-higher recursion level

3. **… the most homogeneous and most promising future regarding the organization's purpose and strategy?**
   The more homogeneous or symbiotic the partial futures, the easier it is to develop a common strategy. A new product can then be developed jointly for different customer groups.

4. **… the fewest interfaces and overlaps between the individual environments?**
   Interfaces between the individual environments increase the internal organizational effort to process variety (e.g., avoiding gray markets and competition between two products). Reducing the interfaces or avoiding overlapping environments also has **operational effects** within the organization: they increase the need and effort to coordinate and adjust (system 2).
   If two environments are too strongly overlapping or interfering with each other, then one must analyze whether one is not better off by combining both. This can be the case, for example, if customer needs or products, which in reality belong together, are handled separately. If a majority of customers tend to buy product A and product B together but are treated by two different organizational units, then this fragments the customer. The customers will then experience, for instance, insufficiently defined interfaces between both products, incompatible product developments, or misaligned technological standards. This will leave the impression that the company is not well coordinated and organized internally.

When grouping the basic systems 1, we must be aware of one major danger; namely, to proceed only from the concrete product or, at least, from what one believes is the product and value for the customer. A specific product can be bought for different reasons. It can serve different ecosystems and purposes that must be addressed differently. A tablet can be used for different private purposes as well as in multiple professional contexts (e.g., hospital, construction zone). Grouping these ecosystems can result in significant design errors.

10.3.3   "Make Your Life Easy!"—Finding the Best Structure for the Internal Processing of Variety

To adjust to the environment and its interrelations is just one aspect; equally important are the **internal organization** and its **abilities or limitations** regarding the processing of variety. In principle, one should select from all the available options those that "make one's life easy". To reformulate it in the language of the VSM: one should choose the option, by which the viable systems can achieve the desired equilibrium point easily and their metasystems can control and guide lower levels as well as generate additional value with the least amount of requisite vertical *eigen*-variety (see volume 2).

Not every conceivable option for aggregating the different individual environments into larger environments is equally feasible when it comes to the internal

processing of complexity. What criteria should be used to group and aggregate the systems 1 when viewed from how the variety is processed internally? To evaluate the different options from this angle, one can use the structure and logic of the VSM as guidance. This means that we need to assess which of the available options …

1. … provides the most effective and efficient way for **systems 1** to process the complexity of the environment. Formulated in military language: one looks for the battlefield most favorable to the strengths of one's troops or, in VSM language, where the *eigen*-variety, the existing variety attenuators, and amplifiers have the best effect.
2. … requires the least amount of coordination (**system 2**) within the organization.
3. … generates the greatest amount of synergies (see Chap. 13) and allows designing the most effective and efficient control mechanisms (**system 3**).
4. … provides the simplest and most effective way of auditing the systems 1 (**system 3***).
5. … enables the organization to best develop and implement strategies and promote innovation regarding the current business (**system 4**).
6. … provides the basis for the strongest alignment and cohesion concerning fundamental policies, standards, and values (**system 5**).

The purpose of these criteria is to find the aggregation logic that provides the most homogeneous or complimentary grouping of systems 1 regarding their internal capabilities and metasystemic processes. We remember from volume 2 that the more homogeneous the varieties between the systems 1 are, the smaller the metasystemic effort required to control the systems 1 will be (vertical *eigen*-variety); consequently, less coordination is required, and more synergies can be generated. Conversely, the more diverse the systems 1 are, however, the more intensely the metasystem must work to create value (see volume 2).

To illustrate this aggregation process, we will use a simple model. Let us assume a company that manufactures jewelry pendants for necklaces. For the sake of simplicity, we reduce the variety of the pendants to two parameters: colors and geometric shapes. Each of these parameters requires specific manufacturing skills and addresses different markets.

As shown in Fig. 10.11, we assume nine different basic systems 1, which differ only in color, but at this stage not in form (they all are rectangles). How should these be grouped to higher recursion levels?

According to which criteria should the next recursion level be aggregated?
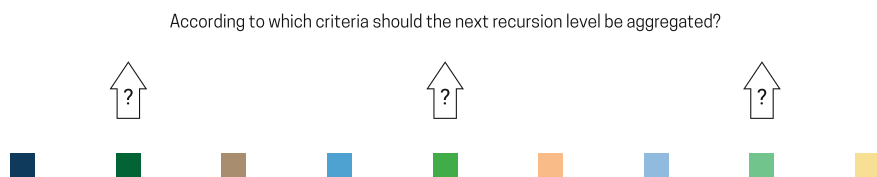
Fig. 10.11 A crucial question is according to which criteria the systems 1 should be grouped if they differ in their varieties (represented by colors)
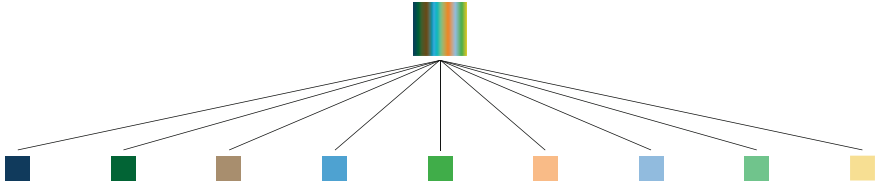
Fig. 10.12 Metasystemic control of all systems 1 from one single recursion level (option 1)

A possible option (option 1) would be to unite them all at the next higher level in one unit (see Fig. 10.12). The problem that arises from this option is, of course, overload. If the specific knowledge for the production and marketing of the colors is too different, then a bottleneck situation might arise, and the different color markets end up not receiving the necessary attention from the higher levels. This is a problem that not only many conglomerates but also successful start-ups face when growth suddenly picks up sharply.

Another way could be to group the systems 1 in two steps, i.e., across two levels. For this approach, one has several options: In option 2, the two upper levels specialize just in the geometrical form. In this option, the management of the individual colors is left to the lowest levels (see Fig. 10.13), whereas the higher level focuses on the control of the geometrical form and its optimization.

This option allows specialization, but at the same time, it creates several disadvantages. First of all, one notices that the "specialization" at the top and middle level are identical; namely, the management of the geometric shape. Consequently, the added value of one of the two levels is unclear since they deal with the same kind of variety. Hence, one could presumably delete one level without it being noticed.
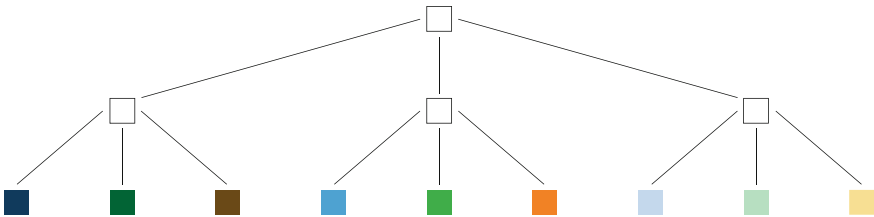
**Fig. 10.13** Two recursion levels control just the geometrical shape (option 2)
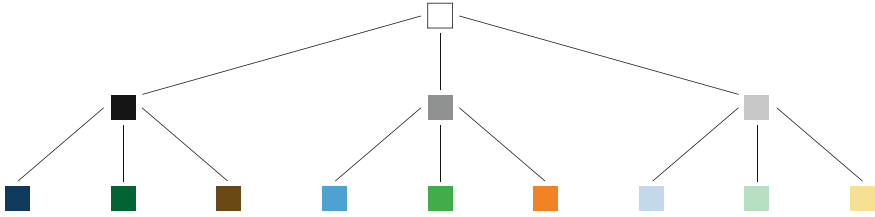
Fig. 10.14 Grouping of the systems 1 according to the different degrees of brightness (option 3)

Secondly, the difference between the lower and middle recursion level is very large in this option. The middle level focuses only on the geometrical shape; however, the important and ubiquitous color aspect is absent. If it comes to color-related issues and problems, the middle level cannot support the lowest level in any meaningful way and even worse, the middle level might even be ignorant of the differences between the systems 1 at the lowest level and their complexity. The middle level only understands "geometrical shapes," whereas the key issue is "colors." It depends on the strategy of the company as to whether this is sufficient or not, but if colors are an important differentiator, the color competency should also be developed higher up.

One can also proceed in a different way (Fig. 10.14); namely, to group the lowest systems 1 according to the different degrees of brightness at the middle level. The top level then specializes in the geometric shape (option 3).

A fourth option consists of grouping the systems 1 according to color families and subsequently to the geometric form (option 4—see Fig. 10.15).
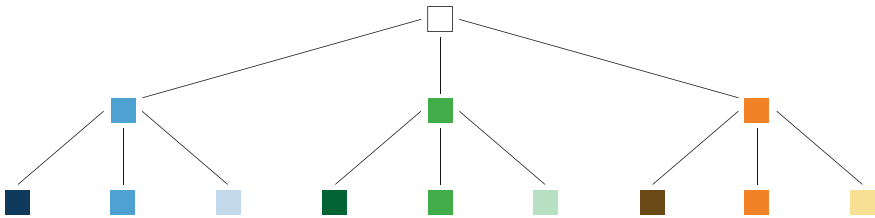
Fig. 10.15 Grouping of the systems 1 first by color families and then by their geometrical shape (option 4)

What are the advantages and disadvantages of options 2 to 4? Options 3 and 4 are significantly better than option 2 because they use recursivity as an instrument more effectively. In both options, each higher level makes its specific contribution and interacts in a more differentiated way concerning the (*eigen-*)varieties of the lower levels. If, however, one had to choose between these two last options, option 4 has the advantage of being better adapted to the environment, since apparently the environments and varieties of the systems 1 differ primarily regarding the color (e.g., color taste, fashions). So, if color is the essential key success factor, then the higher levels should be formed by using the "color competence" as an aggregation criterion. If brightness is used as the criterion of aggregation, the organization does not respond as well to the needs of the environment as it does through the "color family" criterion. Someone who concentrates on brightness might not be sufficiently well positioned to understand the specific characteristics of the different color markets.

Grouping the systems 1 and segmenting the recursion levels according to colors also has a better effect on the inside of the organization: the lower level employees find managers at the middle level who are familiar with their respective color spectrum. The middle level, therefore, corresponds better to the lower level: it can process more precisely the residual variety of the lower level and respond to its challenges. It can also create more synergies within a color family than across all colors: aspects related to the color "green", for instance, can be bundled more easily in option 4 than in the other ones.

This example with colors and geometric shapes is, of course, simplistic, but it brings to light the essential considerations in the design of the recursion and management levels, jobs, and organizational units. Many mistakes in the design process occur because one does not carefully think through what kind of purpose one recursion level must fulfill for the others, and what kind of variety it needs to process.

10.3.4   Evaluation Procedure

We now come to the last step: along this process, various aggregation options will have emerged. Sometimes, there is only one option feasible, but usually one will have two or three feasible options from which one could choose. In this case, the different options need to be evaluated regarding the various criteria by using an evaluation sheet as, for example, shown in Table 10.1. In this example, the geographical division is the worst: it does not provide any benefits neither to customers, nor to the environment, nor to the internal functioning of the organization. Deciding between the aggregation according to age-related customer groups or product technologies is more difficult: the first option is particularly convincing because it is

Table 10.1 Example of a scheme for evaluating various segmentation options based on the VSM logic

	Available segmentation criteria		
	Age specific customer groups	Geography	Product technologies
I. Purpose and identity	●	◔	◐
II. Strategy	●	◔	◕
III. Target equilibrium points	◕	◔	◐
KPI 1	●	◔	●
KPI 2	◐	◔	◔
KPI 3	◕	◔	○
IV. Key success factors for the systems 1	◕	◔	◐
Success factor 1	●	◐	◔
Success factor 2	◐	◔	◐
Success factor 3	◕	◔	◐
V. Grouping of partial environments: homogeneity, benefits and operational interfaces	◕	◔	◐
V.1 Homogenity and beneficial complementarity of partial environments regarding:	●	◔	◔
Customer needs and products	●	◐	◔
Influences from the wider environment	◕	◔	◔
Changes in the future	●	◔	◕
V.2 Amount of operational interfaces and overlaps between the partial environments	◕	◔	◐
VI. Internal processing of variety	◐	◔	●
Coordination between systems 1	◐	◔	●
Synergies between systems 1	◐	◔	●
Simplicity to conduct audits	◐	◔	●
Potential for joint innovations and strategies for all the systems 1	◐	◔	◕
Level of coherence regarding norms and values of all systems 1	◐	◐	●

closer to the environment, but the third option ("product technologies") offers more advantages regarding the organization's internal processing of variety.

The critical question then becomes the following: if no aggregation option has a clear advantage over the others, what should one do? In these cases, one can use the following heuristics:

1. It is preferable to use the structural option that **best suits the environmental structures** because the environment (i.e., the customer) forms the livelihood of an organization ("structure follows strategy" or stated even more pointedly "the structure must follow the environment"). The more the environmental and organizational boundaries that the organization has defined reflect the structures in the environment, the more likely the customer is to react positively to the organization and will engage more intensely with it, and the more easily will it be for ecosystems to form. The more inadequately the customers are segmented by the company, the more likely the customer will not remain—or even not join—the ecosystem that the company wants to create. The organizational structure should, therefore, avoid fragmenting the environment (i.e., the customers and markets) in unnatural ways.

2. In case of doubt, the **capacity and freedom of the systems 1 to adapt** is to be preferred to internal synergies and coordination/control efforts. This allows the company to specialize better to the needs of the environment and form ecosystems. A company ultimately lives from customers who are buying the products and not from achieving savings within the organization. One can save oneself to death.

   This heuristic also follows from what we said in volume 1 that the systems 1 are the core and foundation of the organization, where its purpose becomes implemented.

3. One should also give more weight to the option that **favors the overall environment and future** (System 4) **over the partial environments** of the systems 1. This results from the consideration that the wider and the future environment will eventually determine the partial environments. The partial environments must not prevent the adaptation of the entire company.

Unfortunately, there exists no exact mathematical formula for these kinds of decisions. The causal relationships can sometimes be too difficult to evaluate in detail, because of complex feedback effects, and nor can the various evaluation criteria be linked together by clear-cut mathematical formulas. In such ambiguous situations, one might need to test the various options first in pilot tests.

This **bottom-up approach** has the advantage that it helps to correct a **top-down segmentation** of the environment as a result, for instance, of strategy processes (see Sect. 8.2). It is not so uncommon that organizations draw market boundaries during the course of their strategy project only to discover later that they should be drawn differently if viewed from the operational level. A bottom-up approach can help to correct this. If the bottom-up grouping of systems 1 results in the same market boundaries as the top-down approach within the framework of the strategy, then one can be relatively sure to be on the right track.

This assessment must be made for each organization individually. It cannot be copied from one organization to another, such as in benchmarking processes. The reason is that each organization is differently endowed regarding resources, infrastructure, and competencies. For two banks, the question arose whether they should be structured better by regions or by business units. Should the next higher

level control the basic business through regions or product areas? Which aggregation criterion makes the bank more effective at the customer base?

For one bank, regional knowledge and integration into the local networks of a region was the most important lever in its strategy: being "on-site" and having personal knowledge of the customers were the key assets of its way of doing business. If this is the case, then this means that one must, above all, structure the organization geographically, e.g., in regions so as to favor closeness. Only in this way, can the organization play out its local competencies and use them to differentiate itself from the competition. For another bank, this was precisely the other way around: it assumed that it could achieve strategic advantage through standardized products, thereby minimizing costs and maximizing product innovation. Here, a business unit organization will be most probably the right one but certainly not a regional structure.

The new organizational model must, therefore, take into account the requirements of the environmental needs, strategic objectives, as well as the available *eigen*-variety and required internal synergies. This means that if one cannot see one's strategy embodied in one's organizational structure, one should not be surprised if the implementation of the strategy does not get on its feet.

10.4   Building the Basic Model

This process, in which the systems 1 and their environments are aggregated to higher recursion levels, is carried out from the lowest (customer orders) to the highest level of the company. In the end, the structure of recursion levels and corresponding environments, i.e., the "basic model" will emerge. We will briefly illustrate this process.

The basis and starting point of the organization are the customers and their orders, which are processed along the **time dimension**. Figure 10.16 shows this processing of customer orders with three different products represented by different colors and geometrical shapes (blue, red, green, and ball and pentagon):
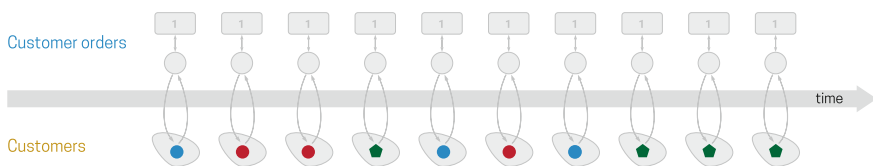
Fig. 10.16 Basis and starting point for the basic model are the actual and potential customer orders
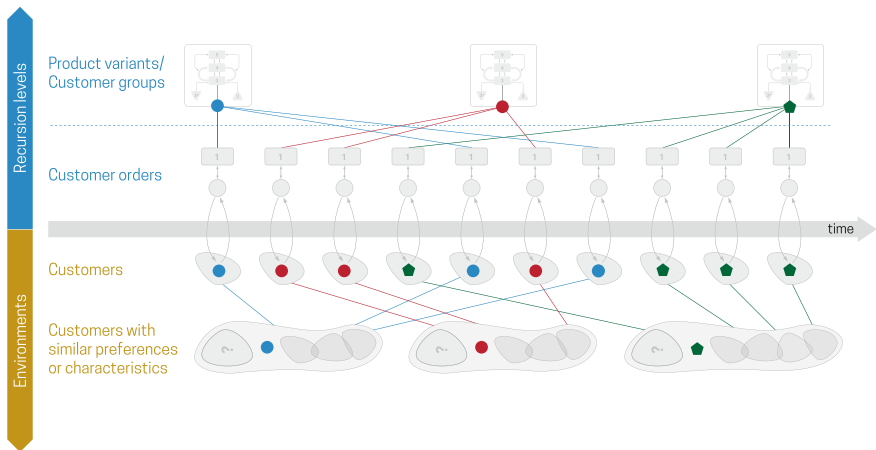
Fig. 10.17 Customers with similar preferences or characteristics become grouped to customer groups

These customer orders are then grouped, for example, into "customer groups" or "product variants" at the next higher recursion level (here: according to the color). This internal grouping corresponds to a group of customers with similar preferences in the environment (see Fig. 10.17).

These customer groups or product variants are then further grouped, for example, according to general product models and customer wishes (in our example, the geometric form), which are managed by product managers. These product managers become then responsible for the general development and strategy of these products and ensure the compatibility of the product variants.

This process of aggregating systems 1 continues until, as shown in Fig. 10.18, one arrives at the most general customer requirements, which can no longer be reduced to one another and between which no or hardly any interaction takes place. In day-to-day language, these aggregations are called "markets" or "industries" (e.g., financial industry, chemical industry). In Fig. 10.18, we show just a simple case in which all levels follow the same aggregation logic. The vertical aggregation logic can, of course, vary depending on the nature of the basic systems 1 and their environments. Some business divisions might have more levels than others, or may choose different criteria to aggregate the levels.

When developing this basic model, it is important to ensure that …

1. … the **aggregation logic of the recursion levels and the environmental structures correspond to each other** as much as possible. To repeat what we said earlier: the better the organizational logic mirrors the structures in the environment, the more viable, adaptable and thus, agile, can an organization become, and the more likely ecosystems and communities can develop. The further the structure of recursion levels moves away from the natural
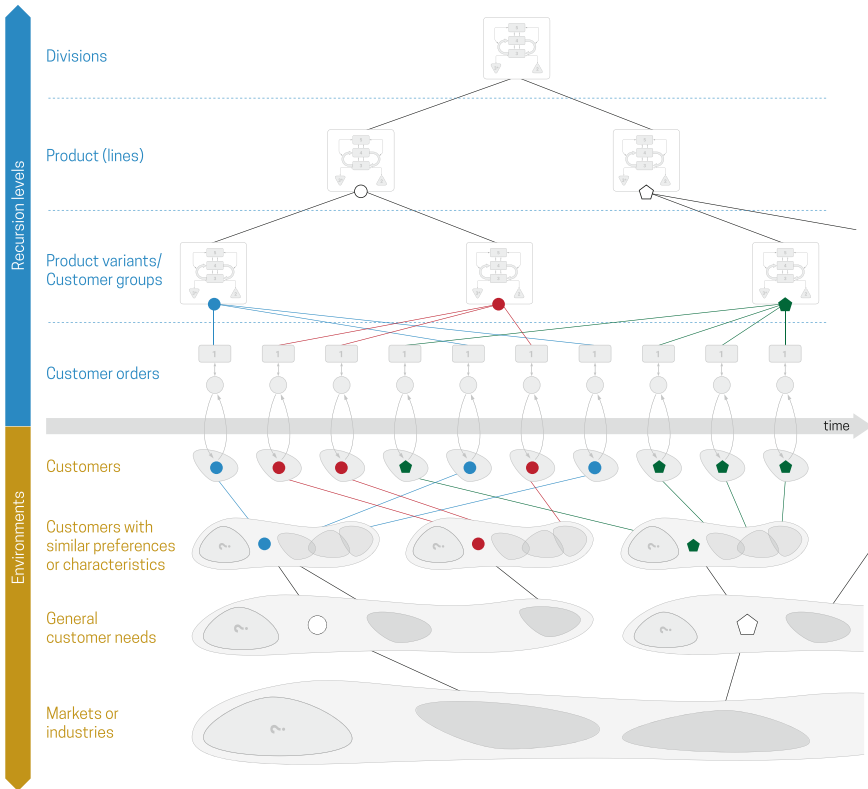
Fig. 10.18 Process of forming the recursion levels and aggregating the environments

segmentation of the environment, the more difficult it will be to respond to the challenges of the environment, and the more the impression will prevail that the organization organizes itself apart from what the environment needs.

2. … **every recursion level has its specific environment**. This means that each recursion level must be responsible for some environmental aspects, for which no other level is also responsible and for which it develops strategies and innovations.

   The imperative that every recursion level must be in a constant exchange with its own segment of the environment and should form an ecosystem is essential for the health of the organization (see also volume 1). As such, every metasystem must also have channels to the environment to function well. If this does not happen, the organization might fall victim to the "ivory-tower-syndrome": the metasystem becomes completely detached from the environment. In a viable organization, no recursion level should be created without its environment (see volume 2).

How then do recursion levels and the known hierarchy levels in the organizational chart interrelate to each other? And, why do we need organizational structures at all? Can we not live without them?
If you are interested in these questions, then continue reading here, otherwise, go to the end of this chapter.

10.5   On Recursion and Hierarchical Levels

For many readers, the question will arise as for how one can relate the concept of "recursion levels" to the classical hierarchical levels in the organizational chart and how hierarchical levels can be understood within the VSM logic.

Before going too much into the specifics, we first need to recall the difference between both types of levels: recursion levels have their own distinct area of responsibility in the environment related to the organization's purpose (e.g., customers, customer groups, markets) and exercise all systemic functions. This is not always the case with hierarchical levels as already discussed in volume 2; for instance, if they exercise only a purely coordinative function. Quite often, they are only **subdivisions of one recursion level**.

Let us take the example of an operational holding company, which consists of three levels, namely the level of the management board, the department heads, and finally the level of the expert units within these departments. Although separated into three levels, they might belong to the same recursion level, if *de facto* they share the same metasystemic perspective, i.e., if they look at the company as a whole.

Subdividing a recursion level into several hierarchical levels (see Fig. 10.19) becomes necessary if the number of tasks at a recursion level increases to such an extent that the recursion level itself begins to lose the overview. Consequently, to regain an overview and to coordinate the various tasks more closely, the recursion level is divided into several hierarchical levels.

This differentiation, however, does not alter the fact that all these levels are part of the same recursion level and share the same control perspective or, in the language of the VSM, are part of the same metasystem. We also see this in practice: The Board of Management rightly expects Group Controlling and its employees to assume the same overall company perspective as it does itself.

For the functioning of the organization, hierarchical levels are not always as important as they are believed to be. Employees in an organization differentiate typically only between the main levels such as "the headquarters" or company, the business units, and the operational basis. Whether someone
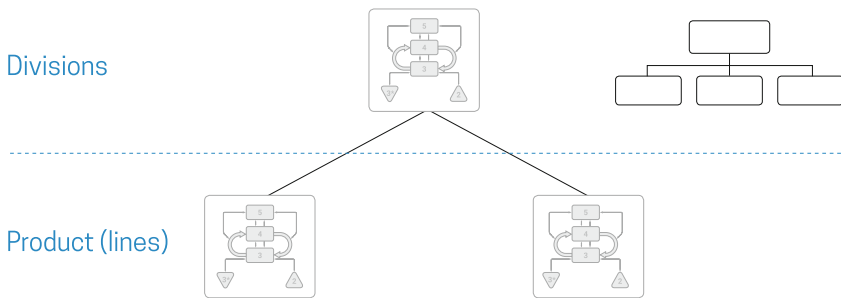
Fig. 10.19 The divisional recursion level divides its metasystemic control tasks into two different hierarchical levels

comes from the hierarchical level "L-1", "L-2" or "L-5" is mostly irrelevant —except for one's career and salary, of course. More relevant for the organization and solving problems is, first and foremost, which control perspective someone represents and not so much his or her precise title and rank.

Hierarchical levels function sometimes as auxiliary constructions to generate more overview and order within one recursion level, we just stated. However, hierarchical levels can also quickly become an obstacle. If, for example, an operational unit turns to the holding company or its HQ, it merely wants to get in touch with the holding perspective and obtain a decision quickly. It does not want to go through the multiple hierarchical levels of the holding company or the HQ. The reverse case applies, of course, too: the holding company would like to have only one point of contact with the operational areas and does not want to work through the different hierarchy levels of the operational areas. If one recursion level is split up into too many hierarchical levels, the organization slows down and loses the overview.

This means that the hierarchical levels within a recursion level should organize themselves in such a way that its jobholders and units can decide in the name of the recursion level to which they belong, without having to involve the other hierarchical levels of their recursion level. In the actual decision-making processes, the subdivision of one recursion level into several hierarchical levels must hence be reversed and should become unnoticeable. A recursion level must be reachable by the other recursion levels as directly and as simply as possible: it should organize itself as a one-stop shop for the other recursion levels at best.

10.6   The Benefits of Having Organizational (Chart) Structures

"Structures" and, especially, "hierarchical structures" today have a negative connotation: they are understood to inhibit agility, creativity, change, and engagement with the organization's overall purpose. However, structures also have positive effects: recursion levels are, for instance, important to provide an overview for the lower levels or to relieve the top level from control tasks, we said in volume 1. Organizational chart structures are also necessary to assign responsibilities to people and make specialization possible. Structures create order, transparency, and accountability (see Sect. 2.5).

However, this is not all: structures also allow one to build continuity across time, to transfer knowledge and resources, and, quite paradoxically, to increase an organization's flexibility. To detail this point a bit more, we return to what we said earlier in this chapter, namely that an organization's foundation is, in fact, in a state of constant flux and even unstable. In contrast to a house that is built on a rock, customer orders vary across content, time, and contexts. Viewed from a **temporal perspective** (see Fig. 10.20), organizations do not remain forever unchanged like the Egyptian pyramids, but they **continuously recreate themselves through the customer orders that are constantly incoming**.
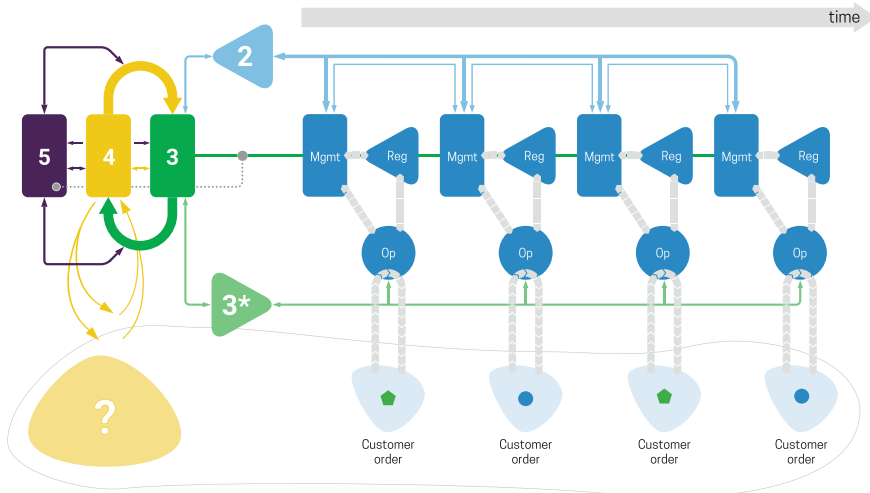
Fig. 10.20 To ensure the coherence and transfer of knowledge and resources, the individual customer orders must be coordinated and controlled from a metasystem

In fact, an organization's existence consists of a revolving and constantly re-updating process in which the resources of one completed customer interaction are (re-)used for and transferred to new ones.

Organizations thus need to ensure that this **transfer of knowledge and resources** over time and customer cases can take place in a coordinated way. This is the task and responsibility of the already-known metasystemic processes (see Fig. 10.20), which control and regulate the synergistic and coordinated use of resources and provide the necessary coherence and stability to the organization across time and customers. For this, they, however, need to be stable themselves.

This invariability of the metasystemic processes across time, contexts, and cases is what we then come to perceive as the "structure" of the organization. They form the basis for what becomes visible at higher aggregation levels as the organizational chart structure (which is, of course, only a reductionist image of the organization's full system of variety processing). Bad and sometimes traumatic experiences with hierarchies should, consequently, never let us forget the positive and initial function of a "structure"; namely, to provide the necessary invariance and stability for an organization so that variability, flexibility, and adaptation become possible (e.g., in the form of different customers and products) (see also Luhmann, 1987, p. 608).

If organizations only consisted of the processing of concrete customer orders without a metasystem, they would not be able to develop experience and to transmit knowledge. Every new customer (order) would represent a new challenge.[5] Organizations could not create synergies, plan and coordinate the various customer (orders) or even ensure the same level of quality across all customer orders.

Metasystemic functions and recursive structures are thus the processes and "devices" that allow organizations to become adaptive while remaining sufficiently consistent and reliable across time and all customer (orders). Structures allow organizations to change and yet to remain cohesive. They are the foundations to grow.

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[5]Organizations without structures lose in fact speed and adaptability since they must reorganize themselves every time from scratch. This is why especially high-growth companies without sufficient structures suffer from unnecessarily "reinventing the wheel" several times over.

Summary

- The individual customer order is the foundation of each organization. It constitutes a basic system 1 of the organization.
- The first step in designing the basic model is to capture and understand the variety that the basic systems 1 must process, the nature of their operational processes, and the necessary *eigen*-variety.
- Then one needs to identify and re-examine the equilibrium points at which the organization sees itself in balance with the environment.
- The next higher recursion levels are formed by selecting the best possible aggregation logic according to how well it allows them …

  1. … to match the varieties of the different environments,
  2. … to process variety and exercise the metasystemic tasks efficiently and effectively,
  3. … to achieve the desired equilibrium point with a minimum effort.

- In cases of doubt, preference should be given to the aggregation option that favors the interaction with the environment, the adaptation of the systems 1 to their environment, and the adaptation to the wider environment and future.
- Each recursion level must have an environment with which it can form an ecosystem and with which it can exchange adequately.
- The subdivision of one recursion into hierarchical levels must not lead to the fragmentation of the recursion level.

Questions for Reflection

1. How often do reorganization projects in your organization start from gaining an understanding of the concrete (customer) orders and their execution?
2. How much are your reorganization projects guided by the variety that needs to be processed, or is the organizational chart the main point of reference?
3. How well does your organization's structure reflect the structure of the environment and the organization's strategy?
4. How well is your current organizational structure designed toward optimizing the internal processing of variety?

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The "Interior Design" (Part 1): Finding and Defining the Way to Generate Benefits and Purpose

11

The **basic model** that we have defined so far specifies only the organization's main structure and aggregation logic. For many reorganization projects, clarity about the basic organizational model and knowing the implications on the organizational chart structure (see Chap. 14) might already fulfill the principal objective. Sometimes one, however, needs to go deeper and readjust or even redesign the specific functioning of the various processes and systemic functions. The basic model is only the skeleton, but how does the organization function concretely? How does it become animated and lively?

We can again compare this step with the planning of a project where we have defined the main project plan specifying the work packages, tasks, project members, and the project timeline but where it has not yet become clear how the project should function on a detailed level and how the people should work together. What kind of processes, infrastructures, resources, and competencies does the team need concretely, and how does it meet and coordinate itself? What should the values and rules governing the project work be? How do the project and its team "come alive"? Often these kinds of questions are ignored at the project setup and only in the course of a project do they re-emerge with, by then, little time left to implement changes.

To use our house building metaphor once again, we now need to design and arrange the interior of the house in such a way that it becomes habitable such as by seeing to the heating installation, where the cables and light outlets should be placed and the various amenities that it should offer.

We will develop the organization's "interior design" in three steps: in this chapter, we will first look more closely into the **operational business processes** of

Fig. 11.1 Step 3 in the design of organizations (part 1)
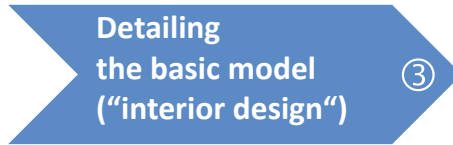
**Detailing
the basic model
("interior design")** ③

Defining the:

1. **Operational processes**
   that generate the purpose
   of the organization

2. **Metasystemic functions** at
   every recursion level

3. Necessary and affordable
   synergies

the systems 1 regarding the variety that they need to process (see Fig. 11.1). How precisely do they fulfill their purpose, and what do they need for it, to accomplish their task? This will be the focus of this chapter.[1]

Secondly, one needs to design the necessary **metasystemic functions** and **inter-recursive channels**, which will be the topic of Chap. 12.

Thirdly, one then needs to define from which level what kind of **synergies** should be generated and managed (see Chap. 13). The challenge lies in the highly iterative nature of the design process (see Sect. 8.3), since, for instance, the level of synergies that one finds and defines influences the basic model as well as the functioning of the operational and metasystemic processes defined earlier.

For the detailed design of the systems 1, one starts best with the variety equilibrium model (see Fig. 11.2) that we have already encountered in Chap. 10.

We have already analyzed these aspects in the context of the basic model. However, there, we just searched for a general overview and the key factors that determine the aggregation and structural logic. For the detail design of the systems 1, one needs to deepen the findings made during the previous step. In this volume, we will focus just on the following three aspects and assume the product as given:

1. the **environmental variety** that needs to be processed (Sect. 11.1)
2. the necessary **operational processes** (Sect. 11.2)
3. the requisite *eigen*-**variety**, i.e., the necessary resources and competencies (Sect. 11.3).

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[1]All figures in this chapter related to the VSM are or contain and if not stated otherwise, adapted (detail) views from Beer (1995b), p. 136, Fig. 37.

Fig. 11.2 The variety to be processed, the product, operational processes, and *eigen*-variety need to be adjusted to each other to form a viable system 1 (from Fig. 10.5)
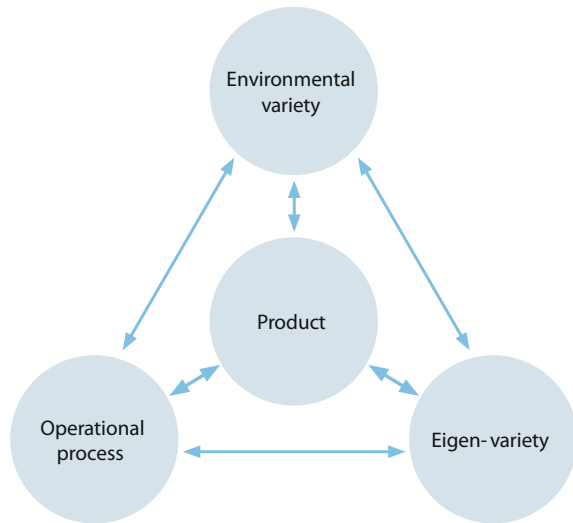
All these aspects must fit together and are thus developed in parallel and iteratively, even if we are now going to discuss them sequentially.

11.1 "What Is Our Value?"—Scouting the Environmental Variety (Aspect 1)

In volume 1, we said that the entire organization is an instrument to create value for its chosen environment. How an organization needs to organize itself is thus partly also predetermined by what its environment wants, what kind of resources it has, and how it is structured (e.g., infrastructures). The organization is not free to choose its structure and internal functioning, but must also reflect its environment, for which it wants to create value. The structure of the environment codetermines the organization's structure and, in this sense, one can even say that the environment becomes part of the organization. The clues about the right structure for the organization are thus already hidden in the environment. The "interior design" of an organization must also reflect its environment. Whoever has understood what the environment wants and how it behaves knows a great deal about how to design the organization.

In this chapter, we will focus on three aspects: first, on how to capture the **environment's relevant variety** and assess the **organization's value creation**, second, **on calibrating the organization's chosen scope of the environment** and third, on **the calibration of the equilibrium points**.

11.1.1   "The Roads Are Paved with Gold, but Where Is the Gold?"—Finding and Understanding the Source of the Organization's Value Creation

When immigrants departed for the USA in the nineteenth and twentieth century, they were often promised a country whose roads were paved with gold. As they were soon to learn, the streets were not paved at all and they were expected to pave them (Eye Witness to History, 2018). Many of the immigrants succeeded, but they had to find out where the gold was buried, and it was mostly where they did not expect it. With hindsight, one always recognizes where a road is paved with gold, but one forgets how hard it was to find the place.

The same applies to organizations: what generates the gold is seldom clear. The gold often lies somewhere buried, and one needs to search for clues to where it might be hidden. As Drucker (2006b, p. 13) reminds us: "Every executive (..) sees the inside—the organization—as close and immediate reality. He sees the outside only through thick and distorting lenses, if at all. "The livelihood of the entire organization, however, depends on penetrating this fog and finding the gold mine in the environment, i.e., the environment's "pain points" or rather "pleasure points"—but how to find them?

Walt Disney was a firm believer in **observation** (Disney Enterprises, 2003, p. 42): "I don't want you guys sitting behind desks," he told his staff in his amusement parks, "I want you out in the park, watching what people are doing and finding out how you can make the place more enjoyable for them." Only through observation, does one learn to understand what kind of problems people have and what delights them. For this reason, Walt Disney asked his staff to have their lunch in the park because then, "they could continually observe guests—and figure out how to make things better" (Kinni, 2011).

For the Walt Disney Parks, one would, for instance, assume that the attractions and the wandering cartoon characters like Mickey Mouse, with whom one takes pictures, are one of the major success factors (for the following, see Boudreau, 1998, 2008; Boudreau & Ramstad, 2007; Cascio & Boudreau, 2012). Of course, these are the main reasons why one visits these parks, but they are not the only and pivotal ones that make people "happy" at the end of the day. Visitors have many different issues that can make their visit truly unpleasant, for instance, no quick answer to the question, "Where is the next washroom"? The visitors of the Walt Disney Parks have hundreds of different questions of this kind. However, who can answer these questions in the Disney Parks?

Walt Disney Parks noticed that these questions were mostly clarified by the many freely moving, but hardly noticed, auxiliary forces, such as the sweepers. In contrast to the cartoon characters who strictly act to a predefined script and schedule, the cleaning staff is more flexible and can help, for example, families with young children and assure them a stressfree visit to the amusement park. After all,

one does not buy only a visit to Mickey Mouse but first and foremost a stressfree and delightful day. Sweepers are thus not just cleaners but are also essential for the overall well-being of the visitors. They play a pivotal role in the customer experience (Boudreau, 2008; Cascio & Boudreau, 2012, pp. 115f).

As a consequence of this observation, Walt Disney started investing in the training of the auxiliary staff, such as even reading the body language of visitors to recognize their needs earlier (Shuit, 2004). And their job definition, in fact, changed too: They are no longer just sweepers but also "front-line customer representatives with brooms in their hand" (Cascio & Boudreau, 2012, p. 116), which also changed their position in the organization.

As one can see from this small example: what creates value is not always clear from the outset and what one might think it to be. Deduction, analysis, and planning alone do not suffice to capture the environmental variety. One must observe the behavior of the environment in action to understand it and in what way precisely the organization creates value. This is perhaps even more relevant today as we rely mostly on what we see on our computer monitors and less on what happens in reality. Here, Peter Drucker's comment (2006b, p. 142) in his classic book *The Effective Executive* written in 1966 should serve us as a constant warning: "With the coming of the computer (..), the decision-maker will, in all likelihood, be even further removed from the scene of action. Unless he accepts, as a matter of course, that he had better go out and look at the scene of action, he will be increasingly divorced from reality. All a computer can handle are abstractions. And abstractions can be relied on only if they are constantly checked against the concrete." Artificial intelligence and modern statistics can reveal many patterns to us, but as every statistician knows, they need to be checked against reality.

Hence, an organizational design process cannot be executed properly in an isolated planning office. "Don't judge a man until you have walked two moons in his moccasins," goes an Indian proverb. We need to walk in the "moccasins" of our customers and the operational staff if we want to design an organization well. Only then will we get an idea of the variety, with which an organization is confronted, how it creates value, and what the pillars of the organization and its viability are. Only by walking on the dusty and arduous roads of the operational business do we learn, what the real problems are and how they can be transformed into a gold mine. Only then will we be able to distill what the critical success factors are and how the organization must be organized and operate.

To design an organization in detail, one thus best takes a notebook, leaves one's office, and observes the organization in interaction with its environment—in its successful as well as failed interactions! This provides sufficient clues about what the employees, processes, and other resources of the organization must be capable of and how they must be arranged organizationally so that they can create an interacting community and ecosystem with their environment.
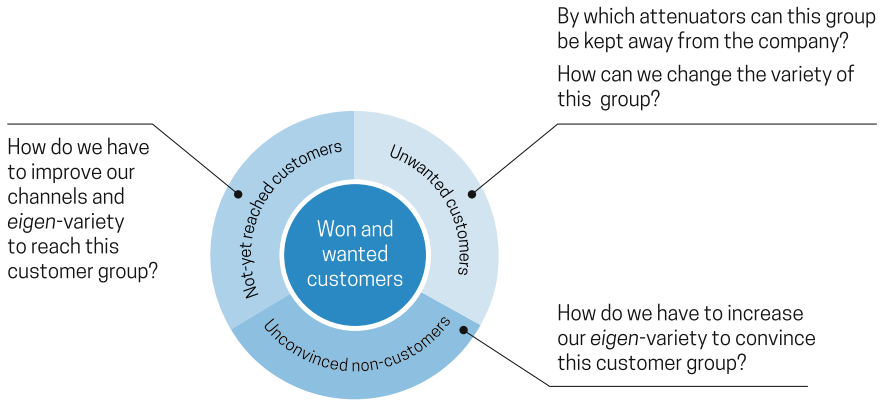
Fig. 11.3   Customer groups require different approaches to establish an Ashby conform situation

11.1.2   Finding the Right Scope or Why Focusing on Current Customers Can Be Misleading

When one analyzes the environmental variety and seeks the right equilibrium point, a common mistake is to analyze just the current customer interactions. If one wants to calibrate an organization to the environmental variety, one must not focus only on the existing customers but also on other customer types, since they might require different responses and thus *eigen*-variety (see Fig. 11.3), namely:

1. Customers who have not yet been convinced or who are dissatisfied with the products and services („not-convinced customers")
2. Customers to whom one was not yet able to reach out („not-yet-reached customers")
3. Customers who one does not want („unwanted customers")

These customer segments require different measures and responses and thus, *eigen*-variety (see Table 11.1).

Table 11.1   Customer segments and their specific equilibrium situation and required responses

Customer segments	As-is situation	Required responses
Customers	Environmental variety corresponds to the internal variety	Keep the organization constant and evolve "organically" together with customers
Not-convinced customers	The organization's *eigen*-variety does not correspond to the customers' variety	Adjust *eigen*-variety (e.g., product and service capabilities) and improving sensors and transduction capabilities (see volume 1)
Non-customers	Connections to or meeting places with the environment are insufficient, or the serviced environment is too narrow	Create and improve channels to and meeting places with the environment; change environmental boundaries (increase the scope of activities)
Unwanted customers	Variety attenuators of the organization too weak	Reinforce attenuators

Fig. 11.4 Left diagram: a large group of the intended customers had already been won; right diagram: the group of won and intended customers is still small compared to the other customer groups

By how much one needs to change the current organization depends, of course, on how well the current organization succeeds in achieving the targeted equilibrium point. If the organization already convinces and acquires its target customers to the desired extent (see Fig. 11.4, left picture), then one can assume that the environmental variety and *eigen*-variety are reasonably well balanced—provided that the temporal and social tensions within the organization are within the normal range.

On the other hand, if only a smaller portion of the targeted customers can be reached and convinced (see Fig. 11.4, right picture), then more extensive analyses become necessary. In this case, the other customer segments are still too large in relation to the already convinced customers.

11.1.3 "When Is a Customer Satisfied?"—Calibrating the Value Delivered and the Equilibrium Points

When one knows how and for which target environment an organization can and should generate value, it is then advisable to revisit and re-examine the equilibrium points, i.e., the promises made regarding the product, its quality, and the organization's performance level. Are the equilibrium points chosen in the strategy the right ones? Can they be fulfilled by the organization, and are they creating value for both, for the organization as well as the environment?

Achieving requisite variety according to Ashby's Law is typically understood as a call to do more. However, this is a misunderstanding; it can also mean **doing less if feasible**. Over time, organizations add "nice-to-have" products and services (or features thereof) to their core value proposition. However, are they still needed or even valued by the customer or have they become dear just to the organization and

its employees? Unfortunately, companies do not regularly review their offering critically or find it hard to say farewell to established products and practices. To prevent this from happening, organizations need "**gatekeepers**" (such as regular review processes or employees) that restrict the tendency to overfulfill.[2]

A reorganization project hence represents a valuable opportunity to revisit the organization's offering and reflect indeed what **the organization should not offer** anymore and **how well it needs to perform** (see also Sect. 9.4). This is just as important as the positive list, perhaps even more vital because it is often overlooked.

11.2 „How Do We Produce Value?"—The Operational Processes (Aspect 2)

Once one has obtained a good understanding of the environmental variety, one then needs to obtain an overview of the processes necessary to process the environmental variety. For this, one develops a basic process model of the systems 1 that describes how they should produce, sell, and interact with the primary environment. For this step, one typically uses the standard process modeling techniques and methods, which we hence do not need to specify further. In addition to the operational processes, one also needs to develop the tactical control and planning processes and instruments (see the schematic Fig. 11.5).
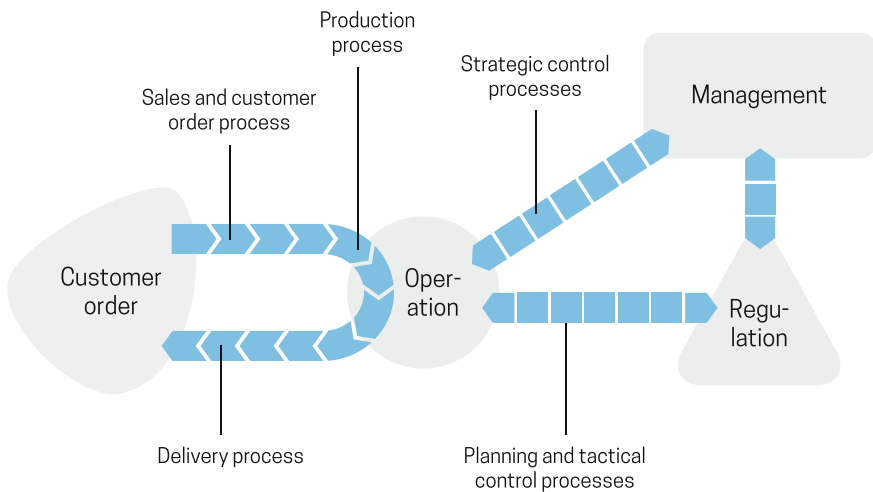
Fig. 11.5 Operational and managerial processes of a system 1 (schematic and simplified representation)

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[2]The tendency to overfulfill can sometimes result rather from of uncertainty and risk aversion instead of real customer needs.

In the case of existing organizations, one should, however, not rely on existing process charts and manuals only—real life is often different and so are the organization's actual processes! The basis for the analysis must instead be how the organization works *de facto*. Employees often use "**unofficial**" **workarounds and tricks** that deviate from official descriptions and manuals. Such deviations are important for the design of processes since they contain revealing and hence valuable information about first, where the varieties are not in equilibrium in an organization and second, where the organization needs to improve and provide better tools and processes and third, which instruments and processes are, in fact, unnecessary and counterproductive and should be abolished immediately.

As a general rule: there are **more ineffective instruments and procedures** in an organization than one might have thought at the beginning. Thus, "walking in the moccasins" and observing the organization in operation with a notebook also applies to the operational processes: without having walked in the moccasins of the basic systems 1 for a sufficient amount of time, one will never understand where their shoe pinches and wherein their value contribution and performance lie. And, he or she will also not be able to work out how higher recursion levels can and should support and control the lower ones.

> **Is this process map too general for you? If so, then continue reading here, otherwise, continue with Sect. 11.3**

> Sometimes a general process model such as the one shown in Fig. 11.5 might not be sufficient. In particular, in the case of highly process-oriented industries, one must delve more into the details along the time dimension. In Sect. 10.1, we considered a customer case as a single event, whereas, in fact, it might consist, of many interactions with the customer. A basic system 1 goes through **different stages** during which it assumes different tasks and configurations of its *eigen*-variety: executing an order is preceded by winning the order, for which one must prepare marketing campaigns or product samples. This is followed by the production of the product in several production steps and after-sale-services, which ensure that the customer remains content with the product and loyal to the organization even long after its purchase. For each of these cases, the system 1 needs different processes, competencies, resources, and instruments.
>
> How can these multiple interactions be represented in the VSM? Basically, these are **temporary manifestations of the system 1**, which quickly emerge and disappear and become more stable and visible as "customer cases" only on a higher and more aggregated level (Fig. 11.6).
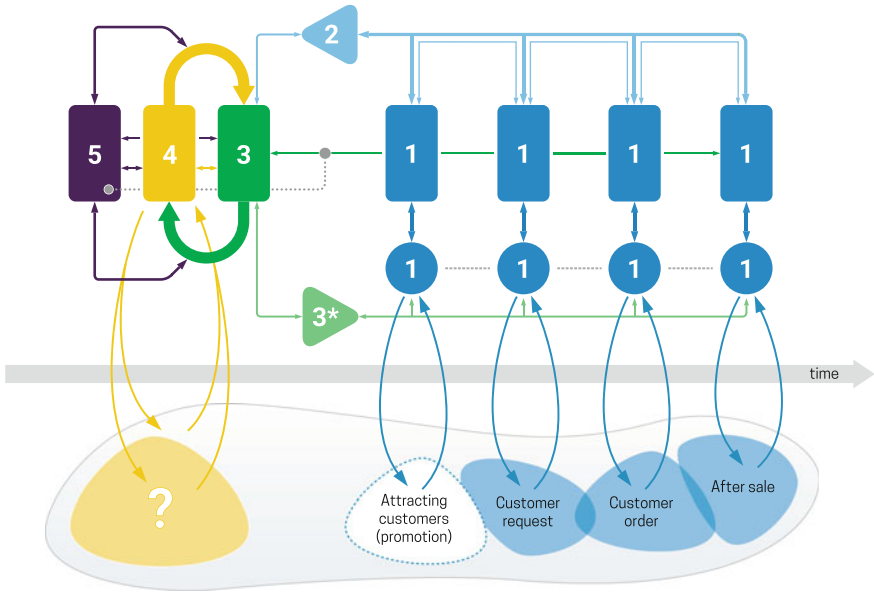
Fig. 11.6 A customer case consists of multiple temporary interactions with the customer

All these temporary manifestations require a VSM structure, meaning that the interactions must be connected and aligned with each other through metasystemic processes[3] (see Beer, 1995a, p. 536, Fig. 100). Information provided at an earlier time must match with that given at a later moment, and the delivered product must match with the promoted one. To manage the interfaces between these temporal stages ("squiggly lines"—see also volume 1), one needs coordination (system 2) and control mechanisms (system 3). Moreover, one also needs to check whether the information given at an earlier point in time was correct and well-suited (system 3*).

If one wants to define more specifically the variety to be processed, the necessary *eigen*-variety, and the processes, one will spread the business process map from Fig. 11.6 further out as, e.g., in Fig. 11.7.

This temporal segmentation of the system 1 into various stages and incidents, is particularly necessary if the varieties to be processed differ significantly between the different points of interaction and require different competencies and resources. In this case, one will group these temporary

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[3]How are the metasystemic functions present during these customer interactions? To minimize the physical presence of a manager, organizations use formal rules, regulations and handbooks. The salesperson then does not need to ask a manager in person. The metasystem or system 1 management is then not present through a person but through these regulations, handbooks and instructions.
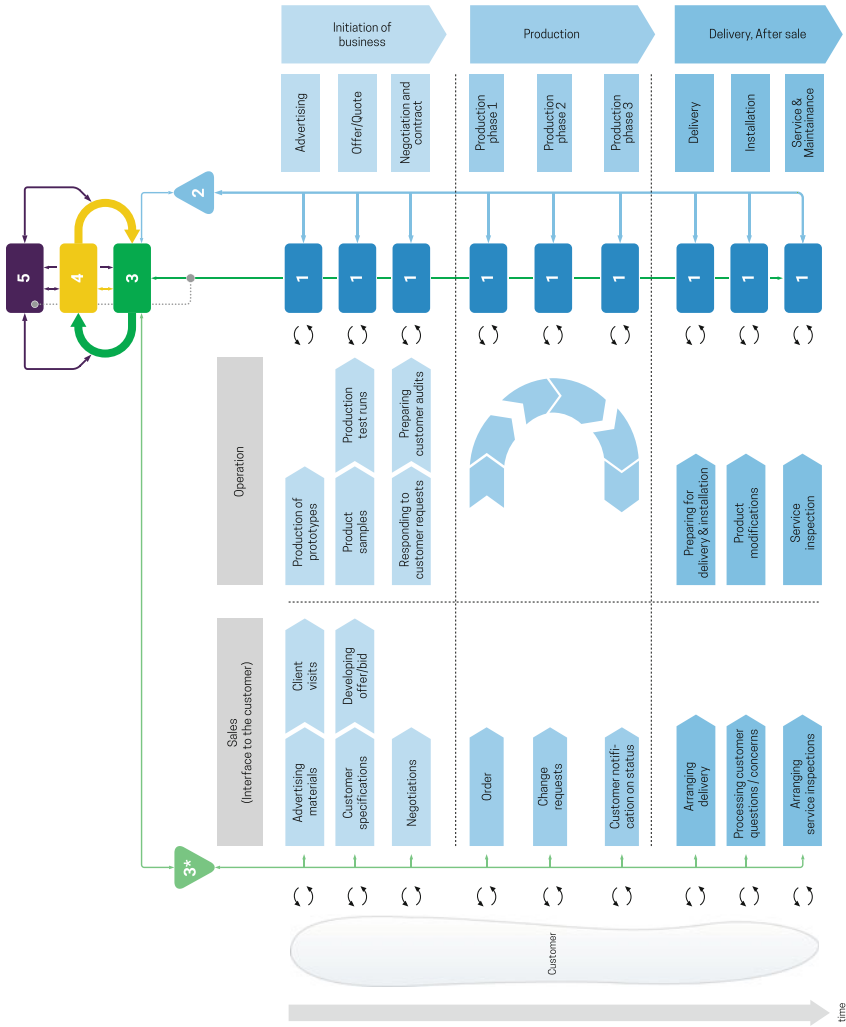
Fig. 11.7 A temporalized basic system 1 shown as a sequence of interactions with the customer and internal processes

manifestations later into different jobs and units in the organizational chart structure to obtain the necessary synergies. One will then form units specializing, for instance, in processing data (e.g., from letters and paper forms), providing assistance (e.g., hotline), processing customer orders (sales department) and taking care of product quality issues and customer complaints (after-sales service).

11.3 Providing the Requisite *Eigen*-Variety (Aspect 3)

The VSM reminds us to look not only at processes but even more also at the *eigen*-variety with which the systems 1 are endowed (see volume 2), e.g., what kind of resources are made available to them. The term "resource" is very comprehensive in the VSM framework and includes physical resources such as materials and money, as well as knowledge and skills, and the time required. All these types of resources need to be defined in parallel to the analysis and design of the process model (see Fig. 11.8).

Fig. 11.8 The basic operational processes need to be endowed with requisite *eigen*-variety
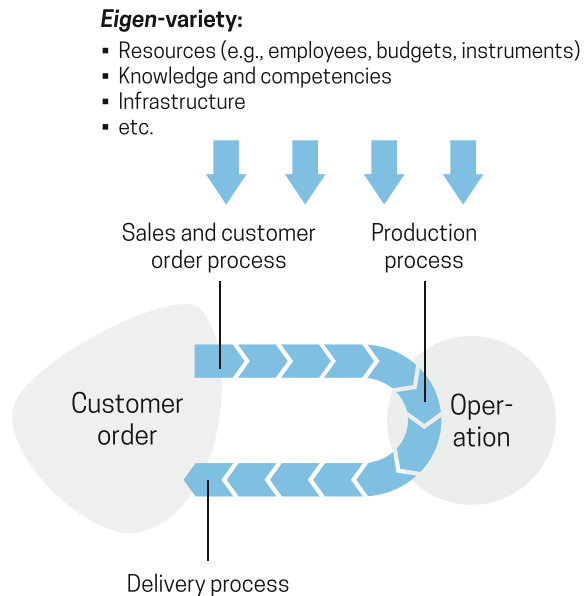
Therefore, one should not only take into account the resources that are needed for the normal execution of the processes but also those that can **intensify the eigen-variety of the systems 1** in special situations such as crises. The difference that an organization can make in comparison with its competitors often lies buried in this additional *eigen*-variety and the mastery of special cases and situations. So, one should consider in which exceptional cases an organization can differentiate itself from others and what kind of "amplifiers" it needs to excel.

Since this additional *eigen*-variety is not needed regularly, but only in emergency cases, they are controlled by a higher recursion level to generate the necessary synergies (e.g., in a shared service). In the organizational chart, this task is often taken over by central units. In the organizational analysis, one will, therefore, need to examine how these central units can and need to assist the systems 1 rapidly and help them to distinguish themselves from competitors.

In addition, one should consider how **the inflowing variety needs to be restricted through attenuators**, for example, by defining limits, rules, guidelines, and controls (see Fig. 11.9).

Fig. 11.9 Throughout the entire interaction with the customer, the organization applies attenuators to regulate the variety

Variety attenuators (examples):
- Rules and regulations
- Norms, standards, limits
- Controls
- Policies concerning "special customer wishes"

Sales and customer order process   Production process

Customer order   Oper-ation

Delivery process
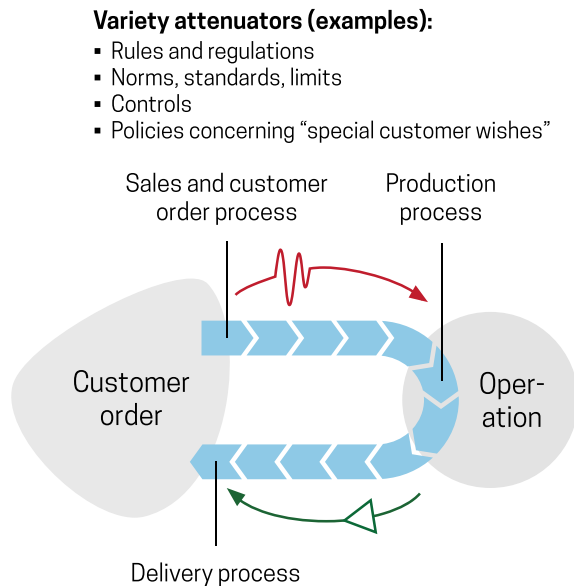
Variety amplifiers (examples):
- Advertising measures
- Contract manufacturing and hiring temporary staff to meet demand peaks
- Contracting additional logistics partner

In the end, one should look at the overall picture: can the organization achieve an equilibrium between the environmental variety and the *eigen*-variety of the organization? Can we respond to the key customer requirements and needs, or not? Are we well prepared for critical incidents?

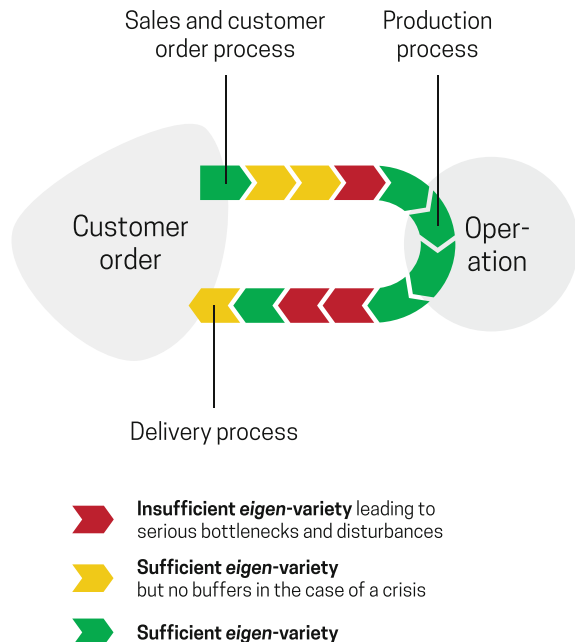## 11.4 "Can We Manage It?"—Evaluation of the Current Organization

If one wants just to change and not completely redesign an organization from scratch, one might start by evaluating the current processes and resources regarding their ability to process variety.

Four questions should guide this assessment:

1. Where are the current **bottlenecks** in the processing of variety?
2. What **changes in the process sequence, competencies, resources**, etc., are required to achieve the requisite *eigen*-variety (e.g., delivery times)?
3. What **additional *eigen*-variety** do the **systems 1** (e.g., instruments, resources) need?
4. What kind of *eigen*-**variety** do the **higher recursion levels** need to support and control the lower ones?

An assessment of the current structure could then result, for example, in the following picture regarding the processing of variety (see Fig. 11.10) and the required changes in the organization.

Fig. 11.10 Evaluation of the operational processes of the basic systems 1 regarding their capability to process variety

Sales and customer order process

Production process

Customer order

Oper-ation

Delivery process

Insufficient *eigen*-variety leading to serious bottlenecks and disturbances

Sufficient *eigen*-variety but no buffers in the case of a crisis

Sufficient *eigen*-variety

Last, but not least, our concern has so far been whether an organization has sufficient *eigen*-variety. However, it can also have **too much *eigen*-variety**: these are the cases, in which the *eigen*-variety is not used sufficiently well or does not have the desired effect. This extra *eigen*-variety is often overlooked or hidden away since people do not want to give up extra resources that provide a certain degree of comfort. Nevertheless, as part of the organizational diagnosis, one should also question the need for existing resources, since even if they are idle and not harmful, they increase the internal complexity and require additional metasystemic control processes. A regular "diet" might then be necessary to regain simplicity and agility.

Summary

- To design an organization, one must first get an accurate understanding of the variety that needs to be processed and the required *eigen*-variety. To this end, one must understand (1) the environmental variety, (2) the processes, and (3) the *eigen*-variety required.
- One should consider not only existing customers but also the not-yet-convinced and not-yet-addressed customers. Furthermore, one should also analyze the customers that one does not want to have since they create undesired variety.
- When analyzing the current organization, one should focus not only on the possibility of one having too little but also too much *eigen*-variety.
- Problems and "unofficial" tricks and workarounds used by employees are an important resource with which to identify how well the current organization can maintain the equilibrium between the variety to be processed and the organization's *eigen*-variety and where it needs to be improved.

Questions for Reflection

1. Had you already exposed yourself to the organization's operational processes, before you (re-)designed your organization?
2. Have you ever talked with your customers about what they really need and how they perceive the organization's performance before (re-)designing your organization? To what extent does your company devise customer satisfaction surveys in such a way that they allow unpleasant aspects to emerge (or are they only designed to confirm the status quo)?
3. How does Fig. 11.4 look for your organization?
4. Evaluate the operational core processes of your organization (as in Fig. 11.10) regarding the *eigen*-variety necessary for five to ten randomly selected customers. Does your organization have the requisite *eigen*-variety in these selected cases?

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The "Interior Design" (Part 2): Designing the Metasystemic Functions

12

So far, we have focused on the systems 1 and the requisite *eigen*-variety that they need to function well. Now, we must design the metasystemic functions that are necessary to integrate the systems 1 into bigger units (see Fig. 12.1).[1] For each recursion level, we need to understand how their metasystemic functions operate
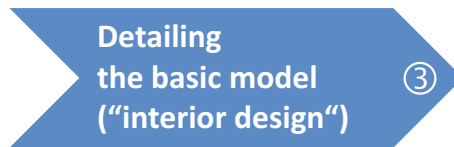
Detailing the basic model ("interior design") ③

Defining the:

1. **Operational processes** that generate the purpose of the organization

2. **Metasystemic functions** at every recursion level

3. Necessary and affordable synergies

Fig. 12.1 Step 3 in the design of organizations (part 2)

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[1]All figures in this chapter related to the VSM are or contain, and if not stated otherwise, adapted (detail) views from Beer (1995, p. 136, Fig. 37).
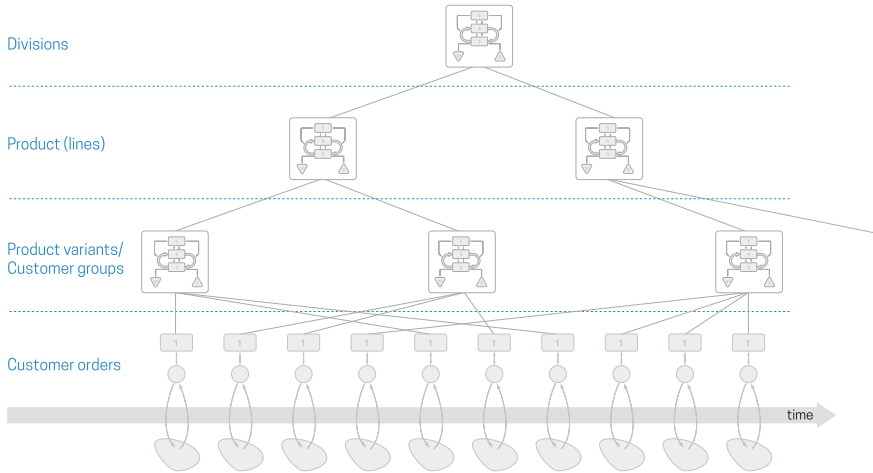
Fig. 12.2 Recursion levels and their metasystems

(see Fig. 12.2) or to put it more into colloquial language, we must describe how each level should be, i.e., controlled, coordinated, audited, and so forth. How should the execution of a customer order/case, a product area, and a division be managed? This is the key question. The VSM provides us here with a blueprint of the necessary "management" processes for each level (see also Hoverstadt, 2008).

We will describe this design process for just one recursion level, given that the systemic tasks are the same for each recursion level and only their content varies (e.g., auditing the execution of customer orders compared to auditing an entire division). The best way to design the metasystemic functions is to go through the essential mechanisms of their functioning (see volume 1) and apply them to the specific context of their recursion level. In this chapter, we will list some of the most important aspects in the form of questions that you need to ask to design the system functions (see also the questions listed in Jackson, 2002, pp. 97ff).

For this part of the design process what we have already said earlier applies: We should always choose a pragmatic approach and focus only on the key success factors and core processes and try to understand them instead of trying to map and design all tasks and processes in the greatest possible detail.

12.1 "You Just Have to Coordinate with Each Other!"—System 2

Having defined and designed the basic systems 1 (see Chap. 11), the next relevant question is how the systems 1 should coordinate with each other and about what issues. For this, the rules and framework need to be developed that allow them to coordinate. In VSM parlance, we thus need to design all the processes and frameworks that constitute system 2 of a recursion level (see volume 1).

To start this step in the design process, let us first picture what kind of coordination problems and issues can arise between the systems 1 of a given recursion level (e.g., customer orders or product units or divisions). From there, we then proceed to the following questions that should help us to design system 2 more specifically:

- Which topics must be coordinated between the systems 1, for example, between customer orders or between product units?
- Which instruments and resources, and what kind of infrastructure do the systems 1 need to coordinate themselves regarding these issues?
- Regarding which topics can "oscillations," e.g., double-booking of resources, misunderstandings, or interface problems arise (see also volume 1)? What are the challenges in coordinating the systems 1?
- How much coordination is required, especially in view of the necessary synergies (see Chap. 13)?
- Which objectives demanded by system 3 need to be detailed, operationalized, and planned further by system 2? Who takes care of these tasks?
- What kind of planning instruments are needed to align the activities of the systems 1?

Write down the coordination tasks and specify the required coordination mechanisms regarding their processes, resources, and infrastructures for the recursion level in focus. You can use the matrix shown in Fig. 6.2 to work out the aspects that need to be aligned, e.g., between the different factual dimensions of the systems 1 (often represented by the corporate functions).[2]

12.2 "Someone Must Be in Charge of All of It?!"—System 3

Before defining the system 3 of a given recursion level, we should briefly remind ourselves of its purpose, role, and the kind of value it should generate for the rest of the organization. Synergies might immediately spring to our mind, but this is not

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[2]This matrix can also be used for describing the other system functions.

the only task system 3 must accomplish: It also needs to establish accountability, define the bylaws of the systems 1 (corporate and legal intervention), and regulate their need for resources. Furthermore, it must also define the necessary level of cooperation and cohesion among the systems 1. Finally, we need to estimate how much *eigen*-variety such as resources system 3 needs and the organization can afford. Once we have clarified these parameters, we can then work through the following more operational questions of system 3:

- How intensely should the systems 1 be controlled? To answer this question, make a list of issues that need to be controlled by system 3 and define the level of control.
- In which areas does system 3 need to generate synergies and how much?
- How does system 3 manage the resources that are jointly used by systems 1?
- What are the necessary control and planning instruments, as well as information systems that system 3 needs, particularly regarding the use of resources?
- What are the tasks and responsibilities of system 3 regarding the definition of the systems 1's boundaries and their relationship to other systems 1 and the entire organization (e.g., contracts between holding and subsidiary)?
- What statutory rules and guidelines must system 3 define for the systems 1 and in what areas?
- How should system 3 hold its systems 1 accountable? How does it establish a sense of responsibility?
- Which aspects (represented, e.g., by the corporate functions) should be part of system 3 (see Chap. 5)? How do the representatives of these aspects exchange information and work together, and how can one ensure that they understand themselves as a unit?
- What will the challenges be when exercising the system 3 function?
- How can it be ensured that system 3 has the necessary competencies, resources, and information to control the systems 1?
- Who should exercise the various system 3 tasks and in what social configuration (e.g., as a committee)?

Here, again, write down the key aspects and what this implies regarding processes, resources, and infrastructure.

12.3 "Knowing Every Corner"—System 3*

Often new processes or rules are implemented in organizations without having specified how one intends to verify their compliance. Later, one becomes disappointed that no one adheres to these processes or rules. Furthermore, organizations also need to continuously improve, but who takes care of this?

For this, organizations need to implement a system 3* but setting up system 3* processes and designating employees alone is not sufficient. System 3*'s *eigen*-variety and capacity to view the operational organization from a different perspective are even more critical for its success (see volume 1). Insufficient knowledge about operational processes and lack of critical thinking are the major causes of a non-existing system 3*. System 3*'s *eigen*-variety must be maintained and continually improved.

An insurance company continually thinned out its central offices as part of ever-new savings programs. Since no one had any time left to carry out on-site visits, these "savings" led to the problem that no one in the group headquarters knew anymore how the operational business functioned. Thus, the headquarters could not suggest any meaningful improvements and was continually outmaneuvered by its operational units; its *eigen*-variety had weakened too much compared to the horizontal (*eigen*-)variety of its operational units.

For the design of system 3*, it is therefore of paramount importance to consider not only the processes but also the competencies, and resources it needs to fulfill its task. One should thus not only install formal system 3* processes and units but also ensure that they are well equipped and remain knowledgeable. And this also implies the question of how the systems 1 can be stimulated to contribute to system 3* (e.g., idea boxes and whistleblower lines; see volume 1).

To design system 3* systematically, we should thus best take the business process map of the systems 1 and a list of the resources entrusted to them and go through the following questions:

- Which processes and the use of which resources need to be audited and continuously improved (factual dimension)?
- How often and when should these processes and the use of these resources by the systems 1 be audited and reviewed regarding optimization potentials (temporal dimension)?
- What will the challenges for system 3* be?
- Which competencies and how many resources are required to ensure a fully functioning system 3*? How does one maintain and continually develop system 3*'s knowledge? How does one ensure that system 3* keeps its critical and "fresh eyes" on the organization?
- How does the organization ensure that audit results are used by system 3?
- How can lower levels contribute to system 3* (e.g., idea boxes and whistleblower lines)?
- How does system 3* gain the trust of systems 1 so that they open up? How do the roles of systems 1, 3, and 3* need to be calibrated to promote the self-correction by systems 1 (see volume 1)?
- How can the independence of system 3* be guaranteed?

Create a list of activities, skills, processes, or resources required for a well-functioning system 3* in your organization.

12.4 "Keep Eyes and Ears Open"—System 4

There are not many aspects more annoying than units that are not able to think in broader contexts, to make strategically meaningful decisions or to generate new ideas. All these cases are manifestations of an underdeveloped system 4.

While in the operational part of the systems 1, the sequence and interfaces of processes are very important, for system 4 it is more decisive to find and design the right **spaces**, which allow one to create a collective perception and understanding ("focus"—see volume 1) as well as to think creatively, innovate, and develop strategies. These spaces are necessary at every recursion level—at the purely operational level but also at the level of the divisional directors or the board of management. All levels need their system 4 since they face different wider environments and futures.

We discussed the necessary elements of system 4 earlier (see volume 1). Here, we will just list a few of the most important questions to consider:

- How should and can system 4 reach out to its wider environment?
- What channels and sensors to the wider environment and the already foreseeable future are necessary?
- Through what processes and institutional spaces does the organization ensure that sufficient creativity and novel perspectives are generated and permitted?
- Through which processes and institutional frameworks (see "operations room" in volume 1) are individual perceptions of the future consolidated? How does the metasystem create "focus" in its perception of the wider environment and future as well as in its strategies, objectives, and innovation processes? Do these processes and frameworks have requisite variety in relation to the wider environment and the future?
- What will the specific challenges of system 4 be?
- Through which processes does the organization ensure that systems 3 and 4 have requisite variety to each other and are equal to each other regarding their influence and power?
- How can it be ensured that all those who carry out system 4 activities are involved, so as to prevent a fragmented system 4 (see volume 1)?

Note what the necessary processes, activities, and social, and temporal spaces for all systems 4 at each level are.

12.5 "What Are the Values that We Want to Live up?"—System 5

Values and principles influence our actions and decisions. Every organization needs a system 5 at every recursion level that develops fundamental guidelines (e.g., how to treat customers at the lowest level or regarding the organization's social

responsibility at the top level - see also Gomez et al., 2019). To this end, ask yourself the following questions:

- Regarding what kind of decisions, situations, and issues does the organization need what kind of values, standards, and long-term company policies? What will the specific challenges of system 5 be?
- How does one ensure that the values, norms, and policies reflect the *eigen*-variety of the organization and the environmental variety that needs to be processed? Further, how does on ensure, that they are thus not too vague, meaningless, ivory tower-like, and idealistic? The two possibilities to counteract detachedness are first, involving the operational level when defining the organization's values and second, providing concrete examples.
- Through which processes does the recursion level in focus manage to "close itself" regarding the issues that it needs to decide, that is, leaving no question unresolved or resorting to false compromises? How does one instill sufficient courage so that decisions are made?
- How does one ensure that the values of the individual corporate functions, such as production or sales, are aligned with each other?
- Through which mechanism does the organization ensure that the perspectives of system 3 and 4 are balanced?
- How does system 5 constitute itself institutionally? Who and which dimensions of the organization must be represented in system 5 to promote a holistic perspective? What kind of *eigen*-variety does system 5 need regarding the issues it needs to decide?
- Which role models should be upheld, and which stories, narratives, symbols, and traditions should be told that best exemplify and promote system 5's values and principles?
- How can the lower levels make their voices heard (algedonic channel) if required? How does system 5 ensure that it stays connected with the rest of the organization?

Here too, briefly try to sketch out system 5 for each recursion level: What are its specifics, and how would you describe its essential elements to an outsider? Also, describe how system 5 or, at least its core, becomes constituted formally (e.g., through board meetings).

12.6   The Design of the Inter-recursive and Algedonic Channels

If one has described all recursion levels, one must plan at the end how the recursion levels should be connected to each other. This means going through the following questions:

- How can inter-recursive channels be created or at least their emergence be facilitated?
- By which formal instruments does the organization ensure that similar control models are applied at every level (e.g., control model, key figures, and reporting)?
- How are the employees of the recursion level in focus trained to obtain a common understanding of how to control and manage their recursion level and its systems 1 in line with the rest of the organization?
- How can innovations of one recursion level be made accessible to others? Through which instruments can the organization ensure that a uniform picture of the overall environment and the future is created at all levels?
- How does one ensure that the same values and decision-making principles guide all levels?
- Through which measures does the organization promote transparency across the recursion levels?
- How does one reduce translation problems due to different "languages" and "worlds"?
- What kind of *eigen*-variety do the inter-recursive channels need to distribute information in good time and accurately across the organization, so as to let the different perspectives in an organization converge, and to promote the cohesion across the entire organization?

Here, too, keep a record of your essential considerations.

12.7   Methodological Remarks

These design steps are carried out for each recursion level with the same kind of questions, as discussed in this chapter. The answers to the questions will vary due to different factual and temporal issues as well as environments at each level (individual customers, sectors, markets, etc.); however, from a formal perspective, the systemic tasks and questions to be asked should be the same for each level. The result of this design process is a description of the metasystemic functions at each recursion level regarding their essential challenges, core processes, and tasks, and the (control) instruments, and resources required to process the variety.

The tasks of the higher recursion levels mainly consist of metasystemic tasks, and this is why we focused only on them in this chapter. However, there might be **operational tasks** linked to the organization's purpose that **only emerge at upper levels** and their environments and are **not yet contained in lower levels**. The upper levels, after all, face an environment wider than the ones of lower levels. One should thus review the task areas of the systems 1 of a given recursion level, whether these systems 1 lack certain operational tasks in view of the wider environment that have not been defined at a lower level but are necessary if viewed from the given level in focus.

Regarding **the required level of detail:** How much should one describe and define? Since this is a fundamental dilemma encountered in every design process, let us once again briefly mention the focus: It is not important to capture reality all-embracingly in the design process, but only the key factors and elements influencing the organization's processing of variety. These factors and elements must be made transparent, while the rest will develop by itself over time.

For this reason, one will, for instance, not focus one's main attention on processes that are already defined through IT systems. One can also rely on the **self-organizing capabilities of employees**: What has not been identified in the course of the modeling phase can be identified and corrected over time. Reorganization processes are **evolutionary processes.** The important issue is to provide the organization with the necessary guidelines along which it can and should develop. As in a greenhouse, young plants usually need a supporting stick to grow—to provide this stick is the task of the organizational model, and nothing more!

Summary

- For each recursion level, the specific variety to be processed by a metasystem (e.g., problems and challenges) must be identified that emerge from the systems 1, the larger wider environment, and the changes in the future.
- Then, the essential metasystemic functions and inter-recursive channels must be designed (see the questions in this chapter).

- The design of the metasystemic functions needs to provide only the essential guidelines and core processes, which then allow the organization to develop further.

Questions for Reflection

1. Go through the questions in all the subchapters of this chapter: What questions have not yet ever been asked in your organization but should be asked? What would the answers to these questions be in your organization?

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2. How do the recursion levels in your company differ from each other regarding the variety which they must process (e.g., at the level of customers order versus the divisional level)? Work out these differences in the factual, temporal, and social dimensions.
3. Building on the previous question: What are the consequences of these differences for the design of the metasystemic functions? What are, thus, the key success factors for the functioning of each recursion level? What kind of factual and social competencies will be required? What are the demands regarding the temporal structures?

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The "Interior Design" (Part 3): How Can We Achieve Synergies?

13

Organizations do not only live from their customers but also from the synergies they can generate. At least at this stage in the design process, but probably already in the design of the basic model and system 3 (see the previous chapters), we need to consider what kind of synergies can and must be obtained from the systems 1 at every recursion level and what kind of organizational arrangements need to be made (see Fig. 13.1).

Fig. 13.1 Step 3 in the design of organizations (part 3)
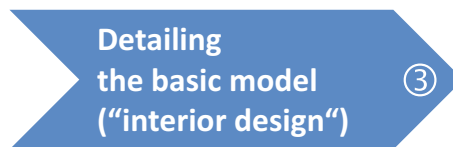
> **Detailing the basic model ("interior design")** ③

Defining the:

1. **Operational processes** that generate the purpose of the organization

2. **Metasystemic functions** at every recursion level

3. Necessary and affordable **synergies**

Since synergies and their configuration are one of the most dominant topics in organizational design, we want to devote a separate chapter to them.[1]

13.1   "Synergies" and "De-/Centralization"—What Do These Terms Mean?

Creating synergy means that additional positive value can be created for the organization through the joint use of resources and the coordination of processes and activities. Synergies prove that the overall optimum of an organization is better than the sum of the individual optima. Synergies in whatever manifestation are one of the foundations of every organization adding to its legitimization.

"Synergies" can be created from a variety of aspects in an organization: people, money, time, machines, knowledge, competencies, raw materials, etc., but also process steps and activities. If one talks about "synergies," the prominent positions in the P&L come first to mind, for example, the costs for raw materials, production, R&D, or marketing. However, synergies already occur at much smaller scales and in everyday life: should one create a marketing brochure together with other units or not? This, too, is a question of synergies.

To obtain synergies, the relevant system 1 resources and processes need to be controlled by higher recursion levels ("resource bargain"). The control of these resources and processes then no longer remains within the discretion of the systems 1 but falls into the hands of higher-level systems 3.

Transferring the control of resources and processes to a higher recursion level should not be understood and expressed too much by **spatial categories,** such as "central" or "decentral," as is often done (see also volume 2). The specific feature of a "central" production is not that all production processes are located in one site, but that instead the allocation of resources and production processes is controlled and executed by a unit at a higher level (see Fig. 13.2).

It is, thus, conceivable that a central production unit in Fig. 13.2 is divided into several physical production sites, provided that the decisions about the entire production plan, the use of production facilities, and resources of the different sites are made from this central production unit. So, spatial categories are not sufficiently precise.

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[1]All figures in this chapter related to the VSM are or contain, and if not stated otherwise, adapted (detail) views from Beer (1995, p. 136, Fig. 37).
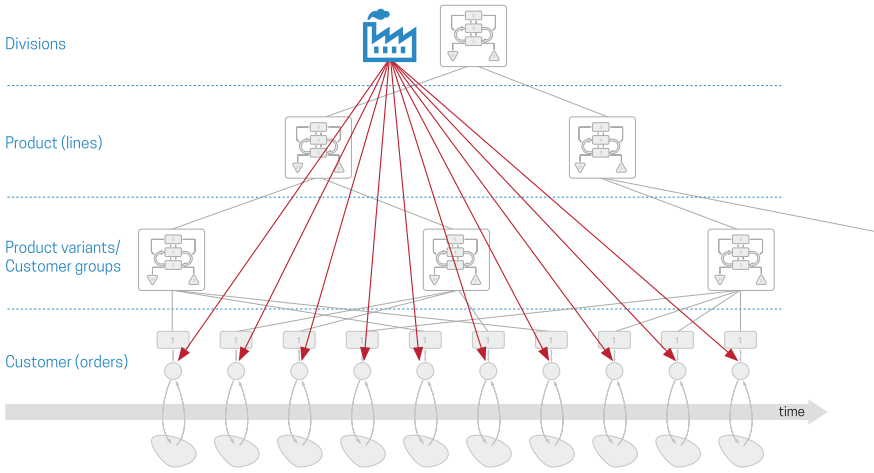
Fig. 13.2 Production processes and resources controlled from the top recursion level across all systems 1

"Decentralizing" thus means, in turn, that decisions about the allocation of resources, production facilities, and the production schedule are referred to lower levels that supervise fewer units and operate independently from each other (Fig. 13.3). Using spatial categories obfuscates again what "decentralization" means since all the decentralized production units might be located on one plant site and yet, operate independently from each other.

The VSM is sometimes understood as promoting decentralization at all costs. This, however, is a misinterpretation: decentralization is not an end-in-itself, but rather, must be subordinated to the purpose and viability of the whole organization. From
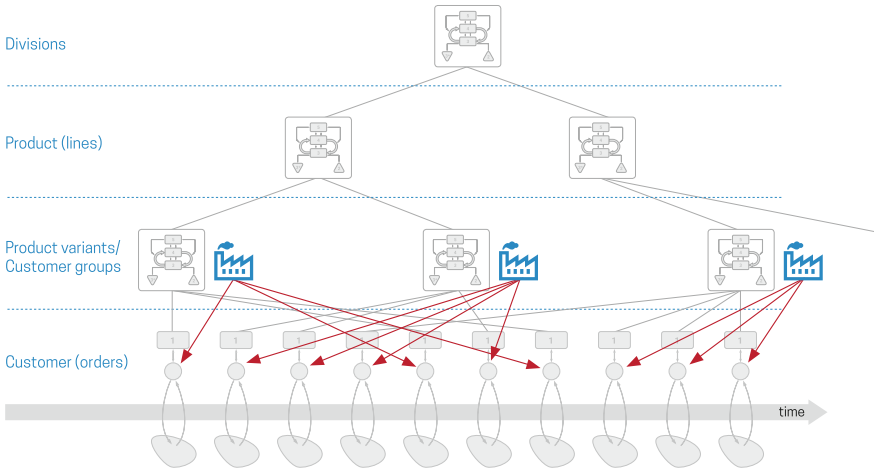
Fig. 13.3 If synergies cannot be gained for the entire company, they need to be controlled from a lower recursion level

time to time, one even must counteract **too much decentralization** because the systems 1 have a natural tendency to increase their (*eigen-*)variety by specializing and adapting better to their environment. This might lead to **uncontrolled growth of internal complexity** to which the organization must react and initiate measures to restore the balance between horizontal and vertical (*eigen-*)variety (see volume 2).

In these cases, a regular "haircut" will sometimes be necessary to look "handsome" again. For this, the organization requires a competent system 3 and 3* that have a profound knowledge of the actual operational world: how much *eigen-*variety do the systems 1 really require? Systems 1 typically oppose restrictions fearing adverse reactions by the environment, such as a loss of customers. In such circumstances, the metasystem needs to "encourage" the systems 1 and reassure them that the organization is strong enough as a whole to compensate for the envisaged reduction in horizontal variety (e.g., through network effects or a strong brand).

13.2   What Kind of Synergies Should Be Sought?

Since creating synergies interferes with lower-level processes, one needs to decide which synergies one can "afford"—not all synergies are as beneficial as they might appear at first hand. To decide which synergies one can and should generate is a matter of balancing out between the viability of the individual system 1, the viability of the entire organization,[2] and the effort, i.e., the vertical *eigen-*variety required to generate the synergies.[3]

The most straightforward case is synergies that **don't reduce the systems 1's requisite *eigen*-variety** and **their capacity to adapt** to the environment. These synergies ("low hanging fruits") allow the systems 1 to pursue their purpose, objectives, and strategy without any significant restrictions. One can obtain as many as possible of this type of synergies provided managing them does not overburden and distract the metasystem and creates net value.

The following **types of synergies**[4] are also relatively easy to decide since **they should be avoided**:

1. Synergies that severely restrict the *eigen*-variety of the systems 1 and are not necessary for the overall organization's competitiveness and viability ("synergies without purpose and need").
2. Synergies that overstretch the *eigen*-variety of the metasystem and hinder the metasystem from fulfilling its ordinary tasks, e.g., due to combinatorial effects that increase the internal complexity exponentially ("unmanageable synergies").

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[2]Viability of the entire organization means in this context primarily the viability including all the other systems 1 in the organization across time.

[3]Expressed more formally, synergies must respect the principle of the mutually adjusting horizontal varieties and the axiom of requisite vertical *eigen*-variety (see volume 2).

[4]These types can in reality overlap.

3. Synergies that create insufficient value compared to the additional vertical *eigen-variety* required by the metasystem or that necessitate too many "sacrifices" by other systems 1 ("too costly synergies").

More difficult to evaluate are the synergies that are **necessary for the entire organization** and **its long-term viability**[5] but **critically restrict individual systems 1 regarding their mission and purpose**. These cases can only be decided based on careful analysis. Safeguarding the common cause and value created by the organization should prevail over particularistic interests but like a doctor ("first, do not harm"), one will also seek to minimize interfering with the viability of the individual systems 1 and thus keep the level of synergies as low as possible. In the end, this is, of course, a matter of assessing the risks and weighing the various values[6] at stake, especially regarding how significant and sustainable the additional value created for the entire organization is and will be.

13.3   From Which Recursion Level Should One Control and Manage Synergies?

If one knows what can and should be controlled synergistically, then the question arises regarding which level should manage and control these synergies. In principle, one goes as far up as possible to maximize synergies. However, not everything is as synergetic as it initially looks. One must analyze the varieties very thoroughly that one wants to manage synergistically to determine the right level. The key to the **viable management of synergies** is **a differentiated approach**. What do we mean by that?

Let us return to our simple example from Sect. 10.3 in which colors and geometric shapes represent the varieties of the systems 1 at the lowest level (see Fig. 13.4).
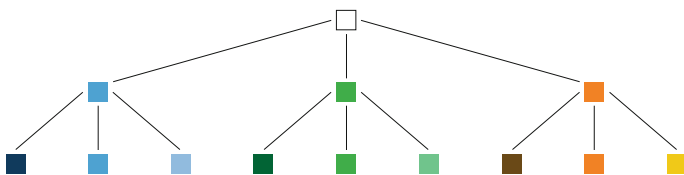
Fig. 13.4 Organization with two types of variety (color and geometrical shapes)

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[5]The primary beneficiary of synergies should always be the systems 1 and not the metasystem alone.

[6]Not only the financial value but also, for instance, reputational or ethical values need to be considered.
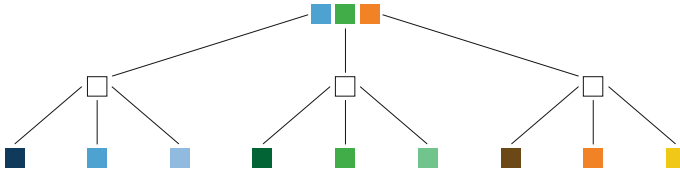
Fig. 13.5 Case of organizations, where synergies are controlled from too high a recursion level

We stated earlier that the organization is best advised if the middle recursion level manages the color families, and the top level, the geometric shapes. Organizations that want to generate synergies are, however, often tempted, to bundle the management of all synergies at the top level. Expressed in our graphical model, the top level then manages all color families. Consequently, the middle level becomes de facto obsolete (see Fig. 13.5).

However, is this really how it should be? Through this measure, the top level increases the heterogeneity of the variety it needs to process. Consequently, it needs to reinforce its *eigen*-variety (see axiom of requisite vertical *eigen*-variety). It needs to become more specialized and might even need to hire experts for each color family. Ultimately, the organization might end up with a higher number of experts (because there is still the middle level) and not much remains gained. Furthermore, information and control deficits emerge as the information distances between the operational systems 1 and the top level increase.

In a medium-sized high-tech enterprise, all R&D activities were centralized (see Fig. 13.6). The reason was quite understandable: the decentralized units had begun to move away from the central operating system, which constituted the foundation
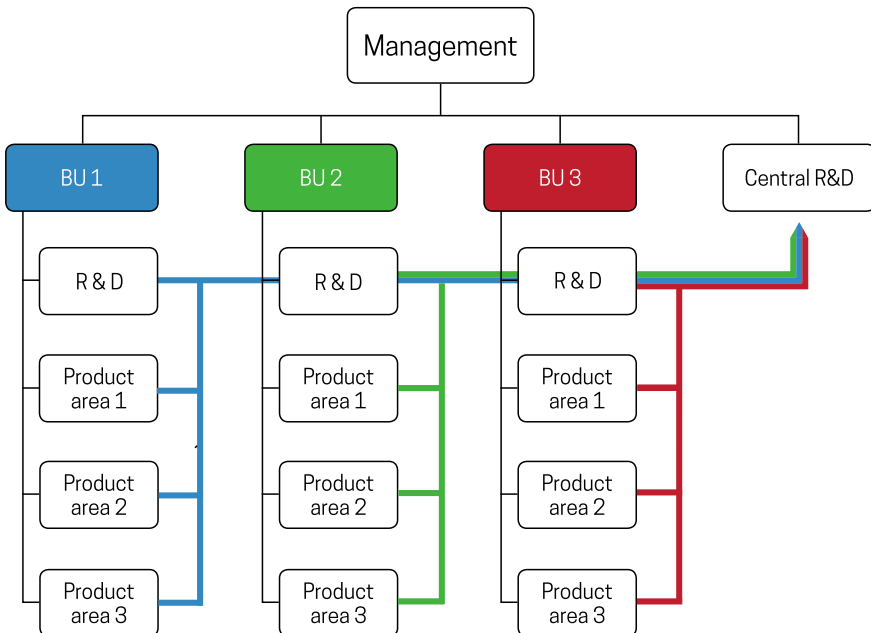
Fig. 13.6 All R&D units and activities became transferred to a central R&D unit

and backbone of all software-based products. Uncontrolled growth in technical modifications and adaptations led to the loss of synergies.

If we return to our previous graphical logic, in which colors and geometrical shapes represent different varieties, then the situation of this company can be represented as follows (see Fig. 13.7). The joint operating system of the business units is represented by the geometric shape. The products of the business units, which constitute different application and technology families, are represented by colors. Since these technology families have similarities within a business unit but not across business units, we use three different color families with three different grades of intensity within each family. The bundling of all R&D activities of the business units into a central R&D department corresponds, in this case, to the grouping of the system 4 functions at the recursion level R_0.

The underlying assumption of the centralization was that not only the R&D processes as such could be centralized but also the underlying specific varieties of the business units. As it turned out, this was not the case; although the products were built on a common operating platform, the product, their requirements, features, and corresponding customers differed from each other. The hypothesis of synergies did not hold in view of the business units' different varieties.

Fig. 13.7   All R&D activities (system 4) were bundled in one central R&D unit

Fig. 13.8 The units in the central R&D orientated themselves toward their product areas (thick horizontal arrows) and less toward the head of the central R&D unit (thin vertical arrow)

To better reflect and process the different varieties, the central R&D consequently started specializing and organizing itself parallel to the business units, i.e., it mirrored the business unit structure (see Fig. 13.8). This reduced interfaces, overlaps, coordination efforts, and improved communication. In addition, it allowed the employees to better specialize.

Innovation and product decisions then became "clarified" and agreed on in advance and directly between the product managers of the business units and the corresponding R&D managers. Consequently, however, the central R&D manager was often left out of the information loop and only informed for the sake of form. The R&D experts and the individual business units did not really need the R&D head: "Why should we involve him? By talking directly, things are done faster, and he (i.e., the head of the central R&D) does not understand much of the details, and most of what we develop does not affect the other R&D units" was the consensus among many R&D and business unit employees. The R&D head had *de facto* become obsolete and with him, virtually, the centralization.

This clandestine and unofficial decentralization process had to take place almost naturally since the various centralized R&D subunits needed to find an Ashby-conform equilibrium with the variety of their main counterparts in the business units. The direct contact to the business units was the shortest way to settle issues with the least loss of information. As a result of the daily collaboration, the R&D units became (re-)integrated into the processes and decisions of the product and

Recursion level	Unit	System 5	System 4	System 3*	System 3	System 2	System 1
Level R 0: Company	Company	□	□	□	□	□	□
Level R 1: Business units (BU)	Business unit 1	■	■				■
	Business unit 2	■	■	■	■	■	■
	Business unit 3	■	■	■	■	■	■
Level R 2: Product areas	BU 1 / Product area 1	■		■	■	■	■
	BU 1 / Product area 2	■		■	■	■	■
	BU 1 / Product area 3	■			■		■
	BU 2 / Product area 1	■		■	■	■	■
	BU 2 / Product area 2	■		■	■	■	■
	BU 2 / Product area 3	■		■	■	■	■
	BU 3 / Product area 1	■		■	■	■	■
	BU 3 / Product area 2	■		■	■	■	■
	BU 3 / Product area 3	■		■	■	■	■

Transfer of the responsibility for the operating system

Transfer of the responsibility for the product related software

Fig. 13.9 A better approach is to differentiate the R&D tasks regarding the recursion levels

business units. A detour via the head of the central R&D department would have only complicated and delayed matters. In the end, the position of the central R&D head had become increasingly unclear and was "bypassed," and the central R&D as such lost its purpose and cohesion.

This outcome was not due to bad intentions from the R&D employees, but rather the consequence of the variety that needed to be processed by the employees and individual units in the R&D department. The varieties of the business divisions were too different, with no or too few synergies across the business units and its corresponding R&D activities. The real processes thus followed the logic and demands of the underlying viable systems (i.e., business units) and ignored **the official organizational chart structure.** The formal organization existed only on paper.

What could one have done better? In this case, a more **differentiated segmentation of the system 4 tasks** into business units and company-wide topics would have made more sense. Only the company-wide tasks and aspects should have been assigned to the central R&D unit while the rest should have remained in the business units. In our graphical logic (see Fig. 13.9), only the geometric form or the basic operating system should have been centralized. The individual product technologies (colors) should have remained with the business units.
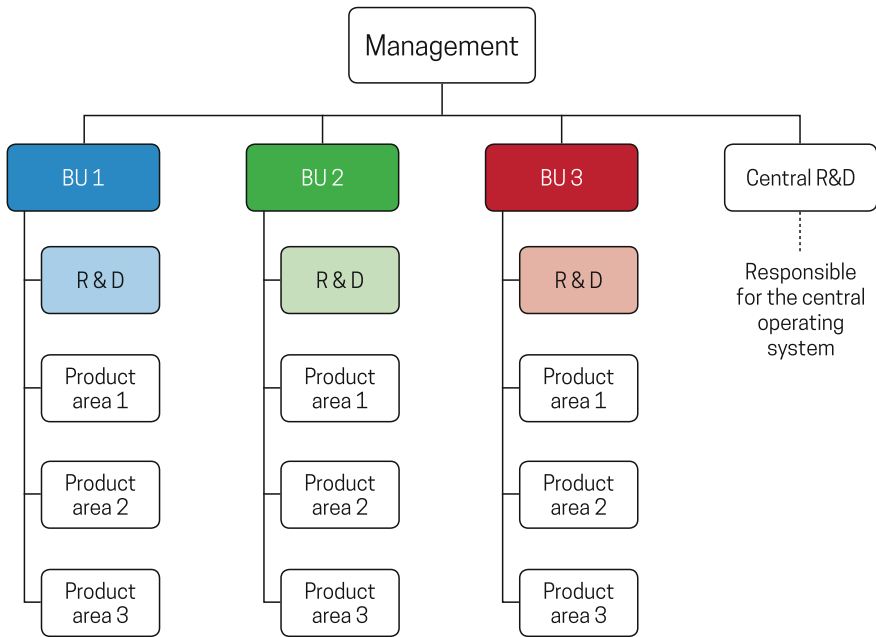
Fig. 13.10 An organizational chart structure that corresponded better to the processing of variety of the company in the case study

As a consequence, each business unit would have kept its R&D department for its product-specific aspects.[7] The main tasks of the central R&D would then have been the development and support of the central operating system, as well as the coordination (system 2) and control (system 3) of the various technical developments by the business units (e.g., the development of the basic technology, allocation of R&D budgets). For this, the central R&D should naturally also receive the necessary authority to enforce company-wide standards.

In the organizational chart, this would have resulted in a structure like the one represented in Fig. 13.10.

Unfortunately, one frequently finds a tendency to centralize too strongly. If products and regions are too different, such "globalized" functions make limited sense. In a multi-utility company with very different business units (e.g., energy, heat, Internet, and waste), the sales units and processes were removed from the business units and centralized into one central sales department. The idea behind it was that a sales representative could offer and sell not only one product but also the entire product range of the company. According to this hypothesis, one sales representative could then sell all instead of one product in one client meeting.

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[7]We need to add a cautionary note here: this case should not be understood as a general recommendation. There might be many cases where for good reasons a centralized R&D is the only viable solution, especially if the development of product-specific and platform-related aspects cannot be separated.

Despite several attempts, however, this central sales department did not function; on the contrary, the business units started complaining that the new central sales department was less accessible and receptive to them, did not boost the sale of their products and that they had to develop their own sales activities again. So, in the end, the sales processes became replicated in some business units.

At closer inspection of the environmental complexities with which the business units were dealing, it transpired that not only the products were very different from a technological viewpoint, but also that the contact persons and decision-makers within the customer companies were very different. These were only willing to accept sales representatives who had the necessary technical competence and background.

However, since the products were very heterogeneous, it was hardly possible for one sales representative in this utility company to be sufficiently competent in more than one or two product areas. The heterogeneity of the business units made it, therefore, impossible for the central sales department to be adequately responsive to all markets and generate synergies. The variety exceeded the competencies of the sales department. Furthermore, the limited knowledge and expertise of its sales-persons led to the problem that they generally preferred to sell only those products that they already knew and failed to promote the others.

When creating synergistic units, consequently not only the horizontal (*eigen-*) variety as discussed above in the case of the central R&D department must be considered but also the vertical *eigen*-variety that synergistically operating units require. Can the synergy units manage the different varieties for which they are made responsible and can they generate the envisaged synergies? The lesson from this example to be learned is this: just because processes bear the same name (in this case, "selling"), and this does not mean that synergies can be generated. Whether synergies can be gained depends, first and foremost, on the underlying varieties that need to be processed and the *eigen*-variety that one needs (see also volume 2).

Any forced centralization then only extends the decision-making processes and creates misunderstandings, delays, and conflicts. Centralization projects (such as shared service centers) run into difficulties not so much because processes have been "centralized," but rather due to the decrease in communication and information quality and responsiveness, and speed in decision-making processes.[8]

Therefore, synergies must always be weighed against the resulting disadvantages. Centralization, as a dogmatic principle, does not make much sense. Rather, one needs to adopt a **differentiated approach** reflecting the differences in the varieties to be processed and the most meaningful degree of centralization. Not every task and process can be centralized to the same extent.

While a differentiated approach is the right way, one must also keep in mind that there exists an **upper limit to differentiation**: if responsibilities are too much split up between different levels and units, then the exchange of information and

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[8]Service level agreements (SLA) between the "central" and "decentral" units are in that regard a valuable, albeit only formal instrument. They must be supplemented by mechanisms that generate a common understanding and perspective between the employees of the "central" and "decentral" units.
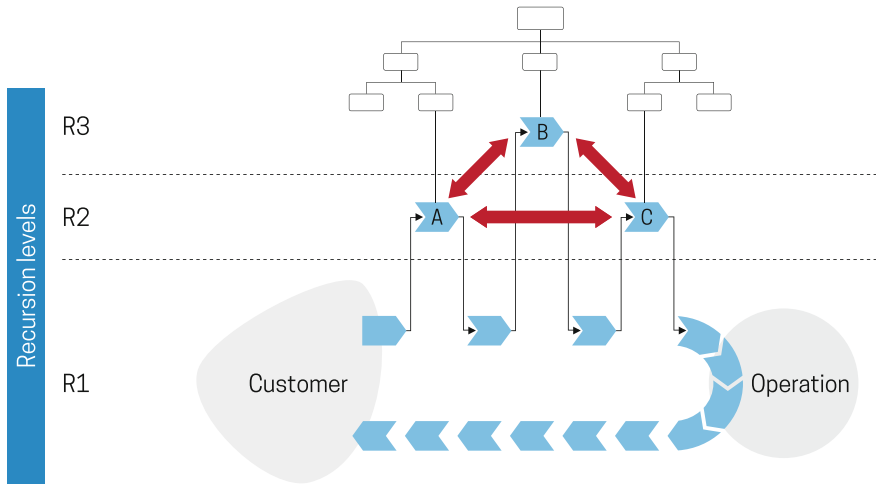
Fig. 13.11 Synergies along the operational process are often controlled and executed from too many different recursion levels and different organizational units causing a lack of coordination and information exchange

coordination of processes will lag. In Fig. 13.11, the units A, B, and C are responsible for synergies of specific parts in an operational process. Splitting up responsibilities increases the information and decision-making paths. The internal complexity increases, and so does the required coordination effort to ensure that each unit operates according to the rhythm and time frame of the underlying operational processes (see also Sect. 3.1).

Higher-level units must integrate themselves as best as possible into the operational processes of the systems 1 so as not to reduce the adaptability and reactivity of the **systems 1**. This applies, in particular, to the cases, in which so-called "central" units execute operational processes on behalf of the systems 1 (e.g., company-wide call centers).

One should thus always try to limit the number of units, recursion levels (e.g., global and regional level), and corporate functions involved in the execution of one process sequence as much as possible. For global corporations, this, in particular, also applies to the spatial, temporal, and cultural dimension, i.e., one should reduce the number of countries, time zones, and languages spoken to execute a certain process as much as possible.

One is perhaps sometimes better advised to forgo certain synergies and, instead, leave the execution of certain parts of the operational core process as close as possible to other parts of the entire process chain, its natural boundaries, and interfaces.

13.4 Three Risks Related to Synergies

Of course, one wants to obtain as many synergies as possible, but on the way to them, three traps loom:

1. The tendency by higher recursion levels to overestimate potential synergies and underestimate the intricacies involved

This danger arises due to the **information distances** between the higher and lower recursion levels. Higher levels are and cannot be aware of all aspects and details of the lower levels' varieties. This is the reason why, for instance, merging large IT systems always looks simpler than it actually is. "The devil is in the detail," goes the saying, not without reason, and this devil "detail" almost always lies buried at lower recursion levels.

Unfortunately, centralized activities once allocated to units can hardly be returned to the former units without one losing one's face. Centralization then often becomes **a one-way street**, which can be barely corrected. For this reason, it is advisable to proceed carefully with centralization measures and carry them out only after thorough analyses and tests. One should always keep the possibility and face-saving strategies open to correct mistakes and to be quick to give up synergy projects that turn out to be ineffective.

2. Ignoring or even removing the systemic functions of the lower recursion levels

When organizations want to generate synergies, they sometimes deprive the lower recursion levels of their co-decision rights. This should not happen since the lower recursion levels know the details of their variety to be processed better. The systemic functions of the lower recursion levels are necessary for the upper levels to get a correct picture of the variety across which synergies should be generated.

In addition, one should not forget that the lower levels are responsible for implementing the decisions, and thus, depend on how the generation and management of synergies have been organized by the upper levels in terms of structures, processes, and responsibilities. If the processes and structures put in place for managing the synergies reduce the ability of lower levels to process the variety adequately, demotivation will follow.

Furthermore, anyone who continually overrules the subordinate units "beheads" them (that is, ignores and disqualifies their metasystemic functions) and thus makes the recursive structure of the organization ineffective (see volume 1). Unsurprisingly, one then ends up with headless and vegetative units that no longer process the variety of their environment consciously and do not want and cannot adapt anymore.

Synergies are best implemented when they are also planned and **supported by the lower recursion levels**. To gain synergies effectively, thus requires that the lower recursion levels be involved in the decision-making process.

3. Underestimating the combinatorial effects of synergies

Synergy projects often overlook the combinatorial effect, which can arise through the combination of varieties that need to be processed. Variety does not disappear just because one wants synergies. On the contrary, since creating synergies means joining together elements that were separated beforehand, one creates new combinations, and hence, additional variety.

Consequently, synergies can become the victim of combinatorial effects (see volume 2), where the complexity does not decrease but often rises exponentially with the number of elements from which synergies are sought. Synergies can then turn into an organizational nightmare rendering the organization almost dysfunctional.

Creating synergies, hence, does not only mean to combine but also to develop the **logic** of how the various elements can be integrated and combined more effectively and efficiently. Therefore, before one wants to create synergies, one needs to assess the combinatorial effects and devise a plan for how the additional variety can be dissolved or better structured through a higher-order logic.

Summary

- Synergies that do not limit the systems 1 can and should be implemented. Synergies, however, that limit the horizontal (*eigen-*)variety critical to the organization's strategy and purpose should be evaluated in the light of the overall value created by the entire organization and minimized as much as possible. Synergies that overstretch the metasystem, limit the systems 1 critically, and do not generate sufficient value should be avoided.

- Organizations should promote decentralization as much as possible but only to the extent necessary for the processing of environmental variety and the implementation of the organization's purpose and strategy.

- One should be careful that decentralizing does not become an end-in-itself, leading to too much heterogeneity developing in the organization.

- The organizational responsibility for managing synergies should be allocated using a differentiated approach that takes the varieties to be processed and the information distance created into account.

- The following three risks should be avoided:

  1. Overestimating the potential degree of synergies.
  2. Neglecting or removing the metasystemic functions from the lower levels.
  3. Neglecting the combinatorial effects and increase in complexity resulting from synergies.

Questions for Reflection

1. What degree of decentralization exists in your organization? Is it adequate given the environmental variety to be processed and the synergies needed?
2. If you are considering the central units in your organization, do they have the requisite *eigen*-variety to generate and manage synergies (such as competencies, resources, and time)?
3. Where do you find too much (*eigen*-)variety in lower levels that needs to be "trimmed"?
4. How accurately have potential synergies been identified in your organization over the past five years? If not, what are the reasons?
5. How well are the lower levels involved in the specification, control, and coordination of synergistically controlled resources?

Reference

Beer, S. (1995). *Diagnosing the system for organizations of organization. The managerial cybernetics of organization.* Chichester [West Sussex], New York: Wiley. (Figures 21, 25 and 37 republished with permission of John Wiley and Sons Inc. and the permission conveyed through the Copyright Clearance Center, Inc.).

Toward a Functioning Organizational (Chart) Structure

14

We now come to the next step (Fig. 14.1); namely, to translate the basic model for the primary functions into the organizational chart structure ("left wing") and define the necessary adaptation mechanisms for promoting a holistic perspective ("right wing").[1]

Fig. 14.1 Step 4 in the design of organizations

> **Designing the organizational chart structure** ④

Defining the:

1. **Organizational chart structure** ("left wing")

2. Mechanisms ensuring the **holistic perspective** ("right wing")

3. **Connections between the recursion levels**

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[1]All figures in this chapter related to the VSM are or contain and if not stated otherwise, adapted (detail) views from Beer (1995b, p. 136, Fig. 37).

14.1   The Left Wing: How to Design the Organizational (Chart) Structure

As a result of the previous chapters, we have now obtained an insight into the basic model, the processes required to make the organization viable. We have also already determined which of these can and should be controlled synergistically and from which recursion level. Up to this point, the design process described from Chap. 9 onward focused on understanding and describing sufficiently well how the systems 1 and the metasystems at different recursion levels should operate.

This understanding is needed before one can start with the design of the organizational chart structure since the organizational chart structure tends to fragment the viable systems, as we said earlier. If one does not know what is vital for the successful functioning of these viable systems, then one also does not know how far the segmentation through the organizational chart structure can go, and respectively, what the costs to pay may be. Only on the basis of this in-depth understanding is one suited to define the future organizational chart structure.

The design of the organizational chart structure begins with a **prototype** which is modeled very closely to the viable systems and recursion levels. This prototype represents the best possible organization chart structure according to the laws of viability. Since it is not always possible to implement this ideal, one, therefore, will need to adapt this prototype later to the given conditions, such as the locations of production sites, available resources, and existing infrastructures, all of which determine and limit the organization. This adaptation from the prototype to the real-world conditions should remain as close as possible to the prototype.

Before we go more in-depth into the world of the organizational chart structure, a "customer warning": Organizational chart structures are reductionist representations of how organizations function in reality. Many processes are not mapped and visible in organizational charts, and one must always bear in mind that the real scope of an organization or a job is much broader than one assumes.

14.1.1   The Ideal Organizational Chart Structure: Modeling the Prototype

Should we choose a functional, business unit, or regional organization? The basic model provides direction, but we still need to transform it into an organizational chart.

If we take the underlying message of the VSM seriously, there is only one way to go: **the organization must stay as close as possible to the viable systems and their aggregation logic** (see the basic model). The viable systems that we have derived so far in our analysis and design process represent the best "structure" on how to process environmental variety. Any deviation from this structure of viable systems provokes disturbances in the variety processing processes and reduces the effectiveness of the organization's *eigen*-variety. It reduces furthermore the chances

Fig. 14.2 The basic systems 1 form the building blocks of the organizational chart structure
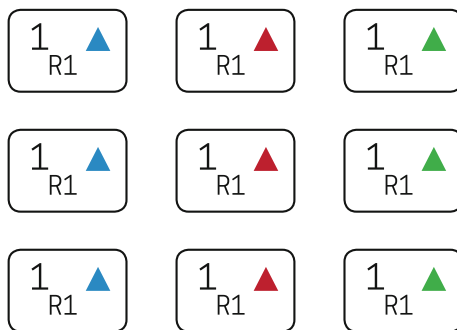
that natural ecosystems can develop. This already gives us a first indication about the "best" organizational structure: it will be, in most cases, a market- or customer-centered organization.

However, before we jump too far ahead, let us first turn to the specific process of designing an organizational chart structure. The basis and core of organizations are their systems 1, as we stated earlier. Returning to our graphical model, let us assume that the organization is composed of nine systems 1 that produce and sell triangles in three colors in three regions (see Fig. 14.2).[2] Consequently, their processes and resources should ideally be kept together as a distinct unit in the organizational chart structure as much as possible.

The segmentation of the hierarchical level should follow the logic of recursion levels (see Chap. 10), meaning that the units should be grouped according to how well their varieties fit together. In our example, one will consequently group the units with the same color at the next higher level.[3] These units are headed by a manager, unit, or team consisting of managers or executives who are responsible for the metasystemic management and control functions ("M_{R2}" in Fig. 14.3).
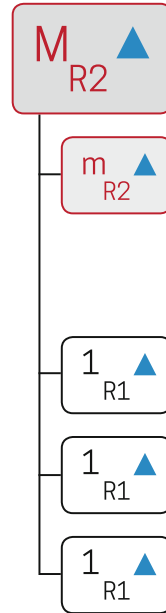
Possibly this management unit (or position) will be overloaded with too many metasystemic tasks. It will, therefore, delegate some of the metasystemic tasks to one or more units to support it ("m_{R2}"). This support unit might be charged, for example, with coordinative and regulatory tasks (so essentially with the unit's system 2). A further similar unit might be installed to relieve the management unit "M_{R2}" from audit or innovation functions.

The management unit or position M_{R2} will try to leverage the synergies that we identified earlier across the operational processes and resources of the systems 1

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[2]In this example, we choose the recursion level above the individual customer orders for reasons of simplicity. Depending on the actual number of basic systems 1, it might sometimes be more practical to start with higher recursion levels such as customer groups, products or regions when configuring the organizational chart.

[3]Following Beer (1995a, pp. 316f) the next higher recursion level starts with the system functions and processes whose focus is the management of a group of systems 1. For this reason, we count the management unit ("m"), its support unit ("m") and the synergistic unit ("Syn") as the next higher recursion level (even if they execute operational tasks of the systems 1).

Fig. 14.3 The creation of a
management unit or position
("M") and its support
unit ("m")

(see Chap. 13). For this purpose, one or more synergistic units or positions
("Syn_{R2}") will be created that take over this task (as in Fig. 14.4) and relieve the
management unit or position M_{R2}. As discussed above, the synergies to be managed
by this unit can relate to all sorts of processes, individual activities, or resources; for

Fig. 14.4 The creation of a
unit dedicated to generating
synergies ("Syn")
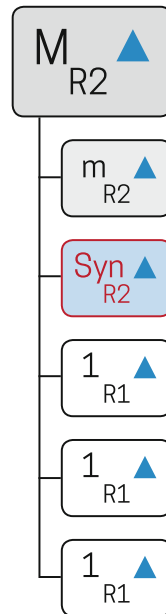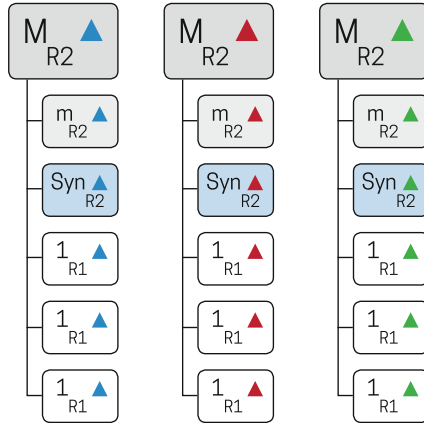
Fig. 14.5 First and second recursion level of the organizational structure

example, creating marketing brochures, call center activities, or individual production and sales processes.

The overall picture for the second recursion level of the organizational structure then looks as follows (see Fig. 14.5).

For most organizations, we have not yet reached the end of the process: if possible and necessary, these three units will be aggregated and managed by a higher recursion level. This level will be controlled by a management position or unit ("M_{R3}" in Fig. 14.6). Similarly to the lower level, this management position or unit will then try to generate synergies across all systems 1 in those areas where the systems 1 share similarities or are complementary to each other. These can be, for example, common
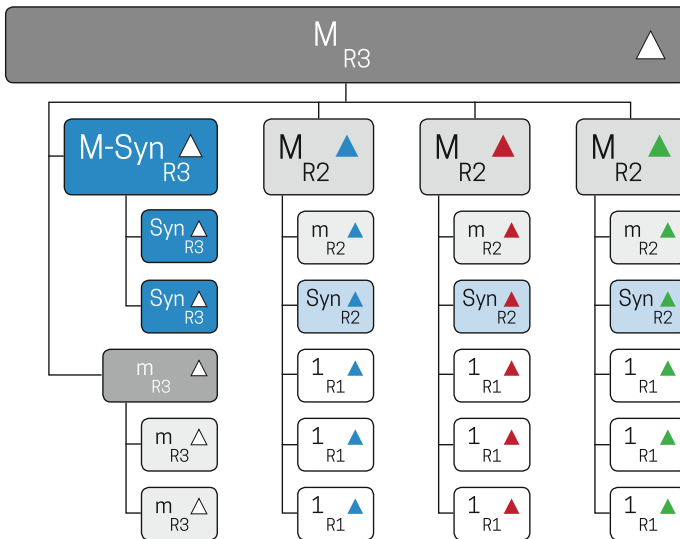
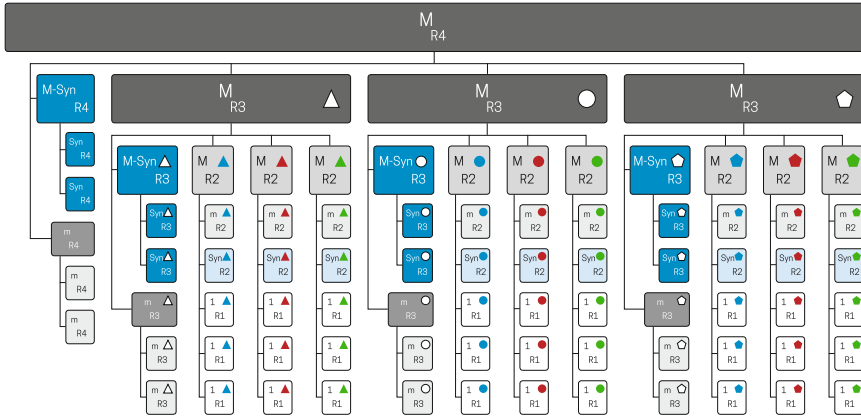**Fig. 14.6** Third recursion level

Fig. 14.7 Fourth recursion level

product features or components; certain processes such as marketing, R&D logistics; or common resources, such as money or offices, which will be managed by specialized units ("Syn_{R3}"). The management of these different synergy units might also perhaps require a separate and specialized management unit or position ("M-Syn_{R3}"). Similarly, one will also create positions or units ("m_{R3}") whose functions it is to relieve the overall M_{R3} management unit from some of its metasystemic functions.

However, let us suppose that the organization produces not only triangles but also circles and squares in different colors. These products could then be organized similarly to the triangles, but we may then need one further recursion level that seeks synergies across all the geometric shapes produced (see Fig. 14.7). At this level, one might also try to generate synergies that are common to all products regardless of a specific color or geometric shape. These units ("M-Syn_{R4}") may cover, for example, investor relations, tax or legal issues, or financial issues such as the generation of the group-wide balance sheet and consolidated financial statements.

As we can see, this process is guided by the principle that management and synergy units should be located as closely as possible to their specific operational units and processes that they manage and control. This way, the levels are nested into each other according to their specific variety.

To illustrate this modeling process with a counterexample: it would be, for instance, inefficient if the third and highest hierarchical level take over all the synergies and control from the lowest level as shown in Fig. 14.8. This overburdens the top level and extends the information paths unnecessarily.

Let us now, at the end of this process, discuss the **functioning of the synergy units** in greater detail. Firstly, the synergistic unit may take over some of the metasystemic functions of its management unit ("M_R"). In this case, the head of the management unit delegates some of his/her metasystemic tasks to this synergistic unit.

Secondly, synergistic units might also execute tasks on behalf of lower-level systems 1 such as sensing and capturing information from the environment,

Fig. 14.8 Organizational chart structure, where synergies are managed from too high a recursion level

innovating, or coordinating (see Fig. 14.9) or even executing certain operational processes and tasks of the systems 1. In doing so, they then also become part of these systems 1 and as such, involved in the system 1 management.
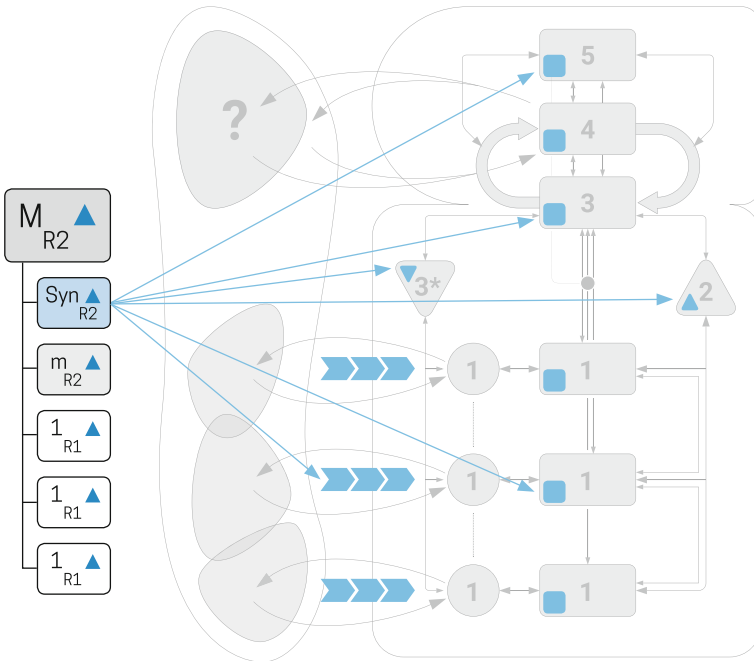

Fig. 14.9 Synergy units take over metasystemic functions regarding specific operational tasks or resources as well as their operational execution

Consequently, **they are then operating on multiple recursion levels** and need to assume **opposing perspectives**: the overall view as well as the perspective of the system 1 processes and management, for which they operate. What occurs typically between different units must now take place within them, namely, to focus on synergies but also to be sufficiently responsive and adaptive regarding the environment. The critical challenge for a synergistic unit then is to be sufficiently equally attentive to both demands.

14.1.2   From the Prototype to the Final Organizational Chart Structure

The prototype is characterized by the fact that the systems 1 should be reflected in the organizational chart structure as much as possible. In theory, a fully dedicated team, with its resources, should be available for each customer order. However, this tailor-made service can only be implemented in the rarest cases: in the high-price segment or when the systems 1 are large enough (e.g., for large infrastructure projects).

In all other cases, this will not be possible: cost pressures or the unit sizes of available resources require sharing (e.g., to obtain the minimum number of staff or the minimum size of production machines or warehouses). This need for more synergies has, of course, an impact on how many dedicated resources the system 1 units will receive. The more synergies need to be generated, the fewer functions and processes can be reserved exclusively to these units. They thus need to be transferred from the system 1 units to the synergistic units (see Fig. 14.10).
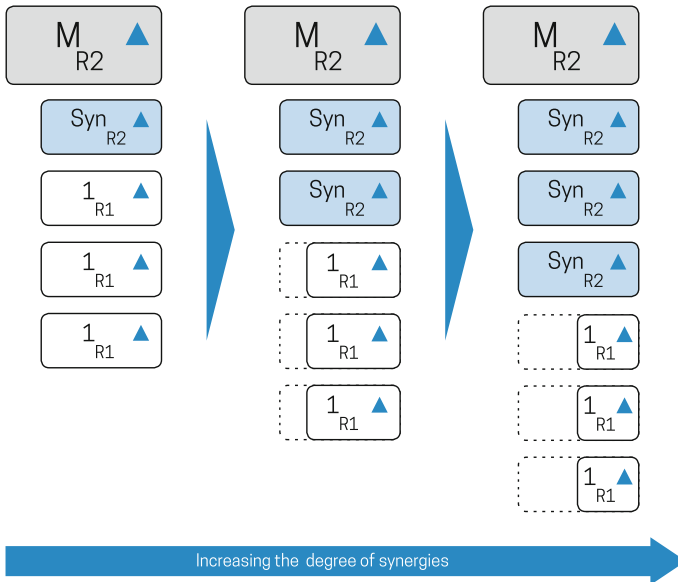
Fig. 14.10 Generating more synergies means that the tasks from the system 1 units will be transferred into synergistically operating units

Segmentation by markets   **Segmentation by functions**
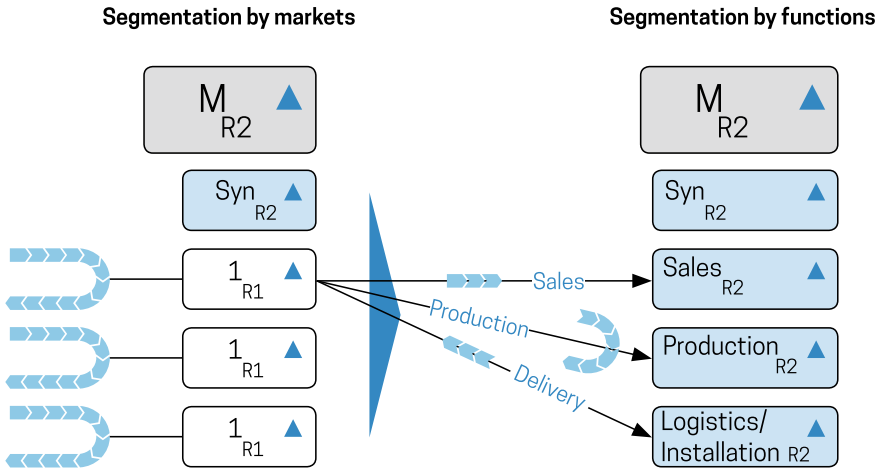
Fig. 14.11 In a functional organization, all processes are divided up to synergistically operating organization units (example of a market and functional segmentation)

The extreme point is reached in the functional organization. In this organization type, all processes and resources of the systems 1 are divided up into more specialized organizational units (see Fig. 14.11) that execute certain processes and tasks of the systems 1: all sales processes to a sales unit, all production processes, and resources to a central production, etc. (for more details regarding the clustering of tasks into units, see the guidelines for the secondary functions in Sect. 15.1.3, which also apply to the primary functions).

We see from this that the question of when to use a functional or market organization is too simplified. In reality, this is not an "either-or" question, but rather both types of organization are just the two extremes of a continuum of ever-increasing synergizing and bundling of resources and processes.

The above-outlined division of processes and resources of the systems 1 units to synergistic units has its price, of course:

1. It requires a **higher degree of coordination along the entire operational process chain**, which is often lacking in the functional organization, in contrast to the more market-oriented organization structures (Mintzberg, 1979, p. 125).
2. It produces **additional internal complexity** that exponentially grows due to combinatory effects (see Chap. 13).
3. It reduces the **systems 1** to the point where they potentially **disappear from the awareness of the organization**: in the end, no one has the customers in view any more (see Sect. 2.4).

The question, therefore, is how many processes and resources can and must be extracted from the system 1 units and bundled in specific synergistic units? This process is somewhat similar to the Mikado game, where one pulls out sticks from
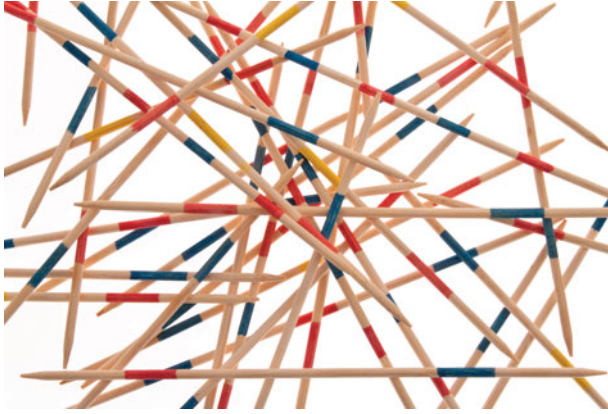
Fig. 14.12 Generating synergies sometimes resembles the Mikado game: how much can one control centrally before the system becomes unstable? © fotolia/stock.adobe.com—artist(s): Gina Sanders

the stack (Fig. 14.12). Like in Mikado, the question then is, which and how many processes and resources can be withdrawn from the systems 1 without that their viability collapsing and their operational performance becoming severely disrupted.

What happens if the exchange between the horizontal (*eigen*-) varieties of the different elements of the systems 1 becomes disturbed could be observed in a company that produced gaming software. This group consisted, on the one hand, of business units, which were able to operate from a monopolistic position and, on the other hand, of business units which had to fight in very competitive markets.

All these business units were served by a central IT, which developed the products for the business units in the digital markets. As the monopolistic business areas were the largest in this company, the central IT focused primarily on these. This led to the problem that the coding of software for the units in the competitive markets was not executed as demanded by the speed and timing of these markets. These units, therefore, became too slow and lost competitiveness even compared to much smaller competitors, whose IT units almost exclusively worked for units operating in competitive markets. These competitors could, therefore, react faster and more flexibly to market changes and challenges.

The centralization of the IT had clear cost advantages since it ensured that IT developers were used efficiently, codes reused, and the software modules for the different business units remained compatible with the overall platform. On the other hand, as this case showed, it jeopardized the very existence of some of the digital business units because it restricted their ability to react, and further, it reduced their horizontal *eigen*-variety. In this case, a more **differentiated approach** would have been more beneficial (see Sect. 13.3), whereby some aspects would be developed centrally, but others left to specific "Rapid Response" teams available to those market units that had to survive in competitive environments.
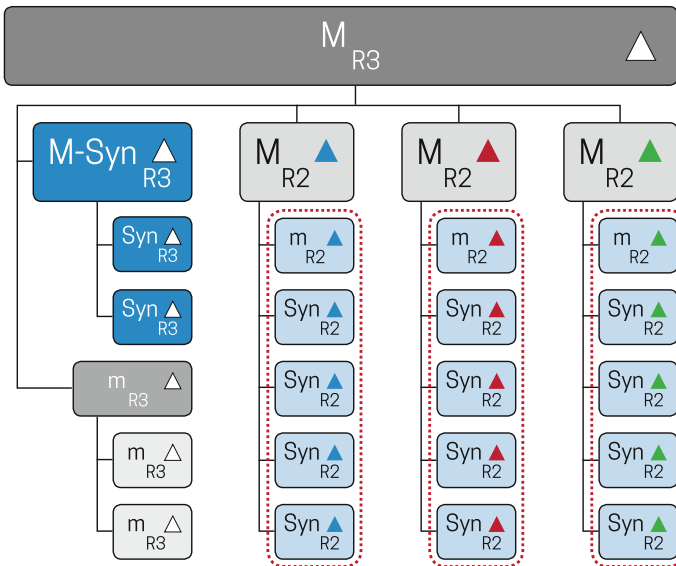
14.1.3   Hybrid Structures

Sometimes it is not possible to build an organizational structure based on just one structural logic. If the availability and specificity of resources do not allow it, one needs to implement hybrid structures. This is the case, for instance, in organizations with business units (see Fig. 14.13) that are structured at the top level according to products and markets, but at lower levels (so within the business units) according to the corporate functions.

Hybrids might not only become necessary vertically but also horizontally (i.e., at the same recursion level). Although a medium-sized company was able to implement a business unit organization for most of its markets, for smaller markets, it was not economical to have a separate unit installed for each business unit. In such cases, one will have to switch to a regional-type structure, where a regional office with several local sales offices or representatives (Syn R_2) work for several business units (three-colored circles) and are managed by a local head on behalf of the business units (see Fig. 14.14).

Together, the business units must, however, and entirely in accordance with the logic of the VSM, then define according to which rules they use the management, employees and resources of the regional unit (see system 3 and "resource bargain"). The business units then act as the **collective management of this regional unit**, and the manager of the regional unit must understand him- or herself as being their agent in this regional market.


Fig. 14.13 Hybrid organization: Below the market structure at R_2, we find a functional organization (represented by the synergy units)
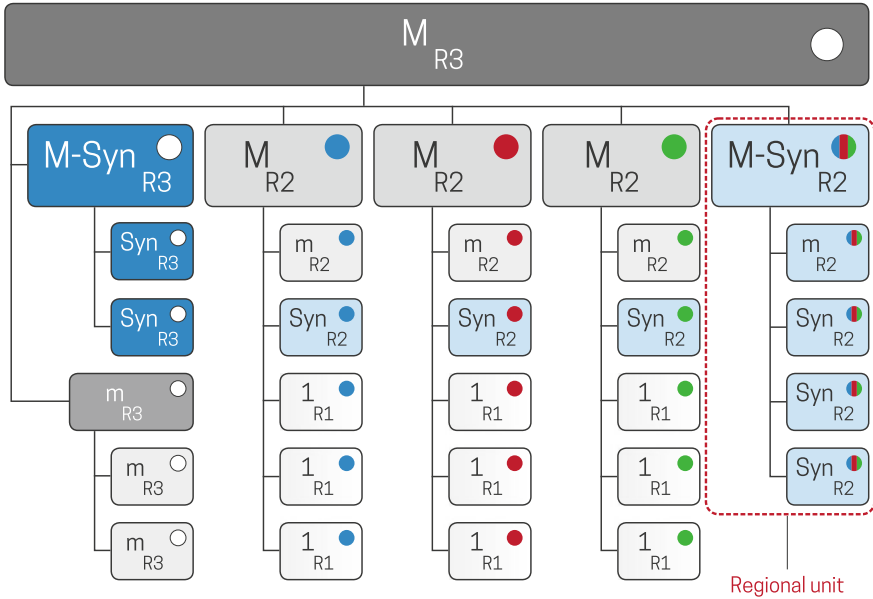
Fig. 14.14 Hybrid of a BU-type organization with a regional unit

In such hybrid organizations, one should not be mistaken as to what the true systems 1 are: in the concrete case, it is not the regional unit itself. The **regional unit is only a synergetic device** to manage the local systems 1, which are the individual local BU markets and thus belong to the BU. One can observe this synergistic nature in the challenge for the regional sales manager to switch continuously between the different BU markets, customers, objectives, and orders and feel being torn apart by the diverging requirements of the business units. The logic of how variety needs to be processed does not, therefore, merely change by adopting a regional structure.

What we have discussed here regarding the function of regional units might also apply to other units that are, for instance, responsible for production sites, warehouses or, in some cases, subsidiaries (see below). They too might be synergistic devices delivering services for several business units.
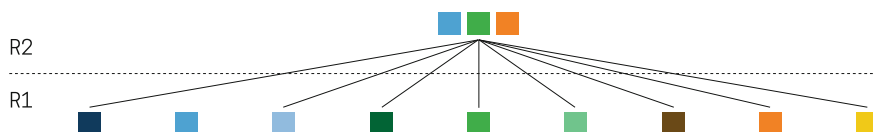
Fig. 14.15 The top recursion level R2 must cover a wide range of different varieties

> **How does one add an additional level and choose the right holding form? What are subsidiaries in the VSM, and what are the implications for the design of hierarchical levels in the headquarters? If you are interested in all these issues, then continue reading here, otherwise, go to Sect. 14.2**

14.1.4 Inserting a Hierarchical Level and Adding a Level at the Top—The Cases of Divisional and Holding Structures

Sometimes, levels are added to the existing structure either by splitting one level into two or by placing one at the top (especially holding structures). Based on what we have said so far, how must one understand these two cases? Both add a level, but they face different design questions.

**Case 1: Splitting one recursion level into two ("formation of divisions")**

One of the initial reasons for the development of the divisional organization, as Chandler pointed out in his detailed study (2003), was that the top recursion level became overloaded by the increasing variety as a result of the accumulation of different business fields, such as in the case of Dupont or GM.

Returning to our previous example of colors and geometrical forms, we can express this situation as a top level that feels responsible for too many different colors (see Fig. 14.15).

Divisionalization in this context means that an additional recursion level becomes inserted (see Fig. 14.16) below the top level to aggregate the lower
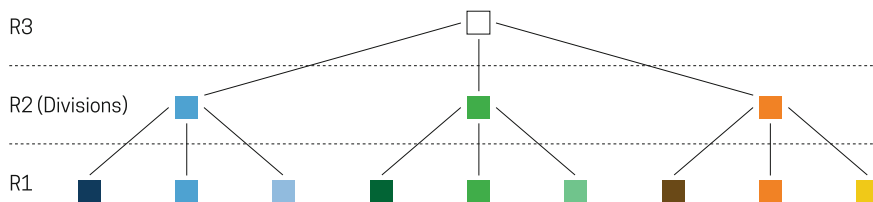
Fig. 14.16 Insertion of divisions at R2
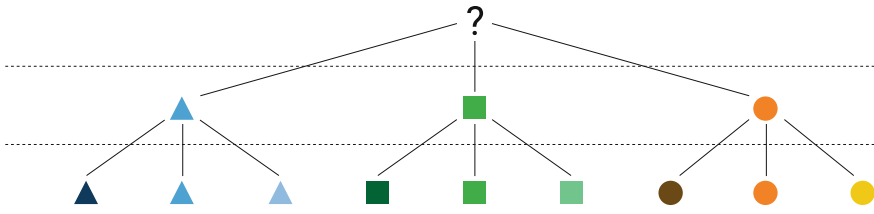
Fig. 14.17 There is no common aggregation criterion for the top level

units into larger units (i.e., the "divisions") before their issues reach the top level. The top level becomes relieved because it then must only control these groupings (divisions) and thus can reduce the variety that it needs to process.

The extent to which these new groupings make sense then ultimately depends on the varieties to be processed and how well these can be segregated meaningfully across different levels (see our earlier discussions) so that the levels do not interfere too much into each other.

Case 2: Grouping of independent units under the umbrella of one overarching unit and level

While in the case described above, the divisionalization is easier to argue because it divides the variety to be processed into smaller and more manageable parts; the bottom-up grouping of decentralized units to larger divisions is trickier: how much sense does it make to assemble heterogeneous business units under the roof of one unit?

Let us take the following example in Fig. 14.17, in which not only the color but also the geometric shapes vary. Defining the top level is far more difficult in this case: there is no common denominator, neither in shape nor color-wise. So, what could and should then be the contribution of the top level to the entire organization?

If one wanted to install an overarching unit on the top, it would be condemned either to idleness, because it cannot create any value, or to building a top-heavy organization by replicating, at least partially, the (*eigen-*)variety of the middle level (see Fig. 14.18).
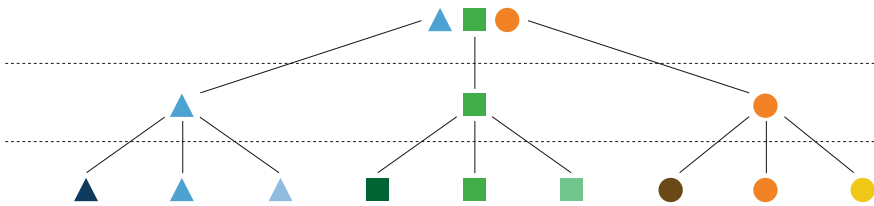

Fig. 14.18 The top recursion level duplicates the variety of the middle level

In such a situation, an upper level does not make much sense, so it would be perhaps better to leave the organization just with the middle level. These are the cases where, for instance, individual business units would operate better alone than under another unit. To avoid such cases, one needs to specify precisely for which issues the newly created top level should be responsible.

This brings us to the choice of the right model for a holding company (here we are only concerned with management related and not with legal or fiscal aspects). If, as we have seen in Fig. 14.18, the varieties of the lower-level units are too heterogeneous, then an overarching control unit on top of it makes little sense. Here, a holding company can and should reduce its area of responsibility to the few aspects that concern all units, which will be in most cases not directly related to the core business of the operational units, but to more general issues such as financial, tax, and legal aspects. This is the *modus operandi* of a **financial holding** (see Fig. 14.19). The more the top level can influence aspects of the core operational processes, the more the organizational model moves toward an **operating holding**.

If one intends to create a financial holding, one should, however, be aware of the risk of diverging business missions and purposes (see Sect. 9.1). If a financial holding manages them like an investment portfolio, this might lead to decisions that hinder the development of individual business units. Its reference environment might then change from the markets of the business units to financial markets consisting of potential investors. Such a divergence then might lead to tensions and frictions within the organization about its purpose and overall objective and could disturb the cohesion across the recursion levels. To find congruence in the core values, beliefs, and identities might then become a significant challenge. Hence, in such cases one needs to pay attention to the alignment of all metasystems regarding the purpose that they pursue so that the internal processing of variety does not get disturbed over internal conflicts about the organization's "true purpose."
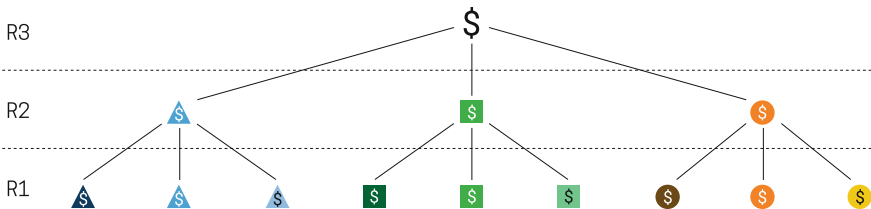
Fig. 14.19 Financial holding: it manages only the financial aspects relevant to all units

To sum it up, both cases of divisionalization (top-down versus bottom-up) are different, as we have seen. In the top-down case, the joint operational control has already demonstrated its value. The only question left is to show that an intermediate level can provide the desired relief and is necessary. In the second case, however, it must be shown that the grouping of several units under one overarching unit makes sense at all and does not create unnecessary conflicts.

14.1.5   Not Everything that Appears to Be a System 1 Is One

What are subsidiaries, regional headquarters, local offices, and plant sites in the VSM logic? In particular, subsidiaries have been identified for a long time as systems 1. This might have been the case at the time when the VSM was developed, but the situation has now changed considerably. As Birkinshaw and Pedersen (2009, p. 367) rightly pointed out, subsidiaries become increasingly dissolved, and many of their activities relocated to the business units or central corporate functions. The standard subsidiary belongs to the "endangered species" for both authors. There are, of course, also subsidiaries that have managed to rise in the company's structure and have become company-wide centers for specific activities (e.g., for research projects or the offshoring of IT services). However, these subsidiaries are no longer subsidiaries in the classic sense but have moved up to higher recursion levels and perhaps become part of a company headquarters operating at several locations.

From the perspective of the VSM, the reason for such shifts in the role of subsidiaries can be explained easily: The variety has changed in such a way that a different segmentation of the environment, as well as aggregation logic, has become more meaningful to the organization, both from a strategic and from an efficiency perspective. No longer do countries, but product markets count; and similarly, no longer the mastery of geographical, cultural, and legal specifics, but the performance and features of the products are vital.

Shorter physical transport routes and communication channels, as well as more legal and economic harmonization on a global scale, have made national differences less significant. As a result, the independently acting subsidiaries, which have, thus far, functioned as systems 1, have become less necessary and reduced to the task of managing the environmental interfaces related to sales and first-level support tasks only (see Fig. 14.20).

This, of course, has implications on the subsidiary heads: although remaining managing directors from a legal aspect, they are, in fact, reduced to key account managers in their country. Not they, but the central business and product units largely make the business decisions. To fight against this
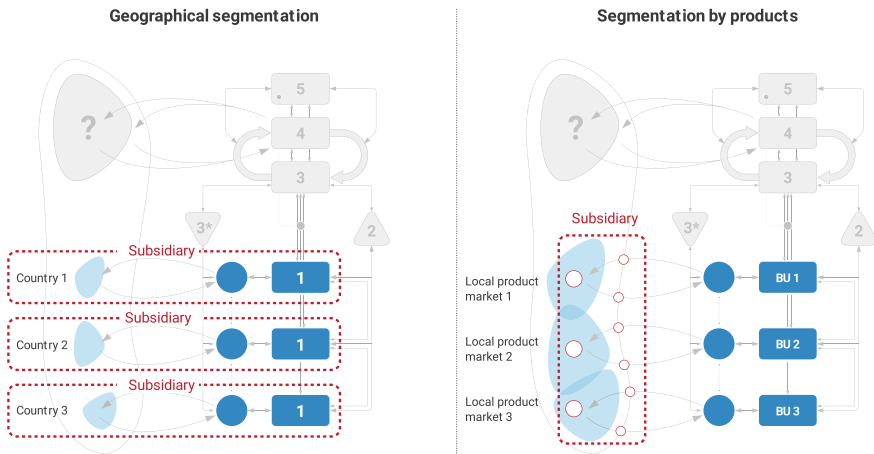
Fig. 14.20 With the change from a geographically segmented organization to a BU-type organization the systemic function and role of a subsidiary change significantly

dynamic is almost impossible due to the irreversible changes in the varieties that need to be processed.

Unfortunately, some business or product units make a crucial mistake and go too far in the demotion of subsidiaries: since the environment and its support are, nevertheless, part of the overall system 1, those who control the interface to the environment must be represented in the management of the systems 1. Practically, and expressed more simply, the BU management should then be composed not only of the BU managers and their staff but also of the regional and local subsidiary managers[4]—the BU managers must also include the local managers in their decision-making processes.

This example also illustrates that we should not let ourselves be guided by the legal structures when analyzing an organization. For the processing of variety and adaptation to the environment and future, they are of limited importance. What counts are the varieties to be processed and how they are channeled through the organization.

What we have just said regarding subsidiaries also applies to regional headquarters, local offices, or plant sites: in most cases, they too are not systems 1, but only a combination of specific functions carried out on behalf of the systems 1.

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[4]Local and regional managers, however, must also change their perspective and understand themselves as members of the business unit management and not merely as advocates and lobbyists for regional and local issues. As outlined in volume 2, participatory management requires that the representatives change their perspective and regard the organization in its entirety.

14.1.6 "Too Much to Supervise!"—Creating Hierarchies Within a Recursion Level

We have so far just discussed how the supporting management units ("m") and synergy units ("Syn") emerge in the design process, but the question remains, how they can be structured if they have to shoulder too many tasks. As already discussed in Sect. 10.5, a recursion level might easily lose its overview due to too many responsibilities.

Basically, there are two options available to differentiate and structure the task spectrum of a recursion level. First, the recursion level can partition its task spectrum into several units at the same level ("horizontal differentiation") or secondly, differentiate itself into several hierarchical levels ("vertical differentiation") to which it assigns different tasks. The latter option would be chosen, if otherwise, the recursion level will have too many units at the same level. Figure 14.21 shows how the third recursion level becomes more differentiated into several units and hierarchical levels when compared to Fig. 14.14.
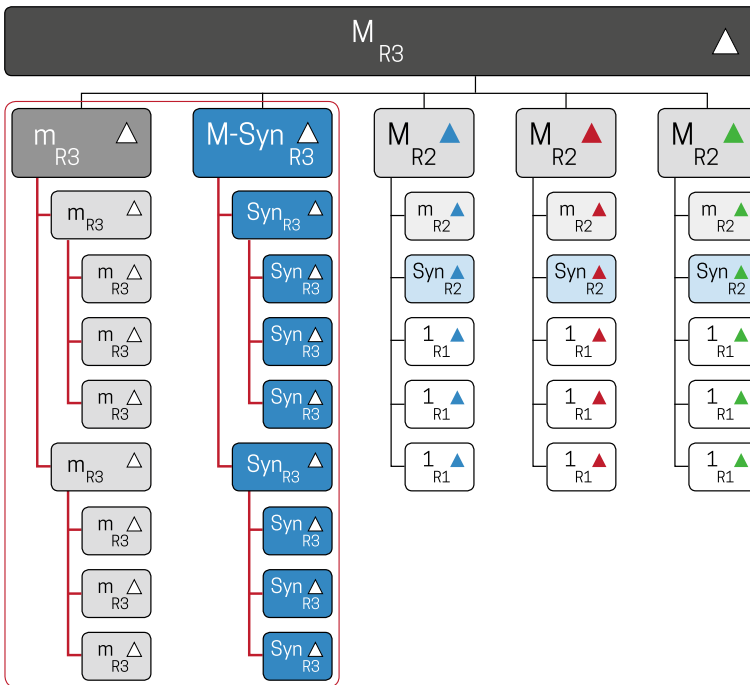
Fig. 14.21 A complex and too big task spectrum at R3 makes it necessary to differentiate its support ("m") and synergistic units ("Syn") into more units and hierarchical levels

While such differentiation might sometimes be necessary, there are dangers associated with it, as already pointed out in Sect. 10.5:

1. Regarding the **horizontal differentiation**: dividing a level into too many different units can fragment the **operational processes**. The operational units at the lowest level then face a myriad of different specialist units at higher levels to which they need to turn for support or a decision. In the worst case, these higher-level units are not coordinated among themselves so that it falls onto the lower levels to align the upper levels.

2. Regarding **vertical differentiation**: Too many hierarchical levels in one recursion level might obscure the decision-making process, prolong information and decision-making paths, and decrease transparency for the other recursion levels. With more hierarchy levels, it becomes, for instance, less clear who decides in the upper levels. The headquarters becomes more opaque.

14.2 Activating the Organization's Right Wing to Counterbalance its Silos

The **organizational chart structure** almost inevitably fragments the viable systems. This can easily be observed in everyday life, such as in the existence of "silo mentalities." Each organizational design process must, therefore, also consider how it reintegrates the different perspectives into one holistic view, what we called earlier the "right wing" of the organization. Since we have already discussed the right wing intensely in Chaps. 5–7, this section functions mainly as a reminder to review your "right wing"-mechanisms once you have finished your organizational chart.

Many organizations, unfortunately, stop too early, forget their right wing and only discover the need for it later, through a lengthy learning process that costs time, emotions and political maneuvering. A business division of a consumer goods manufacturer, that was functionally structured, once had to recognize that its functional organization could no longer meet the challenges coming from its different markets and that its silos promoted self-optimization instead of collaboration. Accordingly, the functional organization was augmented by so-called streams, in which various corporate functions would interact together more closely in view of individual submarkets and would target them more specifically. We can visualize this alignment through the introduction of such "streams," as shown in Fig. 14.22.

In VSM language, these streams represent the underlying systems 1: If the submarkets are too heterogeneous, the different underlying varieties force the functional organization to restructure its processes more in alignment with these markets.
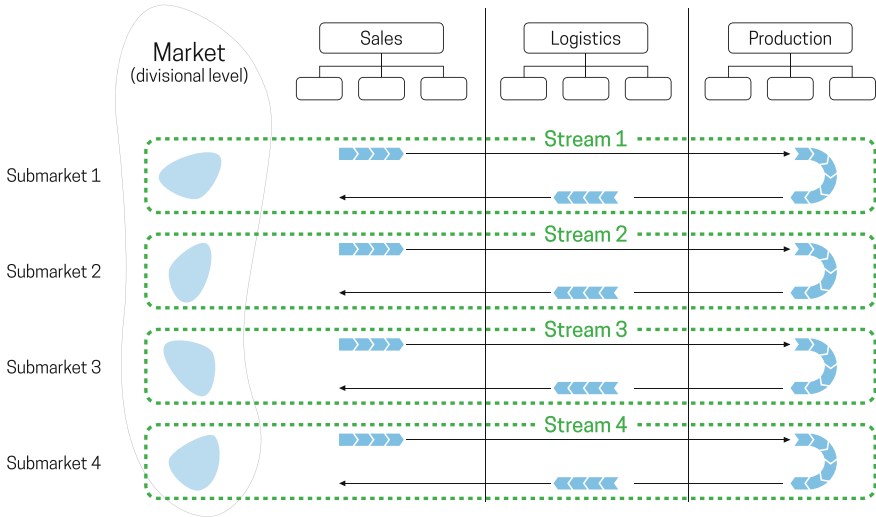
Fig. 14.22 Functional organization with a cross-functional "stream" organization

However, the regrouping of operational processes into streams was not yet enough to attain an overall picture in this case: although the interfaces and objectives between the corporate functions within a stream were aligned, serious problems continuously reemerged despite agreed processes and rules.

As it turned out, the variety of operational business was still too high to be resolved by standard interfaces or email. Too many employees continued to work much too confined within their functions. A **holistic view**, as well as a mutual understanding among the corporate functions, was still missing. In the language of the VSM, the metasystems of the individual streams were still too fragmented or did not even exist. The holistic control model of how the varieties should be processed and managed across the entire stream was still lacking. The formal instruments did not sufficiently promote the convergence and mutual adaptation of perspectives (see Chap. 6).

Consequently, one had to create a separate institutional space where the convergence of perspectives, the creation of a holistic perspective, and the formation of a common culture and sense of mutual responsibility could begin. The solution was found in convening all relevant managers and experts of a stream to quarterly retreats, during which they were able to discuss the various topics freely at the level of the streams and the business division. The benefit was significant: it created a collective awareness, and language, and speeded up the problem-solving process. Through this institutional space, the functional organization could finally overcome its fragmentation and revived the metasystem of each stream, as well as of the entire business division (see Fig. 14.23).
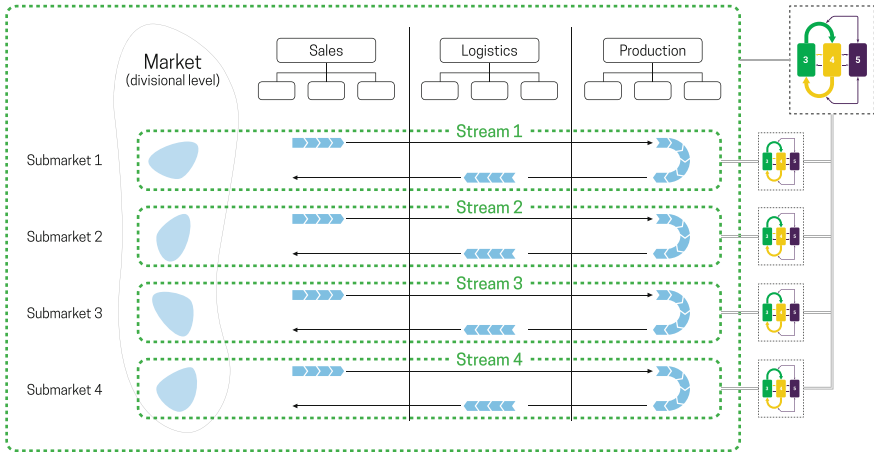
Fig. 14.23 The streams introduced by the company needed their proper and institutionalized metasystem to recreate the holistic view sustainably

Retreats like the one described above are often seen as an accessory, but in fact, they are an essential part of an organization. They belong to its "right wing" and must be defined in parallel to the organizational chart structure. This was also one of the reasons why Beer recommended the creation of an Operations Room (see volume 1). Whether management retreats are sufficient depends on the specific circumstances. Sometimes it is necessary to intensify the creation of this overall view even more, both temporally and spatially, for example, by placing the various unit managers temporarily in a shared office so that they can adjust and exchange continually. One can also install weekly steering meetings that regard the entire operational process of the viable systems from a higher and more holistic perspective, such as was the case in an insurance company that needed to overcome frictions, misunderstandings, barriers, and double work due to the lack of coordination.

When organizations implement new so called "horizontal" structures such as the streams mentioned above, unfortunately, they often forget to ensure sufficient alignment with the heads of the existing corporate units. Today, under the banner of greater agility, teams are often formed across these units that can decide issues affecting these units' resources and their synergistic/coordinative function, without explicitly coordinating with the heads of these units. However, without this alignment, the organization either becomes fragmented into two realms or the heads of these corporate units are demoted to merely rubber-stamping what has already been decided in these teams. In both cases, the organizational chart structure becomes almost meaningless and one had better design a new organizational structure. For this reason, the heads of the units must always take part in the metasystemic processes of these new structures, as well as in the creation of the holistic perspective on the organization.

In the context of organizational design, it is thus imperative to consider how the corporate functions need to align first with each other, and secondly, with those who lead a "stream", for instance. This analysis of what it takes to fully develop the organization's "right wing" should be done before the new organizational chart is announced and implemented, otherwise the costs will be high.

14.3   Restoring the Organization's Recursivity, Ensuring Its Cohesion and Developing Its Lateral Channels

Even if the organizational chart structure preserves the viable systems in their integrity, we must also be aware of the fragmentation dynamics that occur due to the **vertical structure of organizations**. Each additional recursion level fragments the organization, prolongs information paths and promotes the emergence of different understandings and perspectives, we have already said in volume 1. As a board member or managing director, one is often confronted with team decisions that are premature and not well-thought-out in view of the larger strategic position of the company or the challenges it is facing. Similarly known are the opposite cases where the "chieftains" decide issues that do not make sense to their employees. These are everyday examples of diverging recursion levels and the reason why the VSM demands the creation of **inter-recursive channels to restore recursivity and maintain cohesion** in all its dimensions (see volume 1). We have already discussed the relevant design questions regarding the inter-recursive channels in Sect. 12.6 and need not elaborate them again in detail. Here, the point is rather that we do not forget them and that we thus need to revisit them at the end of the design process and to check what is still required to achieve full recursivity and cohesion across the entire organization (see volume 1).

We also need to consider a second risk that results from the **aggregation logic** through which the viable systems have become nested into each other. Simon (1962) made the observation that systems can only be **nearly**, and thus not completely decomposed. The best aggregation logic will not be able to capture all connections. While the majority of cases can be processed within the chosen aggregation logic, some cases will always remain which escape this logic. These are the cases where one needs the help of units that belong to a completely different branch in the organization.

What is thus needed for those situations where another recursion logic is necessary? Here, the **lateral connections** between the viable systems that are not directly connected (see horizontal green/light grey line in Fig. 14.24) come into play because, in these exceptional cases, they enable the organization to break with its primary structural logic and reorganize differently (see also volume 2). These are the cases, where, for instance, customer wishes are fulfilled that could never be processed within the set of regular rules, reporting lines and structures, but only because units and their employees have already established links to other units that help to overcome the fixed lines of communication, information, and decision-making. These
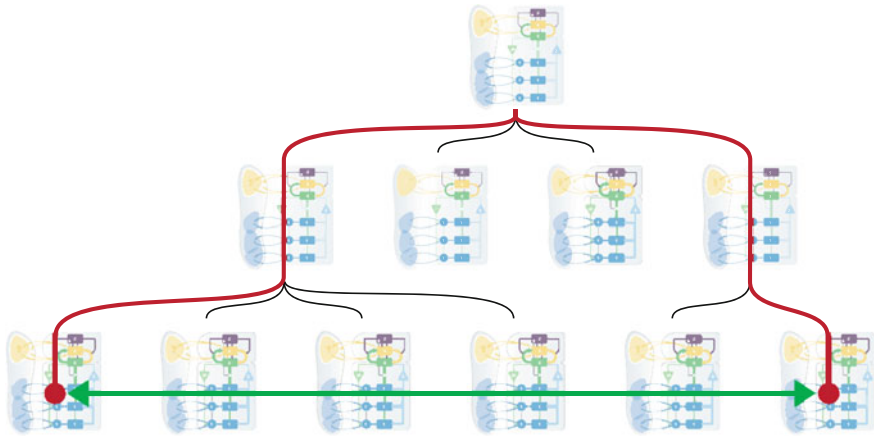
Fig. 14.24 Lateral coordination mechanisms (green/light grey) relieve the top-level recursion level from coordinating the lower ones (red/dark grey; from volume 2) (Color figure online)

lateral connections correct for the reduction of complexity that the organization continually undertakes, especially through the choice of a particular aggregation logic.

Designing organizations is thus not finished with the organizational chart but also requires to create those frameworks, instruments, and platforms (see volume 2) that allow the creation of such **lateral connections across the entire organization**. Through them, the organization can assume different recursion logics and thus broaden its *eigen*-variety and increase its agility. Often, these connections also become the sources of innovation since they let people meet that have different perspectives, and thus can stimulate each other.

These lateral connections need to be cultivated carefully: They can also endanger the stability of the regular organization when they are not coordinated with the established information and control channels and systems. Similar to the risks of too much informal coordination (see volume 1 and 2), they can decrease the transparency and overview of an organization. It is therefore vital that lateral decision-making processes be transparent to the rest of the organization in order not to endanger the regular organizational structure. Decisions made in the lateral network must be brought to the attention of the regular organization, otherwise they duplicate the organization and might even create a "shadow organization".

Summary

- The organizational chart structure should follow the structure of the viable systems as much as possible.
- The synergistic units should be located as close as possible to the operational units whose resources they control.
- A highly synergistic organization (e.g., functional organization) can be put in place as long as it does not limit the horizontal variety of the systems 1 critically.
- Grouping systems 1 according to different formal aggregation criteria at the same recursion level should be avoided.
- When creating synergistic units, one should pay attention to the risk of creating too much need for coordination and too much internal complexity as well as losing sight of the systems 1.
- In addition to the definition of the organizational chart structure, processes and structures must be put in place ensuring that the holistic view is not lost and that the inter-recursive channels are sufficiently well established to provide enough transparency and coherence across the entire organization.

Questions for Reflection

1. Check to what extent the organizational structure of your organization reflects its environment. Should processes and activities be grouped differently?
2. How close are the synergistic units in your organization to the operating units? How much have they been designed in a differentiated way or have they been formed instead on the basis of too simplistic principles, such as "everything has to be centralized/decentralized")?
3. How well are the tasks for processing of variety allocated across the various levels in your organization? Do phenomena such as duplication of work, bottlenecks, or levels and units that only pass through information occur?
4. How well are processes and structures established in your organization that promote a holistic view among all employees, managers, and executives?
5. How well does the organizational design process in your organization pay attention to the inter-recursive channels? How transparent and accessible are the levels to each other?
6. How well are lateral connections and networks developed in your organization?

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Organizing the Secondary Functions

15

Once the primary functions have been defined, and the basic model has been developed, one can then design the secondary functions (see Fig. 15.1). Why is this sequence necessary? The answer lies in the principle of "follow the business": secondary functions must follow the structure of the primary functions since the latter fulfill the purpose of the organization and thus, are at its center.

How are then secondary functions then organized and designed? The design process for the secondary functions is, in many parts, similar to the one for the

Organizing the secondary functions ⑤

Defining the:

1. **Operational tasks** of the secondary functions

2. Required **metasystemic functions**

3. **Synergies** regarding secondary functions

4. **Organizational chart structure** for the secondary functions

5. **Interfaces between the secondary and the primary functions**

6. Interfaces **between secondary functions**

Fig. 15.1 Step 4 of the design of organizations

primary functions. There are, however, some specific challenges, which we need to understand beforehand and which we will discuss in this chapter in more detail.[1]

15.1 Designing the Organizational (Chart) Structures for Secondary Functions

The design process for the secondary functions is in many ways similar to the one for the primary functions, we just said. The biggest difference is perhaps that one does not develop a basic model for the secondary functions as we did for the primary ones (see Chap. 10). The body has only one skeleton, and likewise, the organization has only one basic model that reflects its business model and how it intends to fulfill its core purpose. Secondary functions are not the organization's purpose but only follow the primary functions. Consequently, they do not have their own basic model but need to become embedded in the right place in the basic model of the primary functions. And at this point, the design process for the secondary functions starts.

15.1.1 Identifying the Tasks of the Secondary Functions and Designing Their Operational and Metasystemic Processes

The first step in an organizational design process is to identify all the secondary functions that an organization needs. Secondary functions emerge out of the operational processes and the organization's *eigen*-variety in the form of resources, infrastructure, technologies, and competencies that support the primary functions. Whoever employs people needs processes to take care of them (HR). Whoever needs raw materials requires someone who is responsible to see that they are purchased and delivered on time (procurement and supply chain management). Finally, whoever operates in an economic system based on money needs someone who collects and distributes money (finance). All these processes, resources, assets, technologies, and so forth, must be executed and/or managed.

   Like with the primary functions, one consequently needs to analyze which secondary-type tasks are required and then designs the necessary operational processes of the secondary functions (e.g., purchasing, recruiting, IT) in greater detail. Here again, the crucial point is not only the process perspective but even more so, how one achieves an Ashby-conformed equilibrium between the environment and *eigen*-variety of the secondary function. Key questions are, for instance:

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[1]All figures in this chapter related to the VSM are or contain, and if not stated otherwise, adapted (detail) views from Beer (1995, p. 136, Fig. 37).
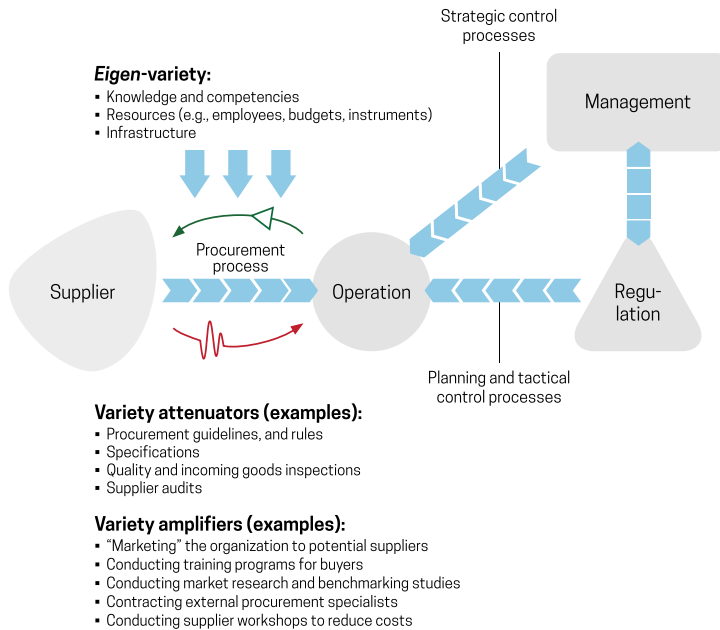
Fig. 15.2 Schematic model for the procurement process

- What kind of **operational processes and tasks** do the secondary functions perform for the systems 1, and how do they support the systems 1?[2]
- Which **environmental interfaces** do they service?
- What constitutes the **variety of their environment**?
- What kind of *eigen*-**variety** do they need to possess so as to achieve **equilibrium** with their environment, such as resources or knowledge?
- What are their **amplifiers** and **attenuators**?

The result of these questions and the corresponding analyses will lead to a process model, as we already know it from the primary functions (see Fig. 15.2).

Since these operational tasks and processes generate the need for **metasystemic functions**, these must be worked out in the next step (i.e., what must be coordinated

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[2]One should always remember that secondary functions are not part of the operation since they do not generate the purpose of the organization. They only become part of it as support processes that help regulating, maintaining, or improving the *eigen*-variety of the operation. If we use "operational" in the context of secondary function, it thus has a wider meaning than just the system 1 operations and refers to the execution of basic tasks and processes (e.g., concrete ordering and shipping of goods).
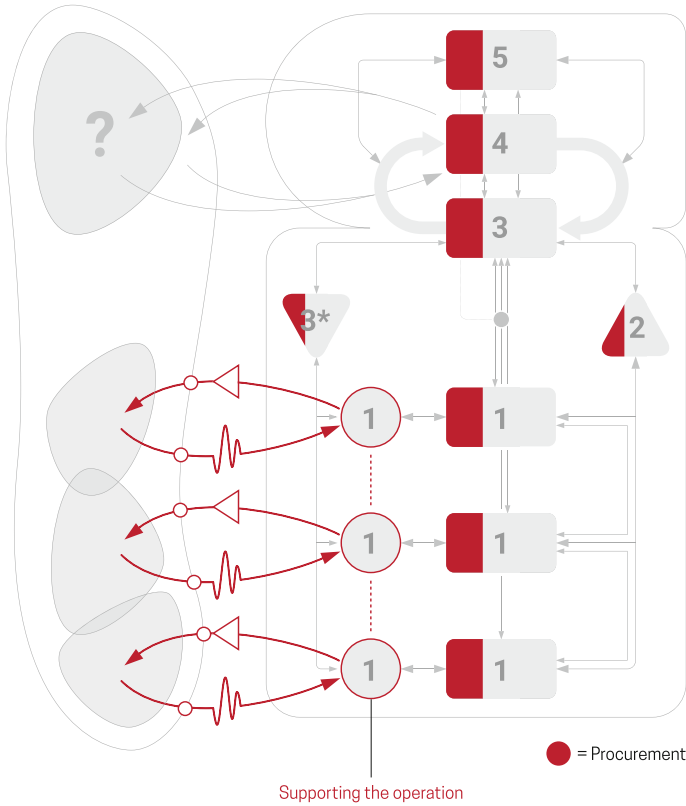
Fig. 15.3 Systemic activity profile of procurement

or audited?). The definition of the metasystemic functions follows the same process as already described in Chap. 12 for the primary functions. As we pointed out in Chap. 1, secondary functions perform many, if perhaps not all, systemic tasks across the entire organization (see Fig. 15.3). These systemic tasks must be identified and described across all recursion levels of the basic model: one processes purchase orders at the lowest level and develops and manages global purchasing strategies at the top level.

However, not every secondary function can be found at every recursion level of the basic model. While almost all recursion levels might need a finance or IT function, this might not be the case, for instance, for logistics or purchasing. There might be cases where, for instance, procurement activities on the intermediate levels (e.g., regions) or at the top make no sense (e.g., in the case of a purely financial holding). However, this is not problematic but rather, to be expected, since the basic model reflects only the primary functions.

In line with what we already said in Sect. 8.4 regarding the required detail level, the analysis should only focus on the specific core processes and activities as opposed to attempting to map all the secondary functions in detail.

15.1.2 Assigning the Responsibilities for Synergies

Like with the primary functions, one then tries to identify what kind of synergies can be generated and from which level they should be controlled. The principles for choosing the right recursion level are the same as for the primary functions and consequently need not be discussed in detail anymore (see Sect. 13.3).

Secondary functions are, however, not entirely free in the choice of the level from which they want to generate and control synergies. Secondary functions exist to support the primary functions and purpose of the organization. This means that the chosen level for secondary functions must not critically impair the primary functions they are supposed to support (see Fig. 15.4). More concretely, this means, for example, that purchasing processes can only be bundled globally if the *eigen*-variety in the systems 1 does not become significantly restricted (e.g., fewer product options, lengthier contract negotiations and delivery times, loss of information). If this is the case, one then might perhaps be forced to decentralize the global procurement department into procurement units on different continents or even individual countries so as to offer a rapid and flexible servicing of the primary functions.

The **organizational structure of the secondary functions** must always be defined **in the context of and in dialogue with the primary functions**. If no
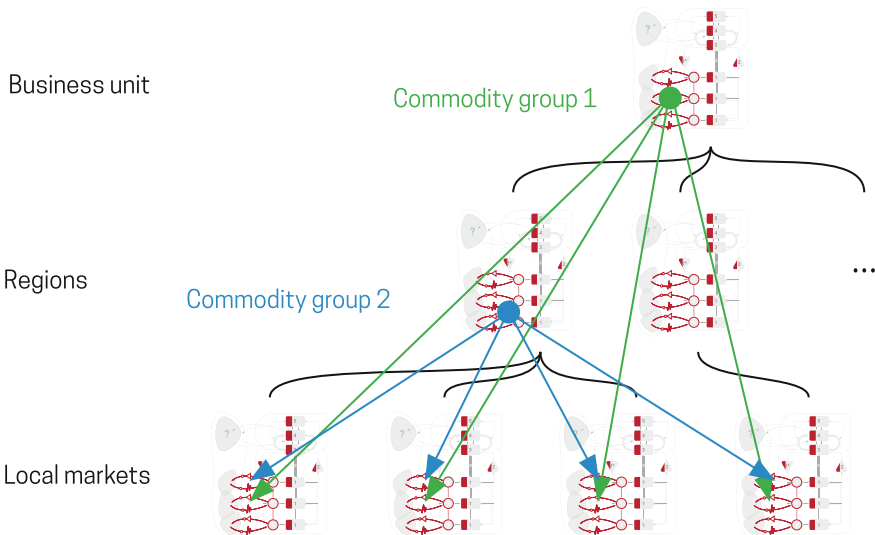
Fig. 15.4 Commodity groups might be managed synergistically from different recursion levels depending on their role for the primary functions

Commoditiy groups	Company level	Business units	Regions	Local markets
Commodity group 1		✔		
Commodity group 2	✔			
Commodity group 3	✔			
Commodity group 4			✔	
Commodity group 5				✔

Fig. 15.5 Assigning the management of a commodity group to recursion levels (schematic)

decisive criterion suggests itself, the **primary functions and their viability should be given priority over the secondary functions**.

The final result is a table that shows which tasks are assigned to each recursion level (see Fig. 15.5) and perhaps differentiated by content, such as commodity groups, markets, and jurisdictions.

Some secondary functions also have **interfaces with the environment**. Grouping the secondary functions synergistically then also depends on the environmental structures. Purchasing is not simply "purchasing." The procurement markets for paper, electricity, steel, and machinery are different and require specific knowledge. No buyer can negotiate and place orders for all types of goods and services with the same level of expertise. Similarly, one cannot train every IT employee in all IT technologies used in an organization due to cost reasons.

In the case of procurement, consequently, one will segment the multitude of different purchasing orders into different categories that best reflect the differences in the environmental variety. Similarly to the primary functions, the structure of the secondary functions should follow and mirror the environment as closely as possible to facilitate responding to the environment and the processing of its variety.

If the environmental structures offer several segmentation options (e.g., different markets), one proceeds as already earlier discussed regarding the primary functions and selects the **segmentation logic** that …

1. … provides the **highest degree of homogeneity** or **complementarity** among the various partial and wider environments as well as futures. The higher the homogeneity and complementarity, the better one can adjust to the processing of the complexity and specialize.
2. … offers the **best segmentation of the partial environments** in view of the number of interfaces and operational interdependencies.
3. … **optimizes the internal processing of variety**, especially concerning the generation of synergies (system 3) and coordination of processes and resources (system 2).

15.1.3 Designing the Organizational Chart Structures of the Secondary Functions

How does one design the organizational chart structure for secondary functions? Basically, one applies the same principles and process of the primary functions, as discussed regarding the formation of jobs and units (see Chaps. 3 and 4) and the design process of the organizational chart structures (see Chap. 14), through which one will then arrive at a picture as shown in Fig. 15.6.

Wherever feasible, one will create synergistic units for the secondary processes and for the tasks across the system 1 units and recursion levels ("Syn"), but only up to a certain degree: the transfer and bundling of processes in synergistic units must not disrupt the system 1 units in their processing of variety and in their attempts to achieve an equilibrium with their environment.

Drawing organizational boundaries between secondary functions is relatively straightforward since they are typically separated from each other through the differences in their content (e.g., legal versus financial issues). The more
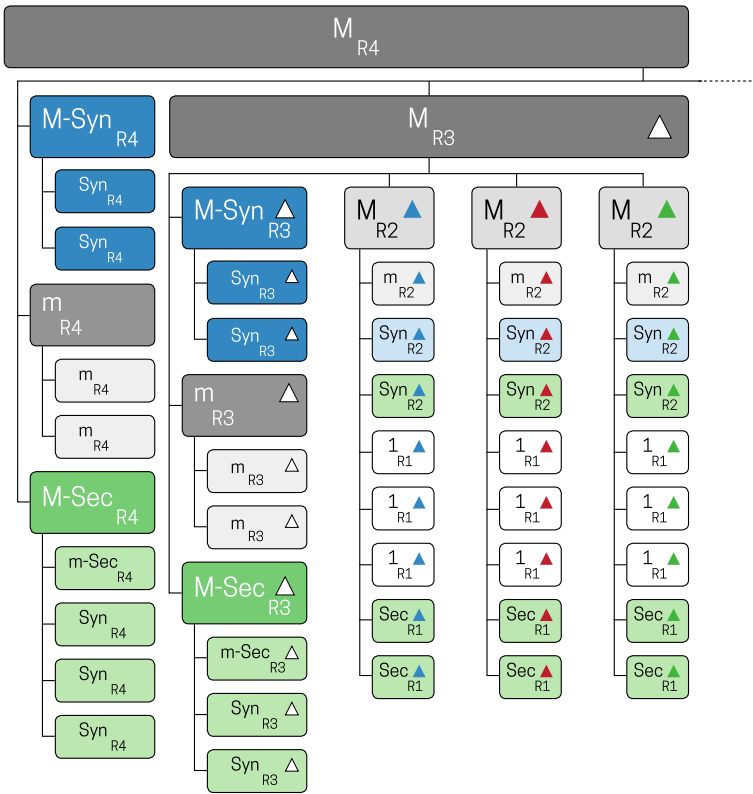

Fig. 15.6 Secondary functions (green) are added to the organizational chart structure

challenging task is, however, how one structures a secondary function unit internally if it attains a certain size. In this case, one will try to follow these **guidelines and heuristics**:

1. Tasks that are in **contact with the environment should be bundled** to jobs and units in such a way that at the one hand they best mirror the structures in the environment (e.g., regarding technologies or regulatory issues) and at the other hand, the necessary competencies and skills (see Ashby's Law).
2. To focus on the environment better, one will tend to separate **the tasks oriented toward the environment** from those focusing **purely on internal processes** (e.g., administrative processes) and group them in different units provided that this decoupling does not slow down the process flow and the processing of information.
3. One will also distinguish the tasks that are **process oriented** from those that are **rather knowledge** and **skill-driven** (e.g., so-called expert positions).
4. Processes that belong to a **greater process chain** can be grouped to improve the process flow and promote a holistic process view, provided that the **varieties processed** and the **required *eigen*-variety** do not differ too much between the process steps. One should never group processes just because they share the same name—the variety to be processed and/or the *eigen* variety used can differ and can thus increase the organization's internal complexity.
5. And vice versa, tasks that treat the **same type of variety** (e.g., IT problems) and/or require the **same *eigen*-variety** (e.g., specific IT skills) can be grouped into one unit provided that this segmentation does not hinder the process flow and processing of variety.
6. Tasks related to **the development of new instruments, resources, and processes**, like in projects, should be separated from those related to **routine processes** since they require a different skill set and different instruments.
7. **The exercise of different system functions** should be separated as much as possible, to maintain the systemic polarities within an organization (e.g., order processing versus auditing and optimizing these processes versus developing procurement strategies).
8. The **exercise of the metasystemic functions** necessary for certain operational tasks or processes should remain close to these tasks or processes. A secondary function and each of its sub-units should exercise all systemic functions itself.

One temptation is that of aggregating and combining secondary function units up to the top with a final "super-unit" as a capstone. However, is that useful? In particular, this question arises if one looks at the portfolios of some executives. Sometimes, the aspects of the secondary functions are too far apart to be combined in a superstructure meaningfully, such as finance and HR-related issues. In such cases, it might sometimes be better to keep them separated and to form an extended management board in which expert representatives can represent the various secondary functions more specifically.

15.1.4   The Weak Point of Secondary Functions: Their Inter-recursive Channels

Despite its similarity, the design process for secondary functions must overcome one challenge that the primary functions do not face. While the primary functions are relatively clearly connected through the inter-recursive command and information channels, the secondary functions do not always possess equally well-developed channels. Often, the management of the secondary function at the top level must use the channels of the primary functions. They must pass through the primary management units of the lower levels to reach their operational units and employees. In real terms, this means that a global finance director might need to go through his or her management board and the MD of a local subsidiary to reach the employees in the finance department of this subsidiary. Sometimes, the secondary function might even not be represented in the management of the subsidiary.

This situation is graphically illustrated in Fig. 15.7: the managers of the secondary functions (green boxes) are neither represented in the management of the lower recursion levels (large gray boxes) nor connected to their corresponding units at lower recursion levels.

However, inter-recursive channels must also be developed for all secondary functions and not just for the primary ones. The heads of the central units (e.g., central HR or controlling) thus rightly demand a connection and control channels to the operational units of their function. How else should they enforce their synergies, regulations, quality requirements, innovations, and values?
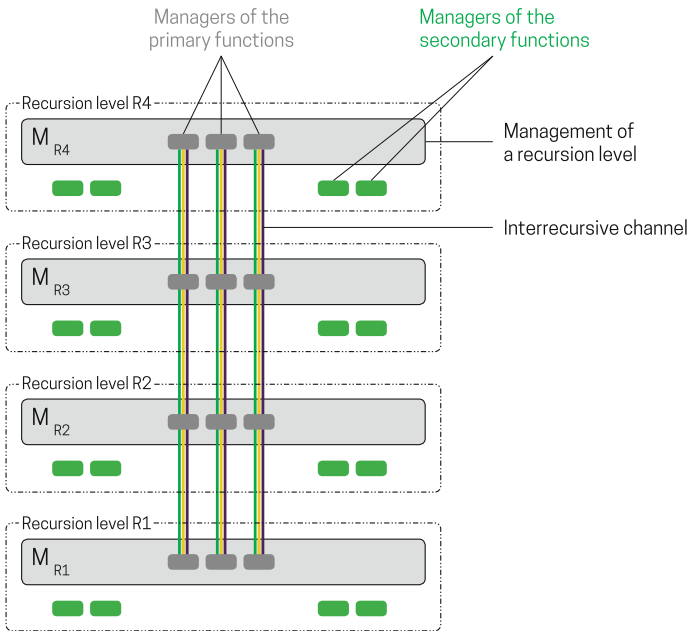
Fig. 15.7   In this organization: the managers of the secondary functions (green boxes) are not represented in the management function of a recursion level (light gray boxes) and lack inter-recursive channels to their counterparts at lower levels
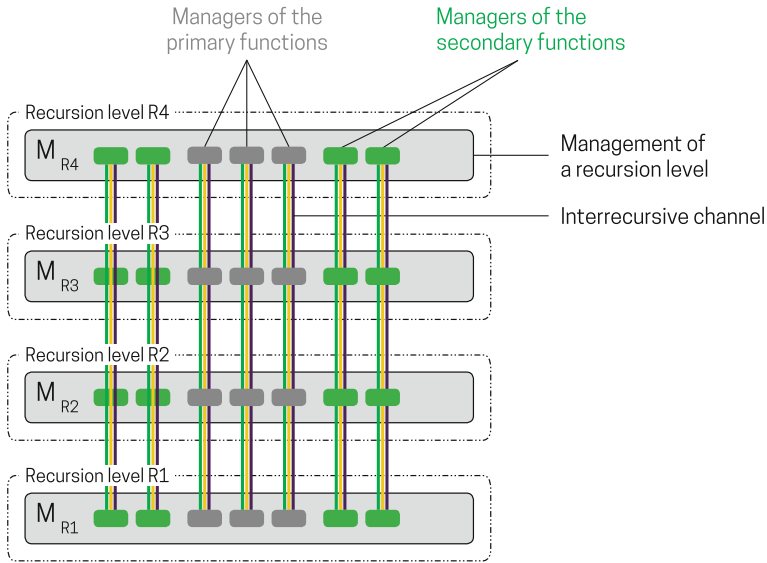
Fig. 15.8 In this organization, the secondary functions are part of the management function of each recursion level and are connected across all recursion levels

For this reason, one must understand and design the management functions ("M") of the viable systems properly. They should not only include representatives of the primary functions but also those from the secondary functions (although not on all topics and not all the time). These representatives must also be in close contact with their colleagues from the same secondary functions at other recursion levels (Fig. 15.8) and develop a common understanding regarding their function.

We now can also understand a bit better the motivation of some calls for stronger centralization. In some cases, the so-called centralizations are not primarily undertaken to achieve synergies. Instead, they represent attempts to restore interrupted inter-recursive channels, as previously shown in Fig. 15.7. "They do what they want" is commonly heard from the upper levels regarding the lower levels in such constellations, and "they have no idea" are the verdicts by the lower levels about the upper levels such as HQ. If one starts seeing the problem as it is depicted in Figs. 15.7 and 15.8, then centralization is one, but not the only way. Instead, the true cause (see also volume 2) could be that the **inter-recursive channels are interrupted and need to be restored**.

Centralization might often only be the last resort, but for that, one should try first to reconnect the levels by setting up common information and control systems, organizing joint strategy development days, conducting training, or letting employees experience the other levels and perspectives. A channel to strengthen the link between recursion levels might also represent system 3*, i.e., being present on the ground and accumulating operational knowledge. Those who want to steer more strongly and create synergies must strengthen their vertical *eigen*-variety according to Ashby's Law; the metasystem must become more knowledgable about the operations, we said in volume 2. "Management by remote control" does not create inter-recursive channels with sufficient *eigen*-variety.

15.1.5   Interfaces Between Secondary and Primary Functions and the Necessity to Create a Holistic View

As the next step, one will then have to consider how the interfaces between the secondary and primary functions should be designed and maintained and how one ensures that both sides have the requisite *eigen*-variety to understand each other (e.g., knowledge, processes including feedback loops, time).

Both types of functions deal with a specific set of variety and, therefore, develop their particular *eigen*-variety in response. To understand each other, they would ideally mirror the *eigen*-variety of the other function, which would be inefficient. Consequently, there will always remain aspects of a function incomprehensible to the other functions. We can observe this asymmetry, for instance, in IT projects, where only in the course of time does it become clear what the other function originally intended or meant to say; and this is true for both the IT specialists as well the representatives from the "business side." Both believe that they had already understood each other while drafting the specifications and during the contract negotiations and it is not until the first test run of the software that both sides start realizing how small their mutual understanding was.

One will attempt to formalize and standardize these interfaces as far as possible using rules and procedures so that they become a routine. However, this only works with varieties that do not change. Wherever the varieties change, as is the case with projects, such procedures fall short. One solution could be to install "bridgeheads" (i.e., nominating people who know both worlds well enough) such as so-called business partners who are installed for this kind of function. Although this is a viable path, it often leads to the monopolization of the translation knowledge ("gatekeeper") and prevents this knowledge from spreading further into the respective functions. Moreover, it also increases costs to have someone in place whose function is "just" to translate.

The best approach is, most likely, to involve and activate the individual employees in the primary and secondary functions directly and let them learn as much as possible about the "worlds" of the other functions. Therefore, the representatives of the various functions should visit each other as much as possible and show and explain to each other their core activities, central challenges and key parameters of the variety that they are processing. They do not need to acquire a detailed knowledge of the other side since this would result in a duplication of knowledge. The objective rather is to create a mutual understanding of the key questions, concepts, terminology, and metrics as well as the implications of certain key decisions on one's area of responsibility.

These "visits," although they initially cost time and money, are a good investment. They promote the **construction of a common perspective** and lay the basis for solving and organizing problems more accurately and rapidly as well as making more informed and precise decisions. Finally, one should also ensure that the secondary functions are always adequately involved in the creation of the holistic perspective of the entire organization. They should not only be told about the strategy of the organization but also be actively engaged in strategy processes or key management meetings that deal with important strategic decisions.

15.1.6 The Interaction Between the Secondary Functions

Finally, one needs to take care of the interaction between the secondary functions that have to work together, for example, between those who control the flow of materials (purchasing and logistics). These may also include formal instruments such as regular supply chain meetings.

For unplanned and irregular varieties, these interactions cannot be prestructured and hence need instruments that are flexible enough. In many cases, one tries to overcome this through the creation of committees, but the challenge is that these do not always have requisite variety: problems are always changing and, therefore, require possibly other participants or do not emerge according to the meeting schedule.

It is more intelligent to leave it to the people themselves to connect and to solve problems directly, but there is one challenge—for people to connect to each other, they must have already known each other beforehand, and they must also be aware of each other's competencies. We are thus returning to the informal and lateral network that we have already discussed on several occasions (see also volume 2 and chap. 14). If we consider how much informal contacts between units help to overcome problems, then one sees the value and benefit of these informal networks immediately.

This, however, needs to be organized because people typically meet only within their function and only to a lesser degree cross-functionally. Therefore, it is worth organizing regular informal networking meetings between all corporate functions, through which connections can build up, and that can be activated later to solve problems quickly. These networking meetings might cost a bit of time, but on the other hand, it is precisely these informal contacts that help the organization to gain efficiency through quick and unbureaucratic solutions, even if no cost calculation methodology can calculate these gains precisely. What is important here is not only the networking itself but above all, the **reduction of social and personal barriers** between the employees.

15.2 The Specific Challenges of Secondary Functions

Let us now discuss some of the specific challenges of the secondary functions that the primary functions do not face:

15.2.1 Mediating Between Different Environments

This challenge is immediately apparent: Secondary functions are not only concerned with the primary environment of the organization; that is, with customers, but also with other environments and resources. While the primary functions deal with the primary environment only; namely, that of their customers and the market, secondary functions must watch several environments simultaneously and

communicate between their environments and the primary environment mediated through the primary functions. Further, they must adapt to the incoming variety of secondary environments in such a way that the primary functions can function optimally regarding the variety of their environments.

This mediation and translation function can be well observed, for instance, in the area of IT, when the specifications and requirements are defined; in procurement, when the goods and services to be purchased are specified; or when HR translates the business requirements into job advertisements for the job market. Here, the requirements of the primary functions become translated toward the environments of the secondary functions (e.g., via internal "business partners"), and, vice versa, the variety of the secondary environments becomes adapted to the *eigen*-variety of the primary functions.

This **translation and mediating competency** are crucial for the functioning of the secondary functions which are judged by how well they can execute it. For secondary functions, this means that they must always understand both the complexity of the primary environment and that of the secondary environment. The secondary functions must, therefore, have sufficient *eigen*-variety regarding the varieties of the primary functions as well as to those of their secondary environments.

The difficulty in fulfilling this expectation can often be seen in the accusation by primary functions that secondary functions do not think "business-mindedly" and do not understand what the market wants. This phenomenon results from secondary functions that are either too focused on their specific environment and/or when primary functions do not involve them in business matters sufficiently, and therefore do not obtain the possibility to experience the customer and market first-hand. Also, the difficulty of secondary functions to be perceived as a **strategic partner** to the primary functions bears witness to the problematic position of secondary functions.

Since the primary functions—and quite rightly so—are mainly focused on their environment, secondary functions often have the feeling of not being correctly understood by the primary functions. What is often described as a communication problem goes deeper: it involves different "worlds," perspectives, and cause-effect schemes. It is, therefore, not only enough to intensify communication but we also need to foster the mutual understanding of each other's "world" and perspective—and this is a matter not only of talking but also of thinking and reflecting!

15.2.2 Secondary Functions Have Less *Eigen*-Variety Available Than the Primary Functions

An additional challenge for secondary functions is that they tend to have a smaller amount of *eigen*-variety at their disposal than primary functions. The primary functions fulfill the main purpose of the organization, whereas secondary functions are necessary, but somewhat in the sense of "a necessary evil," which should cost as little as possible. They are, therefore, even more dependent on internal synergies than the primary functions. This has an organizational consequence: their organization and staffing cannot be as strong, rich, and nuanced as those of primary

functions. Nevertheless, they must manage to meet the higher *eigen*-variety of the primary functions. So, in secondary functions, one quickly becomes the "man/woman-for-everything."

This is one of the reasons for the outsourcing of secondary activities. Outsourcing companies can build up larger organizations, thus generating more synergies and consequently, possibilities to specialize. This increases the *eigen*-variety available to the organization that is outsourcing its processes.[3]

15.2.3   "What Are You Actually?"—The Secondary Functions as the Undiscovered Part of the Metasystem

Finally, another challenge lies in the fact that secondary functions are often only seen as purely operational processing units (i.e., within the scope of the systems 1). Metasystemic topics, such as synergies, innovation, and strategy development, are still primarily reserved for the primary functions. Believing that thinking and planning happen only in the primary functions is a common misperception.

Only in recent history have secondary functions also been discovered in their metasystemic dimensions and integrated into the metasystemic processes of an organization (e.g., as a member of an extended executive committee). As a mirror image, this is also reflected in attempts by secondary functions to market themselves within the organization as "strategic partners" and their hope to be perceived as such by the primary functions. Although they should succeed in doing so, unlike the primary functions, they must, however, fight for the recognition of their metasystemic responsibilities and competencies.

This uncertainty about the metasystemic scope of secondary functions is also reflected in the long search for their role and identity in the overall company: what are they actually? For example, a company's central IT department could be perceived as a…

- … **service provider,** whose main focus then is the operational implementation and best possible support of the operating units. Then, the main objective is the operational processes and the quality of the services delivered.
- … **central IT**. Then, its role is mainly conceived as a synergistic unit and as a watch-dog for synergies (i.e., system 3), albeit with less of a focus on the support level to the systems 1.
- … **strategic partner** for the systems 1. Then, its essential task lies mainly in system 4; that is, in the further development of the IT systems to enable new business models, for example, related to artificial intelligence.
- … pure **orchestrator**. Then, the main task of the IT is to coordinate and/or reconcile various IT systems to one another and to monitor them (mainly system 2).

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[3]This advantage must, however, be counterbalanced with the greater (information) distance of outsourcing companies to the organization and the need for more intense transduction (see below).
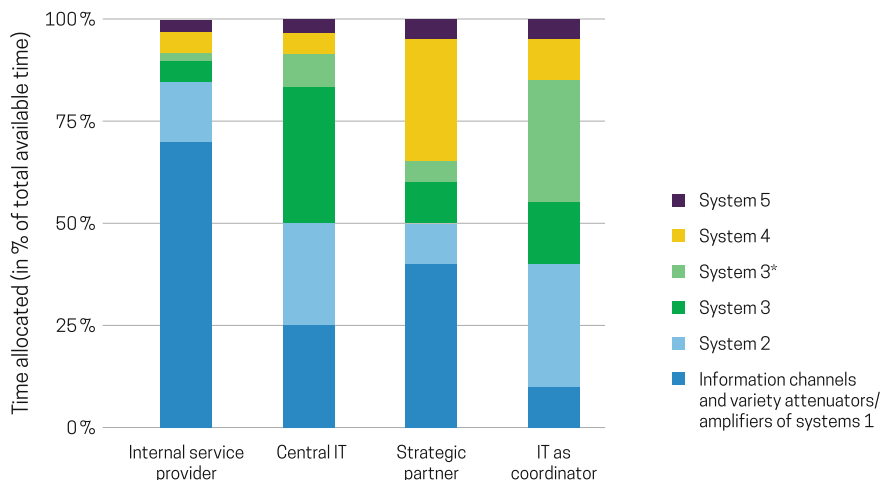
Fig. 15.9 Various systemic task profiles of an IT department expressed in time allocated to the systemic functions (schematic representation)

All these profiles are in a way justifiable because they represent specific priorities, but they are reductions of the actual scope of a secondary function and are, therefore, not always helpful but possibly even harmful. When looking at the task spectrum of an IT department more closely (see Sect. 1.1.10), then one will soon find out that it must exercise all system functions, although sometimes in different ratios to each other (see Fig. 15.9). These varying proportions of importance and time allocated to the system functions result from different circumstances in which, for instance, an IT organization can find itself. They depend *inter alia* on first, how the execution of IT tasks is configured across the whole organization (e.g., the involvement of third-party companies, decentralized IT departments), second, the organization's current challenges and third, the organization's strategy and need for synergy and innovation.

However, at any time, **all five system functions must be present**. This was not the case in a public sector agency where the doctrine was issued that the IT department should function as an internal service provider who must "serve the internal customers [*i.e., other units*]." Apart from the problem that customers can only exist in the external environment, this invited all other units and departments in the organization to believe that IT was there to fulfill all their wishes. Since the IT department was regarded exclusively as a service provider, it had no choice but to meet all these customer wishes to the letter. The result was a highly heterogeneous hardware and software architecture, across which it was impossible to generate any meaningful synergies. The IT department was reduced to the operational delivery of services and stripped of all other metasystemic functions; most notably, system 2, 3, and 3*.

This is a drastic example, but it also illustrates how reductionist roles result in one-sidedness and the neglect of the entire systemic task spectrum of a secondary function leading to dangerous dysfunctionalities.

15.3 Outsourcing—What Makes Sense?

Due to the growing complexity and cost pressures the outsourcing of processes has become vital for organizations to stay competitive. This applies to secondary as well as primary functions. When we talk about organizations today, we might still have a picture in mind that comes from the late 1980s or early 1990s: companies that do everything themselves. Since the mid-nineties, however, we have witnessed a radical reorganization of companies and a reduction of their share in the total value creation that touches levels of often 20% or even less. One must even no longer produce one's own product. However, what can one outsource, and what should not be outsourced?

For the VSM, it is, in principle, irrelevant as to who executes a task in the system, whether it is the staff of the organization or third-party employees. The relevant system should not be equated with the boundaries of the legal company. The actual system can go beyond these boundaries and often does. We also experience this in everyday life. In the course of time, third-party employees become so much part of the organization that they are considered like its employees. Moreover, third-party companies or temporary workers can perform tasks better and more responsibly than the organization's own staff.

From the perspective of the VSM, the relevant questions are instead, whether…

1. … there is a consensus between the outsourcing company and the outsourcee[4] as to **what the relevant system is and where its boundaries lie**.

The challenge here relates to the integration of the outsourcee into the entire system. The third-party provider needs to accept the purpose, values, and identity of the outsourcing company. Questions such as "Does the foreign company understand us and what we want?" or "Does it work in our (common) interest and for us or does it have a conflict of interests?" would be the corresponding everyday manifestations of this problem.

2. … the **employees** of the third-party company have **the requisite *eigen*-variety** and
3. … the **information channels** between the outsourcing company and outsourcee are functioning.

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[4]In this book, we refer to the company that outsources its processes to a third-party company as the "outsourcing company." The company that takes over the processes from this outsourcing company is called "third-party company" or "outsourcee."

Essentially, one needs to take care that the outsourcee is well enough integrated into the system and that no dysfunctionalities, as discussed in the second volume, can arise.

Apart from these three general aspects, we can derive from the VSM some more specific guidelines by walking through its architecture:

1. The relevant system (i.e., the company) must not lose its sensors to the environment to the outsourcee.

Achieving an equilibrium with the environment or the ability to react and adapt to changes in the environment is one of the fundamental tasks of an organization, on which it must always keep an eye. Whether the organization is in an equilibrium state or not, it will only know if it has enough sensors to the environment. The organization must constantly know what the environment wants from it and must avoid becoming "deaf" to environmental changes by being deprived of its sensors.

To outsource the customer support to call centers operated by third-party companies saves costs, but one also risks losing the famous "ear to the market." Outsourcing projects must, therefore, ensure that the organization retains sufficient sensors to the environment: to the partial environments (systems 1), the wider environment and the future environment (system 4).

2. When outsourcing operational activities (system 1), one must ensure that the knowledge generated through these activities remains within or flows back to the company.

When operational processes are outsourced, much attention is often paid to the cost side and quality aspects, but less so to the fact that processes also have another important positive externality for organizations: they **generate valuable knowledge** in the form of **experience**, which reinforces and updates the available *eigen*-variety. When one outsources operational processes, this source of knowledge and *eigen*-variety is lost to the outsourcee. The information loop from the operational processes back to the outsourcing company becomes interrupted. The information no longer flows back into the organization, and essential feedback mechanisms are then destroyed.

This is especially problematic for system 3* because it must know where to look and for this, it particularly needs experience when it comes to operational processes. Outsourcing deprives the organization of this knowledge, making the system 3* inexperienced, untrained, and insensitive to possible problems. In other words, it becomes blind.

In the case of one energy supplier, the outsourcing of its maintenance workshops led to the unusual situation that no one in the energy company understood its power plants anymore; therefore, nobody knew what the third parties were doing or how much their service should cost at the most. Outsourcing, therefore, means that for strategically essential processes, the company needs to be involved and

continuously receive information on the operation of the outsourced processes, its problems, and the problems of and mistakes by the third-party company.

3. "Just coordinate with each other!" (System 2)

In principle, it makes sense to leave the coordination as far as possible to those between which the need for coordination arises (see volume 1). However, the coordination of third-party companies, if there are several different firms involved, is problematic, since they must first negotiate with each other with regard to whose coordination standards should take priority. This negotiation process, which affects the internal efficiency of the third-party companies, is, of course, conflict-prone, time-consuming, and costs a considerable amount of energy. In these cases, it is probably better to set a standard to which all third-party companies must abide.

Another aspect concerns the problem that the coordination point of the third-party companies might be the optimum for these third-party companies but not for the outsourcing organization. This means that the latter must always monitor the coordination process between the third-party companies and should not simply leave it to their self-organization. This principle is also implied by the connection channel between system 3 and 2: according to the VSM, the outsourcing organization must keep and maintain the channel to the coordination process among the third-party companies and use it to ensure that the third-party companies settle at the optimum point of the outsourcing company.

General contractors are a particular case in which the entire operational metasystem is taken over by the third-party company. In this case, the control by the commissioning company needs to take place from the next higher recursion level through an active system 3 and 3*.

4. "An external broom sweeps better, but the internal one knows, where to look at" (System 3*)

To outsource parts of system 3* is, in principle, a useful approach, because third-party companies possibly have a higher *eigen*-variety than internal employees due to their specialization and experiences with other companies. This is one of the justifications as to why external consultants and auditors are hired: they have seen more and are more specialized.

However, to outsource system 3* in parts, the following conditions must be met: the company that assumes a system 3* function must be different from those that perform the operational processes that are audited (system 1). Secondly, this third-party company must be able to act (financially) independently of system 3, so that it can exercise its system 3* function unhindered. Whoever "buys his/her auditor" might not get a fully functioning (i.e., fully truthful) system 3*.

5. "We need to make our decisions on our own" (System 3 and 5)

If one looks at the architecture of the VSM, one can see that system 3 and 5 have a special position within the organization: system 3 is the only system function with channels to all other system functions (see volume 1). It can, therefore, control these through its information policy. System 5 makes the final decisions determining all other decisions, especially about the boundaries of the organization (see also below). For this reason, system 3 and 5 functions have a special position in the entire organization and cannot be outsourced. All alarm signals should ring when outsiders (e.g., consultants) start making decisions for or, even worse, instead of the company.

6. "Let's get inspired" (System 4)

To include third-party companies in system 4 is not only possible but also desirable. The organization thereby expands its radius for learning about new ideas, changes in the overall environment, and future trends. To outsource system 4 becomes problematic if the organization outsources the control of the entire system 4 processes. Through system 4, the future orientation and identity of an organization can be influenced. Depending on which futures, opportunities, or threat scenarios are painted, the organization will decide differently and pursue a different trajectory. The third-party company can hence determine the further course of the organization.

In summary, this means the following for an outsourcing decision: **environmental sensors, systems 3 and 5** must, in any case, remain in the hands of the organization. Operational subprocesses can be outsourced as long as the knowledge of critical processes is fed back into the organization, and the *eigen*-variety of the organization is maintained or even further developed. **System 2, 3*, and 4** can be partially outsourced.

15.4 "Who Governs the Network?"—The Challenges of Networks to Organizational Boundaries and Control

One of the consequences of outsourcing, especially of critical processes, and of the creation of networks is the changes in the **organization's boundaries**. Today, one easily talks about "networks" and "working in a network" without adequately being aware of the effects of networks on the organization's boundaries and governance. The division of tasks in a network not only has an operational component but also affects the identities and purposes of the companies participating in the network. Snow, Fjeldstad, Lettl, and Miles (2011) have shown, for example, that companies assume different systemic roles within a network: some assume the development part, others the control part and others execute the operational processes. The question then arises as to which organization forms the relevant viable system in a

network-type system—is it every single company on its own or rather the entire network? Further, who controls the network and what is its metasystem?

Typically, the founding companies try to take over and control the metasystem of the network. They still view the network as part of their organization, whereas in reality, they themselves have become integrated into the wider network and find themselves having become only just one part of it. The network now constitutes the real viable system, for which the member organizations only execute some systemic functions. If these companies then tend to make decisions just in their favor, they thereby create imbalances and dysfunctionalities, such as the ones described in the second volume. These are the cases where it has not yet become sufficiently clear where the new boundaries lie.

Only two possibilities remain for the companies that founded the network: either the company leading the network takes into account the overall interests of the network and also decides for the benefit of the other companies and the overall optimum. Alternatively, the network partners need to install an overarching control body, of which the founding company becomes only a member (joint ventures with joint management could be seen as such a case). Then, this body becomes the metasystem of the network.

Viewed from a control perspective, the result is the same in both options: the boundaries of the relevant viable system are no longer the ones of the founding companies, but of the overall network. The whole network transcends the founding companies and with it their metasystems. The founding companies then become only members among others in the overall network and need to relinquish control to the network's overall metasystem. Ignoring or even actively resisting this change in control risks the cohesion of the network.

Summary

- The organizational design process for the secondary functions is similar to that of the primary functions with some special aspects that need to be kept in mind, such as:

  1. One should not choose an organizational structure for the secondary functions that critically impairs the primary functions.
  2. The secondary functions must follow the primary ones.
  3. The segmentation of the secondary functions' environments should allow the secondary functions to specialize sufficiently well and optimize their internal processing of variety.
  4. Secondary functions need their proper inter-recursive channels
  5. Since the varieties between the primary and secondary functions differ, special translation and mediation mechanisms between them need to be foreseen. In addition, secondary functions need to develop sufficient knowledge of how the primary functions operate.

- Particular challenges for the secondary functions are:

  1. The secondary functions must mediate and translate between two or more environments, in contrast to the primary functions.
  2. Secondary functions tend to have less *eigen*-variety than the primary functions but need to understand and match the *eigen*-variety of the primary functions.
  3. The systemic profile of secondary functions is often not sufficiently recognized in its entirety.

- Outsourcing: environmental sensors, system 3 and 5 tasks, must always remain in the hands of the organization. Systems 2, 3*, and 4 tasks can be outsourced in parts.

Questions for Reflection

1. Is the metasystemic profile of your secondary functions adequately developed or are some of its systemic functions overemphasized and/or underdeveloped?
2. Where do secondary functions dominate the primary functions and critically limit the latter's ability to act and adapt (e.g., response times, quality delivered)?
3. How well does the translation and mediation between secondary and primary functions work? How well do both of them understand each other? Evaluate their relationship in a cross table with all functions in the header and the first left column.
4. Go through your outsourcing contracts:

   - Where did your organization lose sensors to the environment?
   - In which areas did it lose control over its systems 3 and 5 and consequently is directed by outsiders?
   - Where does your organization lose valuable knowledge about its functioning and use of resources to outsourcing partners?

5. Where has your organization not sufficiently outsourced system 3* and 4 tasks so as to bring new knowledge and expertise into your organization?

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Design Guidelines and Scenarios—A Summary

16

In the previous chapters, we have explained how to model the organizational chart structure following the logic of the VSM. We have, thus far, worked at a very detailed level. In this chapter, we want to regain more of an overview and extract some of the most important general guidelines for the design of organizational chart structures from what we have discussed in the previous chapters. These guidelines are to be understood as such and there might be, of course, cases and contexts, where one cannot follow them strictly.

In the second part of this chapter (Sect. 16.2), we will discuss some reorganization scenarios with which executives and managers are typically confronted, such as: "Shall we create a new department: yes or no?" What does one need to consider without necessarily having to perform a full VSM analysis and if one needs a solution quickly? We want to discuss these scenarios in the language and logic of the organizational chart structure.

As already mentioned, one must always keep in mind one specific limitation: organizational chart structures are an essential instrument to create order, transparency, and accountability among the employees (see Sect. 2.1), but they alone do not create viability. To achieve viability, it is necessary to complement the organizational chart structures with all the other processes, behaviors, and attitudes that we have already outlined in volumes 1 and 2.

16.1 Guidelines for the Design of Organizational (Chart) Structures

For the discussion of the design guidelines, we differentiate between the guidelines applying to the primary and those relevant to the secondary functions. In some aspects, they are similar, whereas in other they differ.

16.1.1 Primary Functions

Guideline 1
The processes that contribute directly and concretely to the generation of the organization's purpose (i.e., the systems 1) must be anchored at the center of the organization and its attention.

This is perhaps the most important guideline in designing an organizational structure: the **creation of the organization's purpose** must be **at the center of the organization** at all times and especially during reorganizations (see Fig. 16.1 from volume 1). This should become visible in the organizational chart as much as possible.

The focus on the customer and purpose is not only important for the operational processing of variety but also for the **functioning of the metasystem**, and this means for the organization's fundamental **decision-making processes**. In volume 1, we pointed out that the orientation of system 5 toward systems 1 and their environment is a **constitutional principle** for the organization's health. Only then can one become confident that the organization will not turn into an end-in-itself and inward-looking one but instead one that focuses on the solution of problems of the environment and the formation of ecosystems.

Fig. 16.1 The systems 1, their customers, and products must be in the center of the organization's attention (see volume 1)
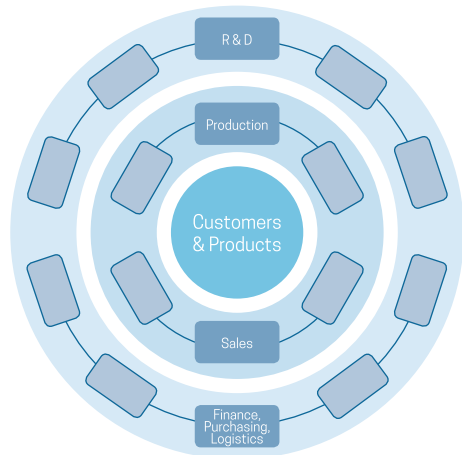
Guideline 2
The structure for the primary functions should reflect as much as possible the organization's strategy.

This may sound somewhat commonplace, but if one considers how often it is not applied, this guideline cannot be repeated often enough. To take a simple example, an IT company that has defined in its strategy to conquer the three markets of hardware, software, and outsourcing should structure the organization in the same way. Consequently, one should find these three markets as the main building blocks in the organizational chart. If not, one does not position the troops according to the circumstances of the battlefield.

This guideline thus also means that the organization should be designed as closely as possible to the primary markets and their substructures. Only if the organizational structure mirrors the environmental structures (i.e., boundaries, interdependencies, and ecosystems) as closely as possible, will it then be easier to find an Ashby-conform equilibrium, and only then will it be able to create ecosystems with the environment.

On the basis of a VSM analysis, a Swiss insurance company decided to convert its functional organization to a mainly customer group-oriented organization. This seemed to be a lasting decision: even after 20 years, this step was still considered a success and "bedrock upon which the foundations of a new orientation had been laid" (Mulej & Schwaninger, 2006).

> **Guideline 3**
> The organizational chart structure should follow the structure of viable systems as much as possible.

This guideline is also relatively easy to understand. It essentially means that the better the organizational structure is oriented toward its processing of variety, the more easily this variety can be processed and the more adaptive and agile the organization becomes.

For the design of the organizational chart structure, this means that one must first analyze how the different varieties need to be grouped so as to minimize the work for the metasystemic functions and information channels (see Sect. 10.3.3 in particular).

This guideline has many implications that are self-evident at this point but that we want to highlight nevertheless since they are seldom respected in practice:

> **Guideline 3a**
> A fragmentation of systems 1 should be avoided as much as possible.

The optimal processing of variety implies that the "natural" systems 1 (e.g., business units) should remain undivided as much as possible in the organizational chart structure. The systems 1 should dispose of all the essential functions, competencies, and resources or have them as close as possible within their reach.

Guideline 3b
Hierarchical levels should be designed as closely as possible to the recursion levels.

This guideline also follows from what we have already said earlier, especially in volume 2. Organizations can suffer from both too many and too few hierarchical levels. The test should always be: what is the systemic contribution of a hierarchical level concerning the processing of variety and how does it constitute a fully viable system increasing the organization's degree of **self-governance** and not endangering its **internal cohesion**?

Guideline 3c
The exercise of metasystemic functions should be located as closely as possible to the operational tasks, processes and units for which they are active.

To separate metasystemic functions (e.g., auditing or innovation) from the corresponding operational processes and units in the organizational chart and to bundle them in higher units due to synergistic reasons, poses the risk of impairing the organization's and these units' viability and recursivity. Consequently, the units that take over metasystemic processes from other (lower) units should be located as close as possible to the units and the processes which they concern themselves with. This also applies to any synergistic units that control or execute the operational processes of the systems 1 (e.g., call centers).

Guideline 3d
Decision-making powers should be located as closely as possible to the units that require the decision.

This is the more generalized form of guideline 3c and a consequence of the subsidiarity principle (see volume 2): decisions should be made by the units that need the decisions or by units that are positioned as closely as possible to those units that need or are affected by the decisions. This minimizes the length of information channels, errors, and misunderstandings, while it also increases the organization's adaptability and speed. Consequently, if the decision-making powers are too much separated from those units that need them, the necessary **inter-recursive channels** must be implemented at the same time to keep the organization cohesive and informed.

Guideline 4

The same structuring logic should be applied to all units of a given level in the organizational chart that are executing primary tasks and processes.

Some companies apply different structuring criteria for primary function units at the same hierarchical level; for example, a geographical and product-oriented structure. There may often be good reasons for choosing hybrid structures, as mentioned earlier above, but one should avoid it as much as possible. Different structuring dimensions within one level require the metasystemic functions to switch between different logics, which make it difficult and time-consuming to maintain coherence.

Different structuring dimensions also increase the internal complexity of an organization and make it more difficult to maintain consistent information systems and interpret consistently key metrics, reports, and thresholds for critical decisions. Finally, different logics also increase the need for **translation** between the structuring dimensions.

Guideline 5

The logic according to which primary tasks and processes are grouped should seek to maximize the homogeneity or complementarity of the (*eigen-*)variety within these groupings.

Similarly, when grouping primary tasks and processes one should always pay attention to the variety to be processed or *eigen*-variety needed and should seek **to minimize the amount of heterogeneity** within these groupings (see also volume 2). To group tasks or processes solely because they bear the same name is an insufficient justification. The size and complexity of the metasystemic tasks, such as coordination and controlling, depend, after all, on the heterogeneity of the variety to be processed.

Guideline 6

Coordination tasks (system 2) should be executed as much as possible without creating dedicated jobs or units.

Sometimes one has the impression that organizations consist mainly of "coordinators." The source for this is a sort of reflex of organizations to problems. If one has problems, one creates a coordinator. Unfortunately, problems are then often only "parked" and remain unsolved (see Chap. 4).

As a temporary measure, to strengthen the actual level of coordination, such coordinators can be helpful, but they can also become problematic if made permanent. The problems are no longer solved by those affected, but only by "middlemen." The decision-making power and responsibility then might even shift away from the to-be-coordinated decision-makers to these coordinators.

As we said earlier, the units and job holders needing coordination should coordinate themselves as much as possible alone. **Self-coordination** is the most efficient form of coordination since each additional coordinator just increases the internal complexity and faces the challenge of how to motivate the to-be coordinated.

> **Guideline 7**
> If possible, the metasystemic system functions (system 2–5) should be executed by different units or job holders.

This guideline means that, for instance, the auditing function should be separated from the operational control function or that the innovation function should be taken over by someone different from the operational control.

As we saw in volume 2, viable organizations need to implement **systemic opposites** so as not to become blind. If an employee or unit accumulates too many different system functions or works on too many different recursion levels, these opposites might become blurred due to lack of time, (self-)interests, or the desire to preserve internal harmony.

Production managers should not carry out an audit only themselves, since how well can they view their production from a different angle and how honestly will they review their area of responsibility? An auditor, especially an external one, can afford to be more critical. Separation of the systemic functions, as far as possible and financially feasible, thus grants the system functions greater internal independence and enables a more open discourse within the organization.

> **Guideline 8**
> The units or positions representing the metasystem or exercising metasystemic tasks should be equipped with the requisite *eigen*-variety.

As we have already pointed out in volume 2, the **equilibrium between horizontal and vertical *eigen*-variety** is one key design parameter. The metasystem should not be equipped with too little nor too much *eigen*-variety regarding resources and infrastructure. The first hinders the metasystem from generating the expected additional value, the second risks too much control and bureaucracy (see volume 2). For this reason, one should carefully analyze how many support ("m") and synergetic units ("Syn") and corresponding resources are indeed needed at the upper hierarchical levels.

> **Guideline 9**
> The development of completely new products should be taken over, if possible, by separate and dedicated units and not combined with the existing core business or products.

The reason for this guideline arises from the differences in the varieties that need to be processed by both: the traditional business is specialized in the processing of its variety and often lacks the **understanding** or the **instruments** for the variety of the new business. The **dominance** of the existing business over the new business regarding access to resources and structures also threatens the latter (see also volume 1 and 2).

The new must, therefore, be sufficiently strengthened until it becomes independently viable—similar to young plants, which are first grown in a greenhouse before they are exposed to full nature.

> **Guideline 10**
> The creation of jobs and organizational units must be complemented by integrative processes ("right wing").

This guideline is a consequence of the two wings of an organization (see Chap. 2) and implies, in concrete terms, that one must never terminate a design process with just the design of the organizational chart, but that one should consider also …

1. … how the **adaptive processes** across units need to work to produce a holistic perspective (right wing) and…
2. … how the recursion levels for each corporate function should be linked together through **inter-recursive channels** so that transparency, coherence, and unity can also prevail in the so-called vertical dimension of an organization.
3. … how **lateral channels** are created to counterbalance the fragmentation due to the aggregation logic.

16.1.2 Secondary Functions

Secondary functions also need design guidelines, which are in some—but not all aspects similar to those of the primary functions.

> **Guideline 1**
> The organizational structure of the secondary functions must reflect their functional strategy and the variety of their specific environment.

This is analogous to the primary functions (see above) and needs no further elaboration.

Guideline 2

In the organizational (chart) structure, the secondary functions should be as close as possible to the primary functions and their recursion levels, especially if they are executing or supporting their operational processes directly.

Secondary functions must follow the primary functions (provided that necessary synergies are not lost). If business divisions are organized regionally, the secondary functions should also be structured regionally as far as this is feasible. Mirroring the primary functions helps the information flow and exchange of perspectives and worlds.

Guideline 2a

The metasystemic functions of secondary functions should be located as close as possible to the operational units for which they are active.

This guideline is analogous to the primary functions and follows from guideline 2. Ideally, the metasystemic functions should be close to their operational processes. Sometimes, it is necessary to separate metasystemic functions from the operational processes for synergistic reasons. Here, one should act with caution and not move them too far away from the operating units, on behalf of which they exercise the metasystemic functions. Metasystemic processes should be located close to the units for which they execute these processes. This way, they preserve the viability of lower level units and the recursive nature of the organization (see also guideline 3c for the primary functions). This also applies to any synergistic unit that controls or even executes the operational processes on behalf of the systems 1.

Guideline 2b

Decision-making powers should be located as close as possible to the levels that require the decisions.

This is a consequence of the **subsidiarity principle** (see volume 2) and a consequence of the last point: decisions should be made as much as possible in those units where the decision will have its direct effect.

Guideline 3

The tasks of secondary functions can be clustered to organizational units according to their specific systemic nature (e.g., interaction with the environment, process-orientation etc.). Several conditions need to be met: first, the segregation of tasks does not hinder the primary functions (see guideline 2), second, these units should not process highly heterogeneous tasks, third, the segmentation of tasks does not slow down the processing of variety along greater process chains and does not obstruct the exchange of information.

This summarizes some of the main points discussed in Sect. 15.1.3. Some processes of secondary functions work only internally, whereas other processes deal only with the environment. Some tasks are mainly process oriented, whereras others are mainly driven by knowledge and skills. All these different types of tasks need specific and distinct knowledge and competencies and in most cases, it consequently makes sense to separate them provided that they do not disrupt the processing of variety, the process and the flow of information.

Guideline 4
Jobs and units that only translate and mediate between primary and secondary functions should be minimized as much as possible.

To have translators between functions (so-called "coordinators") can become necessary if the varieties between primary and secondary functions are too different. However, since these translators again create their specific translation problems, the number of these "coordinators" should be minimized as much as possible: it is better to bring the specialists of the secondary and the primary functions into direct contact without involving another mediator.

Guideline 5
Recurrent and non-recurrent activities (projects) should be grouped into different units.

This guideline arises from the differences in the varieties that need to be processed and different equilibrium points between horizontal and vertical *eigen*-variety. Recurring activities are characterized by low variety (otherwise, they could not be recurring) and typically have a high potential for synergies. Project-related activities, however, are unique and thus possess much variety, which requires adaptability and expertise on how to change a running system. Furthermore, they need a lot of autonomy to adapt to unforeseen circumstances fast ("subsidiarity principle").

This results in different requirements for the metasystemic functions and the competencies they require (focus on efficiency for repetitive tasks versus the importance of expertise in the case of unique tasks). One cannot manage a project with the same instruments and people as one does regarding the processing of standard customer orders, for example.

Guideline 6
Secondary functions that are too heterogeneous should not be grouped under one higher-level unit.

Secondary functions represent different aspects of environmental variety and, hence, need different resources and competencies. Since organizations often like to reduce the span of control, they are also tempted to integrate as many secondary functions into one single unit as possible. This is of little use if these secondary functions process too different varieties (for example, purchasing, HR, finance). In this case, it is better to leave them separated. This increases their adaptability and agility since they need fewer decision-making channels and procedures.

> **Guideline 7**
>
> If possible, the individual metasystemic system functions should be taken over by different units or job holders to preserve the polarities and yet remain close enough to those units for which they are active.

This is analogous to the guidelines for the primary functions.

> **Guideline 8**
>
> Organizations should implement processes for the secondary functions that allow them to better understand the organization's primary environment: They also allow to see more clearly their specific contribution to the purpose of the organization and to the requisite *eigen*-variety of the primary functions. Secondary functions should continually bear the company's purpose and their contribution to the primary functions in mind.

For employees in secondary functions, there is a temptation to consider their secondary function as the primary purpose of the company. This is not the consequence of bad intentions, but often the result of one's personal interests or the membership in a professional association, or other external expert community. It is, therefore, necessary to ensure that the employees of the secondary functions identify at least as much with the core purpose of the company as with their specialist area.

This, however, should not be left to chance but must instead be appropriately organized by deliberately involving the secondary functions in the life of the primary functions; for example, by inviting them to customer visits, production facilities, or by testing the organization's product in comparison with the competitors'. As an employee of a secondary function, one should not only be proud of one's own abilities and expertise but also of what the company itself produces.

16.1.3 Do not Copy-Paste Organizational Structures!

One of the most important consequences of the VSM is, however, that no template exists for one's organization and its structures. The organizational structure of another company cannot be copied to one's company. The varieties with which each organization must deal are in most cases, too different for copying to work: be it the variety of the environment or the organization's available *eigen*-variety such

Fig. 16.2 Do not copy-paste
the structure of other
organizations!
© fotolia/stock.adobe.com—
artist(s): Arcady

as resources, the behavioral repertoire, competencies, and tacit knowledge. Each organization must find its specific structure that best fits its varieties. "Copy-Paste" does not work for organizational structures (Fig. 16.2).

This also applies to benchmarking processes. Benchmarking can be useful for supplying ideas or questioning current practice, but not for more. The reasons why organizational structures or certain processes work in a company can be manifold and are rarely understood even by the same company. For each organization, the process of variety processing must, therefore, be understood and designed independently. This is also the reason why the VSM does not provide a blueprint for an organization, but only a logic and heuristics to develop structures.

16.2 "What Shall We Do?"—Some Basic Reorganization Scenarios

In this section, we will discuss a few basic scenarios that organizations and their executives frequently face. Since an organization is usually not built from scratch, but is instead continuously modified, these rather evolutionary modifications are the most frequently recurring cases where the VSM will be applied.

Before we discuss the scenarios in greater detail, we should remind ourselves first that changes to an existing organization should always be the moment to first check the organization's basic model first regarding:

- What are our systems 1, by which we fulfill our purpose? And: Have we structured our organization in such a way that the systems 1, customers, and products are at the center of the organization's attention?
- Are the existing organizational structures and processes designed well enough to process the variety coming from our environment?
- Have we verified that we process only the strategically relevant variety, and have we abandoned unnecessary variety and tasks?

If one cannot sincerely answer these questions with a clear "Yes," then one should postpone the envisaged changes and correct the basic structure of the organization first. Otherwise, one cures only the symptoms, but not the underlying problems.

16.2.1 Installing a New Hierarchical Level

New hierarchical levels are usually introduced for two reasons: either one wants to relieve the upper levels (see Chandler, 2003), or one wants to increase the level of coordination and synergies among the lower levels by inserting a more specialized level above. In both cases, the aim is the same; namely, to rebalance the equilibrium between horizontal and vertical (*eigen-*)variety. However, the questions to be solved beforehand are different:

1. Reducing the span of control

As relieving as it is for the upper level to transfer tasks to a newly installed lower level, one should, however, always clarify whether a new level is the right instrument. Each new level extends the vertical dimension of an organization and thus increases the internal complexity, as can be seen in the need for new decision-making and information rules. This, in turn, reduces the transparency, information flow, and internal cohesion between levels.

When we want to introduce a new hierarchy level, we should, therefore, ask ourselves whether it only subdivides the same recursion level or responds to the lack of a recursion level. If the new hierarchical level does not constitute a fully developed recursion level, then struggles about competencies and responsibilities between the levels might emerge, and which in turn, can even question its value contribution (see volume 2).

One might, in this case, better avoid the insertion of a new hierarchy level and instead try to expand the existing level and broaden the responsibility borne by one head to found and involve a "management team."

2. More coordination and synergies

Similar to the problem above, but from a different perspective, is the desire to create stronger coordination and more synergies by adding a level on top. This is particularly common in the case of corporations with many different product areas and divisions, which are then grouped into a new higher level, such as industry "segments."

These aggregations sometimes run the risk of being artificial if the operational varieties of the systems 1 (e.g., business units or divisions) are too different and do not share the same environment or future. Consequently, the environmental variety that can be truly processed by this newly installed level is too small and the possible value contribution too low. These higher-level units then ultimately remain artifacts which complicate the decision-making and information channels. Here, it would be better to acknowledge the differences and to keep these units as autonomous as possible.

Thus, before introducing a new hierarchy level, one should always examine the following questions carefully:

- What varieties should and can the new level indeed process?
- Can this new level facilitate the processing of variety by providing better coordination mechanisms?
- Can the new level generate more synergies than without it, or does it produce more internal complexity?
- What impact does the new level have on the levels above and below it? Are they benefiting from the new level? Will they fear losing work, or will the new level be forced to produce more work to prove its value?
- Does the new level have its part in the environment, where it can make a relevant contribution to the organization's purpose and strategy? Can it take over, meaningfully, some of the organization's processing of environmental variety?

16.2.2 Elimination of Hierarchical Levels

The opposite case is the elimination of hierarchical levels. As tempting as this might sometimes be since it promises to increase efficiency, one must also consider this step carefully.

Hierarchical levels are not always obstructive or wasteful; they can provide depth and relief to the organization, as we have already discussed in volumes 1 and 2. They filter variety for the upper recursion levels, allow for more specialization, and can make faster and more precise responses and decisions possible if the top levels are overburdened. Also, one must always bear in mind that the environmental variety to be processed does not diminish just because one eliminates one level. The other levels must take over the variety that was processed by the eliminated level. This tends to increase their workload and response time and even might even make the organization's responses to environmental issues less precise.

It is also important to bear in mind that the elimination of one level reduces the interaction with the wider environment and the future. If one level is abolished, this means that the other levels must process more inputs from the environment. Will they be able to do so in the same specialized way as the eliminated level?

Again, we can see the decision on organizational structures always depends on the **underlying variety that must be processed**. Can the lower or higher levels shoulder the variety that the abolished recursion level processed? Can, for example, the upper levels provide the same support to the lower levels without the eliminated level or does one need to expect losses in response time, understanding, and problem-solving skills? These are the key issues that we must consider before eliminating a level.

16.2.3 "Centralization" of Tasks

Similar to the last scenario is the intention to centralize tasks, which must be decided in the light of the four following questions:

1. What actual benefits can be generated by the newly created central unit or position for the other units regarding the processing of variety?
2. How well can the centralizing unit integrate itself into the different operational processes and provide its services to the operational units? How much will the horizontal *eigen*-variety of the lower levels (e.g., response speed and flexibility) be restricted?
3. Does the central unit have the necessary vertical *eigen*-variety (skills, time, etc.) to accommodate the different horizontal (*eigen*-)varieties (see Sect. 3.1.2) or are they too different?
4. How much does the information and communication effort increase due to the centralization of tasks and processes?

Before deciding on how best to "centralize" tasks and resources, one should also remember the three traps into which one can stumble (see Sect. 13.4).

16.2.4 And Vice Versa: The Decentralization of Tasks

Due to the high rate of change in the current environment (see "VUCA" as the *leitmotif* of our time), organizations are now subject to new decentralization pressures, which are also promoted by new management paradigms, such as "agility" (see volume 1). In principle, this is also supported by the VSM, but according to the VSM, decentralization cannot be carried out without costs. Decentralization is not an objective in itself.

Decentralization tends to lead to more horizontal variety and hence to **more internal complexity**. As long as one does not need to control this extra-complexity or risk essential synergies, decentralization does not pose a problem. If this is, however, not the case, then according to the axiom of requisite vertical *eigen*-variety, the **vertical *eigen*–variety must be increased** (see volume 2). One must not only consequently increase resources, but also generate the additional knowledge and understanding in the upper levels of how to keep the greater horizontal variety together and extract benefits from it.

Decentralization requires a new logic and method of how one deals with and controls this additional variety induced by decentralizing. **Decentralization thus necessitates a significant (intellectual) effort from the metasystem** if it does not want to relinquish overall control.

Therefore, before decentralizing, one should ask the following questions:

1. What are the **implications of the additional horizontal (*eigen*-)variety** regarding the organization's capacity to process this increase in variety (e.g., new customers, product and service requirements, new practices, and routines of the operational staff)? In which operational areas can one cope with an increase in horizontal variety and in which ones not?

2. How do the **control models** of the whole organization need to be adjusted to the additional horizontal (*eigen-*)variety? Where should one improve them, where can and must one give up attempts to control this additional variety?
3. Above all, how do the **auditive and coordinative functions** need to be reinforced so that the additional horizontal (*eigen-*)variety does not destabilize and overwhelm the organization?
4. How should the **information channels and systems** be strengthened? What new kinds of information systems, key metrics, and reports are required?
5. What additional **skills and resources** does the metasystem need?
6. If decentralization fails, **how is the organization capable of reducing the increased horizontal (*eigen-*) variety in a controlled way**, especially regarding the environment and its expectations?

Decentralization promises freedom and relief and is therefore attractive. Consequently, it is even more important to understand how the organization can be still held together if the horizontal (*eigen-*)variety increases. Just because one loosens the reins, one cannot give up the control and responsibility at the same time.

16.2.5 The Creation of a New Unit or Job

A question with which one is often confronted is whether to create a new department or position or not. New units become typically necessary if the variety to be processed increases (e.g., more customer orders). Apart from this normal adaptation mechanism, there are four other causes that require the creation of new units or jobs and thus merit a closer inspection:

1. Existing processes or tasks become more differentiated to allow **more specialization**.
2. **New tasks** have emerged, possibly even new business fields, for which one needs to find a place in the organization.
3. One wishes to increase **internal synergies and coordination**.
4. One wants to solve **an organizational problem**.

For a stronger **differentiation of existing processes and tasks**, there applies what we have already said in Chap. 3: the advantage is more specialization, while the disadvantage is the fragmentation of the organization. The additional unit requires additional information and decision-making channels. This adds to the complexity of the adaptation processes within the systemic functions (see also Chap. 6) but "Is this worth it?" one needs to ask oneself.

Regarding **new tasks** (e.g., induced through new technology or a new product or business field), the question arises whether the new tasks merit creating a new job or unit or whether one can instead add them to an existing job or unit. In general, a new entity creates boundaries within the organization, and thus, the risk of further fragmenting the organization. The key criterion here is again the processing of

variety: if new variety emerges that cannot be processed by existing units (too little understanding, knowledge, etc.), then separating it and setting up a new organizational unit is recommended. Otherwise, tasks should be assigned to existing units or positions.

A different situation occurs when new units and positions arise from **the wish to centralize**. Here, as already discussed above, it is essential to see whether firstly, the new central unit is capable of processing the heterogeneity and generating synergies, and secondly, whether the synergies can compensate for the loss of reactivity and flexibility.

However, the fourth case, where positions or units are created **to overcome internal management, power, or organizational dysfunctionalities** is the most problematic one. Problems are then merely "parked" and cannot be solved if the new position or unit does not get the necessary instruments, support, and decisions (see Chap. 4). In this case, it is better to address the problem directly, or as Stafford Beer put it: "Rather than to solve a problem, it is clever to dissolve them" (Beer, 1994c, p. 401, 1995, p. xiii). In this case, it is better to put all the problems on the table than to make any new job holder or unit head unhappy.

16.2.6 The Creation of New Coordination Mechanisms

A common and recurring theme in organizations is the creation of coordination mechanisms, be it new rules, standards, or committees. In the view of the VSM, one can derive some guidelines that should be kept in mind:

1. One should first solve the underlying coordination problem as such. A **coordination mechanism is only a second-best solution**. It is always better if one does not need to coordinate explicitly at all. For this purpose, one should always examine whether one cannot reduce interfaces or reintegrate fragmented process chains.
2. The coordination should best be undertaken by those who need to be coordinated and not by a third-party: **self-coordination** before external coordination!
3. Sometimes coordinators are nominated to compensate for the **lack of coordination will**. The problem is that the willingness to coordinate cannot be created by a new position. Rather, one should try to change the **framework conditions** such as objectives, the relevant environments or available resources to increase the willingness to coordinate (see also volumes 1 and 2). If one has fewer resources available or more ambitious goals or finds oneself facing a more difficult environment, then one will be more inclined to coordinate with others than by simply being commanded to follow by formal coordination rules.
4. The art of coordination is to find the mechanisms that make the **coordination energy-efficient and almost automatic**. The more complex the coordinating mechanisms are, the more people will try to avoid and circumvent them. Here, game theorists, psychologists, and anthropologists are particularly called upon to find solutions that the employees will follow intuitively and almost automatically.

5. As a general rule, one should create as **few organization units** dedicated only to coordination as possible. They tend to develop their own agenda and interests and are often rejected by the units to be coordinated.

16.2.7 Merging Organizational Units

When it comes to the merging of organizational units (from teams to entire companies in the context of a corporate merger), the design of this complex process is often reduced to the question of **who owns the central command channel** (in VSM language). The assumption is that as soon as one places two previously independent units under one authority (i.e., system 3), the merger between the units will occur almost automatically.

Unfortunately, this is not the case. In a company that was formed out of several other companies over a period of 15 years, one could still sense the old companies. The employees, far from being united, could tell which companies other employees were coming from. In the case of such rudimentary and never-completed mergers, the organizational units are only merged regarding the operational control but not in their entirety, if at all. Rather, one must expect that the overall organization will continue to consist of **parallel worlds** (see Fig. 16.3) with independent management models and separate systems 2, 3*, 4, and 5 functions.

Therefore, when merging two units, it is important to merge **not only the operational control function** (system 3) but **all other system functions** as well. In this respect, one must examine whether the merger is feasible at all. System 5, especially, is the most difficult system function to merge. To change system 5, one must reinterpret its foundations, especially the history and principles of the old organizations, which can be a tedious process.

The magnitude of the challenge is mainly determined by how much the varieties that need to be processed by the to-be-merged organizational units differ from each other. Markets, customer needs, products, behavioral patterns, and customer expectations can differ significantly between units, and if these differences cannot be bridged, they will persist and prevent the merger from being completed.

When merging, one has then, first of all, to think through how these different varieties can be reconciled meaningfully. Neither imposing the merger in an authoritarian manner "from above", nor an integration strategy which focuses only on the atmosphere or psychological aspects helps. One must **find a logic** that reconciles them or that dissolves the differences.

Consequently, mergers cannot be successful if one does not develop a new control model that applies to the entire company and its new metasystems but instead continues using only the model of one of the merged units. The problem with this approach is that this model then reflects only the varieties of one unit but leaves the other units out and helpless in their need to process their specific variety. This easily leads to the "Dominant system 1" dysfunctionality, which we discussed
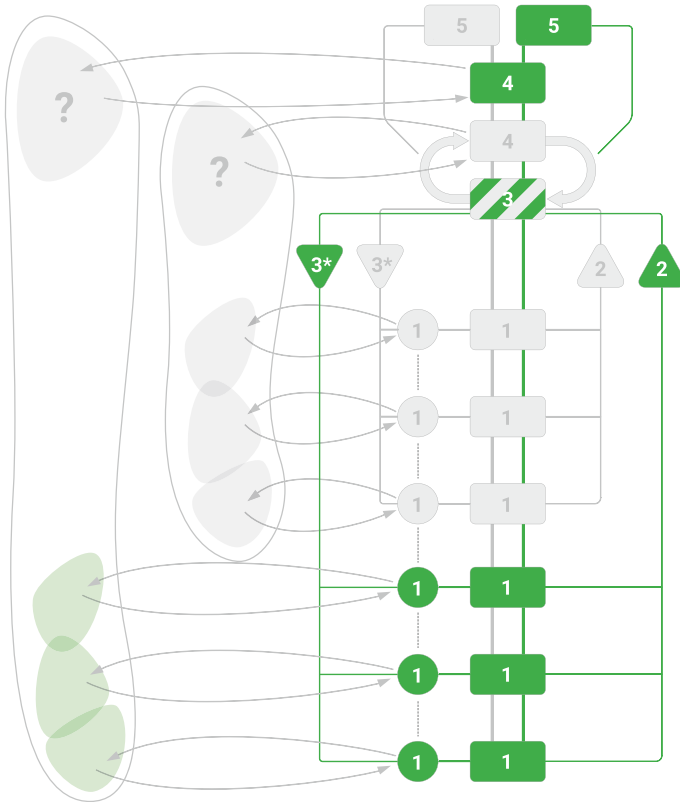
Fig. 16.3 Different varieties of the formerly independent companies (gray and green) hinder both companies from merging completely—contains adaptation from Beer (1995, p. 136, Fig. 37)

in volume 2. Without integrating the models of the other units, the new organization cannot be fully merged, with all the consequences for the motivation of employees and managers.

This is also why the belief that one just needs to merge system 3 and the central command channel is deceptive and should be abandoned as quickly as possible. If the varieties that need to be processed by the different merged units cannot be resolved, they will be imported into system 3. One appoints a new management team and thinks that at least the management is united. If conflicts continue, then this is often and quickly attributed to personal animosities within the management unit. This may or may not be the case.

If no common "denominator", i.e., common model and control logic, for the different varieties of the units to be merged can be found, it is virtually impossible for the management team to forge unity. The merger on which the organizational chart is drawn happened only on paper. It fails to reconcile the different varieties of the formerly independent organizations, with which system 3 of the merged organizations must deal.

In the absence of such a common denominator, the different varieties and ways to process them will instead be imported into the decision-making processes of system 3. The adaptation mechanisms within system 3 (see Chaps. 5 and 6) will be overwhelmed, leading to a paradoxical situation whereby the more one tries to achieve unity within system 3, the more the differences become manifest. System 3 fails precisely because of its obligation to create unity!

However, system 3 not only becomes dysfunctional internally but also externally toward the systems 1 that are awaiting decisions from system 3. Does system 3 (and the metasystem in general) have the corresponding vertical *eigen*-variety to process the organization's internal heterogeneity or not? Can it perform its task, or will it have to neglect the heterogeneity and thus relinquish the actual control over the systems 1? And this is what we experience: when the bosses disagree, the subordinates can do what they want and can play out the disagreement to their advantage.

System 3 will then split itself into different and almost autonomously acting subdivisions. These subdivisions of system 3 work on their own trying to achieve an equilibrium only with regard to their systems 1 and their varieties. Every executive takes care of just his or her area and does not interfere with the others; the management becomes divided, and the result is a split system 3. If this is the case, then the merger exists only on paper.

The first task before a merger is, therefore, to look closely at how homogeneous the underlying varieties are, and then to develop a logic or "common denominator" that allows processing the different varieties of the to-be-merged units.

16.2.8   The Bottleneck Syndrome

A situation which is also frequently found in organizations is the so-called bottleneck syndrome (see Fig. 16.4). A bottleneck in an organization is often just the result of insufficient capacities. In this situation, the middle level needs to be equipped with more resources. However, there might also exist structural reasons that lead to bottlenecks. For instance, if several organizational units must pass through one single unit to reach, communicate with, or decide for other units.

These bottlenecks are often found in subsidiaries where business unit managers from the corporate level want to reach their country representatives but must pass through the local managing director. The managing director then stands in their way and becomes the bottleneck. This situation emerges, for instance, if subsidiaries were **formerly stand-alone systems 1** and then reduced to **interfaces to the environment** as the result of a reorganization. The business units of multinational companies now want to control their products and salespersons in the subsidiaries more directly (see Sect. 14.1.5).

Fig. 16.4 Bottleneck
syndrome: the higher level
has to pass through a narrow
middle level to reach the
lower level
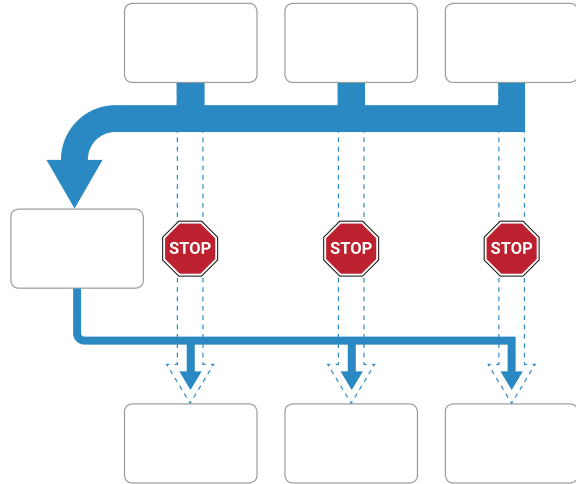
From a VSM perspective, the decisive question in such a situation is, therefore, whether the bottleneck position constitutes a necessary recursion level or not. If not, the lower, i.e., operational, level in the subsidiary should be directly linked to the business units. The managing director then essentially becomes a delegated coordination and control mechanism in the country for the business units.[1]

Typically, this bottleneck phenomenon occurs when **the primary structural dimension of the basic model changes** such as from a geographical to a product-related organization. Or, for example, if market boundaries become redrawn, such as in the case when the market demand changes from buying individual products to bundles of products (e.g., individual tours versus package/all-inclusive tours). If the market demands the product bundles, organizations need to reflect this change and create units in addition to the product units that oversee these product combinations.

These units usually start as pure coordinators between the units responsible for individual products. The more the market demands these product combinations instead of the individual products, the more these supposedly coordinating units want to control the individual products more adamantly and independently (e.g., regarding market strategies, product development, and production-related issues). The units managing the individual products then become the bottleneck for those who offer the product combinations. The organization might then be forced to change the primary structural logic from stand-alone products to product combinations as the new systems 1.

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[1]However, as stated earlier, the MD of the subsidiary must then also become part of the business units and its management, since he or she is responsible for one part of the business unit's environmental interfaces—an aspect the business unit heads should not overlook.

Changing environmental structures require changes in the organizational structures. If these changes are not executed, this incongruence of environmental and organizational structures can lead to bottlenecks.

16.3   "And Therefore Examine Whoever Bindeth Forever …"

Before changing one's organizational chart structure, one should submit all changes to **a fourfold quick test** before one implements and is thereby forced to live with them:

1. **How do organizational changes affect the functioning of the basic systems 1?**

   Behind this abstract question lies the moccasin test: put yourself in the shoes of your operational organization, which must produce and sell your products in the market every day. As Peter Drucker (1993, p. 681) wrote once regarding decisions of the top management: "A business is manageable only if the top management is capable of testing against concrete reality." Ask yourself how the organizational change will affect operational performance, and thus, the long-term competitiveness and viability of the organization. The systems 1 must be at the center of the organization; are they still so after the reorganization?

2. **How does the organizational change influence the internally created complexity?**
   Do your plans increase the internally generated complexity? Is your organization in danger of losing overview and being concerned only with itself, or not?

3. **How do the planned organizational changes influence the adaptability and innovativeness of the organization?**
   An essential mechanism for organizational functioning is the relationship between system 3 and 4, the "organ of adaptation" (Beer, 1995, p. 120). Both aspects, the present, and the future must be equally strong and interact well with each other. Does the organizational change improve the engine of adaptation? How do organizational changes influence the organization's adaptation mechanisms?

4. **How do the organizational changes affect the creation of the holistic picture of the organization and the focus on the organization's purpose?**
   The organizational chart structure fragments the systems 1, the overall control and the development of the organization's purpose. Does the planned change keep the organization's "right wing" alive or threaten it?

Summary
Design guidelines for the organizational chart structure regarding the **primary functions**:

1. The purpose, customers, and system 1 units should be anchored at the center of the organization and its attention.
2. The organizational structure should reflect the strategy.
3. The organizational chart structure should follow the structure of the viable systems and the way the variety is processed, which implies that:

   a. The system 1 units should not be fragmented.
   b. The hierarchical levels should be defined as closely as possible to the recursion levels.
   c. The exercise of metasystemic functions should be located as close as possible to the operational tasks, processes units, for which they are active.
   d. Decision-making powers should be located as close as possible to the units that require a decision.

4. The same structuring logic should be applied to all units of a given level in the organizational chart that are executing primary tasks and processes.
5. The logic chosen for the grouping of primary tasks and processes should maximize the homogeneity or complementarity of the (*eigen-*)variety within these groupings.
6. Coordinating tasks should be executed, if possible, without creating new positions or units.
7. The metasystemic functions should be executed by different units or job holders.
8. The units or jobs representing the metasystem or exercising metasystemic tasks should be equipped with the requisite *eigen*-variety.
9. Completely new products should be located, if possible, in a separate unit and not be mixed with the existing core business or products.
10. The creation of jobs and organizational units must be complemented by integrative processes ("right wing").

   Design guidelines for the organizational chart structure regarding the **secondary functions**:

1. The organizational structure must reflect the strategies of the secondary functions.
2. Secondary functions should be located close to primary functions in the organizational chart:

   a. The metasystemic functions of secondary functions should be located as close as possible to the operational units for which they are active.

     b. Decision-making powers should be located as close as possible to the level that requires a decision.

3. The tasks of secondary functions can be clustered to organizational units according to their specific systemic nature (e.g., interaction with the environment, process-orientation etc.). Several conditions need to be met: first, the segregation of tasks does not hinder the primary functions, second, these units should not process highly heterogeneous tasks, third, the segmentation of tasks does not slow down the processing of variety along greater process chains and does not obstruct the exchange of information.
4. Jobs and units that only translate and mediate between primary and secondary functions should be minimized as much as possible.
5. Recurring and non-recurrent activities should be grouped into different units.
6. Secondary functions that are too heterogeneous should not be grouped under one higher-level unit.
7. Metasystemic functions should be taken over by different units or job owners to preserve the systemic polarities within the organization.
8. Processes should be implemented that strengthen the awareness among the secondary functions of the purpose, the organization's primary environment and their contribution to the organization's requisite *eigen*-variety. Secondary functions should also remind themselves regulary to put the company's purpose and primary functions at the center of their attention.

New organizations should be tested before their implementation regarding their impact on:

1. … the performance and viability of the basic systems 1,
2. … the additionally created internal complexity,
3. … the adaptability and innovativeness of the organization,
4. … the fulfillment of and focus on the organization's purpose compared to the existing structure.

Questions for Reflection

1. Analyze your organization or area of responsibility with regard to the design guidelines discussed in this chapter: how much do they correspond to these guidelines?
2. Remember your last reorganization process: how much was the new organization tested beforehand by criteria similar to those discussed in Sect. 16.3?

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Hotspot Matrix Organization

<div style="text-align:right">**17**</div>

When we look back at the design process of the basic model, we see that organizations can in many cases be structured according to several environmental dimensions. To these options, we must add the structuring options that can result from the different ways to generate internal synergies; for example, by clustering processes or by using the same technologies. Therefore, would it not be best if all these dimensions could be satisfied at the same time?

Organizations have, in response to this, developed the matrix organization, which has enjoyed significant popularity for a long time but is going out of fashion due to its impracticality. The Swiss company ABB, which is regarded as one classic example of matrix organizations, has been gradually moving away from the global matrix organization by strengthening the product dimension and in 2018 finally announced it would abandon it at all (Ruigrok, Achtenhagen, Wagner, & Rüegg-Stürm, 2000; Spiesshofer & Ihamuotila, 2019).

What is meant by a matrix organization? In a matrix organization, two units, each representing a different structural dimension, control the same resources and processes at the same time. Such matrix dimensions could be, for example, the product and country dimension. This type of organizations is not limited to two dimensions—the so-called tensor organization uses three dimensions, but these are only variations of the same organizational design principle.

In this chapter, we will first discuss the problems of a matrix organization and then how we can deal with the problem of multidimensionality.[1]

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[1] All figures in this chapter related to the VSM are or contain and unless stated otherwise, adapted (detail) views from Beer (1995b, p. 136, Fig. 37).

17.1 Why Don't Matrix Organizations Function Well?

Using the VSM, we can illustrate some of the problems associated with matrix organizations. Essentially, in a matrix organization, two or more metasystems attempt to access the same system 1 at the same time. This doubles the central command channel as well as the metasystem including the coordination mechanisms and the auditing channel (see Fig. 17.1).

The effects of such a construct are known to everyone who has worked within this type of structure: uncoordinated instructions from different metasystems lead to the paralysis of the operative units and to frustration among employees.

However, upon examining how variety is processed in a matrix structure, we find that the issue becomes even more severe. The metasystem is typically supposed to process the complexity that the operational units cannot process themselves. Higher system levels should, therefore, provide support and relief to the lower ones. However, in the case of a matrix organization, this is not possible—or rather precisely the opposite happens: the roles are swapped between the lower and upper level.
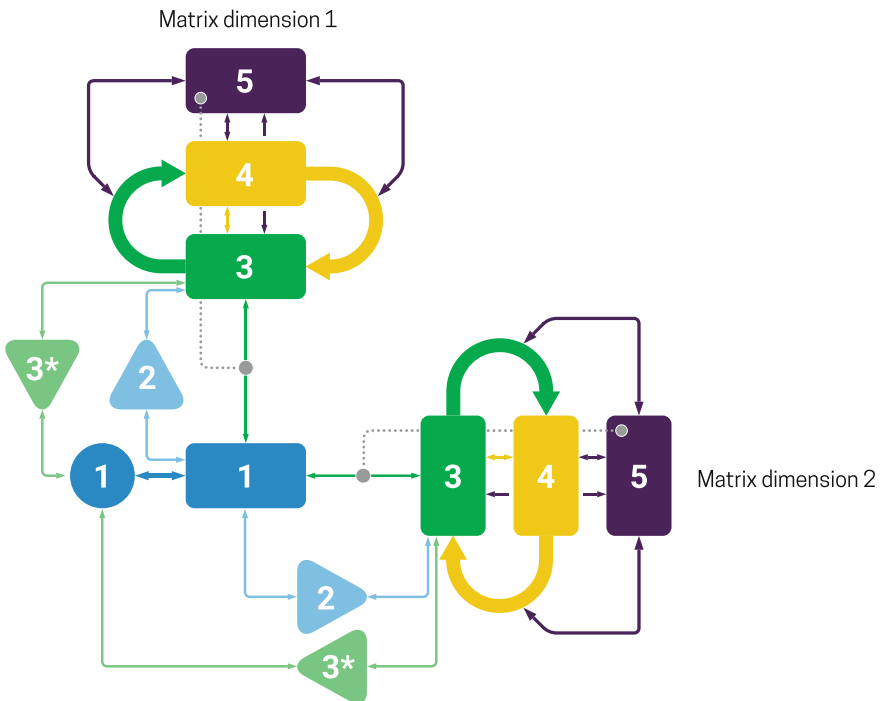
Fig. 17.1 A matrix organization duplicates the metasystem
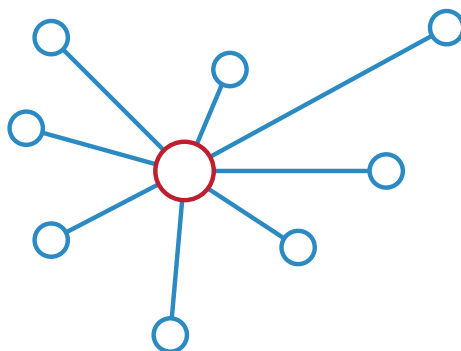
Fig. 17.2 The information hub in a network is the natural basis for a leadership position in the network

What is the reason for this? Leadership is only possible by being better informed relative to others. Therefore, leadership always arises at the points where information channels intersect (see Fig. 17.2). Usually, it is the metasystem and, in particular, system 3 that assumes the leadership role in an organization because that is where all the information of an organization comes together. In a matrix organization, however, the opposite occurs: the system 1 becomes the central information node in the organization because no or only weak connections exist between the different individual matrix dimensions that are supposed to form a unified metasystem (see Fig. 17.3).

Thus, in a matrix organization, a paradoxical situation can arise wherein the lower-level system 1 must lead the upper levels since all the information only comes together in the system 1. As a bizarre consequence, the lower level must then exercise metasystemic functions. Furthermore, it faces the challenge of bringing the divided metasystem together, which is not its task either. This paradoxical situation is what people working in matrix organizations experience: employees are forced to mediate between the superiors from the various units to achieve a joint decision. At the same time, they must not appear as if they are the superiors of their superiors.

Such a situation naturally complicates the communication process and information flow within the organization and increases the need for coordination. The metasystem is on the brink of ultimately becoming superfluous, and the systems 1 are under the impression that they can and should make decisions (and better ones at that) independently. This reversal of the leadership function consequently also leads to problems in the social dimension: since the upper levels are supposed to lead, any initiative or active participation in the decision-making process by the lower levels could be perceived as an attack on their leadership position.
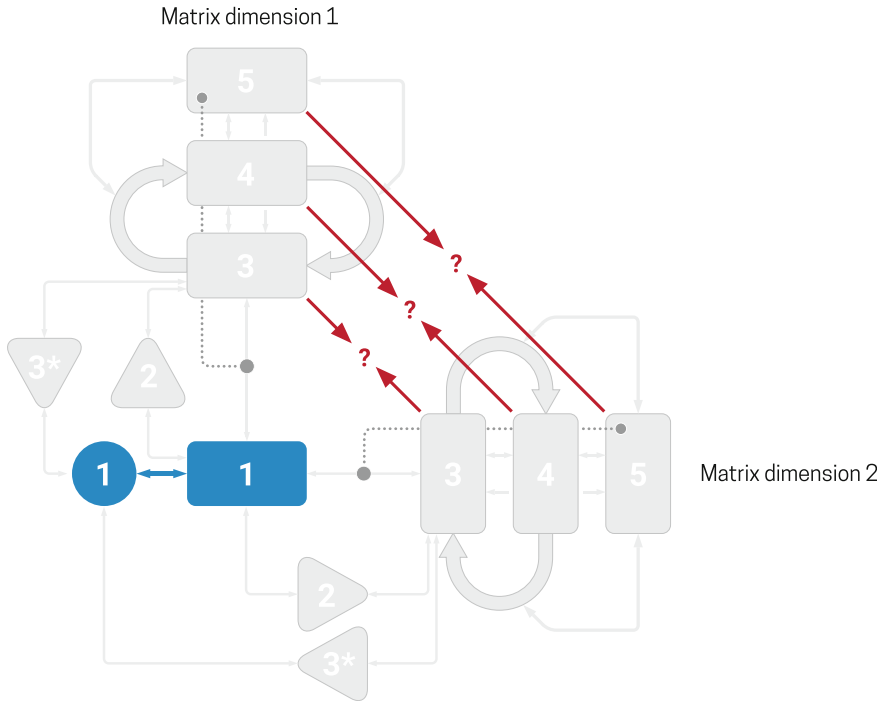
Fig. 17.3 In a matrix organization the lower-level systems 1 become the information and decision-making hub (here: for one system 1)

17.2 Causes for the Emergence of Matrix Constellations

From the perspective of the VSM, there is, in principle and within certain limits, no reason not to create units that specialize in different structural dimensions. In fact, specialization within the organization is helpful to increase the requisite *eigen-*variety: one can adapt to challenges better. If the specialization is not the problem, then what are the factors rendering a matrix organization problematic?

1. Setting the organizational chart structure absolute

A fundamental problem of the matrix organization is setting the organizational chart structures absolute. What do we mean by that? Let us return to our earlier example, where we compared the organizational chart structure to a prism (see Chap. 1). We stated that by creating organizational structures, the environment is also split up into different dimensions for the organization. The advantage is that it allows the organization to process the environmental variety in a more specific and focused fashion. However, this is merely an artificial separation, given that the company dimensions as such don't exist for the environment; that is, for the customer who is purchasing a product. The product can only be produced, delivered, and sold if all company dimensions collaborate (see Sect. 1.3). For the customer, the company

exists only in the combination of the different dimensions and he or she evaluates it accordingly—"Can't they coordinate and work together?" one hears quite often.

Like an exploded-view drawing, the organizational chart structure disassembles the organization into various dimensions and elements. This is by no means a disadvantage, but what is evident for a car is not evident in the everyday life of a matrix organization: it can only work when the parts are joined together according to a plan or, in the case of an organization, according to an organizational logic and through right wing type processes. As we know, the exploded-view drawing with the individual components is not yet the driving car. However, most companies with a matrix structure believe that their organizational chart is already the functioning organization.

In a matrix organization, the logic for the **integration and common control of the various dimensions is lacking:** their interaction is not sufficiently regulated. Just letting two lines intersect in the organization chart and demanding that these units should coordinate does not suffice for a real integration, even if many organizations assume this unconsciously. The essential step has not yet been accomplished, that is **to organize this interaction and coordination**. Even worse, in the matrix organization, the viable systems disappear; they vanish amidst the many individual units in the organizational chart structure. In the matrix organization, one is only able to see and focus on the individual parts of the organization rather than the entirety of the viable system.

2. **Asynchronicity between the systems 1 and the metasystems of each matrix dimension**

Conflictual matrix situations also arise because organizations underestimate the amount of **time needed to coordinate units**. The intersecting lines in the organizational chart suggest that the systems 1 and the superordinate units of the matrix are in constant contact and permanently accessible.

Unfortunately, this is not the case: every higher matrix dimension, as well as system 1, has its specific rhythm. Typically, the time required to establish synchronicity between the participants already (i.e., the scheduling) takes longer than the window of time that is open for making a decision. Operational units, therefore, usually do not receive the necessary decisions within the time limits that they need to function normally.

3. **The incongruence of objectives or the attempt to solve logical inconsistencies by organizational means**

Another fundamental problem of the matrix organization consists of an attempt to solve a logical problem by organizational means. The structural dimensions represent logical perspectives on the variety to be processed. Yet, these logics must "somehow" be reconciled—but "how?" The nature of this "how" is the key question.

What is meant here? At the core of matrix organizations, we encounter the problem that different units have different factual requirements and demands regarding resources and their use. While one unit in the dimension "markets" demands an additional yellow color for a specific market, the dimension "production" advocates for staying with the standard color red since this would simplify production processes. However, one cannot have both yellow and red products at

the same time. This is, if viewed correctly, **a logical and not an organizational problem**. No organizational configuration of this world can solve this dilemma. The logicians of the Middle Ages called this as the problem of the "*tertium non datur*"—the excluded third.

The problem of matrix organizations is, therefore, not so much that different units must work together, but rather that different logics contradict each other. Matrix situations arise if the different organizational dimensions propose incongruent approaches, and the organization has not provided a clear preference, criteria, or framework to prioritize and choose between them.

Problematic matrix situations hence often arise not from errors in the organizational structure, but instead from ambiguities in the strategy, goals, and values of the organization. In the language of the VSM, the cause of a matrix situation may even be a metasystem that is too weak, in particular, system 5. If one neglects or fails to clarify ambiguities in the priorities, objectives, values, and norms of the organization on a logical level, matrix situations will arise almost automatically.

This has important implications as to what we can expect from organizational structures and design processes: the solution to conflicts within matrix organizations cannot be found so much on a structural level, but must instead be sought after on a **logical level**; that is, at the **level of strategies, principles, values, and policies**. The structure cannot be expected to resolve logical contradictions and ambiguities, even if one would like to have it so.

17.3   Organizational Principles for Mitigating or Avoiding Matrix Constellations

What does all this imply for the design of organizations? Firstly, it becomes apparent from the factors outlined above that the categories of the organizational chart structure provide us insufficient *eigen*-variety to control matrix situations. The typical "thinking in boxes" and the focus on drawing reporting lines is not enough. Here, one must proceed differently.

The first step is, undoubtedly, to avoid matrix situations altogether by creating as many distinguishable and autonomously acting units as is possible, each with clear, unambiguous and uncontested areas of responsibility.

If one takes into account the uncertainty induced into the organization by a matrix-like division of tasks (e.g., fragmentation of the metasystem, higher synchronization efforts), then one should resort to a matrix organization only in exceptional cases. Clear responsibilities, even at the price of sometimes unilateral decisions, are more advantageous in many scenarios than decisions in which all dimensions are consulted, as this creates additional costs, delays, and internal fighting.

The objective must be to find a segmentation of responsibilities with as few intersections and overlaps as possible. The smaller the intersections and overlaps, the less coordination effort is needed. As seen earlier, the scope of system 2 depends on the extent of the interfaces and interdependencies among the operating units (see volume 1).

Principle 1
Avoid matrix structures by unbundling and separating responsibilities as much as possible so that they can be assigned to jobs and organizational units unambiguously.

When conflicts arise in matrix organizations, the key question is mostly: which structural dimension should be given preference over other ones. What dimension has priority over other dimensions, and under which circumstances?

As discussed above, these are, first and foremost, logical problems and must, therefore, be solved through the strategy and the objectives of the organization. Thus, before defining matrix-like organizational structures, one must analyze possible concomitant logical conflicts and attempt to address them first. The units or persons working in a matrix situation must receive a hierarchy of values and objectives, by which they can weigh and judge conflicting options. Failure to provide this hierarchy can be likened to handing over a complicated production plant to production workers without the corresponding instructions, documentation, or plan of the plant.

Principle 2
Clarify logical conflicts and priorities before implementing organizational structures

Conflicts in matrix situations can also be avoided by allowing and enabling the systems 1 to make decisions as independently from the higher-level units as is possible. The more issues lower-level units can solve themselves, the less often their superiors from the various matrix dimensions must be called for a decision. This reduces the potential for conflicts and accelerates the organization's overall decision-making and adaptation processes.

However, for this to happen, the systems 1 must be prepared by higher units: the latter must allow the systems 1 to participate in the decisions of the metasystem as much as possible to learn what is important to the superior units. The sooner the lower units understand what the superior units want, the sooner they can solve their own problems independently, and hence, the need for coordination diminishes.

Principle 3
Help the systems 1 to minimize their need for decisions from the metasystem by letting them participate in the metasystem's decision-making process so that they can learn how the metasystem decides.

In matrix organizations, the primary organizing effort is borne across the central command channels of the various systems 3 and the systems 1. In matrix organizations, many decisions are needed, and for each decision, all relevant structural dimensions need to be brought together. This overburdens all parties, and therefore, decisions in matrix organizations are delayed.

The VSM shows that another possibility exists: one can relieve the system 1–3-channel through the **system 2- and 3*-channel** (see volume 2). What does this imply concretely? It means that the more an organization generalizes its ad-hoc decisions and transforms them into **general rules and principles**, the fewer individual decision-making meetings are required between the representatives of the matrix dimensions. Issues are then for the most part already decided simply by the application of a rule. The more intelligently (and this does not mean more extensive, but on the contrary simpler) these rules are (so system 2), the more easily the systems 1 can decide independently. An intelligently designed set of rules can help to reduce the number of matrix constellations.

However, rules alone are not enough, because, in matrix organizations, many conflicts are also ignited by the fact that rules are not respected. As we have seen in volume 2, system 2 and 3* always come as a pair. Rules require monitoring of their adherence by employees. Using rules as a relief mechanism hence also necessitates **a strong system 3***.

Principle 4

Use system 2 and 3* to relieve system 3 and the central command channel.

Matrix organizations are complex structures. To resolve complexity, time is needed, and the more complex a structure is, the more *eigen*-time an organization needs to process its complexity. Whoever selects a matrix organization as a structural model must equip the organization with more time than standard one-dimensional organizational structures need.

"More *eigen*-time" here entails, first, making more time available to the units within a matrix situation, during which information can be sufficiently exchanged and decisions coordinated. However, it also means foreseeing time buffers that allow addressing open questions and difficult coordination processes. This *eigen*-time must be planned into the organization's temporal structure (e.g., longer response times to customer requests). One can attempt to negate the need for this time. However, this occurs at the expense of conflicts in the factual and social dimension, in which time scarcity unloads (see Sect. 18.1.2). Ultimately, with exceedingly tight schedules and time windows that are too narrow, one nullifies one of the hoped-for advantages of a matrix organization namely, the coordination of all dimensions.

Sometimes, however, the environment does not grant the organization a long response time. For situations where quick decisions are required, **emergency plans** need to be developed, which allow the representatives of all structural dimensions to gather for a decision quickly. These plans need to define the necessary communication, information, and decision-making channels and processes, which enable a rapid convocation of all relevant company dimensions. If departments A and B must consent together, then it must also be defined how both can be reached and meet as fast as possible. Finding a time slot should not be the subject of intense coordination processes.

> **Principle 5**
> Provide more *eigen*-time and specific temporal structures to the matrix organization.

The representatives from the different units must ultimately speak with one voice: the viability of organizations requires a consistent and united metasystem and command channel to the systems 1. As stated earlier, only in the unity of the organizational units does the organization come alive and viable (see Chap. 1 and Fig. 17.4).

How does this unity come about? We have already discussed many aspects in Chap. 5–7, and here, we will only address a few specific aspects:

- Firstly, the individual managers and units representing different matrix dimensions must come to the **self-understanding** that they will only form a fully functional metasystem for the systems 1 if **they act together** (which is not self-evident).

Fig. 17.4 The unity of the system functions is crucial for the viability of an organization
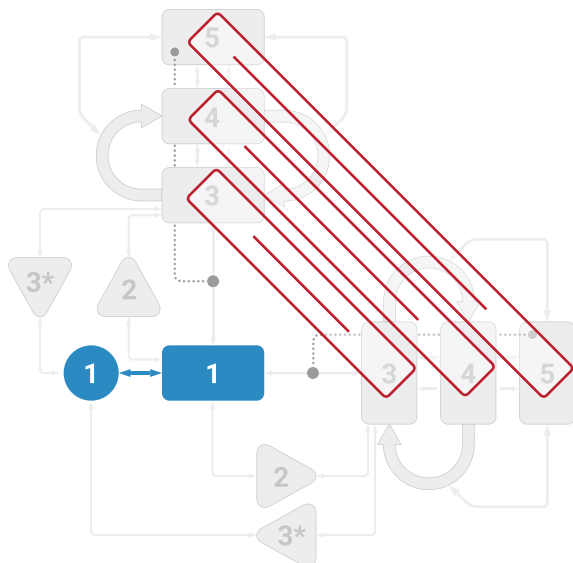
- Often, one underestimates the cognitive effort and time investment necessary to achieve a "**cognitive focus**" among all participants (see Beer, 1995a, p. 379). Each structuring dimension has its angle of view and a specific opinion about what is "the best." These perspectives must first enter into a dialogue with each other. For this purpose, an institutional framework is necessary, which makes this convergence possible from a spatial, temporal, and social point of view. This cognitive focus should not necessarily only be developed when and if a decision is needed, because then it is almost too late. It must be developed and practiced continuously. Just as firefighters continually train for the emergency case, where one does not have ample time available to negotiate tasks, responsibilities, and protocols. This should also happen between those who represent the structural dimensions. A uniform cognitive focus must be reinforced and developed continuously.
- Finally, one must give the development of a unified perspective a corresponding **social structure**. One must not leave this to chance: the call "coordinate with each other" is not enough. The representatives of the various structural dimensions must be familiar with each other before a crisis strikes, so that they are already able to act as a united group when they need to.
- An option used too rarely to reduce the number of matrix constellations is **to delegate the operational control of routine cases** to a single person or unit. For these routine cases, it will no longer be necessary for all dimension representatives to meet, but instead, one representative can decide *bona fidei* for the others.
- However, for this measure to function well, a well-developed system 2 and 3* is necessary as we concluded above: it needs a set of rules, which the delegated decision-maker must follow, and whose compliance others need to monitor continuously (system 3*). This requires reflection, experimentation, and trust, but the invaluable advantage of delegation is the elimination of the matrix.

> **Principle 6**
> Decision-makers must be trained to think and act in a united manner, and for this, they need the relevant supporting mechanisms and social structures.

A matrix situation also often becomes permanent if it is extended into higher levels. If conflicts can be escalated upward, then the matrix is reinforced and cemented. The top levels of an organization thus bear significant responsibility for the resolution of matrix conflicts: if the top of an organization does not act in a united manner, unity and cohesion cannot be expected from lower levels.

The higher recursion levels must, therefore, have a common understanding of how their unity and their behavior critically influence the cooperation of lower levels. They must not prolong the conflict but force the lower levels to find a common solution: "We want solutions from you, and not to be asked to solve your

conflicts." Only when the lid is tightly pressed on a pressure cooker does, the meat become cooked at the right time. In the same way, the upper levels must deliberately force the lower levels to reach an agreement, but not to use the matrix for their political interests.

> **Principle 7:**
> The higher recursion levels must not deepen the dissent of lower levels but rather encourage them to seek a solution.

Summary

- Matrix organizations are characterized by a division of the metasystem and, in particular, of the central command channel between system 1 and 3.
- Due to the division of the metasystem, the systems 1 become the central hub in the information system. This reverses recursivity and transforms the system 1 into the organization's acting metasystem.
- The causes of the problems in a matrix organization include:

  1. Setting the organizational chart structure absolute and fragmenting the viable systems.
  2. Asynchronicity between the systems 1 and the metasystem of each matrix dimension.
  3. The incongruence of objectives, values, and norms, and the attempts to solve logical inconsistencies with organizational means.

- The organizational design principles to mitigate matrix situations include the following:

  1. Unbundling the tasks to reduce the interfaces and interdependencies and assigning clear responsibilities to jobs and organizational units where feasible.
  2. Clarifying logical conflicts and priorities before implementing a new organizational structure.
  3. Minimizing the number of situations, where the systems 1 need a decision from the upper levels.
  4. Using system 2 and 3* to reduce the need for decisions from the metasystems of the various matrix dimensions.
  5. Providing more *eigen*-time and specific temporal structures for the matrix organization.
  6. Building support mechanisms and social structures that promote the consensus building between the structural dimensions.
  7. Promoting unity among the higher-level units.

Questions for Reflection

1. For those units in your organization that find themselves in a matrix situation, are there ways to assign the tasks with fewer parallel reporting lines to higher units?
2. Where have logical inconsistencies in your organizations regarding objectives, principles, and values not been resolved?
3. Where do situations arise in your organization where the lower levels must direct the upper ones?
4. Are "emergency plans" established in your organization for situations where fast decisions are needed?
5. What processes are in place that ensure that the units in a matrix organization can develop a shared understanding of their objectives, purpose, and individual constraints?
6. Are matrix situations (artificially) prolonged and "cultivated" by upper levels in your organization, even though lower ones should be able to solve them?

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Part III
Implementation

Organizational Diagnosis and Simulation

18

We now have a methodology on how to structure and design organizations. But how does one successfully implement the new organization? This firstly requires that one ascertains that the new organization will correct the problems of the old one, and secondly, that one knows how to transform the current organization into the new one.

To ascertain whether the new one will indeed be better, one must first assess the existing organization and test the new one through simulations. Only through proper diagnosis can one learn about the mistakes of the old organization, which the new one is intended to correct. Testing the new organization through simulations should prevent us from being trapped by the "innocence" of the "new": The new is often regarded as better and right. However, might this just not be an illusion? Is the new organization not often nothing more than a "hypothesis"? For this reason, each new organizational model should be subjected to a test before the implementation.

We shall briefly discuss the diagnosis process and the testing of organizational structures through simulations in this chapter[1]. The implications of the VSM for the design of the reorganization process will be discussed in Chap. 19.

18.1 Conducting an Organizational Diagnosis Based on the VSM

The purpose of an organizational diagnosis is to find out how well an organization can process variety. The result is an evaluation of the various system functions, information channels, variety attenuators, and amplifiers in relation to the variety they are supposed to process and the detection of organizational dysfunctionalities.

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[1]All figures in this chapter related to the VSM are or contain and if not stated otherwise, adapted (detail) views from Beer (1995b, p. 136, Fig. 37).

The possible dysfunctionalities against which one diagnoses an organization have already been discussed in volume 2 in detail. In this chapter, we will concentrate on two aspects that we have not yet touched upon. We shall first address the diagnosis process as such, and second, "complexity" and its multi-dimensionality, which we need to better differentiate for a successful diagnosis.

18.1.1   Some Notes on the Diagnosis Process

The diagnosis of an organization is a difficult task because, unlike the human body, whose condition can be measured well and objectively, one is more limited regarding organizations. The "evidence" that one can produce in an organizational diagnosis mainly consists of opinions and subjective assessments. So, how does one proceed properly?

Step 1: Establish a reference point for "viability"

Every diagnosis first needs a reference point, which is the organization's viability. This sounds straightforward, but is more complicated since all organizations "live and are alive somehow"; even those who are close to bankruptcy. How then do we assess the viability of an organization? Here, the definition from volume 1 can help us further: There, we pointed out that "viability" cannot mean "mere existence," but that, in a higher sense, it means the ability to choose and achieve a self-defined goal and to process the corresponding variety. Thus, the reference point to assess the viability of an organization is its **ability to determine itself and choose its objectives and purpose freely, in alignment with its available *eigen*-variety**.

Hence, the diagnosis must first identify the purpose which the organization and its members want to pursue. As discussed above, this is not always clear and often does not coincide with what is stated in official self-portrayals, such as mission statements, business reports, Web sites, or marketing brochures (see Sect. 9.1). The task is, hence, to determine what the organization wants to achieve. For this, one must ask key stakeholders in the organization.

This does not necessarily mean that, as a diagnostician, one needs to accept this self-determined purpose and goals automatically and without reservations. It can be a valuable contribution of a diagnosis if the purpose and the objectives are critically questioned so that they can become more precise or aligned with the strategy, available resources, environmental constraints, and dynamics. Sometimes, it is also advisable to compare the organization with others in the same industry or to ask customers: Are the objectives too ambitious or too weak or even the wrong ones? Which aspects and dynamics of the environment does the organization fail to take into account?

Once one has clarified the purpose and objectives, one has obtained a reference point against which one can assess the organization's viability. The guiding question for the diagnosis will thus be: "if you want to achieve these goals and purpose, how well does the current organization support you?"

Step 2: Build the basic model

Even if one focuses only on certain parts of the organization, for example, certain recursion levels or corporate functions, the elaboration of the basic model of the organization (see Sect. 8.4) is indispensable. It is essential to understand how the organization has to process the incoming environmental variety operationally.

This basic model does not need to be very detailed, but it should at least provide a good understanding of how it is that the organization processes variety through its systems 1 and the various recursion levels. One needs to start from the present organization, but one could already ask at this point, which other structural options are, in principle, feasible. These alternatives allow conclusions about errors in the current organizational design and can provide a valuable basis for future recommendations.

Step 3: Conduct the diagnosis

The diagnosis is then carried out through interviews and the screening of documents. Here, one immediately encounters one of the most significant problems in a diagnosis, namely the **lack of objectivity**. Each description of the organization is made by a member of itself. The only objectivity that one can obtain is the subjectivity of all employees and managers: All information about the functioning of an organization consists "only" of personal assessments (see also Espejo & Reyes, 2011, p. 7).

The only possibility to "objectify" information is to include several perspectives:

- For the diagnosis, therefore, one should interview representatives of **each system and corporate function**.
- At the least, one should interview the representatives of the **recursion levels** below and above the level in focus, as the varieties to be processed by the level in focus can stem from lower or higher levels.
- One should also integrate **external perspectives**: How is the organization perceived by the outside world concerning its complexity processing capacity (e.g., customers, non-customers, and suppliers)? What is considered as its strengths, but also its weaknesses?

For the diagnosis, one can choose either a deductive or inductive approach: In the first case, one examines the individual system functions of the organisation to be diagnosed; in the second case, one first lets the organization describe the problems and then maps them to the VSM. Often, a hybrid approach can be used—let the interviewed people describe the problems and then quickly examine the most important system elements that have not been discussed so that no aspect remains overlooked.

The VSM offers a very intuitive way to illustrate the problems of an organization, such as in Fig. 18.1:

The "health" of the individual system elements can be indicated by the colors of the traffic lights. In the example shown in Fig. 18.1, the organization faces
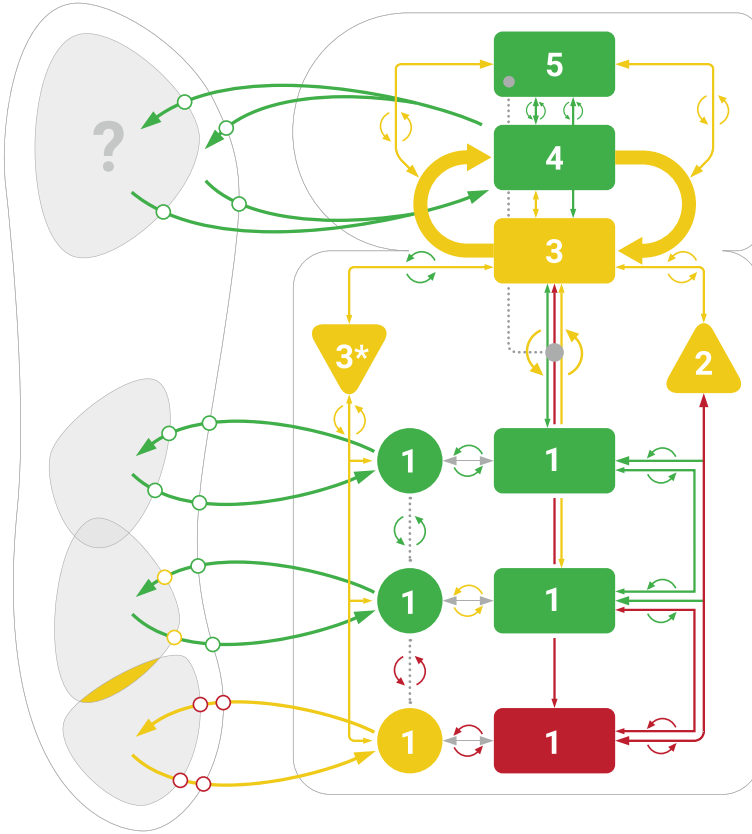
Fig. 18.1 Result of an organizational diagnosis—A snapshot

operational problems with the management of one particular system 1. It was overburdened and had largely lost control of its dealer network. The operational metasystem of the entire organization was also overwhelmed by this situation, and system 5 has not built up the appropriate algedonic channels to identify the difficulties and to counteract them.

18.1.2   "What Is the Real Problem?"—About a Holistic and Differentiated Concept of Complexity

In this book, we have so far referred to complexity or its measure "variety" in a generalized way. For the organizational diagnosis, it is particularly important to differentiate complexity a bit further, because its multidimensional nature generates specific challenges for the diagnosis.

What do we mean by the **multi-dimensionality of complexity**? Let us take the following case: A medium-sized company has experienced years of conflicts between two departments. To find a remedy, change and conflict management consultants were repeatedly hired, but without success: The departments continued to quarrel. As it turned out, the problem did not lie in the social and personal dimension, as had been assumed. Instead, the problem was that factual responsibilities had become unclear. Both departments perceived themselves as the meta-system for the same operational processes. These conflicts could then be quickly clarified by analyzing the (factual) varieties of the processes and realigning job descriptions, reducing the interfaces, and redefining the roles of each department. The opposite case also exists, of course: Factual problems are used to hide personal animosities. Here, a factual approach cannot solve the underlying tensions.

Hence, if one does not differentiate the various dimensions with sufficient accuracy, one "prescribes" the wrong improvement measures. Following the well-known German sociologist Niklas Luhmann (1987), and expanding his approach slightly, one should distinguish between the factual, social, temporal, and psychological dimension of (organizational) complexity.[2] But, how do these dimensions manifest themselves, and how are they assessed?

In the **factual dimension**, this means above all to analyze whether the existing technologies, abilities and technical competencies, systems, processes, resources, and infrastructures of the organization provide requisite *eigen*-variety.

In the **temporal dimension**, it is necessary to ask whether the required response times, availabilities, temporal structures (e.g., meeting schedules), and time budgets are in place. The problem in many organizations is chronic lack of time or asynchronicity, such as that events do not follow the agenda of the committees or the reporting cycles defined by the organizations.

Within an organizational diagnosis, one therefore needs to analyze how the different system functions and their subelements interact from a temporal perspective. One needs to investigate how an extended management team can convene within the required timeframe in crisis situations and what rules and regulations (e.g., regarding voting procedures) and infrastructure (e.g., video conferencing facilities) it needs to resolve urgent matters. Alternatively, one needs to ask whether an organization has reserved enough time buffers, for example, by providing spare resources, extra capacity, or by managing (temporal) expectations (e.g., deadlines). In other words, is the organization permanently working "on the brink of collapse" or are temporal buffers in place?

Time is also affected by the design of system 2 and 3*. An organization without a system 3* will always be surprised by unplanned events (the excluded variety) and will experience time scarcity, states of emergency, and constant "firefighting." An organization with a weak system 2, on the other hand, does not succeed in assuaging the "firefighting" mode: It does not want or cannot identify any regularities and

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[2]Due to the length of this book, we refrain from an in-depth analysis and definition of the dimensions but instead base our thoughts on our everyday understanding. Luhmann only used the first three dimensions in his theory.

recurring patterns among the unplanned and spontaneous events, which would otherwise allow the organization to prepare and implement plans better. This is why good time management does not necessarily mean a faster undertaking of initiatives, but perhaps simply in good time (Schwaninger, 2006a, p. 16).

The **social dimension** must also be considered in an organizational design and diagnosis process:

- What **style, behavior, and communication patterns** are required for specific system functions? As Stafford Beer aptly remarked, the way in which one deals with other people is an essential factor for the amplification or dampening of variety (Beer, 1995a, p. 98), of which motivation is a crucial part.
- Through which **social structures** can the system function, and can recursion levels work well, and can information deficits, language barriers, and differences in perspectives be reduced?
- People bring their **personality** (i.e., their strengths and weaknesses) into the organization: This too is variety, which must be coordinated strictly in the sense of Ashby's Law. What are the **social mechanisms** by which the personal varieties are coordinated? Where is it necessary to attenuate (e.g., standards, rules, norms) or to strengthen them (e.g., training, coaching)? By what means can different behaviors be strengthened (e.g., through rewards) or prevented (e.g., by penalties) so that the organization becomes more independent of different individuals and their personality profiles?

In the **psychological dimension**, questions about the necessary personality profiles for specific system tasks need to be clarified. Which personality types harmonize in the various intrasystemic adaptation mechanisms and which ones fail to do so? The psychological dimension also plays a decisive role in the information and communication system in the VSM: How well does the way through which information is generated, distributed, and processed within the organization correspond to the human psychological and cognitive structures and capacities? For instance, when it comes to the design of reports and PowerPoint slides: Do they generate an information overflow or is the information transmitted intuitively? The nature of the communication climate must also be adequately understood: Does it favor the exchange of information and views, or do psychological barriers exist in the organization that affect the flow of communication (e.g., fear, status, and intimidation)?

The following three aspects related to the four-dimensionality of complexity need to be taken into consideration during a diagnosis:

- The **simultaneity of the four dimensions**.
- The **interdependencies** between the four dimensions.
- The possibility that at least **one dimension dominates the others**.

Fig. 18.2 The system 1-to-3 channel is composed of all four complexity dimensions
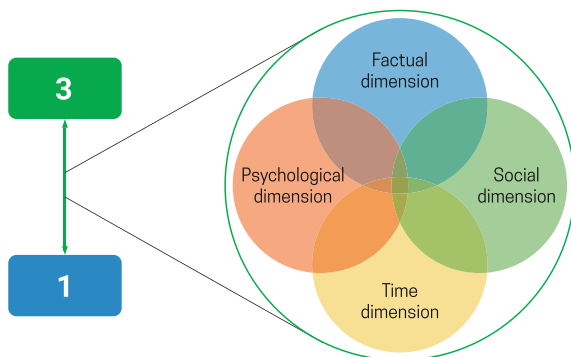
The simultaneity of the factual, social, temporal, and psychological dimension

All four dimensions, unfortunately, always appear together (Luhmann, 1987, p. 127). Every factual problem is integrated into a social context, is subject to temporal constraints, and is confronted with the psychological profile of the people involved. Conversely, every social problem has a factual issue at its core, with its respective history and future that one needs to understand, and with its psychological implications.

This means that in each organizational design and diagnosis, these four dimensions of complexity, which cannot be reduced to one another, must always be taken into consideration, and this applies to each system element within the VSM (system function, information channel, transducer, etc.)!

When examining the vital relationship between the system 1 management and system 3 (see Fig. 18.2), we see that this relationship is always affected by factual problems, temporal constraints and structures (working hours, available time, meeting calendars), social norms and conventions, and the different psychological dispositions between the representatives of both systems functions ("are we on the same wavelength?"). We just need to consider our relationships with superiors or subordinated employees.

This also applies to the adjustment and adaptation mechanisms within the system functions that we discussed in Chaps. 5–7 (see Fig. 18.3). Apart from the factual questions, the solution to a problem always depends on the varieties in the social dimension (e.g., conventions and rules of play), time dimension (e.g., available time), and psychological dimension (e.g., character, personality profiles, and motivation of each representative).

"Be objective" or "we should try to analyze the problem objectively"—these are calls which bear witness to the simultaneous presence of all four dimensions rather than to their distinctness. Evidently, one suffers from social and psychological tensions among participants and cannot keep them separate from the factual aspects of the issue at hand. These calls show how difficult and, yet at the same time, how important it is for organizations and their employees to distinguish between these dimensions in order to understand problems correctly and find good solutions.

Fig. 18.3 Four complexity
dimensions govern all
adaptations and balancing
mechanisms within a system
function—contains adaptation
from Beer (1995a, p. 475,
Fig. 86)
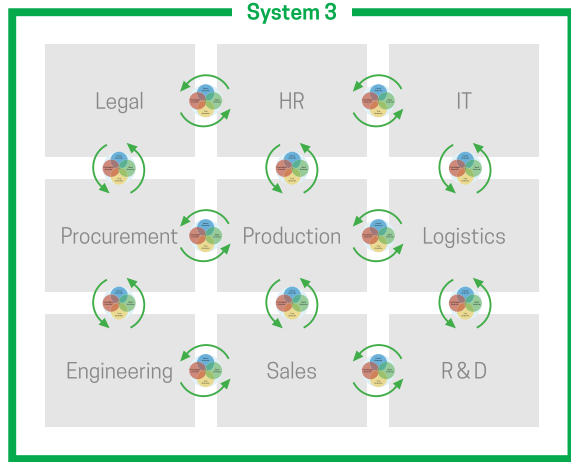
Do you want to know how these dimensions interact and how they influence the diagnosis process?

If so, then continue reading here; otherwise, go to Sect. 18.2

Interactions between these dimensions

Niklas Luhmann (2007, p. 146) has made the interesting observation that these dimensions are not only present simultaneously but that **they also influence each other**. Problems in one dimension can trigger conflicts in the others. However, the interdependency also has positive effects: Unresolved conflicts in one dimension can be absorbed and mitigated by strategies in the other dimensions.

To illustrate this point briefly:

- Problems in the **factual dimension** can have effects in the time dimension (i.e., delays) or spillovers into the social dimension (i.e., conflicts). They can also lead to psychological burdens for employees (i.e., burnout). Conversely, one can solve a factual problem through the other dimensions, for example, through the social dimension: Social networks, good personal contacts, or persuasion allow access to ideas, information, the finding of creative solutions (due to wider access to other's ideas), or the reaching of compromises. The time dimension can also be used: By extending deadlines, one gains more maneuverability to solve a factual problem.

- Conflicts in the **social dimension** can lead to shifts and delays in the time dimension, to obstructions and barriers in the factual dimension, for example, the inaccurate or faulty completion of tasks by unwilling colleagues, or to mental problems in the psychological domain. The social

dimension, however, can be restabilized through the factual, temporal, or psychological dimension. Through reinterpreting or changing a factual issue, one can soften social tensions. The time dimension can be used as well, for example, by imposing time limits to reach an agreement (e.g., deadlines in the case of negotiations). Coaching people in the psychological dimension regarding personal attitudes or behaviors toward other employees can also relax the social climate.

- Conflicts in the **temporal dimension** also lead to pressures in the other dimensions: Time constraints result in stress (psychological dimension), emotional conflicts or changes in group cohesion (social dimension), or in the inaccurate completion of tasks and factual errors (factual dimension). Time conflicts can, however, be mitigated through the other dimensions: through the factual dimension (changing the problem or task to be accomplished), as well as through the social dimension (e.g., providing help and assistance especially in cases of emergencies).

- **Psychological problems** also lead to problems in the factual (wrong decisions), social (poisoning of the climate), and time dimension (delays). Adaptations in the three other dimensions can again help to alleviate some of the psychological problems.

These few examples show how greatly these four dimensions influence each other, and demonstrate that **they must be considered together** in the diagnosis and design process.

This brings us to a fundamental problem in the diagnosis of organizations: In view of their simultaneity and interconnectedness, how do we know from which dimension a conflict originates? Conflicts rapidly spread from one dimension to another. It is not easy for organizations to find an objective answer, and therefore, one often notices that in discussions, participants talk at cross-purposes because they relate the causes of a problem to different dimensions. Was the delay the result of tight schedules, the psychological stress of an employee, or the problem objectively too complicated? Quickly, "causes" are identified, which might not be the true reasons, as one discovers later.

In the design of organizations especially, this uncertainty and lack of clarity make it common that one "solves" conflicts in the wrong dimension, for example, a social problem through solutions in the factual dimension: An organizational unit is added, while the problem originates in social issues and personal leadership weaknesses. Conversely, organizations sometimes want to solve factual and temporal problems through persuasion and appeals to unity and shared values (i.e., in the social dimension). However, the best persuasion of employees or corporate idealism cannot overcome factual problems and can risk credibility.

In both organizational diagnosis and design, one of the main challenges is to keep these individual dimensions apart as much as possible for analytical reasons. If one fails to do so, then one risks that only symptoms are treated

instead of causes. One way to prevent this danger is by trying to describe a problem separately in the four dimensions and to see in which dimension the most convincing explanation and solution can be found.

One will also need to look at how well an organization can bring these four complexity dimensions into play. From the considerations above, one also sees that an organization benefits if it empowers its employees in all four dimensions: Nowadays, "time management" is very much viewed from the perspectives of "working methodology" and "cognitive skills." In many cases, the social dimension is overlooked and thus left unused as an important lever. Much time can be gained by building up good relationships, which allow the exchange of advice and information, or constructive criticism regarding the necessity of a specific task. How much time could employees save if, instead of just working alone in their offices or cubicles, they had simply knocked on the next door?

Domination of one complexity dimension

This mutual interference and interdependence of the four dimensions become a challenge, especially when one of the dimensions begins to dominate the others. As a diagnostician, one will therefore pay particular attention to the possible existence of a dominating dimension. How can we describe the consequences of a dominating dimension? What are the characteristics to identify them?

1. *A dominant factual dimension*

These are the organizations in which the factual and technical perfection is at the forefront of the work ethos, value system, and public discourse (Fig. 18.4). There is little talk about the relationships between people, and the social life is hardly cultivated. This dominance also has consequences at the

Fig. 18.4 Domination of the factual dimension
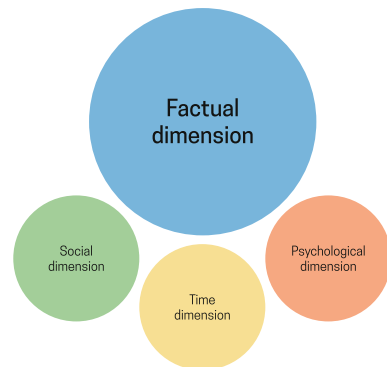
Fig. 18.5 Domination of the
social dimension
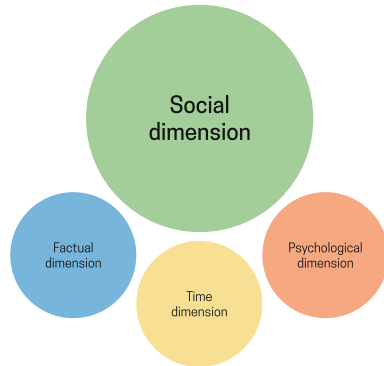
temporal level: The customer, the colleagues, or the rest of the overall
organization may be required to wait, but then he or she receives a
"masterpiece."

2. *A dominant social dimension*

There are organizations where the actual product is less important, but where
the organization primarily serves as a meeting place for its members. The
company then becomes a social association rather than an organization pro-
ducing a purpose for the environment (except, of course, the cases where
social activities are the primary purpose) (Fig. 18.5). The calibration and
maintenance of the social structure are more important than the factual and
punctual execution of a task. Mistakes will be forgiven as long as the social
balance and culture in the organization are maintained.

3. *A dominant temporal dimension*

Particularly today, the domination of time can be found often: Speed and
response times count more than factual accuracy and the social structure
(Fig. 18.6). Time becomes the only criterion for viability: "Let us just not

Fig. 18.6 Domination of the
time dimension
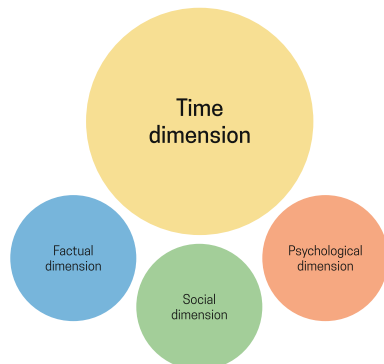
waste time" and speed as the criterion for the highest level of life quality and organizational viability! However, the organization risks losing the reason for its pride (namely, its factual performance) as well as its "soul" and identity. Too little time is left for self-reflectivity and social interactions: There is no time left to develop and experience unity and belonging.

4. *A dominant psychological dimension*

In the case of a dominating psychological dimension (Fig. 18.7), personality profiles, behavioral patterns, and character traits or the individual well-being of employees dominate the organization's decision-making, priorities, and overall point of equilibrium. These aspects are, of course, important, but, ultimately, one must ask what the actual purpose of the organization should be: the full experience of personality(s) or finding and delivering solutions to a customer's needs?

These descriptions show that an organization should try to keep **all four dimensions in balance**. To what degree an organization is successful is a question to be analyzed in the context of a diagnosis. To have all dimensions in equilibrium sounds straightforward. Less so, however, if one asks, at which point these four dimensions should finally become balanced. This point can vary since it depends on the organization's specific purpose, objective, and the nature of its activities. The equilibrium points of an engineering company, a hospital, a coaching institute, or a securities trading house are markedly different. On a superficial level, a dimension can then quickly appear as dominating, while it might be, in reality, in equilibrium for the specific purpose (e.g., the social and psychological dimension for a hospital).

Fig. 18.7 Domination of the psychological dimension
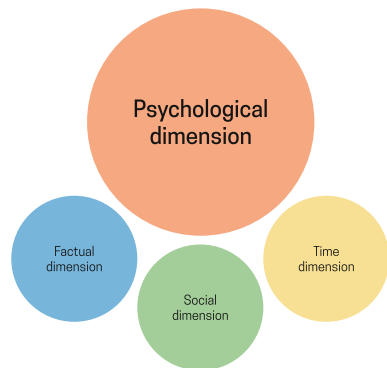
Dominating complexity dimensions as communication and sense-making barriers

For the organizational diagnostician, a dominating dimension might also mean that the discourse of an organization is not neutral and entirely open to all dimensions. If one interviews people, one soon discovers that they verbalize problems in the language of the dominant dimension. Sometimes, they might even be incapable of expressing themselves in the other dimensions. Someone who is very factually minded always sees factual problems and finds it difficult to identify and verbalize social and personal issues, such as feelings. The organization's dominating dimension thus quickly becomes a communication and sense-making barrier for the analysis of the organization.

However, not only the analysis but also the presentation of the diagnosis results become tricky since the organization tends to listen and understand a message only if presented in the format of the dominant dimension. It cannot comprehend the "wavelengths" of the other dimensions; the other dimensions have no meaning in such an organization. In these cases, it is sometimes better to discuss the possibility of a dominant dimension openly beforehand with the organization and explicitly reflect on the nature of the organization's discourse. Concepts and words create reality—what are the words and concepts that the organization uses? One needs to make the organization aware of what dimensions are underrepresented in its language, vocabulary, and discourse, and whether it has difficulties in articulating problems in the other dimensions simply because it "lacks the words" for it.

The danger of one dimension dominating the others is ultimately also an issue for the diagnostician. One should always be aware of the conceptual "lenses" that one carries during a diagnosis process. To counterbalance one's subconscious bias, one should always conduct a diagnosis with another person complementary to one's own profile or, at least, reflect over the results with such a person.

18.2   "Better to Be Safe"—Simulating a New Organization

Finally, the VSM is also suitable for the simulation of organizational changes. Simulations are important because once reorganizations are executed, they can seldom be reversed without losing one's face. Specifically, there are three situations where the VSM can and should be used as a simulation tool:

1. Assessing new strategies concerning their implications for the organization.
2. Testing a new organization.
3. Assessing several organizational options.

18.2.1 Assessing a New Strategy

On the basis of the VSM, the organizational effects of strategies can be better studied—for instance, the effect of an expansion into new markets, or the production of new products on the existing organizational structure (see Fig. 18.8). Working through the VSM, one can try to understand, which complexities arise through a new strategy, how they must be processed, and where possible conflicts and bottlenecks might arise within the existing organization. Is the strategy also manageable from an organizational point of view? How should the new subsidiaries or company be integrated and managed?

Ambitious expansion strategies often lead to an uncontrollably steep increase in environmental complexity compared to the available *eigen*-variety in the organization. Through the VSM, one can model the effects of strategies and assess their
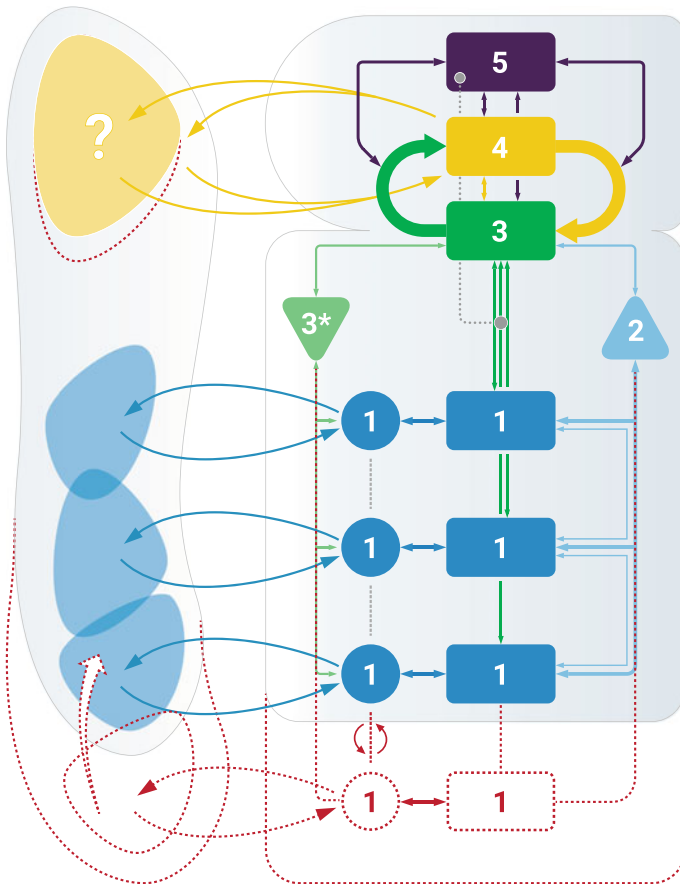
Fig. 18.8 Simulating the effects of a new system 1 on the remaining organization

feasibility. The VSM thus enables us to view the strategy and organization together and to assess whether, in view of Chandler's dictum, the structure **can** follow the strategy.

Similarly, one can better understand the impact of efficiency programs (see volume 2). For example, if employees are laid off and if one loses their knowledge, the internal *eigen*-variety diminishes. Which new variety amplifiers or attenuators (e.g., simplifying the environment) are then required to compensate for this loss? How sustainable are savings if system functions become reduced in their size?

In savings projects, it is a pity that only the cost side is considered, but not the variety processing side. It is often assumed that after a savings project, the organization can continue to function as before. Perhaps it does so, but this is not guaranteed. A well-executed savings program should, therefore, always consider the disadvantages concerning the organization's ability to process variety **in all four dimensions**—the factual, temporal, social, and the psychological dimension.

18.2.2 Testing a New Organization

With the VSM, one can test not only a new strategy but also evaluate a new organizational structure before its implementation. This can be done in two ways:

First, one can test the organization against **changes in the variety to be processed**: How well is the new organization prepared for a significant increase in customers? How well does it respond to an increase in the required innovation and time-to-market rate? How well can the organization react to a significantly higher complaints rate? How well does it react to technological advances and significant innovations?

Secondly, an organization can also be **tested against** the **so-called critical incidents**. One collects critical incidents from the company's history and other companies or imagines improbable events, and then asks: How would the new organization react to them, especially regarding the processing of information?

In times of crisis, the overloading of information channels is one of the key challenges. Everyone has information to share, and everyone would like to create clarity with his or her instructions. This overload of information and advice can easily lead to the collapse of the information system so that, in the end, no decisions can be made, and if made, they are barely noticed and followed. How well is the new organization prepared for it? Does the organization's information system allow channeling of the information flood or will the organization be "flooded"? How much extra capacity do the information channels offer?

Other issues to be tested might be how quickly system 5 of the organization can be activated in the event of a crisis, since in crises, fundamental decisions are needed urgently. Also, how must system 3* and system 4 be equipped to identify the possible crises at an early stage? How must the algedonian and information channels between the recursion levels be designed so that the information about an emerging crisis quickly reaches the top decision-makers?

18.2.3   Assessing Several Structural Options

Similar to the preceding point, but with a slightly different perspective, one can also use the VSM as a guide to assess different structural options. The question to be asked here is with which organizational structure one can achieve a particular objective or implement a strategy more easily. To this end, the success factors and possible challenges that an organization should master must be identified first. In various scenarios, one then tests the adaptation and execution capabilities of the various structural options using the VSM.

Since strategies can usually never be implemented precisely as they were originally planned, another important aspect can and should be tested: the **agility to change the structure later**. Organizational **structures bind,** but later changing circumstances or new insights suddenly favor a different structure. If the battlefield changes and if a new tactic becomes necessary, then one must also regroup the army. Consequently, it is also necessary to test the options regarding their **changeability**: How agile and versatile does the organization remain after the implementation of the various structural options? How much and how long do the structures bind resources and competencies, cement jobs, positions, and departmental boundaries so that the organization will find it difficult to adapt and regroup?

Ultimately, this is also an issue regarding the development of the organization's *eigen*-variety: One should not become the slave of one's *eigen*-variety. **Specialization** is good, but it can quickly become a trap. One can perform a task very well, but only this one. To avoid this, one will have to consider how the various structural options provide sufficient flexibility for the future development of the organization's *eigen*-variety. This is especially relevant to system 2 (e.g., standardization and product platforms, knowledge sharing, and training), system 4 (e.g., the invention of modular products), and the lateral connection channels between the recursion levels (see volume 2). Ultimately, one needs ask: Which of the structural options prevents the emergence of silo mentalities, allows the development of new competencies and ways of thinking, and promotes new opportunities?

Summary

1. Before starting an organizational diagnosis, it is essential to identify the reference point that allows evaluating the functioning of the organization. This reference point is defined by the organization itself and describes what viability means to the organization. It is mainly captured in the organization's purpose, objectives, or value statements.
2. As a next step, one needs to identify the organization's basic model that describes how variety becomes processed in the organization.
3. To achieve the greatest possible objectivity, the recursion level above and below the level in focus should be included in a diagnosis. Also, views from various system functions and the "outside" should be gathered.

4. Each organizational diagnosis should analyze the identified problems in light of all four complexity dimensions (factual, social, temporal, and psychological). Attention should be paid to the interdependencies between these dimensions and their influence on the language, discourse, and mental models of the organization.

5. In simulations, the organization should be tested regarding its behavior to possible changes triggered by new strategies, changes in the environmental variety, or the occurrence of critical incidents.

Questions for Reflection

1. If organizational problems are discussed in your organization, how much do people share a mutual understanding of the purpose and objectives of the organization in these discussions?
2. How often are problems viewed from multiple recursion levels and system perspectives to obtain an objective viewpoint?
3. How much are problems analyzed against all four complexity dimensions for possible explanations?
4. Which of the four complexity dimensions is potentially dominant in your organization? How does the dominant dimension affect the other dimensions and the discourse in your organization?
5. Create a list of critical incidents or possible crises. How well is your organization prepared for them?

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At the Dentist: The Reorganization Process

19

Before a reorganization process, one has the impression that the entire organization is up for a visit to the dentist. It squeezes and hurts, and the organization wants to delay the time until the organizational "teeth" are removed as long as possible. The reason for this aversion to change is easy to understand: changes trigger a chain reaction of countless adaptations in the complex equilibrium systems of an organization. Their consequences, especially on one's career development, are often difficult to assess, and so change is best avoided, if possible (see also Luhmann, 2000, pp. 218f).

The circle of people who wish reforms is, in most cases, only a minority. The majority of employees does not usually look at changes favorably. The currently ubiquitous call for "entrepreneurship" and "change" in management books makes sense against this background: These calls become necessary precisely because there is not enough of it in organizations.

Deeper changes seem to become possible only if a standstill leads to an even greater misalignment for many people. However, even this is not a guarantee: seeing the wall toward which one's company is moving at full speed, some companies in a state of denial remain incapable of starting the necessary turnaround or even press further on the accelerator pedal without changing the direction. They then try to avert the inevitable in ever more erratic but cosmetic actions that, unfortunately, do not address the root of their problems.

However, not only adaptations in the organizational chart structure but the process of change itself has also become increasingly problematic. Many employees now regard reorganization processes as an arena for self-interests or internal politics without any in-depth plan and logic. Reorganizations announced from the upper levels increasingly encounter skepticism and cynicism rather than optimism, it seems. After years, or even decades, of destructive and often ineffective reorganization projects, no one likes to listen to project titles such as "Organization 2025," "Organization 2.0," "CREATE," and their variations any longer—one may even feel disengaged and demotivated. Perhaps it is better to say goodbye to such project titles that are often perceived merely as window dressing for rather painful transformation processes. From these considerations, one must

reckon with the fact that profound reorganizations are undesirable and will almost inevitably face an "uphill battle."

This resignation and disillusionment are, however, also an opportunity to improve the methods of reorganization projects since one of the key issues is to regain the credibility that has been lost. Gone are the days when organizations thought they could ignore or trick reality using buzzwords. Gone are the days when they thought that a reorganization could be carried out solely in the quiet chamber with a consultant. Reorganizations will always remain a task and responsibility of the upper management levels. However, in the future they will have to be designed more dialogically and focus on improving the ways to process (operational) variety. This is necessary for the acceleration in today's environment and the ever more painfully perceptible information deficits across an organization, with which each hierarchy level is confronted.

What can the VSM do in this regard? The VSM provides us with a modeling logic and central design principles, which are valid independently of the individual case and organization… and this is already worth a lot. The arbitrary and political character of many reorganization processes can thus be reduced using the VSM. We can now evaluate various organizational options on the basis and in light of a universally applicable model. The VSM offers a uniform model language which objectifies the discussion in organizations through its focus on the processing of variety. Organizational options can now be evaluated more stringently and soberly as to how well one can process variety with them. Moreover, the VSM always relates us back to the **essential question**: How can we organize the **processing of variety** as well as possible and make the organization **viable**? This helps to limit the influence of political aspects.

However, the right conceptual basis for organizational changes is only one aspect; many decision-makers are also confronted with another important question; namely, **how to get from the current organization to the new one and how to get an organization to change and move**? How should one carry out the change process? Can the VSM help here too?

For this second aspect, one must acknowledge that the VSM is not a change management model in the narrower sense. It cannot provide us with any direct recommendations regarding how to induce changes in the personal-psychological dimension and motivations of the individual employees. Nevertheless, it is still possible to derive valuable suggestions from it on how to design and plan the change process since it incorporates some of the fundamental functioning principles of organizations. In this chapter, we will address some of these recommendations.

In a change process, one encounters two fundamental problems: First, how to create legitimacy for the reorganization, and second, how to build up the (self-)dynamics for change (or "momentum")? The following Sects. 19.1 and 19.2 are devoted to these two key questions. In Sect. 19.3, we will take a process-based view and distill concrete recommendations for the reorganization process as such from the VSM.

19.1 "Why Change a Running System?"—The Need for Legitimacy

19.1.1 Any Intended Change Creates the Need for Legitimacy

The need to legitimize a change process results from its effects on organizations and employees: Changes are conceived as dangerous and stressful since it is rarely possible to predict where the changes will lead to due to their complexity, we said. The tacit dimension of an organization consisting of its implicit and never fully documented routines, processes, and interdependencies (see Chap. 8.4) makes every reorganization an adventure trip with an unknown outcome. The only certainty that one has is that one will face surprises along the way.

In view of this, one must respond and provide reasons why one wants to violate the recommendation "never to change a running system" or the equivalent principle from medicine "primum non nocere."[1] Why change something that works? For organizations suffering from one of the dysfunctionalities described in volume 2, the legitimation is already given in the dysfunctionalities, and the remedy promised by the reorganization—provided the organization acknowledges the existence of the dysfunctionalities. Every employee will easily understand the need for change in such a situation. The question arises instead in organizations that function or that have the perception that they function: Why should they change?

Each change thus initially faces a considerable **need for legitimation**. As an executive or manager, one must be aware of this need and must not ignore it. On the contrary, one must take the time to work out the reasons why one ought to risk this process. Just as a doctor must explain to a patient why a surgical operation is necessary and why the planned surgery is the gentlest intervention out of all sorts of possibilities, so must the management of an organization.

The term **legitimation** is deliberately chosen here[2] since change processes are never just a matter of changing the employees' "attitudes" or "motivations," as change models often emphasize somewhat too one-sidedly. Attitudes and motivations are only one side of the problem, namely, the side of the employees. The other side, namely the responsibility of the organization's management is to provide the **reasons for the change**. Credibility requires reasons and not only attitudes, and it

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[1]"First, do not hurt.".

[2]Legitimacy is not understood here in a legal or institutional sense but from a rational perspective following Habermas' approach (1995), according to which legitimacy means "giving reasons." Legitimation, understood in this sense, seems to me to be more appropriate than just the creation of a sense of urgency as demanded, for example, by Kotter (1995) in his change model. Urgency can be one reason to change but only addresses the temporal dimension. It is more important, in my view, to also provide factual reasons related to the organization's processing of variety and the need to restore requisite variety. Put pointedly and a bit exaggerated: Rushing and hectic do not provide legitimacy but only confusion; to get direction and focus, one needs reasons. Especially in tumultuous times, organizations need to provide a certain level of rationality and meaning to prevent chaos and disintegration from occuring.

requires reasons that are deemed worthy of being believed in. **Skepticism by employees** should, therefore, not be interpreted automatically as a sign of unwillingness and lack of motivation, but rather as an indication that the reasons given so far might not have been sufficient.[3]

19.1.2 Recursivity as a Challenge to the Legitimation Process

The need for legitimacy is also a consequence of organizations having metasystems that can adapt to new situations only through reflection, learning, reasoning, and decision-making. "Reasons" are the input that metasystems require for their proper functioning and for adapting their control models.

At this point, we return to an aspect in organizations that is often not sufficiently well understood in its consequences: **recursivity**. As we remember, organizations have and need more than one "head" (i.e., metasystem) because only with **heads at every recursion level they become truly adaptive.** Only then can the verticalization of the organization and its segmentation into levels achieve its purpose (see volume 1).

Recursivity adds to the organization's *eigen*-variety but unfortunately makes the reorganization process more complicated at the same time, since one needs to deal with multiple heads instead of one. These heads must not be decapitated so as not to destroy the organization's recursivity. On the contrary, it is part of an organization's viability, and its hallmark, that changes always need to be reflected and tested by the organization's various metasystems before being implemented.[4] If the lower level metasystems are not involved, the organization eliminates its essential organs of adaptability and viability, destroys its (recursive) nature, and degrades itself to a machine. Thus, whoever cannot adequately legitimize the change from the perspective of the organization's metasystems will necessarily receive rejection as a form of self-protection… and this might be even a sign of life!

This implies that organizational changes can never be simply commanded top-down; one also needs to involve the heads at lower levels. Legitimation is, hence, a **two-way process**: It does not suffice to just present reasons in a speech; the other side must also reflect and have the possibility to discuss them. Achieving legitimacy is an inherently **dialogical process,** and the reasons provided for a change must always be **adequate to the control models, knowledge, and experiences existing** in the organization. One should never underestimate employees.

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[3]Anyone who does not give any good reasons, whether consciously or unconsciously, risks turning change-consultants into mere "decorators" of top management decisions; unfortunately, not a rare case despite preprogrammed failure for both the top management as well as the consultants.

[4]Of course, a proposal for a new organization can always be rejected for political and tactical reasons, even if everyone senses that a change is necessary. In such a constellation the question is then less to provide legitimate reasons, but, instead, how to design the reorganization process in such a way that sufficient momentum is generated to overcome political power games (see also Sect. 19.2). However, even then, this does not dispense from giving reasons.

This does not mean that one must remain in the frameworks of the other side and cannot challenge them. Legitimation can also be achieved by demonstrating to lower level metasystems that their current control models have hitherto overlooked essential aspects that can be addressed better by the new organization.

19.1.3 Key Success Factors for Sufficient Legitimation

Legitimation is a challenging business because it requires the mastery of at least the following four success factors:

19.1.3.1 Success Factor 1: Finding Good Reasons for the Change

This sounds logical and comprehensible, but it is still too superficially formulated, because what is meant by "good" reasons? The VSM can give us a hint: As we have seen so far, organizational structures can also be considered as logics to control processes and resources so that, in the end, the relevant variety of the environment can be successfully processed. The ultimate goal of an organization is always to establish and maintain an equilibrium between the environmental variety and the *eigen*-variety of the organization for a given purpose and strategy (see Fig. 19.1). A change of organizational structures thus becomes more easily justifiable if it can be shown that the equilibrium with the environment can no longer be achieved by maintaining the current structures and that the organization fails to process environmental variety adequately. The reorganization then "only" becomes the direct and logical consequence of changes in the varieties that need to be processed. The (potential) imbalance between the environmental variety and *eigen*-variety is,

Fig. 19.1 Reorganizations need to be justified through their capacity to achieve equilibrium with the environment. Adapted from Beer (1995a, p. 96, Fig. 21)
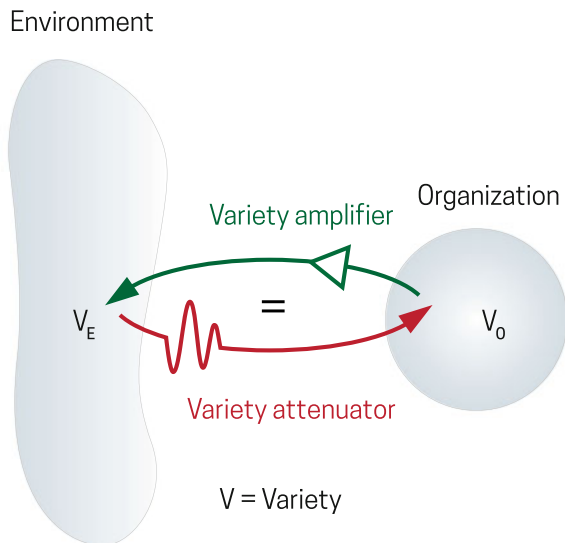
consequently, an ideal starting point for legitimizing an organizational change project.

Three changes can lead to an imbalance between the organization and the environment and thus serve as reasons for reorganizations:

1. **Changes in the environmental variety**
   These changes may result from the primary environment (e.g., customers) or the secondary environments (e.g., from the resources employed).

2. **Changes in the *eigen*-variety**
   These changes result, for instance, through the way an organization operates. If an organization has introduced a new IT system, certain processes will not be necessary anymore, while new tasks can emerge.

3. **Changes in the purpose, objectives, and strategy**
   By changing the purpose, the objectives, and strategy, the relevant environment, and thus, the inflowing variety also change for the organization.

If one examines these three causes more closely, then the changes in the environment have the greatest chances for generating legitimacy. First, the environment is the basis for the organizations' livelihood, second, it can only be conditionally influenced by the organization, and third, the organization must always prove itself in the environment. The two other causes such as the purpose, objectives, strategy, or changes in the *eigen*-variety of an organization are rather a matter of choice and are thus contingent. One could choose otherwise, and this makes the argument for a reorganization more difficult.[5]

All this has one important implication for the reorganization process: Since organizational changes should primarily be based on changes in the environment, one should hence **never start a reorganization process with the organizational chart**, but, above all, with **the analysis of the environment**. This has the advantage that the reorganization process does not become suspicious of being politically motivated and self-serving: The environment is impartial against internal politics. Further, choosing the environment as a starting point to gain legitimacy also has the advantage that the organization is referred to its purpose; namely, to process environmental variety as well as possible … and who can argue against this?

19.1.3.2 Success Factor 2: Bringing the Change into the Present and Making It as Tangible as Possible

A challenge for reorganizations is that they are usually carried out on an anticipatory basis only (i.e., before changes in the environment become a reality). The wake-up call: "It is five to twelve" occurs precisely because it is (luckily) not yet twelve. The anticipation of changes, however, entails an epistemological problem:

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[5]This also explains why strategies that are not yet implemented or difficult to implement represent a major burden for reorganization processes and create serious legitimation problems. They are not yet legitimized in view of the environment: One could still pursue a different strategy ….

The changes as such are not yet apparent, or at least not directly to most employees in the organization. If the looming imbalance is not yet noticeable, it thus becomes more difficult to use it as an argument.

This problem is also reflected in the VSM: the organization is largely dominated by the exchanges with the present environments of the operational systems 1. The future (system 4) has only a small share in the organization's overall preoccupation and concerns. It faces the difficulty to get its message transmitted into the operational area (see also volume 1). One must thus work very actively to reduce the barriers for the future to arrive and become tangible within the organization. As Watzlawick (1984, p. 100) once pointed out when explaining how self-fulfilling prophecies function: "Only when a prophecy is believed; that is, only when it is seen as a fact which has, so to speak, already happened in the future, can it have a tangible effect on the present and thereby fulfill itself." The future must already become seen as a fact—even if it has not yet arrived, and this is the challenge.

To let the future quickly become the present can hence help to reverse the fundamental dynamics in the organization. If future changes become believed as facts, then the reorganization process no longer needs to be justified against being an intrusion into a seemingly functioning system. The reorganization process can then instead present itself as the measure that helps the organization to react to imbalances and challenges already made perceptible. It is, therefore, no coincidence that experienced executives, in the event of upcoming changes, first paint a threatening future as dramatically as possible and thereby try to destabilize the organization. Then, their proposed changes can appear and be perceived like a cure.

However, the future must not become a substitute for lack of legitimatizing reasons. Sometimes, the temptation exists to use the future as an excuse if one cannot find good arguments for a change: "Let's start with the reorganization, you will discover that this will be the right decision." One point is clear: The less one must borrow from the still unknown future and burden it with the mortgage of future successes, the less indebted one can start not only the current but also future reorganization processes.

19.1.3.3 Success Factor 3: The Change Must Lead to Improvement ("Hockey Stick Principle")

The Greek philosopher Aristotle differentiated the efficient from the final cause: Changes can occur because of existing factors (efficient cause) or due to the anticipation of future objectives and benefits (final cause)—a distinction also relevant for organizational change processes. One needs to show both; namely, why current circumstances force to change but also what the target destination is and why it is attractive and imperative to move there.

The speech starting the perhaps oldest recorded change process in human history, the Exodus of the Israelites from Egypt into the promised land is a telling example of the two types of reasons to provide. When Moses instructed the people of Israel to leave Egypt, he did not only make it clear that the current situation (i.e., slavery) required change, but he also promised them "a land flowing with milk and honey" (Exod. 13:3-5). Would he have been able to move the people without

this promise? It is fairly safe to assume that it would have been much more challenging. People and organizations today have not changed much from those in ancient history: they still need a "promised land" to stand up and move.

The challenge is that it is often easier to show why one needs to give up the current status ("move away") than to provide an already clear and concrete direction, vision, and objective of new status ("move toward"). Developing a clear vision is hard work, but only with a clear picture of the target state, it becomes easier for the organization to abandon its current structure and change.

The specific challenge here is that legitimation only works asymmetrically because it otherwise fails to convince: The future situation must always be better than the present one. Ending up worse is not an option. This means that the change project must always make clear that and how the change will lead to an improvement. Moses could have never led his people out of Egypt if he had not promised them the land in which milk and honey flowed and which was so much better than Egypt.

One customer remarked to me once that each business case and argumentation needs to end with a hockey stick diagram: After a valley of tears, it always goes upwards and much higher than before. The expectation that the hockey stick principle seeks to satisfy can, of course, turn into a curse because sometimes one cannot achieve an improvement. Sometimes, one will be content with the fact that it did not get much worse thanks to the reorganization. Executives are tempted to use the hockey stick to justify a reorganization even in cases where one knows that the hockey stick will not materialize. This can go well for the first reorganization, but for all subsequent reorganizations, one has lost one's credibility, and future legitimation efforts will become more difficult.

In such cases, where no real improvement can be achieved, it would perhaps be better to play with open cards and to start with alternative scenarios: What would happen if we did not change? It would then become clear that without the reorganization, the situation would be even much more threatening, and that the reorganization remains the only alternative. This may not always be as inspiring as the promised paradise, but in the long run, it is better for one's credibility and the cohesion within an organization.

19.1.3.4 Success Factor 4: Achieving Quick-Wins that Confirm the Reorganization's Direction

The new organizational structure must prove itself in real life. Organizations do not exist isolated and for their own benefit, but only regarding the environment with which they build a communicating ecosystem. The organization's goal is not the organization itself, but to achieve the desired equilibrium with the environment.

Employees thus continually try to assess the success rate of the organization in its environment: Are we "on track" or not? Is the change meaningful, and does it produce the intended results or not? Is organizational improvement just an idea, or does it take place in reality? The organization and its employees need answers to these questions to preserve their inner stability; otherwise, they will become restless.

This desire to have the direction of the reorganization process reaffirmed needs to be taken into account when reorganizing the organization. For this reason, quick-wins that demonstrate that the new organization is the right step are essential success factors in reorganization processes. They prove that the decision for the change was right and that the organization's fundamental relationship with the environment returns to the targeted balance.

19.2 How Does One Create "Momentum"?

Legitimation is a crucial aspect of change processes, but not the only one. Being right does not yet create the necessary dynamic within the organization. In many reorganization projects, one has the impression that the organization must still be pushed rather than that it is pushing itself. Would it not be more elegant if the organization could move by itself and perceive the reorganization project as a help instead of a threat? So one crucial question is: How does one generate sufficient momentum in an organization?

To answer this question, let us return to one of the insights of the VSM: Organizations are essentially structures developed to process environmental variety, and the unprocessed environmental variety is their livelihood (see volume 1). If this is true, this means that an organization is determined by the variety that it is supposed to process and by its *eigen*-variety. If one wants to change an organization, one should thus not only pay attention to the structures as such but even more to **the variety with which the organization is preoccupied as well as endowed**. The foundations and stronghold of the old organization are the old environment, goals, and tasks but also the organization's resources, competencies, and instruments.

This foundation must be changed if one wants to initiate momentum. As an adage puts it pointedly[6]: "If your only tool is a hammer, then every problem looks like a nail." Consequently, if one wants people to cut trees, then one must place people in front of the trees, take away the hammers, and give them an axe. The same is true for organizations: **Organizations change only if the relevant environmental variety, tasks, objectives, and resources are changed**; otherwise, they will work with the existing ones.

This leads us to the following **four measures**:

1. **Define new and demanding tasks and objectives**

   New tasks and objectives are an instrument to redirect an organization from the current (*eigen*-)variety to the (*eigen*-)variety on which the new organization should be built. The new objectives should make it impossible for organizations to continue processing the same type of variety and utilizing their actual *eigen*-variety.

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[6]For the origin of this adage, see: https://quoteinvestigator.com/2014/05/08/hammer-nail/.

The critical prerequisite for this measure is that the **new operational objectives and tasks can only be achieved through the new organizational structure**. The new objectives and tasks should thus be so demanding that the organization can no longer return to the old structure, processes, and habits on which the old organization is built.

Defining new objectives and tasks has other significant advantages too because if the organization concentrates too much on the reorganization process (which is always the danger), it risks forgetting the environment. Reorganizations are always strategically dangerous moments in which organizations become vulnerable: as the organization becomes inward-looking, customers begin to turn away, and competitors exploit this attention gap. There is no better moment for competitors than when one reorganizes! Demanding objectives draws the organization's focus outward and to producing results.

2. **Change the organization's current *eigen*-variety supporting the current structures**

    When Hernán Cortez reached today's Mexico, his soldiers began deserting and wanted to flee to Cuba. Seeing this, Cortez sank the ships. The same tactic is reported about William the Conqueror: He also had his boats destroyed. The principle behind this decision might seem drastic and harsh but is instructive: Changing the available resources leads to a change in behavior. **Reorganizations must ensure that the organization's current *eigen*-variety does not allow it to return to the old processes, structures, and processes**.

    Changing available *eigen*-variety and limiting access to it also alters power relationships in the organization. Legitimation often does not suffice to encounter fundamental opposition. In such cases, one should not be afraid of removing the resources that support the established power bases.

3. **Create new centers for the organization-wide opinion-making process**

    An essential and valuable resource in organizations is opinions. Organizations are full of them. Opinions influence, whether, where to, and by how much an organization changes. The current public opinion in an organization can thus serve as an anchor for the old organization and inhibit the new one from becoming implemented.

    People are not purely rational beings, weighing every argument for themselves, but often follow an argument only because it is accepted by others. In every organization, there are points around which opinions form, such as opinion leaders, incidents, quotes, aphorisms, or mottos. These points can be viewed as attractors or centers of gravity in complex social systems, which are capable of attracting and shaping the entire public opinion in an organization (see volume 2). These attractors must be controlled and used as a resource for the reorganization project. If the existing attractors cannot be utilized, then one needs to build alternative attractors, for example, by winning opinion leaders for the project or by influencing the public opinion and sentiment with new narratives.

4. **Accelerate time**

This sounds paradoxical at first because time, as such, cannot be accelerated. What we mean by this is that it does not suffice to abolish the foundations of the old structures. One also needs to let the resources, infrastructures, and processes of the future organization become present as quickly as possible because otherwise, one only leaves a void.

People need to see and feel the new "realities" as quickly as possible. Then, it will be easier for them to turn to the new structure. The more tangible the new structure becomes, the easier it will be to trigger momentum toward the new organization and reverse the justification pressure: One then has to justify oneself for remaining with the old organization rather than to change to the new one. Not for nothing, it is said that "speed kills"—it is the new that kills the old.

19.3 How to Design and Implement a Reorganization Process?

Let us now turn to the reorganization process itself: What are the implications from the VSM and the discussion above for the design of the reorganization process? How can the VSM enrich other approaches regarding organizational change and transformation? What are good principles?

19.3.1 A Reorganization Begins with the Environment and Strategy … and not with the Organizational Chart

As we have already noted, each reorganization must, ultimately, justify itself. Since organizations are social structures to process environmental variety, the best legitimation is the changes in the environmental variety that needs to be processed by the organization, we said earlier. The need for the reorganization should only be a logical consequence of these environmental changes.

Many reorganizations run into difficulties and resistance because they are unable to achieve this step: The environment and the future have not become sufficiently integrated into the mind of the organization and made tangible. In emails to employees, they are only referred to as "new challenges," but what does this mean specifically—how can these challenges be sensed, why is the proposed new structure necessary and why not a different one? These questions by employees need an answer.

Here are some suggestions for this step:

– Begin your reorganization with an analysis of the environment, its organizational purpose and strategy, and the anticipated changes.
– Point out what the new challenges and external changes imply for the organization.

– Then, try to get your analysis and evaluation approved and put beyond any doubt by the major stakeholders.
– Try to make these challenges and changes as early as possible tangible in your organization. The goal should be to let the new organization appear as helpful and as a necessary step to cope with changing circumstances.
– Then, explain which organizational model is best suited to these external changes. Try to reach a consensus, especially with key opinion leaders and stakeholders.

19.3.2 Bring the "Stone" Already Rolling

Parallel to providing legitimacy, you need to create the conditions for the organization to start moving by itself. To achieve this dynamic or "momentum," you should:

– Define a new target, for which the new organization is perceived as a necessary instrument and make clear why it cannot be achieved with the old structure.
– In line with the new objective, you should also re-allocate the available *eigen*-variety (e.g., resources) toward the new organization so that the balance of power can shift in its favor.
– Attract opinion leaders or create new points of attraction that help to change the public opinion in the organization. You do not always need opinion leaders; incidents or new narratives can take over this function as well and let the public opinion in your organization gravitate toward the new organization. Analyze what kind of event or *leitmotif* can be used to create attraction to the new organization.
– Create a plan detailing, which activities, process flows, committees, and infrastructures should no longer be maintained or replaced because they keep the old organization alive.

19.3.3 How Does the New Organization Make Life Easier for Us?

Organizations exist to handle complexity, and they aim to accomplish this as efficiently as possible. To legitimize the new organization, one needs to demonstrate how the new organization facilitates the processing of complexity compared to other organizational models. The sooner a reorganization can provide this proof, for example, in the form of "quick-wins," the more likely it will be that the new organizational structure will be adopted fast.

Here are some suggestions for this step:

– As early as possible, identify which tasks or processes are no longer required or can be accomplished more efficiently due to new organizational structure. Try to implement them as fast as possible.
– As early as possible collect or prepare "evidence" that the new organization facilitates the internal complexity processing better than the old one. With which quick-wins can you prove this? What are success stories in the company's history or in other companies that corroborate the new organization?

19.3.4 Pay Attention to the Recursivity of the Organization!

Reorganization projects often suffer from the fact that they do not take the recursivity of organizations seriously enough. Every level in the organization has its metasystem, which deals with specific environments and futures. These differences in the environment and the future must be addressed. The future, which the executive board is facing, is different from the future of the employees who are working at the operational level.

As long as the employees of the company cannot see how their overall environment and future will change, they will have difficulty in understanding the need for a reorganization. For the success of a reorganization process, it is, therefore, crucial to making the changes evident not only regarding the environment and the future of the whole organization (so at the board level) but also with regards to the environment and future of every lower recursion level.

Here are some suggestions for this step:

– Think about what the changes at the overall company level mean for the lower recursion levels. As a preparation, first try to visualize the specific activities, challenges, and objectives of the lower levels.
– Try to explain the changes to each level and their opinion leaders in their "language." Make the changes as tangible as possible (e.g., exhibits, company and trade fair visits, lectures, etc.).
– Plan a discussion process with the lower levels and their opinion leaders, where you try to present and discuss the reasons for the changes from their perspective.

19.3.5 The New Organization Must Create New "Worlds"

A reorganization process can also be understood as a transition from system 3 to system 4 (see Fig. 19.2). For system 3, the old organization is the right organization, while for system 4, the new organization is the way to go.

Fig. 19.2 Reorganization
process as the transition from
system 3 to 4
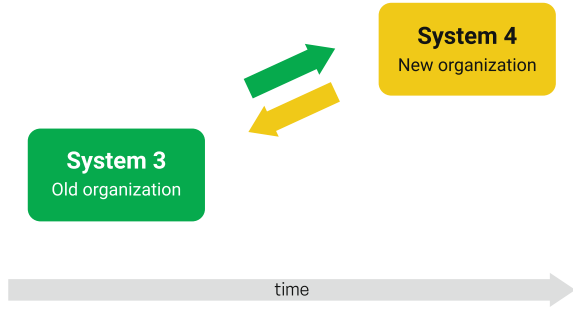
And yet, Fig. 19.2 is still too simple. It neglects that adaptive organizations are equipped with **control models**. These models are not only operational control models but have a more fundamental function: **They create order and "world(s)."** They determine what is relevant and what is not, what is permitted and what is forbidden, and what is cause and effect.

The creation of the "world" is not just an act of God as described in the Bible,[7] but also one by human beings and social systems, such as organizations. Organizations define habitats and create meaning. For someone who gets sacked, a "world is ending," as we say aptly. One loses not only one's job, but one also becomes excluded from a "world."

The old and new organizations embody different "worlds" with different principles, values, and cultures, and thus also decision-making logics. System 3 and 4 often live in a different "world" and, hence, apply different criteria, principles, and values to the choice of the right organizational structure. Thus, one cannot just pass from one organizational structure into another without adapting the foundations of their decision-making.

Depending on their degree of change, reorganizations are not just mere shifts or regroupings of tasks and positions, but also require changes in the hitherto final decisions and beliefs. Organizational changes must, therefore, also be understood as processes of changing mental worlds, in which old "worlds" are destroyed and new ones built up. "There is no stone left unturned" is often said in this context, and this means that a new organization also builds a new "world" with new principles.

For this, the transformation process should not only focus on **changes in the operational details but also on the mental worlds, models, principles, and values**. Here, the VSM logic reminds us that system 5 must always be involved and plays a decisive role in every transformation process since it is ultimately responsible for final decisions (see Fig. 19.3).

What does this mean more specifically, and which system 5 processes are involved? An essential foundation and instrument for the decision-making of system 5 is the **history of its earlier decisions** (see volume 1). Yet, this history is not solely helpful but also a burden, for it leads to the old organization if not

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[7]Looking more closely at the biblical story of the creation of Earth (Gen 1), one realizes that in this narrative, the world was mainly created by bringing order into chaos.
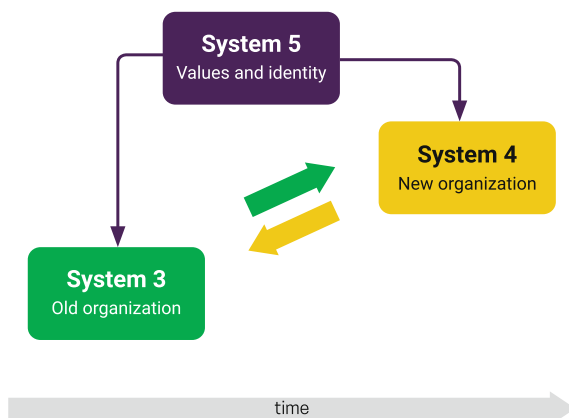
unchanged. The new organization, with its new principles, is not yet included in the current interpretation of the organization's history. The **new organization still needs to be connected to and embedded in the company's history**.

This implies that an essential task for the transformation process is to **reconstruct and reinterpret the organization's history**, especially the history of previous decisions. The principles that are necessary for the new organization must become reflected and embedded in the history of the organization (e.g., in sentences such as, "we have always been the ones who…"). The newly told history of the organization must contain the forthcoming transformation and the new organization (see volume 1). To find and to retell this newly interpreted story is the specific task and responsibility of those who represent system 5 in an organization. The frequent question of some CEOs: "How do we tell the organization that we have to change?" expresses this need to find the right narrative.

However, this is not the only task to be accomplished: in fact, the transition from the old to the new organization often entails a delicate and complicated decision-making process. One never just changes structures but also the most fundamental equilibria of system 5 (see volume 2). The organization and its employees need to find out and decide for themselves, how the reorganization will and should affect, for instance, the equilibrium between what has been **included and what has been excluded from the organization** so far. Almost all reorganizations change accepted norms and beliefs. What has been accepted as the "norm" now becomes abandoned, unwanted, or even prohibited. Reorganizations turn the "world" upside down—this needs to be understood and, in the end, welcomed beforehand. Reorganizations also change the organization's **self- and external-referencing.** They affect the organization's identity and relationship with the environment and change its (self-)perception.

Consequently, a transformation process will sometimes be unable to start with a unified system 5, but instead will first be confronted with multiple nuclei within system 5 (see volume 2). Until the reorganization, the organization has thought that everyone would pull together in the same direction, but the reorganization processes

might reveal more significant differences regarding the purpose and the identity of the organization. People might be divided, and differences in opinions grow. Reorganization processes expose these hidden differences in system 5 matters.

One of the aims of the so-called **stakeholder analysis** is to anticipate these differences and to prepare for the debate with stakeholders in an argumentative and procedural manner. Many and often the most valuable employees leave a company because they cannot cope with "the new direction"—a loss for both sides, and perhaps not necessary if the required bridges between the principles and values of the old and those of the new "world" had been built.[8]

Here are some suggestions:

– Try to understand how the world(s) and essential reference points for employees
  will change.
– Think about the arguments or examples from the history of the organization that
  can be used to build mental bridges into the new "world." Also consider who, in
  the eyes of the employees, are true and credible representatives of (their) system 5
  (e.g., the supervisory board) who can build the bridge for them and tell them the
  new story.
– Plan an intensive discussion process that gives the employees ample time to
  understand the new "world." An important note: An employee information session
  is usually not sufficient; it might require a lengthier internal discussion process.

19.3.6 Reorganizations Can Never Be Planned to the Last Detail but Are an Open Evolutionary Process

We said earlier that organizations are intrinsically not transparent to themselves, and every reorganization project produces its surprises (see Chap. 8.4). A reorganization process will thus never be able to produce a ready-made "organizational machine" at the outset. This would ignore the inherently social character of the organization: Organizations are subject to an evolutionary learning process—for all sides and levels. This also means that for every reorganization, it is necessary to expect changes to the original design. However, this is not a disadvantage or error, but an expression of a learning process. One learns by and only through changing… and this also applies to the reorganization process.

From this follows that reorganizations must be designed as a continuous and open transformation process, where at the beginning, an organizational model defines specific guidelines and basic structures, but which ultimately needs to be

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[8]Espejo (1989) and Espejo & Reyes (2011) rightly point to the different viewpoints, which exist within an organization and which require explicit communication processes, especially during change processes. The VIPLAN methodology (ibid.) aims specifically at linking the organizational design and diagnosis process with the process of constructing a common worldview and joint learning about an organization's identity and purpose.

further adapted. For this reason, it is advisable to open the reorganization process as early as possible, so that knowledge about the organization yet unknown can be brought to light and that the right decisions can be made as quickly as possible. In principle, one can compare this process to house building: If an architect designs a house without its occupants, then the probability of mistakes that make the house dysfunctional and unwanted is very high. It is better to involve future residents as early as possible in the planning process—they must be able to imagine their lives in this new house and to reflect on the necessary changes.

This does not mean, however, that the original plan or the work of the architect has no value. On the contrary, reorganizations need a basic plan (e.g., regarding the time frame, resources needed)—a preselection that eliminates impossible or inconvenient options. The critical point to understand is that one should not become trapped in one's plans but remain open to new perspectives; reorganizations are a targeted but also (co-)evolutionary process that includes variations—new aspects will appear along the process that might complicate matters but also offer further insights.

Here are some suggestions:

– Conceive the reorganization process as a collective learning process.
– Define the necessary guidelines but leave the further development of the organization open for adaptations by a wider group of participants.

19.3.7 "And What Do We Do with Mr./Mrs. …?"

Reorganizations also require personnel decisions since jobs and organizational units are reconfigured and demand new competencies and people. Reorganizations thus always affect the personal relationships and social structure of an organization. One often likes to avoid this. The bitter truth, however, is that the social structure within an organization or the question, which person performs which task, is for the environment only of minor value and interest. For the environment, it is only important that the purpose is achieved, and better than by any other organizations. Everyone is replaceable, ultimately also the entire organization. The customer is often a somewhat inhuman judge and punishes organizations that are built around people only.

The problem of many reorganizations is not that jobs are modeled around actual employees, their competencies, and the necessary incentives (e.g., salary, status). Every organizational structure must make this step because the people are the ones who must accomplish tasks. What does it help to have the right structure if it cannot be filled with the existing employees or possible applicants?

The problem is, therefore, not necessarily people-orientation per se, but rather the fact that organizations do not often adequately balance this out with organizational/strategic objectives. In many cases, organizations design jobs and positions only around people without really considering what is needed when it comes to processing variety. Instead of asking, "what kind of jobs and units do we need?" organizations are occupied with the question "who needs or deserves which job?".

With such a people-oriented "approach," however, it never becomes clear what the people-orientation really costs regarding the organization's effectiveness and
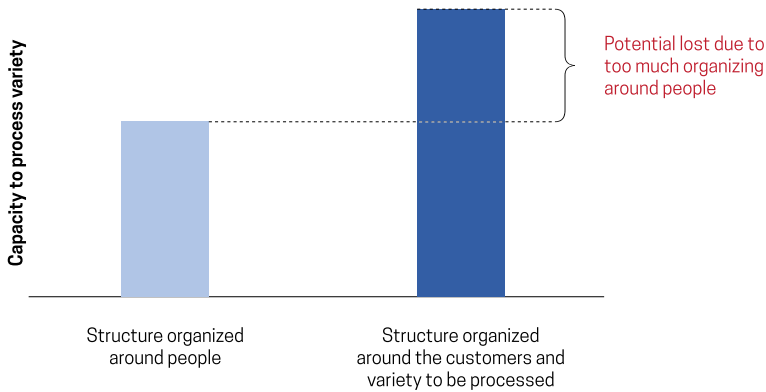
Fig. 19.4 If the organizational structure is built around employees and the internal equilibria, one does know how much is lost compared to a task and customer-oriented organization

efficiency (see Fig. 19.4), both for the whole organization and the other employees. The results are then often jobs that hardly work or lead to frustrations among all other employees and managers in the organization.

Therefore, it is advisable to **look at the factual aspects first**. One should first model an organization as closely as possible to the demands coming from the processing of variety. Only when it has become clear what potential can be achieved through a factually oriented organization one can adapt the organization to "personal" aspects. This approach makes it more transparent what excessive people-orientation "costs" regarding losses in the organization's ability to process variety.

To this end, **some suggestions**:

In a reorganization process, try to reach an agreement that the personal-political dimension will be considered but only at a later stage when the ideal organizational structure has become clear. Only once this ideal structure has been developed, adapt it to the personal and political requests; and only then personnel decisions should be made. Always highlight the extent to which these "adjustments" will limit the organization's viability.

Meet "personal wishes" regarding the organizational design by redirecting them to the company's objectives and its processing of variety. Ask, for instance, how the desired configuration of a job, and respectively, unit to meet someone's personal wishes, can help the organization to achieve its purpose and objectives better, and can make the processing of variety easier than the originally planned configuration. This makes the costs more transparent, and it becomes more difficult to uphold these "wishes." The advantage of this approach is that one does not need to justify oneself for not-approving favors, but instead transfers the burden of proof to the one bringing forward the "wish."

To conclude, let us just add one clarification: this "depersonalized" approach does not mean that one should become entirely impersonal and ruthless. Rather, it means respecting the viability of the organization and value contribution of all other employees. This also implies their optimal use of time, strength, and intelligence, which should not be wasted by organizational "detours" and dysfunctionalities due

to personal favors to a few. One should not forget that people-orientation, in the sense discussed above, favors only some people but harms all the other employees in one way or the other.

19.3.8   At the End: Never Forget the Customer, Purpose, and Environment

The title of this subchapter functions only as a last reminder and thus need not to be explored in full detail: In all the discussions about the new organization, place your customers, your environment, and the purpose and usefulness of your organization into the center of all deliberations. This must be the guideline for any reorganization and will help the organization to make the right decisions and reunite it despite all differences emerging along its reorganization process.

Summary

1. Every reorganization needs to be legitimized in a dialogue with the metasystems at each recursion level.
2. Every legitimation depends at least on the following four success factors:

   - The new organization should be directly derived from changes in the environmental variety to be processed, its purpose and strategy or its *eigen*-variety.
   - Future changes should be made visible and tangible to the organization as much and as early as possible.
   - The reorganization needs to show how it leads to an improvement compared to the current state regarding the processing of variety.
   - The success of the reorganization needs to be demonstrated fast with so-called quick-wins.

3. Any reorganization process must not only legitimize itself; it must also generate "momentum." To this end, the equilibrium point of the organization must be shifted, and the current organization brought into an imbalance. This can be achieved by the following means:

   - Setting new objectives and tasks.
   - Changing the (*eigen*)-variety (e.g., resources) to which existing structures, processes, and behaviors are attached and built on.
   - Changing the points around which opinions form in the organization,
   - Accelerating time by rapidly making the future tangible and replacing the present ("speed kills").

4. This implies for the reorganization process to …

- Start with the analysis of the environment and the strategy, not the organizational chart.
- Build up momentum by adjusting the resources in favor of the new structure, setting new targets, and creating new points of attraction for the public opinion within an organization.
- Pay particular attention to how the new organization improves the processing of variety.
- Take the recursivity of the organization seriously and adapt your arguments for the reorganization to the specific perspectives and logics of the various recursion levels in the organization.
- Try to understand where "worlds" need to be changed and to be bridged.
- Design and "plan" the reorganization process as a targeted, but also open and evolutionary process, which enables and permits learning.
- Focus the reorganization process as much as possible on the processing of (environmental) variety and orient the organizational structure as little as necessary around people.

Questions for Reflection

1. How well does your organization succeed in generating legitimacy?
2. If you look back on the experiences of the last reorganization processes in your organization: what factors led to "momentum"? Which of the factors listed in Sect. 19.2 were not used in your organization?
3. Go through the suggestions listed in Sect. 19.3. To what extent are they already elements of the reorganization processes in your organization? What other factors or "ideas" would you want to add to the ones mentioned in this chapter?

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An Epilogue, or Rather a Prologue?

We have now come to the end of a long journey, which revealed to us in greater depth how organizations function and can be designed from the VSM's perspective. Naturally, this is only one of many possible perspectives on organizations, such as the psychological, the network or the political power perspective. Each of these perspectives has its particular logic, and it is up to us to decide which one best explains and solves the problems and challenges that an organization is facing.

As long as we view an organization as a social structure whose purpose is to solve problems and to create benefits for the environment, the VSM is an indispensable instrument for the diagnosis and design of organizations. It provides us with a formal language and grammar to better understand and model organizations and to facilitate change processes (see also Espinosa et al., 2015, Cardoso Castro, 2019 and Pfiffner, 2010).

At the beginning of this compendium (introduction to volume 1), I mentioned the case of the two executives of a holding company who were nominated as head and vice-head of a supervisory board for one of the companies owned by the holding company and who intended to create the position of a Chief Innovation Officer there. They approached me and asked me how one could organize and structure this position. I analyzed the company, which was structured into four business units. With the help of the VSM, I quickly found out that these business units were well-defined and self-contained viable systems. They were able to function well with a high degree of autonomy and did not have many issues in common, neither in the environment nor regarding the operational processes.

In view of the content and nature of their possible strategies and innovation, it fast became clear that these business units would most likely develop on individual and independent trajectories. Based on these findings, one key question emerged: What could then be the function and purpose of this chief innovation officer? Without common areas in the environment, operations, or future, or without any meaningful coordination tasks or synergies, this position would be, in all truth, rather a "non-job." Whoever would take over this job would most probably resign, retreat, or start political fights within the organization for more influence and more work within the first two years.

"Chief Innovation Officer"
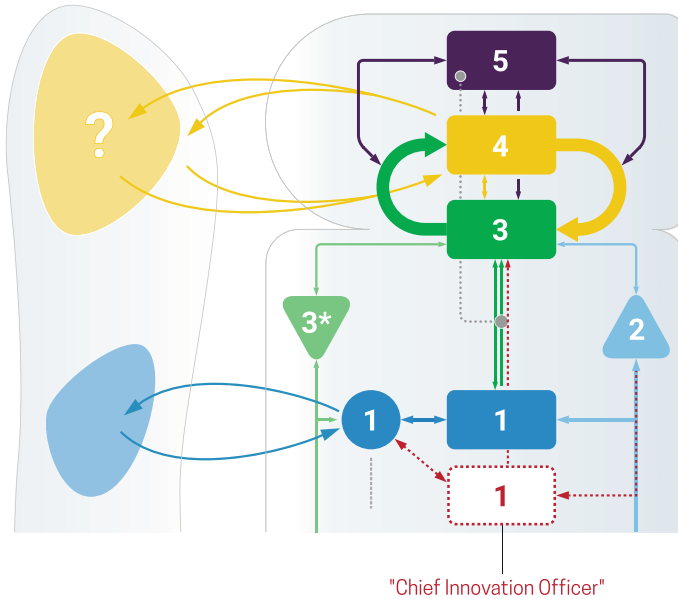
Fig. 1 In reality, the "chief innovation officer" was intended to create a parallel system 1 management—contains adaptation from Beer (1995, p. 136, fig. 37)

Based on this analysis, I questioned the two board members on the reasons why they thought such a position might be necessary and beneficial. It required several rounds, but in the end, the truth emerged: They were confronted by a strong managing director who granted them little insight into the organization, and they themselves did not have the sufficient understanding to ask the managing director the right questions. By installing a chief innovation officer, they hoped to counterbalance the position of the managing director. Since they could not nominate a comanaging director for political reasons, they found it easier to sell this position by calling it "chief innovation officer" with equal access to information. From a systemic perspective, the solution devised by the two board members resulted in a clandestine duplication of the management of the organization in focus (see Fig. 1). That this "solution" is not viable needs no further explanation at the end of this compendium.

This case might appear a bit strange, but the problem of a lack of control between the board of directors and the executives is actually quite common and better known as the "principal–agent" conflict, which occurs when shareholders and their representatives on the one hand and management on the other hand pursue diverging interests. In many instances, the underlying problem is the challenge that the board of directors has a smaller *eigen*-variety than the management. Pecuniary measures are then used to overcome this imbalance and misalignment: Through bonifications, one hopes to align the intentions of the owners of the company better with those of the management. However, as we see from everyday experience and particularly in the aftermath of the

2008 financial crisis, money does not offer sufficient *eigen*-variety to overcome this challenge. On the contrary, such financial inducements increase the variety that needs to be processed—it makes matters more complicated.

What could a possible solution to our problem be? In our case, it is certainly not the creation of a position "chief innovation officer". The problem will only be parked, but not solved (to the frustration of the holder of this position). The simplest and most elegant solution for the entire organization would certainly be if the managing director showed a more open attitude toward the two board members, thereby strengthening the weak inter-recursive channels.

If this is not possible for various reasons, one must address the variety imbalance between the two board members and the managing director. This would mean, in concrete terms, that they need to increase their *eigen*-variety: The board members need to ensure that they obtain a sufficient understanding of the business of the company, as the managing director has, at least in the core aspects of the business. The two board members and with them the entire board need to develop, in the language of the VSM, an adequate (control) model of the company and requisite *eigen*-variety. They do not have to know the business in detail, but they need to know what questions they should ask their management. Good supervisors typically possess this understanding already based on previous professional experience, or they try to acquire it over time (every new task requires adaptation and learning—see volume 2).

Basic knowledge and understanding of the core aspects of the business is only one aspect of re-establishing requisite *eigen*-variety; in the concrete case, the challenge was also of how to become aware of what was going on in the organization. To know what is happening in a company, one should not rely solely on the reports of the system 1 management (see volume 1); one also needs additional information channels into the company—in this respect, the instincts of the two members of the board of directors were correct. In this case, however, the appropriate solution is to refrain from creating a position with unclear responsibilities, which divides the organization, but to design and implement adequate information channels. To overcome the information asymmetry, the two board members could, for instance, have visited the company and asked employees at the operational level for explanations regarding how the company functioned. They would thus gain a better insight into the business and, at the same time, lay the foundation for the algedonic channel (selected employees would have the opportunity to connect and to build up relationships with them).

According to the VSM, another solution could be to use the auditing channel (system 3*). As the representatives of the system 3 of the next higher level, the two board members could audit the company regarding various aspects (e.g., management audits) and the legitimacy and creditability of the management would not be called into question by such standard measures. This also has the advantage that the true intentions of the board members could become more transparent than in the creation of a spying position, where no one knows what its actual purpose is. An audit thus offers the possibility to consciously and publicly discuss problems without having to seek refuge in "political games" behind people's backs. Knowledgeable supervisory boards are more helpful to management than conspiring ones.

However as already discussed in volume 1, we should keep in mind that these information channels should not be used to expose and/or to put the existing system 1 management under tutelage, but rather to be in a position to estimate how much has been filtered away and to know where it hurts in the organization.

Fortunately, the innovation manager was never installed. However, for the two board members, it was already too late: They were removed from their function a few months later; their time had come to an end. Their *eigen*-variety did not meet the requirements of the organization. In the long run, Ashby's Law and the urge of organizations to survive prevail and cannot be ignored: Variety needs to be processed with the requisite *eigen*-variety, and there is no way to evade this law.

Unfortunately, the case mentioned above is not an isolated example: Organizational structures are often changed without considering the underlying systemic principles according to which organizations need to function, and which determine the viability of an organization. In the rarest cases, this is done with intent or against better knowledge. In many cases, erroneous organizational decisions are made because the images that portray the functioning of organizations do not provide us enough clarity.

Here, the viable system model offers us a powerful and compelling alternative to current organizational images and models. It provides us with a map of how organizations function systemically. This map can help us to better navigate through an organization's intricate architecture, to discover the "right" and crucial questions, and finally, to arrive at more tailor-made organizational decisions that allow organizations to become more viable, functional, and adaptive.

Now that we hold this map in hands, it is up to us to use it and open a new chapter in the design and development of organizations … . We owe it to all the people who dedicate themselves daily to organizations through their work; we owe it to society-at-large, whose wealth and social cohesion depend on well-functioning organizations.

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Index