Organization:

da Diagnosis Method

by Pierre Romelaer

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I thank Ross Charnock for the corrections to my English language. All remaining mistakes are mine.

I welcome all comments by e-mail on this document, especially from executives, managers, and other actors living in organizations about the relevance of what is written here as compared to situations on which they have data. Comments are also much appreciated in the form of results of empirical research showing that the framework presented here may be incomplete or erroneous in some of its aspects. All these comments are welcome because Organization Science has been developed through the building of models confronted with reality, and because of course it can only continue progressing in this way.
SUMMARY

This chapter contains a method for organizational diagnosis. The method allows the diagnosis (1) of any job position; (2) of any organizational unit: a work team, a marketing department, a project-group, etc.; (3) of any type of organization which resembles a firm: small and large organizations, industrial or service firms, low-tech and high-tech firms, etc.; (4) of the relation between two organization units, between the Production and Sales departments for example; (5) of any decision process: strategic decision, managerial decision, investment decision, innovation process, etc.; (5) of the coordination between the organization and outside people or organizations: with clients, sub-contractors, partners, etc.

The text begins with a definition of the notion of organization, and then shows how one may analyze the quality, quantity and relevance of the coordination between activities. This analysis of coordination is the first part of the diagnosis. Next, the twelve types of organization most commonly met in practice are described, each having its specific functioning characteristics, advantages and drawbacks. The second part of the diagnosis consists in comparing the organization studied with each of these types. This often allows the identification of organizational problems several months in advance. It also gives a set of solutions to help the organization evolve. The manager who performs the diagnosis (or who has it done by a specialist), may then choose among these possibilities those which are closest to his or her objectives, those easiest to implement, and/or most economical. The main part of the text ends with a brief presentation of eleven coordination systems, which must be taken into account in more detailed studies. We thus have in around 40 pages a compact presentation of a practical diagnosis method which can be applied to a wealth of different organizations.

The document includes five annexes. The first two give details on points only mentioned in the main text (divisionalized and hybrid structures). The next two compare the twelve types of organization we presented with other models mentioned by researchers and consultants. A final annex presents the ways with which jobs may be grouped into organizational units, and smaller units into larger ones.

For readers who are in a hurry:

- managers whose objective is the practical use of the text may skip all the notes at first reading (they will probably find them useful when they want to go further).
- the first eight paragraphs (pages 3 to 37) give a good first grasp of the diagnosis method.
- Figure 1 (pages 5 and 6) compares eight definitions of the notion of organization.
- Figure 2 (pages 7 and 8) presents the coordination mechanisms.
- Figure 4 (pages 12 and 13) presents the parts of the organization as used in the functional analysis.
- Figures 5 to 9 (pages 15 to 22) present the advantages and drawbacks of five types of organization.
- each organizational diagnosis must take into account some or all of the eleven coordination systems presented in Paragraph 8 (pages 32 to 36).
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1 Introduction

Most human activities are not individual and solitary, but are rather the product of concerted and coordinated actions performed by several people. As soon as someone is confronted with a situation where such concerted actions play a part, he or she needs to study the nature of organizations, the processes through which they adapt, change, decide, innovate and transform themselves. Executives are interested in these questions in their role as architects of the organization of their firm, and because their firm's performance depends on how the work is defined and organized. Managers are also interested since they have some freedom in the way they organize work and manage their collaborators (otherwise they are not really managers). And every member of every organization is directly concerned if he wants to understand "how it functions", to know why organizational problems appear and what are their possible solutions.

We shall begin by defining the notion of organization with the technical precision we need if we want to be able to analyse the very numerous forms these "human action collectivities" may have. This being done, we shall present the coordination mechanisms through which the actions of one person may be coordinated with the actions of other people, whether members of the same organization or outside individuals. We shall then describe the main forms of organization which exist (with intensive use of the coordination mechanisms and of the functional diagnosis seen in Paragraphs 3 and 4). Each of these forms of organization has typical advantages and drawbacks. There may exist activities for which one of the organizational forms is clearly better than the others. In most cases, however, executives and managers have the choice among several solutions which all have advantages and drawbacks. No organization is perfect, all have problems. Some of these problems may be solved through organizational change, but inevitably such change will also lead to other problems and drawbacks.

The panorama presented here is strongly based on a modified version of the organization theory developed by Mintzberg (1979, 1989, 1994)\textsuperscript{2}. The differences between the present text and Mintzberg will be signaled in the text with the sign (≠M).

2) The notion of organization (≠ M\textsuperscript{3})

We shall use the following definition: an organization is a set of people who have reasonably regular and predictable relations with each other. Many organizations are composed of salaried people working in a same place under the authority of a common

\textsuperscript{2} Two reasons lead us to modify Mintzberg's theory: (1) empirical observations made in firms and research results published in the international literature lead us to identify required complements and to dissent with some aspects of this theory; (2) as organizations have changed since the Mintzberg's first books, some examples given in the 1979 book are no longer valid.

\textsuperscript{3} Mintzberg (1979) defines the organization as the way work is divided and coordinated (among people or among organizational units). We think that this definition does not give enough attention to the processes through which the definition of the work to be done is obtained, for example through innovation and investment decisions. We see in Romelaer (2002c) and in Desreumaux and Romelaer (2001) that the way decisions are made is heavily dependent on who is involved, on what decision process is followed and in which type of organization the decision takes place. The developments on the formation of strategy in Mintzberg \textit{et al.} (1998) are hence incomplete in our opinion, since they do not point out that the ten approaches to the formation of strategy developed in Chapters 2 to 10 of the book are likely to have vastly different performances depending on the type of organization. The book indeed mentions (p. 302) that the "configuration school of thought" offers the possibility of reconciliation of the ten other schools, but it does not detail the possible specificities of the strategy formation process in the different configurations.
hierarchical superior: a production workshop and a Management Control office often have these characteristics.

In some cases the members of the organization are geographically dispersed. In a company selling and maintaining photocopy machines, as well as in a strategic consulting firm, most people see each other rather rarely, since they spend most of their time in clients' sites. This dispersion increases the necessity of mechanisms leading them to work in coordination.

It sometimes happens that the members of one organization do not have a common hierarchical superior. In a large firm like Valeo, producing parts for the automobile industry, with activities in more than twenty countries, there exist management control specialists in the plants, in the divisions and at headquarters: each has a superior in his or her own structure, but these specialists of the same "management technique" may be said to form an organization if they regularly exchange on their problems and methods.

There are also situations where the members of an organization do not belong to the same legal entity, for example an Alcatel plant producing parts for the nuclear industry, where during the whole of a given month one finds plant personnel and managers working together with quality delegates sent by clients to collaborate in overseeing production, as well as with personnel from partner organizations and subcontractors called in to collaborate in the development of a new product.

The notion of organization applies to entities of vastly different sizes, from the independent car dealership with fifteen employees to worldwide distribution businesses like AHP and Carrefour with more than 200,000 employees. And every part of an organization is also an organization: our definition applies to entities as varied as the textile purchasing department in a hypermarket, an ice-cream plant in Unilever, the R&D department of Corning Glass, Nestlé's French subsidiary, or the pharmaceutical division in Aventis.

Our definition also applies to another category of organizations, which includes charities, political parties, unions, chambers of commerce, families and groups of friends.

The notion of organization is different in ordinary language and in the view of some professionals. We briefly present these definitions in Figure 1 below.

The notion of organization being defined, we shall present the coordination mechanisms. Each of them may be considered as a management tool. It is through them that a manager makes sure that the contribution of his subordinates are in line with the work which has to be done, i.e. that he obtains from them efficient and coordinated activities. The coordination mechanisms are thus linked to the job definitions.

We shall thereafter describe the types of organization most commonly met in practice, and then see how coordination mechanisms and types of organization may be used to perform the diagnosis of an organization.

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4 There exist still other definitions of the notion of organization. For example Giddens (1986) focusses on the “structural properties of social systems”, thus forgetting most of the structural elements which will be described in the present chapter (see Romelaer [2000] on this question). Giddens' incomplete definition is heavily used by management research on Information Systems (DeSanctis and Poole, 1994; Orlikowsky, 2000; de Vaujany, 2001; Kefi, 2002).

Still another definition is the one by Crozier and Friedberg (1980). These authors focus on what they call “concrete action systems” (which are special cases of activity systems we shall see in Paragraph 8), as well as on “games and regulation mechanisms”. As far as we know, these authors do not indicate how it is possible to find these games and mechanisms in concrete situations (ours are described as coordination mechanisms, types of organization and coordination systems in paragraphs 3, 5 and 8), and they do not recognize the empirical existence of types of organization which have typical advantages and problems. Besides, in our opinion, Crozier and Friedberg’s theory gives excessive importance to power phenomena, which are just a small part of the eleven coordination systems we see in the present chapter.
Figure 1

Eight definitions of the notion of organization
(Each of the definitions 1 to 7 is partial. Definition 8 contains them all)

1 The hierarchical organigram
It only gives indications about “who is superior to whom“ and “who is subordinate to whom”. It is very incomplete since an organization is not only a hierarchy.

2 The hierarchical and functional organigram
It is close to the hierarchical organigram, and adds to it the mention of job titles. This gives some indications concerning the principal missions of employees and of managers. These indications, even if useful, are insufficient to know how the organization may function. For example, the fact that we find the mention “regional sales manager“ in an organigram says nothing about whether the person holding this job has freedom to decide about the prospection plans and sales methods of his employees, or whether these decisions are made by the marketing department.

3 The regular flow of activities (production, transportation, or service activities)
This definition is currently used in plants to represent flows of product parts. It is also used in logistics departments, and to represent flows of clients in service activities (clients in a bank may not be “piled up“ in a waiting line without affecting the quality of service). Even in the above management situations, this definition is incomplete since, for example, it does not take into account the activities of new product development.

4 The geographical and spatial repartition of activities. The disposition of machines, tools and persons. Order, filing, and tidiness.
Within this definition, an activity or a part of a firm is well organized if “everything is neatly ordered“. This is often true. But the objective of the firm is not to put objects in order: it is to produce performances for its clients and shareholders, and a decent (and possibly thriving) work environment for its employees and managers. Hence there may exist organization units which appear to be untidy (if not as a mess) to occasional visitors, although they are well organized, i.e. although they have a high performance. Such is the case in some e-businesses, high tech start-ups, or in the Renault department where project-groups develop new automobile models.

5 The format of information, the architecture of the information system.
This definition of the organization is for example the one often proposed by computerized information systems specialists. This definition is incomplete because, for some of these specialists, an information which cannot be formalized and dealt with in a computer simply does not exist, or should not exist, and every problem with the information system comes from the incompetence or from the obstruction of users. This definition of the organization thus may ignore that it is

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5 This Renault department is organized in “plateaux”, i.e. large rooms rather disorderly filled with drawings, models of parts and equipment, where people come and go, assemble and disband, work on pieces or discuss (or even do both at the same time). Interestingly, the company calls this unit “The Beehive“. This type of organization is very effective for the type of creative work it has to do. We shall see it later as a mix between the “adhocracy“ and the “garbage can“ types of organization.
difficult to define in computer format such important elements as a client's trust or as the learning speed of new recruits.6

6 The set of procedures
This definition of the notion of organization is for example the one used by a Methods Department which defines the work procedures for plant workers, e.g. the sequence of gestures for the assembly of parts to fabricate a product. This definition is incomplete, among other reasons, because it ignores (1) that it may be at times rational not to respect a procedure in order to satisfy a client, (2) that it is not economically justified to develop procedures for rarely done or too rapidly changing activities, and (3) that it may be better to have the procedure being developed by workers and local managers through on the spot trial and error (sometimes called “bricolage” in French) rather than having distant specialists do it.

7 The legal structure, the allocation of responsibilities and costs, of resources, of rights to profits, and of decision rights
This definition of the notion of organization is that of legal specialists. It is insufficient since it ignores almost everything which is done daily by employees, technicians, engineers, salespeople and managers.

8 An organization is a set of people who have reasonably regular and predictable relations with each other

What is presented in the rest of this chapter applies very well to organizations whose way of functioning resembles that of a firm or that of a unit of a firm. We shall not deal with the other categories of organization mentioned above (charities, chambers of commerce, families, small informal groups). These entities are organizations. What we shall present applies to them in part and sometimes rather well. But these special organizations also have very often specificities which we cannot present here.

3) The coordination mechanisms (one ≠ M7)

When an activity is composed of various elements, the first thing to do, if we want to know whether it is well organized, is to see if the elements are well coordinated. This question may be asked about the different activities (1) of a job; (2) of a unit of the organization (a plant, a work group). The same question may be asked (3) about the relation between jobs or between organizational units (the coordination between marketing and production); (4) concerning the actions performed along a decision process (an investment decision, a

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6 Expressed in a language we shall see in the next sections, specialists who cling rigidly to definition n°5 of the notion of organization implicitly claim that all coordination in the firm should be done through standardization of work processes and standardization of results managed within a regulated system. Empirical observation has shown that three other coordination mechanisms and ten other coordination systems may (sometimes more efficiently) perform this activity.

7 According to Mintzberg, standardization of competence is essentially linked to the acquisition of knowledge and of know-how through (usually long) formal training, followed by a period (often several years long) of “on-the-job” training under the close supervision of members of the profession (1979:350). We also include in standardization of competence all learning coming from continuing education, the professional literature, as well as “learning by doing” and “learning by using”. Stemming from research such as Hayes and Wheelwright (1988), Leonard Barton (1992, 1995), Nonaka and Takeushi (1995), these often tacit competencies are increasingly taken into account in management.
strategic decision, a new product development); (5) for the relations between the organization and outside people and organizations (clients, suppliers, partners, bankers, administrative authorities).

There exist five coordination mechanisms. Their definition is presented in Figure 2 below. Once this definition is seen, we shall examine the advantages and drawbacks of each, and we shall see how it is possible to see whether the quantity of coordination is insufficient, adequate or excessive.

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**Figure 2**

The five coordination mechanisms

1 **Mutual adjustment** (MAdj)

Several people coordinate their actions by mutual adjustment if they decide on them through a direct communication in which there is no idea of hierarchy: each person may propose ideas, criticize the ideas proposed by others, or make counter-proposals. The communication may be done face-to-face, by phone or via intranet or e-mail. A worker may use mutual adjustment to coordinate herself with “direct” colleagues (those in the same workshop, at the same salespoint), with colleagues from other departments, as well as with clients, suppliers or her hierarchy (a hierarchical superior, when relating to subordinates, does not simply give orders). Mutual adjustment is often used more intensely by people who have a higher competence, and when they are supposed to take initiative in their job. Mutual adjustment is for example frequently very intense in “multi-functional” project-groups for new product development, where communication may be face-to-face (see the Renault case in Note n°5 above) or through the intranet as in some groups in the DuPont chemical company.

Mutual adjustment exists to some degree in every activity of every organization. Be it encouraged, only tolerated, or strictly forbidden, it is the “oil in the gears“ without which the firm or the unit in the firm would often be unable to function.

2 **Direct supervision** (DS)

The activities of several people are coordinated through direct supervision if each has to follow orders given by a superior. The “operatives” do not need to pay attention to their mutual coordination: the superior takes care of it all. Direct supervision is the “classical“ coordination mechanism, the one which is necessarily used when competencies are hard to find, when management cannot use procedures, nor trust subordinates to coordinate with each other through mutual adjustment.

A job is more intensely coordinated through direct supervision if hierarchical orders are more frequent and detailed, if the superior comes more often to verify that work is done according to directives.

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8 The existence of mutual adjustment is sufficient to show that each of the definitions n°1 to 7 of the notion of organization in Figure 1 above is incomplete. In fact, many other developments in this chapter also show the incompleteness of these narrow definitions. Hence the elements presented here may also be used by a manager to identify what is wrongly bypassed by colleagues and consultants who cling to one of these incomplete definitions, either because their culture leads them to such a bias, or because they use such incomplete definitions as “rhetorical weapons“ to defend their project, or to find reasons to refuse proposals made by others.
3 Standardization of work processes  (SWP)

The activities of several people are coordinated through standardization of work processes if each person must follow procedures without caring about the others, the procedures being developed in such a way that the global work is coordinated. This coordination mechanism is used by workers on assembly lines, by auditors for part of their work, as well as by managers who have to fill out a standard form when they want to ask for an investment budget. Standardization of work processes is not only used for lower level collaborators (although it is generally more frequent in these cases).

Within one job position, the intensity of standardization of work processes is higher if the actions which have to be performed following a procedure represent a larger proportion of the working hours, if procedures are more numerous, or when the respect for procedures is more difficult or more strictly enforced.

4 Standardization of results  (SR)

Several activities are coordinated through standardization of results if each of them has to attain an objective, or to respect a standard or a norm, the respect of these objectives, standards and norms being sufficient to obtain coordinated actions. For example, if workers making chair legs and those drilling holes in the seating part of a chair both respect the dimensions given to them, their work will be coordinated and allow the assembly of the chair, without any need for mutual adjustment, and with almost no intervention from the hierarchy. Other examples are norms for quality imposed on a worker, sales objectives given to a salesman, and objectives communicated to a subsidiary manager, like minimum percentage of productivity gain and maximum amount of accounts receivable.

This coordination mechanism, if used alone, requires that the people involved have enough competence and are given adequate means. Standardization of results is increasingly used because of the massive decentralization of responsibilities in many firms. The work then becomes much more interesting, but also more demanding (and even stressing) since the collaborator is responsible for his result.

The “quantity of coordination“ obtained through standardization of results is higher if objectives and norms are more numerous, or more difficult to reach or to respect. A very demanding cost reduction objective may be sufficient to pilot the efforts of a plant manager over a whole year.

5 Standardization of competencies  (SC)

Two or more people are coordinated through standardization of competencies, if the global activity is necessarily coordinated provided each of them refers independently to knowledge and competencies acquired through schooling, training, professional experience, on-the-job informal learning by doing, as well as trial and error (“bricolage”).

Standardization of competencies is heavily used in work aimed at new product development, as well as in higher level activities: medicine, consulting, engineering, research, teaching, etc. It also exists to some degree in all activities: every worker develops some practical personalized competencies.

The “quantity of coordination“ coming from standardization of competencies is high when the individual must have followed long, selective and specialized programs, when she must be accredited through difficult exams, when she needs to read the professional press, and to get information from knowledge bases and experts, as well as learning from her practice (and from the practice of others).
Each of the coordination mechanisms of Figure 2 has advantages and drawbacks. For example mutual adjustment may be very quick and reactive. It allows immediate adaptation to local needs, which organization members know well since they are in the field. This coordination mechanism is also generally considered agreeable by the people involved: each person may express his preferences, his view on constraints, objectives and methods, with the guarantee that his proposals will be at least in part listened to and taken into account.

But mutual adjustment has also potential drawbacks. It is not sufficient by itself to coordinate a large number of people (otherwise they waste their time in discussion), and it does not include automatic memory and outside communication: if the agreement reached by two people through mutual adjustment is not transmitted to the rest of the organization, problems may ensue elsewhere or later. Moreover, if workers coordinate themselves through mutual adjustment, they may develop bad habits which are not necessarily efficient, and which are difficult to change, even through procedures or through hierarchical orders.

When looking at a job position, one can measure the “intensity of coordination” induced by each of the five coordination mechanisms in Figure 2. In general this shows that each mechanism is used to a degree, but that some clearly dominate. The unskilled worker on a classical assembly line has a job mainly coordinated through standardization of work processes (through the work procedures and methods). But in this job, there often exists some amount of standardization of results (dimensions of pieces to produce, number of pieces to process per hour, scrap rate), a small amount of standardization of competencies (the tricks of the trade learnt on the job), and a variable degree of direct supervision (the supervisor may transfer personnel from a machine to another, require the use of a non-standard method, or modify the production program to deal with an emergency call from a client).

The nature of the dominant coordination mechanism has an extremely strong influence on the daily life of workers, managers and clients, as well as on many management characteristics: productivity, dependability, “controllability” (by the operators or by the managers), reactivity, adaptability, capacity to move to another coordination mechanism, flexibility with respect to variations in the activity level, etc. Figure 3 below illustrates some of these influences.

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9 This is true of course only when the coordination is done by the organization members directly involved in the actions to be coordinated.

10 Hence each coordination mechanism has implications for the motivation of organization members. These motivations vary of course from one person to another, and depend on society and on time. For example some people may dislike having to coordinate themselves with others through direct discussions, and feel much more secure when they just have to follow procedures or to obey orders. In fact, most individuals are not rigid in this respect: an individual may learn to use a coordination mechanism he is not used to, and may even discover that he likes it. Such learning may require substantial effort and organizational support. Learning a new coordination mechanism may be quite disturbing: it leads the individual to pass through a period of destabilization, and the organization to pass through a period of turmoil.

11 The other coordination mechanisms have their own specific advantages and drawbacks, and mutual adjustment has many others than those we have presented. It should be added that the notions of advantage and of drawback are relative: what is an advantage in one situation and one strategy may be a drawback in another. For example, adaptation to local needs through mutual adjustment may bring an advantage to one client, but may induce a variability of service which is not considered desirable from public service, marketing, or safety considerations.

12 The same analysis may be done for an organization unit (a plant, a sales outlet), for the relation between two job positions or two organizational units, as well as for the coordination of activities along a decision process (investment, strategic decision, development of a new product), and for the coordination between the organization and outside parties (clients, partners, bankers).
The relation between the dominant coordination mechanisms and the “organizational style“ of a job position: the case of the traveling salesman

In the old-style organization, the traveling salesman is almost only coordinated through standardization of results (yearly or monthly sales objectives). Mutual adjustment with other members of his firm is almost zero (maybe with the exception of occasional phone calls to obtain from the plant a quicker delivery to a client), and direct supervision is limited to orders relative to the list of prospects to visit. The salesman must have some knowledge of clients, and possess relational capacities to negotiate contracts with them, but this standardization of competencies has a low intensity. It has not been learned in a teaching institution, it is rarely maintained and developed in internal training programs. Some standardization of competencies exists through a mostly informal “tutoring“ of newcomers by old-timers, and sometimes also through a more formal coaching the salesman receives from his regional manager, who occasionally visits clients with him (these coaching trips are also used to convey values and fighting spirit, to control the salesman better, and they allow the regional manager to keep in contact with clients).

In more modern organizations, the salesman is submitted to an increased quantity of standardization of results: beyond the global sales objective, he has also specific sales objectives for new products or for promotion operations, as well as complementary objectives, for example to increase clients' satisfaction as measured by questionnaires. He must also respect numerous norms, such as payment delays, maximum volume of sales to risky clients, and maximum percentage of rebates. The salesman has also an increased standardization of work processes. He must write a daily report on sales and on visits following a strict format (he generally does this at the hotel in the evening and sends it to the firm through the intranet), report periodically on competitors' products he has seen and on competitors' moves he has observed, update the prospects list and the prospection program, follow the accounts receivable, etc.

Mutual adjustment may also be increased: concertation with the other salespeople and the regional manager on the update of the prospection program, informal conversations with colleagues on the best sales approaches, participation in project-groups involved in new product development, etc.

Standardization of competencies is likewise increased. The educational level required for entry in the job generally moves to at least a Bachelor degree, and the salesman has to learn how to use marketing data bases. Work sessions may also be formally organized, during which salesmen and the regional manager, with a degree of salesmen participation and of managerial leadership, develop and update a knowledge base of “good selling practices“ and methods which are then supposed to be known (depending on cases, they are indicative or they may be made mandatory).

All these developments do not affect all salesmen's positions with equal intensity. Some firms will use them all, others will insist on detailed objectives while maintaining freedom regarding the methods which can be used, still others will insist on selling procedures.

The intensity of each coordination mechanism may be measured on a scale going from 0 to 100 (through a method not presented here). Observation shows that the intensity of one coordination mechanism is by and large independent of the intensity of the four others. Management consequences follow from this measure:
- when none of the five coordination mechanisms has an intensity higher than 50%, then the job is under-coordinated, and it risks drifting away from what is needed from the point of view of the other members of the firm (including his superior naturally). The need exists to regain control. The job definition may have to be changed.
- when two of the coordination mechanisms are around 60 to 70%, then the job is correctly coordinated for most job holders.
- when two of the coordination mechanisms are above 75%, then the coordination is excessive for most people: the risk exists of unproductive stress, demotivation and errors in the work, unless this excess of coordination exists for a limited time. Excessive coordination may appear if the superior is constantly “on the back of his subordinates“ to push them, if the objectives are too ambitious, or if the job holder must constantly coordinate himself with many people who have incompatible demands (or even, in some cases, when the job holder must do all this simultaneously). Here again the job definition may have to be changed\(^{13}\).

There exists another managerial application of the diagnosis of coordination mechanisms. It is possible in many cases to maintain the same efficiency of coordination by performing two mutually compensating actions: lowering the intensity of one coordination mechanism, and increasing the intensity of one or two of the others. Part of the hierarchical orders and controls may for example be replaced by a more autonomous behavior driven by objectives and/or by well-mastered competencies. The manager may thus reach the same objective in several different ways.

Naturally, the use of different coordination mechanisms requires a different “job environment“: the time the manager devotes to the job holder, the competence requirements and the relational capacities needed to hold the job correctly all depend on the types of coordination mechanisms which are used. Hence the manager who makes substantial changes in the coordination mechanisms she uses with her subordinates will have often to plan training programs conjointly, or even decide on some changes in the collaborators' profiles. However, the manager often has limited possibilities to alter the coordination mechanisms applied to her collaborators. Higher level management may for example require that they follow procedures elaborated by “functional departments” (like Methods, Information Systems, Marketing). It may thus be that a manager is impeded by her organization to take measures which may improve the performance of her unit, or to adapt the organization to the evolution of clients' behavior, although she is responsible for this performance and adaptation.

The analysis of the coordination mechanisms we have presented for a job position may also be performed concerning the coordination among organizational units or concerning the coordination of the various individual actions necessary to achieve an organizational change (productivity increase, quality certification, lowering the number of hierarchical levels, developing new products, etc.). For example, the actions composing an innovation process may be coordinated through direct supervision (the “heavyweight“ project leader), through standardization of results (project specifications, cost objective, maximum delay), through standardization of work processes (mandatory list of steps in the innovation process, protocols for testing), or by mutual adjustment (permanent interactions between

\(^{13}\) The management consequences presented here are only indicative. Real cases may differ widely in terms of the amount of coordination which has to be applied to keep one individual decently coordinated with the others in the firm (people vary in their propensity to try to escape directions and controls), and, for example, there exist “high speed“ individuals who need permanently high coordination forces to be motivated.
members of the project team, the team members being all gathered in the same place to facilitate interaction\textsuperscript{14}).

4) **The functional analysis, the parts of the organization**\textsuperscript{(some ≠M\textsuperscript{15})}

For a reason we shall mention later, it is necessary to present the functional analysis before describing the main types of organization. We call “functional analysis” the operation which consists in grouping the activities of the organization into “parts of the organization“ according to the “function“ they have. The five “parts of the organization“ used in functional analysis are presented in Figure 4 below. They should not be confused with the organizational units (marketing department, maintenance service, regional sales office, plants, etc.). An organizational unit may have activities in several parts of the organization. The list of activities in each of the five parts varies across organizations \textsuperscript{16}.

![Figure 4](image_url)

**The five parts of the organization used in functional analysis**

1 **The operating core (OC)**

The operating core groups the activities which are the “raison d’être“ of the organization. In most firms it contains production and sales activities. The research and development tasks are in the operating core if the firm's strategy includes the development of new products, and purchasing is in the operating core of firms in mass distribution (if it is a strategic activity).

In some firms, production is subcontracted and distribution is franchised. The operating core of such firms includes neither production nor sales. It includes the management of the subcontractors and the animation of the franchisees, and often as well the management of the product portfolio, brand management and advertising (these organizations are sometimes called “virtual organizations“. Benetton had a very similar structure in the 80s).

2 **The strategic apex (StrA)**

The strategic apex groups all the activities which contribute to the definition of the main directions in which the organization will develop its activities: definition of product portfolios, reorganization of structure, rate of productivity increase, etc.

The strategic apex of an independent firm is composed of the executives and of the people who help them at headquarters. It also includes middle managers who contribute part-time to the determination of the general policy, for example members of the investment committee, of the new products committee, or of a task-force in charge of a major reorganization. Each organization has a strategic apex. In a plant it may include the plant manager and his main collaborators.

\textsuperscript{14} This gathering of all team members and their equipment in the same room is called the “plateau organization“. This method is used in Renault, as we saw above in Note n°5.

\textsuperscript{15} Mintzberg (1979) has a Figure in which the names of most Departments classically met in firms are allocated to the five “parts of the organization“ defined in functional analysis. This is often understood by readers as meaning that (1) all activities performed in any one department of the firm belong to the same part of the organization, and (2) departments of different firms which have the same name necessarily belong to the same part of the organization. In fact both assertions above are false, as we shall see in this section.

\textsuperscript{16} The word “function“ is used here with a meaning different from the one it has in the expression “organization by function“ we shall see in Paragraph 13. The expression “functional analysis“ is used here with a meaning different from the one it has for computer specialists.
3 The operational hierarchy (OH)
The operational hierarchy groups all the managers who have subordinates in the operating core (including here both direct subordinates and subordinates of subordinates). Some managers do not belong to the operational hierarchy: for example the Director of Management Control is a high level manager, but she does not belong to the operating core since management control is not the firm's raison d'être. The word "manager" is used here with an extended meaning: work group leaders are included here, even if they are not considered as real managers.

4 Technostructure (TS)
Technostructure groups all activities whose objective is to standardize work processes, results or competencies. It may include whole departments like Methods or Quality. If the Marketing Department of a mobile phone company defines the contractual terms sales people will have to use and the sales objectives they will have to reach, then this activity belongs to technostructure.

Some departments of the firm have only a part of their activities in the technostructure. Such is currently the case for Information Systems and for Human Resource Management. For example, to define a performance appraisal system is a technostructure activity, but to pay salaries is not: the objective is not to standardize, but to relieve managers of a logistical task.

Job titles and the appellations of departments and other organizational units are not always enough to know if activities belong to the technostructure. For example a Training Manager is in the technostructure if he elaborates a training plan which specifies which employees will attend which program (the plan is generally based on the strategic objectives of the firm, and on the training needs resulting from market and technological change). But he is not in the technostructure if he simply circulates a catalogue of training programs, and asks the operational managers to indicate which collaborators they want to send to which training program (then there exists almost no standardization).

5 Functional support (FS)
“Functional support” groups activities whose objective is to help other members of the organization, i.e. to perform tasks which are secondary with respect to their main missions. This part of the organization may include the legal department, documentation, general maintenance, etc.

When functional analysis is done on several organizations, it appears that the distribution of activities between the five parts is vastly different across the various organizations. To use an image, all boats have a hull, interior design, an energy source and a pilot. But enormous differences exist between a sail-boat, a oil-tanker and a container vessel. Likewise there exist enormous differences between organizations, depending on the proportion of activities in the different parts of the organization (the word “part“ being used in the sense of functional analysis, hence distinct from the notion of organizational unit). In this respect, it is impossible to find two identical organizations. But, luckily, there exist “types of organization” which are often met in practice: all organizations of the same type have similar distributions of activities between the different parts, and they have also a lot of similarities in terms of management methods, advantages and drawbacks. These types of organization are described in the next section.

17 The organizational units whose activities are in Technostructure and Support Functions are often called the “functional departments".
5) **The main types of organization** (fairly numerous ≠M)

There exist twelve types of organization. Around two thirds of the organizations met in practice are fairly close to one, and only one, of these types, and the remaining third is almost entirely composed of organizations which are mixes of these types (these “hybrids” will be presented later). We shall see in the next section how it is possible to use the twelve types of organization to perform a diagnosis. For the time being, we will just mention that each type of organization has characteristic advantages and drawbacks (as presented in Figures 5 to 9), which already allows interesting conclusions when one examines a particular organization.

If data gathered on the descriptors specified below show that the organization we are diagnosing is very close to one of the twelve types, then one may determine whether the advantages typical of the type of structure are in line with the strategy and raison d'être of the organization. If the answer is positive, then one may develop the advantages which are only present to a small degree in the organization studied (this should be reasonably easy since the advantages are linked to the organization type).

Next, one may determine whether the drawbacks characteristic of the type of structure are present in the practical case studied, or whether weak signals indicate that some of them may develop. Such a diagnosis frequently allows the identification of potential organizational problems more than a year before the first dysfunctions appear.

The organizational diagnosis thus gives executives and managers time to develop preventive measures and to think about possible organizational changes, and allows them to treat problems when options are still reasonably open. Therefore it avoids their having to deal with already difficult situations.

The benefits of the advanced information on opportunities and problems provided by the present diagnosis method may indeed be put to use by all members and partners of the organization, although executives and managers are of course, among all potentially interested parties, those who generally are highest in terms of access to information, power to decide on changes, and responsibility for organizational performance.

**Type 1 The simple structure (SplS)** (some ≠M\(^{18}\))

In a simple structure, standardization is very low. Work is defined and coordinated by the strategic apex through direct supervision. Operational hierarchy has little power: managers are limited in their freedom and scope of initiative: they are there, above all, to get top management's ideas implemented and top management's orders executed. Top management, sometimes just one person, does not hesitate to short-circuit middle managers and to give direct orders to their subordinates. Most of the time, technostructure does not exist (there are no Methods or Management Control departments), and when it does it is permanently subjected to order, counter-orders and exceptions requested by an omnipresent top management. There are generally no people specialized in functional support: top management asks operators and the hierarchy to take care of these activities, and it it not unfrequent for it to perform some of them itself.

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\(^{18}\) Mintzberg (1989) calls it the entrepreneurial structure, although many such organizations are not entrepreneurial. In the examples given in the original presentation of his theory (1979), Mintzberg mentions that many small organizations and most new organizations are simple structures (308). It is true that a large majority of these organizations were simple structures at the time. Such is no longer the case today.
This type of structure is currently met in small and medium-sized firms whose top managers are real entrepreneurs. But a sizable proportion of small and medium-sized firms do not have this structure, and probably only a minority of simple structures' top managers are real entrepreneurs\textsuperscript{19}.

<table>
<thead>
<tr>
<th>Figure 5</th>
<th>Advantages and potential problems of simple structures (SplS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td>Flexible and reactive if top management has these qualities</td>
</tr>
<tr>
<td></td>
<td>Inexpensive: there is no need to pay technostructure and support functions. Hence simple structures have a tendency to grow fairly rapidly (see below the limits to this growth)</td>
</tr>
<tr>
<td></td>
<td>Well adapted to low- and medium-complexity sectors: top management can master all the aspects of the business</td>
</tr>
<tr>
<td><strong>Potential problems (classical dysfunctions)</strong></td>
<td>The firm does not reap potential benefits coming from standardized procedures and methods</td>
</tr>
<tr>
<td></td>
<td>Work overload at the top</td>
</tr>
<tr>
<td></td>
<td>Unequal quality and quantity of coordination is applied to different parts of the firm: for example the top manager devotes a lot of energy to marketing but, since he has no competence or taste for finance, this part of the activity is insufficiently managed. This unequal attention given to various activities may lead to having some parts of the firm become opaque to the top manager, who does not control things and does not even know precisely where he stands in these areas.</td>
</tr>
<tr>
<td></td>
<td>Control may be inverted: if the top manager has little understanding of marketing, the most competent persons in this area will dictate their view (supposing that the top manager accepts being dictated to, which is not necessarily the case).</td>
</tr>
<tr>
<td></td>
<td>Parallel circuits may exist: employees take care of problems without referring to the boss.</td>
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<tr>
<td></td>
<td>Incompetent autocracy: the top manager was excellent twenty years ago, but…</td>
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<tr>
<td></td>
<td>Maintained incompetence outside top management: it is very difficult for the top manager to accept working with people who take initiatives or simply know things he does not, or else he refuses to share power. Competent professionals are hired as the top manager needs help to manage a growing business, but they are fired or they quit because they (rightly) have the feeling that they cannot do their job.</td>
</tr>
<tr>
<td></td>
<td>The simple structure is incapable of becoming a large organization: if it becomes too large, the top manager ends up being unable to make all the decisions himself.</td>
</tr>
<tr>
<td></td>
<td>Fragile: the organization may die if the top manager has a health problem or an accident which leads him to be absent for several months.</td>
</tr>
<tr>
<td></td>
<td>This type of organization is less adapted to high technology sectors, except if the top manager's talents allow him to cover all aspects of the business (such is the case in some high-tech start-ups, some innovating and creative small businesses, specialized consulting firms or specialized hospital departments).</td>
</tr>
</tbody>
</table>

\textsuperscript{19} The interested reader may find developments on the specificities of the management of innovation in simple structures in Romelaer (2002c).
Type 2 The mechanistic structure\textsuperscript{20} (MS)

In a mechanistic structure, the work in the operating core consists in following standard procedures and methods defined by specialized departments like Methods in industry, or “Information Systems and Organization” in service firms. Mass production organizations (mass fabrication and assembly), as well as mass service organizations (banks, insurance, fast food, chain hotels, tele-marketing) are frequently mechanistic structures, provided they are not heavily automatized or robotized. Mechanistic structures are not all large size: a fast-food outlet (or a tele-marketing office) may be quite small-sized, and it is a mechanistic structure if it relies intensely on a standardized method to prepare sandwiches and other dishes (or on the standardization of the contacts with prospects). Incidentally, the existence of small size mechanistic organizations proves that not all small firms have a simple structure. Mechanistic structures have more tendency than others to standardize a sizable part of the activities outside the operating core: they often have departments for management control, quality, or management of human resource, which develop and use “management systems”\textsuperscript{21}.

Figure 6

Advantages and potential problems of mechanistic structures (MS)

Advantages

Productivity is high if the people who created the procedures are competent.

The organization is dependable: management and clients know what they can obtain, risks may be controlled, products and clients are all treated in the same way. This type of organization is common in the nuclear industry, in air transportation and railways.

Allows the recruitment of less qualified (and hence less expensive) people: baseline operators only need to know the procedures.

This type of structure is excellent for geographical expansion: it is sufficient to “clone“ procedures and equipment. (This cloning is not always simple: see the BankOne case\textsuperscript{22})

Potential problems (classical dysfunctions)

The organization is difficult to change, specially when there exist numerous interconnected procedures. It may be that around 2050, firms will have learned to function with strictly respected and very efficient procedures which are adapted in real time to business necessities. But today's mechanistic structures are fairly rigid. When a large-scale change is necessary, the best solution may be to create a new organization with new employees.

Does not make efficient use of human resources. The average level of competence of the population in OECD countries allows firms to capitalize on workers' initiatives and on their capacity to have ideas to improve procedures. This is somewhat difficult in MSs, and often too foreign to the culture to be used even if possible.

Work may be excessively boring, and hence demotivating. This induces a need for more controls, which decrease motivation even more. Latent conflict and sabotage

\textsuperscript{20} Mintzberg calls it the machine bureaucracy.
\textsuperscript{21} We shall see in Paragraph 8 that they belong to the “regulated systems“.
\textsuperscript{22} Winter and Szulanski (2001).
may even develop. All these problems may prevent the organization from delivering the productivity which is expected.

Methods or information systems people develop an excessive attachment and respect for their techniques (or fall in love with them) to the point that they forget the business.

Drift toward excessive formalization: extremely detailed procedures are developed for every activity, even when it is not warranted.

Partial incoherence between procedures (if procedures proliferate without being coordinated with each other).

Weak or “informal“ implementation of methods and procedures: if management has not wielded sufficient power to impose the respect of methods, the functioning of the real organization may be miles away from what the organization is “on paper“.

A manager must pay attention to such a possibility when he is promoted head of a new unit.

Lack of updating of methods and procedures. Some amount of updating is necessary every year, and a revamping every three or four years.

Conflict between technostructure and operating core is in part inevitable in this type of organization. It is hardly a caricature to say that, in mechanistic structures, the role of the hierarchy is to force resistant workers to use methods created by specialists who do not know what is going on in the field and who have not consulted operational management when they were creating the procedures. Hence it is frequent that, in these structures, Methods specialists say that it does not work because workers and managers are stupid or unhelpful, the operational hierarchy retorting that the methods are inapplicable.

Lack of control of support functions: either it is not considered profitable to standardize these peripheric units, or Methods people have little competence to standardize activities outside those of the operating core.

Lack of strategic action. A mechanistic structure functions like an oil tanker on automatic pilot. Top management is not often required to react to events since procedures take care of everything. But managing a firm means remaining alert to signals showing that reverting to manual control may be necessary when major problems or opportunities are ahead. In MSs, top management may become disconnected from intimate knowledge of the firm and of the environment since it may have not much to do for extended periods. Problems may result if top management resumes control too late, all the more so if the structure is fairly difficult to change.

Insufficient initiative from middle management (in terms of products, markets, technology, organization).

Inflated size of support functions. In this area, much progress has been made during the last twenty years in OECD countries. This potential problem has nevertheless to be kept under close scrutiny.
Type 3 The structure based on competencies\textsuperscript{23} (SBC)

In a structure based on competencies, the work which is the raison d’être of the organization (i.e. the activity performed in the operating core) is fairly stable\textsuperscript{24}, and it is performed by professionals who are fairly independent when they are at work. Some consulting firms have this type of structure: consulting in strategy, on information systems. Banks and insurance companies, which were SMs twenty years ago, are becoming close to SBCs. Hospitals and clinics are generally SBCs, as well as public and private universities, architecture firms and front office departments in financial firms.

SBCs generally have relatively large-scale support functions, where less qualified (and thus less expensive) employees perform tasks requiring a smaller amount of expertise. Since by definition professional work may not be standardized, the SBC technostructure does not have the same role as in MSs: it deals only with tasks such as budgets, planning of surgical operating rooms, etc.

SBCs commonly have numerous permanent committees and commissions whose members come from several units of the organization: a university may have commissions for information systems, for student life and sports on campus, for fund raising, at least one management committee for each teaching program and one research committee for each main area of research. These committees and commissions contribute to the general management of the organization. They generally work with a sizable amount of mutual adjustment, if not of conflict (it is sometimes said that they form the “political arena”)\textsuperscript{25}.

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**Table 7**

Advantages and potential problems of structures based on competencies (SBCs)

**Advantages**

- Allows a personalized service performed by highly qualified personnel: pleasing for the client because it shows how important he is.
- Independent work where operators may use all their competencies: satisfying and motivating for professionals.
- Allows several professionals active in the same area to be grouped in specialized units, and hence allows the development of groups with the “critical mass” necessary to stay at the top of the profession. This advantage is important in some banking activities for example.
- Allows growth and geographical expansion when the activity is well mastered. Such moves require appropriate job markets in the country where the firm is operating, and extensive training activities within the firm.

**Potential problems (classical dysfunctions)**

- The operators’ competencies may progressively decrease if training and exchange on professional experience are insufficient.
- The recruitment of professionals having competencies in new types of activities may be insufficient (these recruitments are strategic decisions).

\textsuperscript{23} Mintzberg calls it the professional bureaucracy.

\textsuperscript{24} We could venture to saying that relative stability means here that not more than 10% of the activities should change from one year to the next (otherwise the organization cannot have a structure based on competencies). In fact we do not know of any scientific measures of this stability.

\textsuperscript{25} The interested reader may find developments on the specificities of the management of innovation in structures based on competencies in Romelaer (2002c).
Lack of understanding by top management of the nature and quality of support activities necessary for professionals.
Insufficient management of the flow of activities (processing of contracts, smooth and ordered flow of patients, etc.).
Insufficient productivity and lack of organization of support activities: the “noble activities“ are those of the professionals, other activities are less attended to.
Lack of clear arbitrage between departments and units of the organization.
Decision-making may be unsatisfactory, too slow, too loaded with “political activities“: top managers, heads of units, “star“ professionals, members of the committees and commissions in the political arena may have severe difficulties in developing common objectives.
Power conflicts
Excessive division of work between too small units: top management, when confronted with conflicts between star professionals, may be tempted to “buy quietness“ by splitting one department into two parts.

Types 4 and 5 Adhocracy (Adh) (some ≠M)

(project adhocracies, automatized adhocracies)

In an adhocracy (the word comes from the Latin “ad hoc“), the work in the operating core changes constantly. One characteristic of this type of organization is that the method to be used to perform the work, and often to some extent also the nature of the work to be done, is not defined a priori: it is defined as the work gets done, often with a considerable amount of mutual adjustment between the organization's members.

There exist two “sub-types“ of adhocracies: “project adhocracies“, and “automatized adhocracies“. What follows only deals with project adhocracies. They are commonly composed of several temporary project-groups: when a project is completed, members of the group are allocated to other projects which at this point require a growing staff.

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26 Mintzberg gives of this a colorful depiction: managing a university is just like trying to herd cats. They scratch you, and go in all directions.
27 Adhocracies may not be called “innovative structure“, as Mintzberg does (1989). Some adhocracies are not innovative, and innovation also exists in all other types of organization. On the latter point see Romelaer (2002c). Also, adhocracies do not exist only in high technology activities: organizations with an egalitarian culture (associations for example) may be adhocracies even if their activity is not high tech. Likewise new organizations may have this structure, even in low technologies: as long as the “production process“ is not well understood, mastered, and “organized“ through procedures and norms, the actors may collectively invent the way to do the work through intense mutual interaction. Top management may let this trial and error take place till a viable regular solution is found (naturally they then change structure to reap the benefits of productivity gains). As a third difference, Mintzberg signals that an adhocracy obtains if top management seals itself off from the operating core in order to proceed with managing change (eventually even divesting itself of the operating core). It seems to us that the organization which remains after this sealing off is not necessarily an adhocracy.
28 Automatized adhocracies are mass production or mass distribution organizations which are very strongly automatized or robotized: since all predictable work and contingencies are taken care of through actions performed by machines and computer programs, the result is that the members of the organization have only to manage change and unexpected events (breakdowns for example). This requires an adhocratic structure as long as the changes and events have not been classified, each being associated with a method allowing to do the work. This adhocratic period may last several years, for example in chemical plants using a new process. The organization progressively moves to another structure when organization members have developed an understanding of incidents and methodic ways to deal with them.
There often exists, in these structures, a non-negligible role for the project manager and for the project specifications (hence the coordination mechanisms also include direct supervision and standardization of results).

This type of organization is to be found in numerous high tech firms and R&D labs, in some new organizations, as well in a large proportion of the organizations existing in the associative, cultural, and political milieux. Some consulting firms and hospital services have these structures. In fact such organizations are adhocracies if they do constantly innovative work, or if most of their contracts require extensive adaptation by trial and error to clients’ specifications. They are SBCs if their activity portfolio is rather stable, or if methods and procedures exist to adapt to clients needs.

Not all adhocracies are innovative. An organization may provide regular goods or services to a regular clientele while redefining its methods every day through constant discussion between the organization members. But such “reinventing the wheel” is not economical.29

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**Figure 8**

**Advantages and potential problems of adhocracies (Adh)**

**Advantages**
Adhocracy is the only organization structure which allows the accomplishment of a high technology work requiring that several different competencies be coordinated: as far as I know, it was first observed during research conducted on the organization of Nasa.
The work is generally considered pleasing by operators: almost everyone may take frequent initiatives, human contacts are intense, and completing a common project gives a feeling of collective adventure.

**Potential problems (classical dysfunctions)**
Potentially stressful for managers and for top management: since the method is defined as the work is done, there exists strong uncertainty about results. But on the other hand the organization is constrained by the contractual specifications of projects (including from the legal and financial point of view). For the same reason, the organization is also potentially stressful for clients, for members of the board of directors, and providers of financial resources.
Potentially expensive: high level professional work does not come for free, drift on delays and on costs are not uncommon.
The organization is difficult to understand, even for its members: structure changes constantly.
Excessive stress of managers and of operators. Burnout for people who cannot stand stress if the adhocratic mode lasts for too long. In case problems appear, internal conflict is more probable in this type of structure if stress and tiredness have developed.
Managers may leave to join the competition, or to create a business of their own. In the worst case, they leave with their team.

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29 Hence non-innovative adhocracies may be found in firms living within a not too competitive environment, and in organizational units not submitted to too much pressure from the firm they belong to. Such may be the case for oligopolistic firms, for firms operating in market niches or serving local markets. Such may also be the case for some associations, some public sector organizations and units in Chambers of Commerce. Of course no fate or scientific law forces these organizations to be non-innovative.
Lack of clear general policy: the firm's strategy is just the sum of the ongoing projects. Conflict between managers and department heads about financial and technical resources, mutual “stealing” of the best operators, destructive competition between teams. This type of organization is inherently unstable. There is a tendency to “re-use“ knowledge developed through project work: (1) in order to capitalize on the new technical capability and business credibility thus created (successfully completed projects are good references for potential clients); (2) because long lasting and widespread stress leads to a desire to move to quieter waters. The structure then generally transforms itself into a SBC.

Type 6  The structure based on results (SBR)  (≠M)
Types 7 to 12 The six divisionalized structures  (numerous ≠M)

An organization has a structure based on results if its members are by and large independent of each other in their work, each being subjected to individual objectives and norms. A Sales Department is often organized in this way: the US sales objective is split into regional sales objectives (East Coast, Midwest, etc.), themselves factored into the sales objectives of the different sales areas, sectors, and ultimately of salespeople. The structure naturally includes an information system which allows managers to make sure that operators and units reach their objectives. As we saw above (Paragraph 3, Figure 3), this type of organization often includes substantially developed support functions. In sales departments, these may include data bases on markets, periodic studies made by questionnaires sent to clients, Nielsen panels, computer programs in commercial prospection, etc.

These types of structures also have more and more training programs for salespeople (hence some standardization of competencies), and groups where people discuss sales methods: these groups are often called “communities of practice“ when they are informal, and “competence groups“ when they are formally organized (hence they use mutual adjustment to standardize competencies). There may even exist some amount of standardization of work processes. The firm may for example advise salespeople to learn by heart and use as much as possible a “script“ for discussion with clients. This script includes questions to be asked in a prescribed order, a method to decide which offer to make as a function of answers, a sequence of steps for negotiation, and the ordered list of points in the sales pitch. The organization has a structure based on results if the paramount objective is still to reach the sales objectives. If the script becomes more important than the result to be reached, then the organization becomes a mechanistic structure.

Among the structures based on results, it is practical to treat the structures of some firms separately. These are mostly large-size firms, organized in units which are fairly independent of each other, like divisions and subsidiaries in a group. These organizations are called divisionalized structures. The six types of divisionalized structures are presented in Paragraph 9.
Figure 9

Advantages and potential problems of structures based on results (SBR)

**Advantages**

The organization is very simple. The job is essentially done when objectives have been fixed.

The SBR is often judged pleasing by operators, who have freedom to organize themselves.

**Potential problems (classical dysfunctions)**

Multiplication of objectives, standards and ratios. Management tries to control and to guide operators, often in the beginning to repress flagrant dysfunctions. But, for example, when beyond a global sales objective a salesperson has a minimum number of clients to visit each day, is required to respect sales objectives for new clients and for each product category, the result is that the control system becomes a straight-jacket, and that the firm loses the benefit of operators' initiative.

Often makes cooperation difficult between operators. It is not easy for management to have a good knowledge of conditions in the field. It is in part for this reason that regional managers periodically visit clients with sales people.

The information system on operators' results may be slow, complex, or inappropriate (much progress has been done in this respect).

Insufficient support for operators.

Support functions may progressively develop a tendency to dictate to operators what they should do.

Lack of attention to potential benefits which may accrue from professionalisation of the job, or from using methods in parts of the activity. The risk exists that operators will remain amateurs, and that the firm will devote a lot of time and resources searching for people who, by chance or by nature, are high performing operators (finding them also in competing firms).

Risk of high operator turnover: their work is independent, the incentives applied to them are often individual and financial, and they are hence probably less attached to their colleagues and to their firm. Turnover of salespeople is often high.

Risk of drift toward a structure with “baronies”, where each regional manager leads his crew the way he or she likes, top management having little control.

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30 The Men's WearHouse case study (Pfeffer, 1997) is an interesting example to the contrary. It features a firm distributing men's clothing and accessories, with more than 500 outlets. A decent amount of cooperation between employees is obtained, thanks to an intensive continuing education system, and to a well designed and well managed performance appraisal system.
6) **How to use the twelve types of organization**

As we have seen above, there exist twelve types of organization (SplStr, MS, SBC, the two adhocracies, SBR, and the six divisionalized structures) \(^{31}\). Before proceeding further, let us repeat that the twelve types of organization have to be used not forgetting that no two organizations are exactly alike, but that in the majority of cases a given organization is fairly close to one organization type, and fairly different from the eleven others.

The existence of the twelve types of organization may be used in several ways:
- as a general guide for action at all managerial levels,
- as a specific guide for the management of different functions, and for decision-making in various areas,
- for quick diagnosis of potential organizational strengths and weaknesses, and quick proposal of “local moves away from the present position”, each coming with its pros and cons (this latter use of the twelve types for diagnosis will be detailed in the next section).

The twelve types of organization may first be used as a general guide for action at all managerial levels. To give a flavor of how it can be done, we can use the analogy we made at the end of section 4 between the different types of organization and the different types of boats. Different types of boats are unequally economical and useful for a given set of activities (transporting goods of various kinds, providing leisure, fishing, coast guard, all kinds of military use, etc.). Also, different kinds of boats are unequally easy to adapt if the mix of activities changes, unequally reactive to various changes in weather conditions, etc. Likewise, different types of organization have diverse economic performance for a given mix of activities, their reactivity is different, as is their cost and speed of adaptation to events such as monthly sales variations, sudden massive success of a product line, rapid fall in sales, ups and downs in the economic cycle, etc. Different types of organization are unequally effective to handle strategic moves such as capacity extension, internationalization, product or process innovation, merger and acquisition, etc. Moreover, they require different management styles, portfolios of competencies and labor markets, and they react in different ways to computerization, introduction of information technologies, and to management tools and techniques such as ERP (enterprise resource program), MRP (management resources planning), ABC (activity-based costing), re-engineering, etc.

The set formed by the above managerial specificities of the twelve types of organization may be used to give guidelines concerning the type of organization which would be more in line with the objectives pursued by the organization as a whole or by such and such of its units. Of course, these guidelines can be given only when the characteristics of the different types of organization have been substantially completed.

The second use of the twelve types of organization is to provide specific guides for the management of different functions, and for decision-making in various areas. Two illustrations are provided below concerning management of human resources.

\(^{31}\) It can be said that there exist five types of organization, if one groups on the one hand the two adhocracies, and on the other hand the SBR and the six divisionalized structures. In fact the structures thus grouped have sizable differences. For example, the functioning of automatized adhocracies is quite influenced by the automatized physical and logical system to which it is linked, whereas project adhocracies do not suffer from this constraint.
In a mechanistic structure, for example in traditional-style banking, personnel appraisal may be centered on the knowledge and respect of procedures, and on the capacity the agent has to use them properly and efficiently: speed of execution, number and seriousness of mistakes per month, etc. On the contrary, in a SBC, for example in professionalized banking, personnel appraisal must be more centered on the capacity collaborators have to master, maintain and increase a wide spectrum of competencies. They must know how to appraise the strategic interest of clients' projects and their managerial capabilities, how to measure clients' financial solidity, understand how financial products may fit into the financial structure of the client firms, etc. Personnel appraisal should also include measuring the knowledge they have about markets, their talents for understanding clients' needs, their negotiating ability, etc.

In a mechanistic structure, operator training may be minimal. Training workers in the use of work methods may be profitable to the firm in order to accelerate integration of new workers, and to avoid bad habits which may come from uncontrolled “learning by doing”. If the appropriate application of procedures in one organizational unit requires the worker to have some knowledge of what takes place in other units (or on clients' sites), then workers' training may include visits to these units and sites, discussions with people working there, or else training sessions on these topics. On the contrary, in an adhocracy, training needs are much more important. Each operator must have a rather wide spectrum of competencies if the firms wants to move him smoothly from project to project, he needs communication capabilities since the work includes intense communication with the project manager, with the other team members, and also often with people outside the project group. He also needs a fairly in-depth understanding of the competencies possessed by the other team members (in order to negotiate more effectively with them), and a good “general culture“ (so that his contribution will be better integrated to the project).

More elements on the relation between organization and management of human resources may be found in Pichault and Nizet (2000) and in Romelaer (1997a, 2002a, 2002b).

The twelve types of organization may also be used to provide guidelines in such areas as promotion and careers in international firms (Romelaer and Huault, 2002), management of innovation (Romelaer and Huault, 2002), investment decision-making (Desreumaux and Romelaer, 2001), strategic planning (Mintzberg, 1994), the roles of executives (Romelaer, 1996), or the functioning of management methods and management tools (Moisdon, 1997; Romelaer, 1997b, 1998). Such knowledge is precious for the following reason: if a management method is in line with the type of organization, then it will be implemented more rapidly, risk of failure will be less, executives and managers will not need to “force things through”, they will have to spend less time and resources explaining the decision, controlling implementation and solving problems, and hence they will save precious time and resources, which will be more usefully devoted to the business.

When we consider the set of structure types and see that each has its advantages and drawbacks, we see that there is no such thing as an ideal organization, but only organizations which are more or less adapted to top management strategy, available resources, and conditions allowed by the various environments (competitive, technical, legal, institutional, etc.). A restaurant organized along a mechanistic structure (for example in the fast food industry), has very important productivity with a narrow product line. This type of organization is not adapted to sophisticated restaurants, which require specialized professionals (cooks, wine stewards, headwaiters). These restaurants have often structures based on competencies, which cannot “be mechanized“ without having to change clientele.
The twelve types of organization we presented may be applied to organizations of all sizes and industries, be it a paint production plant, a supermarket, a maintenance department, a consulting firm, etc. However, some types of organization have limited applicability. For example large-size simple structures are not viable: even a very talented and courageous manager in excellent health cannot handle a unit with 500 employees on a simple structure mode. Likewise, as we have seen in Figure 9, adhocracies are inherently unstable in the long run.

The twelve types of organization are nevertheless insufficient to describe all existing organizational forms. Some real organizations are “mixes“ of two or three of the twelve types. We shall see these “hybrids“ in Paragraph 10. Taking into account the twelve types and their hybrids is sufficient to describe every organization and organizational unit which at least roughly function as private firms do.

Other “models of organization“ have been proposed by scientists and consultants. Some of them are presented in Paragraphs 11 and 12.

In fact, using the twelve types of organization in practice requires more than the elements we have mentioned so far. It also requires that one takes into account the 11 “coordination systems“, and the various modes of grouping activities into units (organization by function or by product, matrix organization, etc.). These questions are dealt with in Paragraphs 8 and 13.

7) A diagnosis method

To go quickly to essentials, let us first indicate that the diagnosis of an organization may be done with the following three steps:
1) identify the coordination mechanisms in the organization or the organizational element one wants to analyse. This diagnosis may be done for organizational elements such as a job position or an organizational unit (a division, a plant, a regional sales office, an Information Systems department, a work group, the set of management control specialists in the firm, etc). It may also be done for an activity (maintenance, quality, etc.) as well as for a process, for example a new product development process, a production process, a logistical process, or a business process going from client order to receipt of payment for a product family. Other important processes may also be studied, for example an investment decision process, the implementation process for a strategic decision, a restructuration, or the integration and reorganization process following a merger or an acquisition.
2) identify coordination problems, and then advantages and drawbacks of various changes which may be made in the coordination (basing oneself on what we saw in Paragraph 3). The core idea here is to try to see which improvement and potential problems would accrue if one increased or decreased coordination, taking in turn each of the five coordination mechanisms. This exploration generally leads to several solutions. The choice between them depends on several criteria:
- the advantages and drawbacks of the future functioning, as compared to the present state,

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32 This does not mean that all adhocracies are condemned to drift to another organizational form. This simply means that the manager who wants to keep her organization operating as an adhocracy will have to face, and fight, economic and social pressures : she will have to refuse potential clients who want her firm to duplicate past success, she will need to find clients who will agree to pay for innovative solutions, develop an ability to recruit and to keep collaborators who accept to function constantly in a high pressure environment (or be capable of constantly renewing part of the workforce and of integrating the new recruits effectively), she will eventually have to confront bankers and board members who would prefer lower risk, etc.
- the resources and time probably necessary to handle the change, and the uncertainty about the result,
- the difficulties to be solved when it comes to changing the way people work and managers manage (a radical change in coordination mechanisms may sometimes require extensive training and control, if not new personnel),
- the compatibility between the new coordination for the unit, the traditions of the firm, and the way coordination is managed in the other units of the firm.

3) Compare the organization (or the organizational unit) we are interested in to each of the twelve types of organization seen in Paragraphs 5 and 9. In around two thirds of cases, one sees that the organization is very close to one of the types, and fairly distant from each of the eleven others. In almost all the other cases, one sees that the organization we are diagnosing is an hybrid of two (rarely three) of the types, and hence different from the nine or ten others.

In all cases, one then moves on to examine the list of characteristic advantages and drawbacks of the type(s) to which the organization we are studying belongs. This part of the diagnosis often allows the identification of potential problems, which are not present, but for which reasons exist to believe they are “in germ” in the present organization. The diagnosis method presented here thus allows, with this advanced notice, to work on the means through which these problems can be prevented, or their effects limited.

A word of caution may be in order concerning the notions of advantage and drawback. In Figures 5 to 9 above, we presented them as they appear in general. In the diagnosis of a real organization, the characteristics of the different types of structures will in fact appear as advantages and drawbacks only when confronted to the specific objectives and preoccupations of the person who orders that the diagnosis be made. In fact both present and future objectives and preoccupations must be taken into account.

The third phase of the diagnosis continues with the successive examination of each type of structure from which the diagnosed organization is presently distant, to see which advantages and drawbacks could bring the decision to move from the present situation in the direction of this structure.

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33 It is then sometimes said that one is in presence of a “pure type”. In fact no real organization is totally identical to the models we presented. Each contains parts, processes and behavior which are permanently or temporarily at variance with the model. A number of reasons may explain such variance: personalities and competence of people (including management styles), remains of past modes of organization functioning, germs of organizational evolution, inconsistencies coming from the responses made to disparate environmental solicitations. Nevertheless, the similarity between real organizations and the models is very often quite striking, and this gives the present diagnosis methods a remarkable efficiency.

34 The person who orders that the diagnosis be made is in general the manager of the organizational unit, or one of his superiors. Even if more rarely nowadays, it may also be a partner firm, a potential buyer, a potential financing source, a union, or else a certification agency. Each of these (at least partly) outside entities are very much concerned with the capacity the organization has to live up with the expectations they themselves have.

35 Future objectives must be taken into account, since top management normally does not seek the best organization for today’s strategy. Top management knows that it will be led in the future to take into account new constraints and opportunities coming from the presently unknowable evolution of the environment (clients, technologies, etc.), as well as from evolutions of its own preferences and of the organization’s capabilities (Romelaer and Lambert, 2002). Hence, beyond the adaptation of the present organization to the present strategy, the firm needs some amount of organizational flexibility to be able to handle these evolutions in good conditions of cost, of reactivity and of reliability. The nature of the organizational flexibility sought for naturally depends to a strong degree on the knowledge top management has about the evolution to which the firm may be subjected (or on the “bets” it makes about this evolution).
At the end of the diagnosis, or permanently during the operation, adjustments are made to take into account constraints and opportunities coming from the eleven coordination systems presented in Paragraph 8.

What precedes applies also to so-called “new organization models” which appear and disappear like fashion items, heavily advertised and recommended by consultants and in the press for some months or years (before they change, as is the rule in fashion). When analyzed as above, they often appear as variants of the twelve types. For example re-engineering, as well as the introduction of “total quality” or certification, are often strong moves in the direction of MS.

Such analysis also allows us to detect potential problems in these fashionable organization models, even though advertisements for these “new” forms often endow them with all qualities and no problems. One may for example expect re-engineering to lower organization reactivity, flexibility, and efficient use of personnel competence and initiative. Organizational diagnosis as practised here also casts doubts on the possibility of applying any of these “new” forms to all organizations, as their proponents often claim is possible. For example, total quality and certification, if practiced in an MS mode, are probably ill-suited to consulting firms, professional banking, and other activities where SBCs are likely to be more effective.

The diagnosis using our twelve forms may show that, under the banner of the same “new organization”, several mutually incompatible pieces of advices may be found. For example, even if on average “client-centered structures” are close to SBRs, one may find approaches on how to move toward a client-centered structure which are linked to several of our twelve forms:

- some of them are centered on the independence and initiative of entrepreneurial front-office people responsible for sales development, every other member of the firm being asked to see their role primarily as a support for these primordial front-office people (this way of seeing things makes us think of SBRs),
- some advice may insist on computerization of the sales process, unifying data formats and interconnecting treatments of all actions which range from contact with a client to reception of his payment in the firm's bank account (this makes us think of MSs),
- still others insist on salespeople’s knowledge and independence, the identification of star salespeople with the objective of understanding the special knowledge they have in order to have it spread to the other salespeople (this makes us think of SBCs).

When we look at this variety of advice, we see that there is no such thing as “a client-centered organization”, but rather several distinct ways of organizing client-centered firms, which have very distinct modes of functioning, very different requirements in terms of workforce composition, nature and extent of support functions, as well as managerial style. These distinct ways of organizing client-centered firms will thus have very different performance characteristics in terms of productivity, reactivity, adaptability, innovativeness, capacity to handle variations in the volume of activity, etc.

Hence trying to follow simultaneously all the advice given on any one “fashionable structure” without thinking twice about the problems of compatibility, is a sure way of submitting one's organization to contradictory messages leading to sub-optimal performance, and to getting employees and managers confused about “the rules of the

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36 In fact, when the fashion fades, one often sees studies appear showing that the “new organization” has disappointing average performance, although at the beginning and at the height of the fashion it had been advertised as having universal application and enormous qualities. For example serious doubts about re-engineering are presented in Nadler and Tushman (1997), and research by Meschi (1998) proves that downsizing brings no improvement on average.
game". This test of compatibility can be done through confronting each piece of advice with the twelve types of organization.

Many "new forms of organization" other than the "client-centered structure" may likewise be shown to be new names for already known organizational structures, or to be very incomplete descriptions. For example we shall see later that all twelve structures may be made more or less "learning organizations" or "virtual organizations".37

The diagnosis method presented above may give the impression of being simple and of leading to unique optimal advice on how to improve the organization. Indeed a 30 hour seminar allows auditors to learn enough to begin practice, and the first applications they make on real organizations already give results which are considered very enlightening by managers and other members of the diagnosed organizations.

In fact the method is not as simple as may be thought:
- performing several diagnoses with a coach is generally necessary to get a good grasp of the method,
- obtaining reasonably unbiased data from interviews with organization members requires an ability generally not possessed by beginners, specially when actions taken as a consequence of diagnosis may have an impact on the people interviewed,
- finding which organization changes are likely to be possible and fruitful requires a mix of competencies and information, on questions such as:
  - what problems have been met and what solutions have worked in other organizations?
  - what are the specificities of the country, of the industry, of the organization, of the individuals involved, and of the context?
  - what information gathering should be given priority at each point in time during the diagnosis, which risks of error exist?38

On a more fundamental level, the advice derived from the diagnosis can never lead to "the best organization". One never has the best organization, even if all the members of the management team of the organization (or of the organizational unit) have the same clear view of the strategy, and of the strategic and organizational flexibilities to be maintained.39

The impossibility of a "best organization" comes from at least three reasons:
- first, each type of organization has advantages and drawbacks. Hence it is impossible to find an organization which has all the qualities we want and none of the shortcomings we fear. If problems are too serious, one may want to "change the organization type", i.e. to perform all the actions necessary to define the new activities and the new relations between organization members and organizational units. This requires getting people to learn the new competencies and the new reflexes which are necessary, as well as to "unlearn" the old ways of functioning. The least which can be said is that none of these operations is

37 Of course, this does not mean that no new form of organization has appeared or can appear. It means that before an idea concerning a new organization may be considered as being really new, it may be a good idea to compare it to the twelve types of organization we presented. Nor should the above remarks be understood as meaning that re-engineering or being more attentive to the client are bad ideas. It simply means that such actions (1) are not likely to bring improvements to all firms, (2) may often be managed in different ways which have different economic performance, and (3) will never have all qualities and no problems.

38 Risks of error always exist because it is not possible to interview everyone in the organization, or to gather information on all possible performance measures and problem indicators.

39 It is extremely rare in practice that such unanimity exists. It is "even more extremely rare" that the strategy is shared by all the organization's members, from the CEO to the telephone operator, including the quality engineer, the salespeople and the webmaster. Hence it is a mistake to say that an organization is a set of people who coordinate with each other to reach common goals.
free, instantaneous and devoid of risk. It may nevertheless be worth incurring these “costs”, rather than to continue having the performance and risk of the present organization. But even if the change improves things, it may in no case be said to lead to a “perfect organization”: the new organization will necessarily also have advantages and drawbacks. Nor will it be possible to say that the new organization is optimal: there always exist alternatives which are better for some subset of the objectives which are pursued (financial return, growth capacity, innovation, etc.).

- the second reason why it is impossible to reach the best organization in an absolute sense, comes from the necessarily relative and contextual nature of organizational performance and change. In both total and partial organizational changes, the choice of which actions to take depends on bets made about how members of the organization will react (probable and possible reactions of outside parties must also sometimes be taken into account). These reactions crucially depend on what the organization is presently, on the people involved and even on the society within which the operation takes place, with essential elements such as competencies, acceptance of authority, tendency to opportunism, personal discipline in respect of procedures, habits of taking initiative, care taken to coordinate oneself with others, etc. The choice of organization change is always contextual and “embedded in society”. No organization and no organizational change is best in an absolute and intemporal way.

- third, there are no optimal organizations because of the uncertainties on organizational phenomena:
  - objectives are never perfectly clear and shared,
  - required strategic and organizational flexibilities cannot be determined with total precision,
  - reactions and initiatives of people are not completely controllable,
  - all elements above change constantly to some extent, as people change through promotions, transfers, recruitments, departures, as well as through personal evolution.

Uncertainty also exists because any organization has imperfect knowledge about itself, and because organization science still has limited achievements. On the first point we may remark that, even in small-size organizations, management cannot be aware of everything. Imperfect knowledge is a fortiori the rule in large-scale organizations, despite management control, internal auditors, and other “regulated systems” (see them in section 8). Concerning organization science, it is certain that the knowledge developed so far has many limitations, even if much knowledge has been produced, particularly over the past fifty years, through thousands of scientific studies based on tens of thousands of empirical observations.

40 Partial organizational changes should not be confused with marginal or minor changes. Some partial changes are experienced as “earthquakes“ or as “revolutions“ by organization members.
41 It can thus be said that possible and desirable organizational changes depend on the organization and on the society at the time of decision. Some express this idea through saying that organizations are submitted to “path dependencies“ (in a sense, the places where my next steps may lead me depend on where I am at present on the path).
42 See these in scientific journals such as Administrative Science Quarterly, Academy of Management Journal, Academy of Management Review, Organization, Organization Studies, Finance Contrôle Stratégie, Revue Française de Gestion, and many more. The fact that organization science still gives us incomplete knowledge (like all sciences) has a consequence: when performing a diagnosis, one should be ready to see that the organization is of a type different from the twelve we have presented, or that there is another coordination mechanism apart from the five we mentioned. In science, by definition, “empirical data are always right“. After all, each of the types of organization we have mentioned was observed for the first time one day.
The three points above lead us to say that there is no such thing as an “optimal organization”.

The presentation of the diagnosis method we have made so far is incomplete on several important aspects. On the one hand, numerous details are not included, since we only want to present here a concise overview. On the other hand, we have not yet presented the objectives of the diagnosis, nor the boundaries of the organization on which data are to be gathered. These questions are treated below.

A diagnosis may have one or several of the following generic objectives:
- identify the present advantages and drawbacks of an organization,
- identify the organizational problems which may appear in the months to come,
- identify the directions towards which the organization has a natural tendency to evolve,
- identify the evolution possibilities of the organization, with associated costs, delays, advantages and drawbacks,
- concerning an organizational change which has been decided, identify the actions to be taken and the risks,
- analyze the actions planned to prepare a decision (an investment decision, a strategic decision, a new product decision, etc), suggest alternatives both in terms of the nature of actions to be performed, and in terms of the management methods and coordination mechanisms concerning these actions. The same analysis may be made and the same suggestions may be given concerning groups of decisions : the organizational audit of the investment decisions, the organizational audit of innovation, etc.

The above objectives are, at least in private firms, linked to economic and strategic objectives. Among classical objectives in this category, one finds the following: increase productivity, develop innovation capabilities, increase the organization's capacity to industrialize, increase flexibility, move to a more client-centered organization, reorganize to give more impetus to internationalization, and there exist at least dozens more.

The objectives of each concrete diagnosis are generally a mix of classical objectives and of contextual considerations, such as specific aspects of the present strategy, personal objectives and style of several executives, the taking into account of some of the organizational units and groups' capacity to change, the culture of the firm and of some of its units.

Two elements must often be taken into account:
1) the flexibility of objectives is a crucial question. On the one hand changes may happen during diagnosis, during implementation of decisions following the diagnosis, and during the first months of the new organization (there may be changes inside the organization and in the environment, changes in competition, changes of some managers). On the other hand, people involved in the diagnosis (including executives and managers paying for it), may change objectives as the situation evolves, as new possibilities and constraints are identified.
2) in numerous cases, the objectives of an organizational diagnosis are fairly imprecise at the beginning, or expressed in terms of dysfunctions and “symptoms” rather than in terms of organizational problems. In some cases, the people asking for the diagnosis have other objectives than the one they declare.

It is generally impossible to reach all the objectives. An organizational diagnosis must often begin with an appreciation of actors' objectives and of their priorities.

In the early phases of the diagnosis, a decision must be made about which organization will be analysed. The question is often much less obvious than it seems. If one seeks to improve
maintenance in a plant, it is often very inefficient to gather data only on the maintenance
deptartment (even if of course this department must be part of the organization to be
analyzed). The relations of this department with “clients“ and “suppliers” define a set of
people who have reasonably regular and predictable relations with each other, and who
thus form an organization if we take the definition we gave in Paragraph 1. This
organization is often the one on which data must be gathered.
From a general standpoint, if only to limit the cost and time required, the organization to
diagnose is often the smallest one including all the actors who may have an influence on
the problem and on its solutions.

To conclude, let us mention the nature and source of data gathered during the diagnosis:
1) data come from a variety of sources: interviews and meetings with people in the
organization (and with some outside people), written data such as process manuals, job
descriptions, documents used by the firm for internal and external communication, and
sometimes elements of personal archives communicated by members of the organization.
To these are added data produced by departments, units and work-groups, such as cost
studies, logs of shift incidents, minutes of meetings, reporting, data bases, etc.
Much care, and some techniques, are used to determine which people to try
interviewing, which data to ask for, how to conduct interviews and to organize meetings, etc. As we
intend the present chapter as a short overview, we cannot detail these techniques.
To give just one example, let us mention that, if a person is making the diagnosis of one
“type of job“ for which there are several job holders in the firm, then in general at least
20% of the job-holders must be interviewed (or observed). The “diagnostician“ will try to
gather data from a subset of job-holders satisfying several conditions: people and jobs
should be fairly diverse (for example jobs which are diverse in terms of localisation,
technicity, etc.), and data gathering should be more intense in key subsets of jobs and job-
holders. For example, if 50% of the job-holders are female and 50% have a degree from a
given school, these concentrations should be at least partly reflected in the data gathered.
2) data are systematically gathered on the elements we presented above when we described
the coordination mechanisms and the types of organization (as well as on the elements
concerning the coordination systems presented in the next section). These include items
such as the intensity of mutual adjustment, the set of activities leading to the development
and updating of procedures (they belong to the technostructure), the presence of a political
arena if one suspects that the organization may be a SBC, etc.
3) some unsolicited data come from conversations and interviews with actors and experts,
and unasked for data are found in documents. These data generally find their place
naturally within the generic diagnosis framework developed in the present chapter.
The list of data to look for and of people to interview often needs to be updated during the
diagnosis as a function of the information received: this information may signal zones of
potential problem areas, or pockets of interesting modes of organizational functioning,
which warrant more precise inquiry.

43 The terms “clients“ and “suppliers“ are understood here in a very general sense, including people both
internal and external to the firm.
44 In the diagnosis of a job with many job-holders, one classically meets subgroups according to sex, age and
seniority, education, job holders in different units of the firm, jobs where the work is done in different
 technological environments, specific positions which are essential in the strategy of the firm or for important
 changes, positions which may be affected by job evolutions, etc.
8) Conclusion

No organization functions alone. A sizable part of the work of managers and of executives consists in looking after their organization and in managing change. But managers are not the only pillars of the organization. Coordination and change may also be induced (and sometimes blocked) by eleven “coordination mechanisms”\(^{45}\). The format of our panorama does not allow us a detailed presentation of them. A brief definition of each is given below:

1. **objectives**, strategies, change projects,
2. “management systems“: all formal production systems, information systems, decision and control systems, for example production planning, management control, quality, salespeople reporting, decision procedures for inventory replenishment and for price change, etc. These systems are sometimes called “regulated systems“ since each of them is composed of a coordinated set of procedures, written rules or fairly fixed habits.
3. **hierarchical relations**. The chain of command between superiors and subordinates is the backbone of the old-style organization, and it is still a crucial element in simple structures as well as in feudal divisionalized structures (see Paragraph 9). But giving orders and controlling subordinates probably represents on average less than 20% of managers time in today's organizations. Conversely, the managers' role is more and more loaded with proposing projects, taking initiatives themselves, coordinating with other units in the firm and with outside parties, inducing subordinates to take and propose initiatives, coordinating subordinates' work and initiatives, etc.

The present tendency goes toward “flattened hierarchies“\(^{46}\) where each superior has more subordinates, and where each subordinate has more responsibilities. These economize on managers' salaries, lowers the distortion of orders going downwards and of information going upwards (since each layer may produce such distortions), and allows the firm to benefit from subordinates initiatives. But flattening the hierarchy may also create problems: managers get overburdened since they have many subordinates, their work risks becoming superficial, and in the end the execution of orders may become less efficiently controlled, and the coordination between subordinates left to poorly mastered mutual adjustment\(^{47}\).

4. **non-hierarchical relations**. Many important actions require work relations between people who have no direct hierarchical link. The adjustment of a production date at a client's request is often best done through direct contact between a salesperson and low level production people\(^{48}\). Most of the technostructure and functional support work is done through non-hierarchical relations, and the same is often true in action systems and activity systems (see below). Some members of the organization may have among their missions,

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\(^{45}\) Mintzberg (1979) uses a set of five “vital systems“: hierarchical relations, regulated systems, work constellations, informal relations, and *ad hoc* decision processes. Our list of coordination systems substantially enlarges this set.

\(^{46}\) The action which consists in flattening the hierarchy is also called “delayering“ since it lowers the number of hierarchical layers. The operation is also called “empowerment“ since by necessity subordinates have more power, and the result is often called a “lean organization“ since the “fat“ has been removed. We may advise executives and managers to take care that empowerment is not done at the expense of coordination, delayering at the expense of managerial efficiency, and that removing the fat does not also remove the muscle.

\(^{47}\) The interested reader may find developments on the constraints on innovation at the level of executives, managers, and regulated systems, in Romelaer (2002c).

\(^{48}\) These contacts may use mutual adjustment, or other coordination mechanisms. Hence non-hierarchical relations are not to be confused with informal relations.
or even as their main mission, to link organizational units on which they have no hierarchical power. Such is the case for some product managers\(^{49}\).

5. **activity systems**. For each activity familiar to the organization, for example the treatment of invoices or quality management, the activity system refers to the set of people involved in the activity, together with several descriptors of the activity (performance indicators, possible dysfunctions, required knowledge, etc. \(^{50}\)). The people involved in an activity system may be spread across several organizational units. There may exist no individual who has at the same time the means, the competence, the power, and the responsibility for the performance of the activity, the treatment of incidents, and the correction of dysfunctions.

It may be that, for some or for all the members in an activity system, the work and the relations linked to the activity represent only a small part of their work, and that it is not taken into account by their superior or by performance appraisal systems. The work performed in an activity system may even have no official existence, even for activities as important as deciding price changes, performing maintenance, taking care of relations with clients, or choosing whom to promote or to transfer when job openings must be filled. An organizational diagnosis must take into account the existence of these activity systems each time their functioning is related to the objectives pursued, through the result they produce as well as through the time and other resources they consume. Some managers may also at times feel it necessary to interfere with activity systems. Such interference may be mandatory for good performance, but it is not simple when the activity in question is not recognized as belonging to “the core of the firm”, for example when it is not included in job definitions. Unofficial activity systems are nevertheless real: one way or the other breakdowns are repaired and relations are maintained with clients, even if there are no formal procedures devoted to these tasks. Informal activity systems sometimes function on the basis of habits and of the initiatives of resourceful actors. The recognition in all firms of the existence of previously informal activity systems has led to many new management methods, such as quality management, activity-based costing, and process re-engineering. More generally, at the level of specific firms and their units, the job of “organizing” consists in part in recognizing the existence of activity systems, and in developing means which allow them to be consciously managed. If procedures, objectives and norms constitute the backbone of the “target organization”, then the action is called industrialization or re-engineering. Such operations are heavily based on regulated systems, and get their inspiration from the mechanistic structure. Of course other approaches to organizing exist, for example those based on the eleven types of organization other than the mechanistic structure\(^{51}\).

An activity system may be linked to an activity which is performed regularly or only from time to time. Where the relations between the people dealing with the activity are reasonably regular and predictable, there is an activity system.

6. **action systems**, also called **decision processes**. These expressions designate both the set of individual acts composing a specific action, change or decision, and the set

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\(^{49}\) A large number of the “liaison mechanisms” presented by Galbraith (1973) require non-hierarchical relations. These mechanisms are used to increase coordination between units of the organization.

\(^{50}\) There is a standard list of elements to be taken into account in the study of activity systems. We shall not present it here.

\(^{51}\) Mintzberg (1979) uses the expression “work constellations” to designate the activity systems. However, as far as we know, he does not explore their internal organization and structure, and does not mention the link they have with regulated systems. The so-called “concrete action systems”, which are the fundamental organizational bricks in Crozier and Friedberg’s organization theory (1980), are special kinds of activity systems.
of people performing them. Sometimes a procedure or a method is used to decompose the whole action into individual acts, and each individual act consists in following a procedure to attain a specified result. The formalized decision process is then included in the regulated systems seen above. In other cases, there is no pre-existing decision procedure and division of work. The nature of the work to be done at each point in time is decided on the spot by the actors as necessary. Which actors will be called to contribute is determined as the action unfolds, and the same is true for the methods to be employed. These are called “ad hoc decision processes”. Examples can be found in some new-product decisions, strategic decisions, change processes, computerization, reorganization following a merger, etc. (although only a minority of these decision processes are ad hoc).

Members of an ad hoc decision process form an adhocracy, which is often informal and superposed on the “normal“ or “usual“ organization: it is generally not found in the organigram. The individual acts in the action system need nevertheless to be coordinated. An action system, just like a job position, may suffer from coordination problems (too little coordination, ill-suited coordination mechanisms, etc.). Very often, the definition of the action to be taken varies as parts of the action are completed, e.g. with technical problems, breakthroughs, unexpected help and resistance.

7. groups. Some groups are contained within one unit of the organization. This is the case for groups of colleagues who help each other and share the tricks of the trade (these groups are special cases of “communities of practice”).

Other groups are transversal, i.e. they have members in several organizational units or in several hierarchical levels. It is often the case for groups which update job definitions or procedures for quality management. Some of these transversal groups associate members of the firm with outside people (clients, suppliers, partners, firms of the same sector, or organizations of the same professional community).

Some groups are temporary, like project-groups set up for the development of new products. Others are permanent, even if their members change, as is the case for the Investment Committee, or for the Works Council in German firms.

As the above examples also show, some groups have official existence and others are informal.

Some of the groups have the character of coalitions defending common interests and objectives. They form the backbone of the firm's power structure, often strongly influenced by a “dominant coalition“ (Cyert and March, 1963).

The diagnosis must also sometimes take into account groups whose boundaries extend beyond the firm's frontiers, through which the “social embeddedness“ of the organization is done, and likewise the embeddedness of the organization's units and members. In this category are commonly found professional groups, as well as ethnic, linguistic and religious groups.

8. informal relations, i.e. relations between people who have common characteristics or affinities, for example people who at some point in the past have worked together or have followed the same training. Some of these informal relations develop between members of the organization, others with outside people.

52 Regulated decision processes and ad hoc decision processes are just two special cases. At least six other types of decision process have already been identified. On this question see Desreumaux and Romelaer (2001), Romelaer (2002c, 2002d), and Romelaer and Huault (2002). For reasons not developed here, it can be said that activity systems and action systems are basic elements of the organization, and that each of them is an organization in the sense of the definition given in Paragraph 1. Many of these organizations are difficult to link to one of the twelve types of organization we presented. The reason is that their strategic apex is diffuse (often of the garbage can type).
9. **external relations** of the different members and units of the organization. In the classical theory of Lawrence et Lorsch (1967), the first performance factor is the mastery each function of the firm (R&D, production, sales) has of its relevant environment. For example, members of the Production department must know their suppliers (for raw material, production equipment, production-related measuring equipment, and computer programs), they must know their job markets, and they must know what the competitors are doing in production. In the sentence above, knowing is not only intellectual and cognitive: it is also relational. When the production manager meets a problem concerning a machine, it is not sufficient for him to have the addresses of suppliers. If resources and competence do not exist to treat the problem internally, he is supposed to be able to call rapidly someone he trusts to advise him on repairing or changing the machine (hence someone he has met before, or someone recommended to him by a person he knows). Managers and executives must also often develop relations with union and political leaders, administrative officials, as well as with members of the local elite.

Outside relations mentioned so far allow what Goffman (1971) calls the “framing“ of the organization with respect to the technological, human resource, politico-administrative, and social environments. The framing of the organization with respect to other “systems and environments“ (legal, competitive, etc.) requires several other types of external relations.

10. **competencies**, including both individual and organizational competencies. In an outdated vision of the organization, it was considered that all competencies should be possessed by the hierarchy. In a version developed later, it was considered that competencies should be mainly contained in specialized organizational units like R&D, Methods or Central Technical Services. Present competence management methods also call on other “competence sources“, among others the following:

- “competence-carrying people“, who include specialists, informal experts (who have practical and often tacit knowledge), “old timers“ (they are “the memory of the unit“, if not “the memory of the trade“), and trusted people from inside or outside the firm who can be called on informally to contribute.

- “competence-carrying groups“, i.e. any group whose members share experience and knowledge. This sharing may develop quite informally, or be managed. Functional groups in organization by projects are examples, as well as activity systems and computer program users' groups.

- formal procedures, models and knowledge bases: all procedures can be considered as “encoding“ of knowledge. For example the electrical equipment producer Merlin Gerin has had work-groups write down all the knowledge possessed by the firm into documents later to be used for reference (Cremer and Meschi, 1997). Any process manual has the same nature, although it is less ambitious since it deals only with the operating knowledge concerning a single process. Likewise expert-systems, data bases and knowledge bases are encodings of knowledge.

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53 For example, concerning members of a unit in a missile producer, when they developed the second generation of a product, they called on members of the first generation project-team who did not work any more in the unit, because the documentation contained insufficiently precise explanations on some of the technical choices. The documentation was adequate for production and maintenance, but unexpected problems and opportunities met during the development of the second generation required human memory, the only trace then left of the reasons for past choices.

54 On competence-carrying groups, see the Gaslic example (Paragraph 10), and the result of the research made by Orr on groups of photocopier machine maintenance technicians (see the section on the “learning organization“ in Paragraph 12).

55 Some authors working on the “resource and competence theory of the firm“ (for example Nelson and Winter, 1982; Winter, 1987; Teece, 1988; Collis, 1991; Dosi, Teece and Winter, 1994) insist so heavily on
II. cultures. The culture of the organization as a whole may have to be taken into account in a diagnosis: it may be an important guide for some actions, as it may block others. Likewise, other cultures may be important in some cases, such as the cultures of different organizational units (a plant, a group of colleagues), or the culture of various groups mentioned above (coordination system n° 7). The latter include for example the culture of the management control specialists in the firm, and the culture of the banking industry.

The eleven coordination systems are related to each other. For example, encounters in regulated systems or in external relations may lead to informal relations, and the existence of a group may give its members the taste and opportunity to launch decision processes, etc. 56.

It is not known so far whether the above list of coordination systems is complete. We may have to include in it the cognitive representations (individual and collective mental maps), as well as the history of the organization and of its units. We may also have to include the “people-producing systems”, i.e. the systems through which present members of the organization have been made who they are, and the systems which influence who will be future members of the organization (in terms of competence, management styles, motivation structure, social origin, etc.). Several of these systems are not managed. Some of them are partly managed, notably through Human Resource Management activities performed by operational managers and functional specialists 57.

the importance of “routines” that their readers may be tempted to believe that they equate organizational competencies with procedures. In fact, one should definitely resist such temptation: we have seen above that competencies may also be carried by the hierarchy, by specialists departments, by special “competence-carrying” individuals and groups, as well as by artefacts such as procedures and expert-systems. Concerning the knowledge artefacts, it should be stressed that, even though they encode knowledge and competence, they represent only a part of the competence: artefacts always require people who are able to use them properly. For reasons we shall not explain here, this incompleteness of knowledge artefacts signals that something is lacking in Popper’s “third world” (1972).

56 The list of coordination systems may usefully be confronted with two expressions commonly used concerning the organization:
- the expression “formal structure” is currently employed to designate every official element in the organization. Although practitioners, consultants and academics do not always give a precise definition of the expression, it often includes, at least implicitly, the hierarchical system, the regulated systems, and the division of the organization into units.
- the expression “informal structure” should be taken with utmost precaution. Many people using it do not define it, and it may lead to severe misunderstanding as it may include all or part of numerous coordination systems: non-hierarchical relations, informal parts in activity systems, action systems, groups, and competencies, as well as informal relations and cultures. In fact, the various coordination systems involved in the “informal structure” are so heterogeneous that putting them all under the same heading may induce management problems.

Great attention must also be given to strong understatements attached to expressions like “formal structure” and “informal structure”. Very positive or very negative appreciations may be conveyed by the mere using of these expressions. Formal structure may be meant as being a rigid and inefficient straight-jacket, and informal structure as being creative, flexible, and convivial. For others, formal structure may be meant as being legal, legitimate and orderly, while the informal structure is a disorder bordering on chaos, a door open to uncontrolled opportunism and inefficiency. None of these characteristics are necessarily present. Such general arguments are empirically false. This does not prevent them from being sometimes extremely strong and efficient “rhetorical weapons” when used by someone who wants to push for his objective and to “kill” competitor projects. Their strength as rhetorical weapons is partly due to the fact that it is not even necessary to express praise or criticism to convey the meaning.

57 The fact that such a system is managed does not mean that it is well managed. It may be that management tools used in this area are ill-suited to the type of system to be managed. In this case, human resource
Some of them can be said to be informally managed, when there exist behavioral regularities which produce results which are predictable at least for the outside analyst. Such is the case in some phenomena which have been empirically observed, like the “clans and elevators system” in feudal divisionalized structures (see Paragraph 9), or in actions taken by a CEO to create “a stable of entrepreneurs”, as the Texas Instruments’ CEO once did.

The eleven coordination systems above play an essential role:
- in the stability of the organization: to do the work despite aleas,
- in the adaptation to environmental evolution (technologies, products, markets, competition, clients' tastes, economic, legal and administrative conditions, etc.),
- in innovation, initiative, seizing of opportunities, entrepreneurship.
Taking these elements into account is necessary to appraise the relevance and efficiency of an organization, and hence to make appropriate management decisions.

To conclude, performing the diagnosis of an organization consists in systematically taking into account 33 elements: 5 coordination mechanisms, 5 parts of the organization in the functional diagnosis, 12 types of organization and 11 coordination systems. It may look complicated at first reading. But, in practice, performing half a dozen applications with a coach suffices to master the method. It is much less difficult to learn than management control, market research, fiscal optimization, or other classical management techniques.

The presentation made in this chapter gives a general framework with which one can perform the diagnosis of organizations of all sizes and all kinds in all industries. Since organizations are very diverse, and this document fairly concise, this presentation must be considered as a general overview. Our objective has been to equip the reader with a broad view of the essentials, with concepts and guidelines which are sufficiently structured and precise to allow him or her to begin practice.
Our objective has also been to encourage the reader to deepen his or her knowledge, through confrontation of our models with the captivating variety of real organizations, and through reading research papers and books which patiently explore the changing reality of organizations.

management will produce disappointing results. Empirical research by Romelaer and Huault (2002) show that such is the case for the management of international promotions and transfers.

58 This action performed by Hagerty is reported in Mintzberg (1994).
Annexes

9) Divisionalized structures (numerous ≠M<sup>59</sup>)

An organization has a “divisionalized structure“ if it is split into units which are fairly independent of each other, i.e. which are not mainly clients and suppliers of each other<sup>60</sup>. For example, if in a metal production firm, the Forge department sends 80% of its production to the Machining department, then the structure may not be divisionalized. All divisionalized structures are not large organizations, but all very large organizations are divisionalized structures, specially when they have several different domains of activity (oil exploration, refining and distribution, bulk and speciality chemistry, pharmacy and biotechnologies), and when they have several different markets (North America, Europe, South East Asia).

Large firms often have a three-tier structure. At the top is the headquarters, below that are “product divisions“ or geographical zones, and each of the latter controls subsidiaries and base units which form the third level.

In the diagnosis of a divisionalized organization, one has to examine the structure of each division and subsidiary, and the mode of grouping of activities. In this area, all possible cases are met. One has also to examine the relations between headquarters, divisions and subsidiaries. In this area one has three main sub-types, which we present below.

The feudal divisionalised structure

In this type of organization, top management pilots the units on the basis of personal confidence relations with division managers and units' managers. Management systems are much less important than the fact of placing trustworthy people in key positions. The organization is not very different from the feudal society (hence its name), in which barons derive their power only from the king, and may become very powerful in their “barony“.

If subsidiaries and units are organized along the same sub-type of structure, then the following “clans and elevators“ system may be observed. The work of each manager consists in doing everything to favor the success of “the head of his clan“, i.e. to secure more resources and to produce better results in such a way that the head of clan is more likely to get promoted. When the operation has succeeded, the head of the clan has more power, and she helps her clan members to get promoted (this is the “elevator“ part of the process)<sup>61</sup>.

The criteria along which barons are selected (and potential barons spotted) are often informal. They frequently include a mix of performance on official and unofficial missions<sup>62</sup>, obedience, long-lasting work relationships, testing people in difficult times<sup>63</sup>, and proximity (in terms of diploma or social origin)<sup>64</sup>.

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<sup>59</sup> Mintzberg (1979, 1994) only considers what we call the standard divisionalized structure. We add five other types of divisionalized structures, mostly coming from published empirical research.

<sup>60</sup> The division into units is not necessarily the same as the geographical distribution of units. In some cases, divisions are on the same site, but not always. See Paragraph 13 for a discussion of the way activities may be grouped into divisions.

<sup>61</sup> Such a clans and elevators system has been observed in a chemical firm by Jackall (1988).

<sup>62</sup> Unofficial missions are those which are not included in the manager's job definition. We give here two examples on which we obtained data in conversation with executives:

- in a firm with 5,000 employees, a manager devotes almost half of his time to the sports team of which his CEO is president. This is an activity which is rather far from the raison d'être of the firm (shareholders may even be worried about this use made of the firm's resources). For the CEO, the sports team is a passion,
Besides firms, feudal structures are met in the Latin American “grupos economicos“ described by Granovetter (1998), as well as in illegal structures such as mafias.

**Standard divisionalised structures, and “standard improved“ divisionalised structures**

In standard divisionalised structures, headquarters manages divisions and/or units on the basis of norms and ratios. The ratios are often financial and short-term. They may include ROS (return on sales), percentage increase of ROI (return on investment), growth of market share, etc. Depending on cases, there may be a single ratio or several (eighty seems to be a maximum). The ratios of divisions and units are computed through standardized procedures, and communicated periodically to headquarters (perhaps each trimester). The communication of these ratios is commonly called “reporting“. One audit department at headquarters has the immense power to go into units to see whether the ratios have been computed in the correct ways, and to appraise the quality of management decisions. A bad appreciation from audit may ruin the unit manager’s career prospects. It may even lead to him being fired.

The standard divisionalized structure was gradually adopted by groups starting in the 60s, and became the dominant form between the 60s and the 80s. It is still widespread today. Uses have nevertheless changed. People realized that this form induces a severe lack of synergy between divisions and between subsidiaries: everyone fights for his own ratios without coordinating with others, subsidiaries and divisions fight for budgets and for promotion opportunities. As a consequence, they play a personal game rather than a team game, and have difficulties in cooperating, even when cooperation would be very useful for technological or marketing reasons.

Several methods have thus appeared, leading to the “standard improved divisionalized structure“. This takes the standard divisionalized structure, and adds to it a dose of inter-unit coordination. For example, managers' careers must include positions in several divisions and units, or groups with members in several units are created, such as communities of practice, project teams, technical committees, and training programs.

**The three types of decentralized divisionalized structures: Bower, ABB, and Burgelman**

In these organizations, headquarters is no longer the main place where all strategic initiative takes place: part of this very important responsibility is delegated to the middle echelons. Naturally this delegation is partial, headquarters keeps important roles, and there necessarily exists a coordination between the different hierarchical levels involved in strategic decisions.

In what we call “the Bower form”, headquarters determines a limited number of general criteria and objectives, and lets each division manager develop his or her strategy, with probably also an instrument for social visibility and attention from the media. It may even be an instrument for possible future political ambition.

- the CEO of a 5,000 employees telecommunications firm once introduced me to one of his managers with this phase: “He is my Mister Fix It“. By this he meant that he used to assign to this manager every difficult mission for which there was no obvious person responsible.

63 The origin of the clan is thus sometimes linked to the importance of the group of managers who were present during the founding years.

64 Social origin may mean family, kinship, linguistic and ethnic groups. Research has shown for example that in some firms of the Chinese diaspora, it is quite impossible for people not belonging to “the family“ to reach executive ranks.

65 We use this name by reference to the structure of the conglomerate described by Bower (1967), more precisely with reference to the description made of it in Crozier and Friedberg (1980).
most of the power on investment budgets and the final say on promotion decisions. Several types of criteria may be used. One criterion used by Jack Welch was: "your Strategic Business Unit should be among the first three in the world in its business, or I sell it". The success induced many other groups to develop similar criteria.

In a more decentralized version, subsidiary directors are those who have the key role in strategic initiatives. Directors of geographical zones and of divisions are “above them” in the hierarchy, but their role is limited to the search for synergies among subsidiaries and units. According to Bartlett and Goshal (1993), the Swiss and Swedish group ABB (Asea Brown Boveri) had this type of structure under Percy Barnevik's stewardship.

In an even more decentralized form of divisionalized structure, strategic initiatives may come from any level in the organization. Development of new activities first takes place on the spot, where an “intrapreneur” is the driving force pushing for new projects. Only when new activities are decently stabilized are they then integrated at a more logical place in the organization. This form of organization has been that of Intel (Burgelman, 1988).

Divisionalized structures have been increasingly decentralized since the 90s.

10) Hybrid organizations

It is not uncommon to meet organizations which have characteristics close to several of the twelve types of organization.

In some cases, the existence of a hybrid comes from “natural phenomena”. For example, as large-scale simple structures are not viable, any firm which has such a structure will have to change if commercial success induces strong growth. To save time, the director will replace direct orders by procedures and objectives. If procedures become dominant, the organization will evolve towards a mechanistic structure, and during the transition phase it will exhibit hybrid characteristics. For each pair among the twelve types, hybrids have been empirically observed.

In other cases, the existence of a hybrid comes from management decisions. For example, since the mid 80s, numerous banks and insurance companies have “professionalized”, i.e. they have left more and more initiative to front-office personnel in charge of clientele development, giving them extra training. These companies hence passed from a mechanistic structure to a hybrid between the mechanistic structure and the structure based on competencies.

Some organizations may move to a hybrid form without necessity or a management decision. For example, we have seen that a Sales department which has a structure based on results may propose scripts which salespeople can use as tools during negotiation with clients. Such a department will evolve towards a mechanistic structure if the hierarchy progressively insists on the use of the script as much as on the respect of the sales objectives. This movement toward a hybrid between a structure based on results and a mechanistic structure may be quite unconscious. It is sufficient for a regional manager to tell a sector manager that his results might have been less disappointing, had his salespeople used the script more systematically. In an extreme version, we have

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66 These criteria and objectives may be expressed in terms of broad product categories, geographical zones, part of the value chain in which the group should concentrate, or in terms of results such as ROA (return on assets) or the degree of diversification. It is important that they are not numerous (around two to five, not more), and that they allow a lot of strategic freedom to lower level managers.

67 Other reasons may explain the move. The section manager, faced with a market downturn or with uncertainties about the sales of a new product line, may think that he will save his skin more easily if, in case sales go below objectives, he can prove that his people have done everything possible to attain performance,
the case of tele-marketing companies, where vendors must respect a “conversation protocol” in which each sentence is written in advance, the choice of the sentence to read being determined by the previous response made by the client. The respect for the protocol is enforced by inspectors who walk down the alley listening to the operators, or who listen in to the ongoing telephone conversations with clients. “Enforcing” means here that the inspector will give a warning each time an operator drifts away from the script, and fire him at the third incident. Such organizations have passed the hybrid stage: they are clearly mechanistic structures.

Hybrid organizations have the advantages and drawbacks of the organizational forms to which they are related. They have an additional drawback, as members of the organization may be unsure of “the rules of the game”. In a mechanistic structure which is moving toward a structure based on competencies, an operator does not necessarily know whether the hierarchy wants him to abide by standard methods, or if it prefers him to use his competencies to develop his clientele. In concrete circumstances met in daily life, it may be impossible to do the two at the same time.

In this situation, the purely economic analysis of the local situation is insufficient. A number of extra-economic considerations affect reasoning and behavior, such as the “informal contract” the operator has with his superior, the culture of the Sales department and the culture of the firm, the comparison with the situation of fellow operators in the firm and in the industry, or the emotion provoked by the fact that a colleague has been fired because he did not respect procedures.

For example, the “informal contract” may be that the superior will protect the operator if convinced that he has done his best. The culture of the Sales department may be that, whatever the higher levels of management may say, initiative and commercial aggressiveness are better than “bureaucratic selling”. The culture in the hierarchical system may be that each manager with a problem tries to save his head by having the blame for bad results be attributed to his subordinates. The emotion provoked by the fact that a colleague has been fired may induce an operator to develop self-protective behavior which will last for years, and persist even if conditions have changed. Explicit declarations by superiors may not always be believed. Even if the operator believes that his superior is sincere, he knows, or feels, that commitments may be breached if the pressure coming from higher levels is too intense.

Such ambiguous situations appear each time the present or future organization is not clear, i.e. they are always present to some extent.

Figure 10 below presents an organization which is a hybrid between a project adhocracy and a structure based on competencies.

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68 The expression “hybrid organization” is sometimes used with a meaning different from the one seen above. Some authors use it to designate structures within which several modes of grouping activities into units are used simultaneously (organization by regions, organization by types of client, etc.). Others use it to designate all types of economic organization which are not pure market, pure hierarchy or pure “clan”.

69 Of course there are numerous examples of cultural behavior, emotional reactions and informal contracts apart from the ones mentioned here. The informal contract is linked to the confidence relation between superiors and subordinates.

70 On these topics see March and Olsen (1976) and Romelaer (2002d). On the importance taken by procedures, emotions, and social settings in the rationality of actors put in ambiguous decision situations, see Romelaer and Lambert (2002). In fact, ambiguity also plays a role in organizations which appear to be clear. Crozier (1969) thus has shown that in clearly mechanistic organizations of the public sector, the superior may have increased power over his subordinate because he can make exceptions to the rules.
Figure 10  
**Organization by projects and competencies**

In organizations by projects which function as adhocracies, each project is conducted “to order”, according to the particular problems and opportunities: the planning and the distribution of work, and the method to be used to perform each part of the work, are determined as the project develops. Frequently, the initial project specifications must be somewhat (or substantially) modified as unforeseen problems and opportunities appear. In such organizations, parts of the work are often reinvented, although in the past the firm has met - and solved - similar problems in other projects.

In classical adhocracies, this type of problem is treated very partially, with improvised means: during recruitment of team members, the project manager informally tries to take into account the previous experience of the candidates, notably on similar projects. And, when during project work one meets difficulties which look somewhat similar to an already solved problem, one tries to contact members of the project team which solved this problem.

Some firms have begun developing means which allow improvement with respect to the above inefficiencies. Such is the case for a large-scale firm active in liquefied gases, which we shall name Gaslic.

Part of Gaslic's activity consists in the design and construction of gas liquefaction units for industrial clients with different needs. Each project is conducted by a team according to specifications. As an overlay to this organization by projects, Gaslic created an additional structure which is of interest to us. So called “competence groups” have been developed on several domains, such as technology, process, exploitation, project development, etc.

The process competence group includes the people active in the field, and likewise for the others. Group members work to collect, systematize, and diffuse knowledge on the domain, with a heavy emphasis on the knowledge gained and developed during project work. On its domain of expertise, the group will conduct the analysis of each completed project and collect information on problems met, solutions developed, trials made and errors committed, findings and inventions. All these data allow collective progress in the domain of expertise of the competence group, after they have been systematized, and integrated into the already possessed stock of knowledge. The updated knowledge may then be diffused through training sessions, and brought to ongoing projects through advice and internal consulting: members who meet a problem may call on colleagues from the competence group who have more knowledge than themselves on the particular type of problem. The idea is that each group member becomes temporarily an assistant on problems and solutions he or she recently met (during project work, during the *ex post* analysis of a project, during a training session). Hence the idea is not to develop specialization in the competence group, nor for a subset of active competence group members to become full time internal consultants on questions relative to one domain of expertise. Expertise is systematized and shared as fast as possible. The activity in the competence group takes only a small part of working time for each group member: at each moment, most group members are working on projects.

Gaslic has a second organizational innovation: the firm requires that all people involved in sales and in negotiation with clients enter into a formatted data base all useful
information they may gather which could help future negotiations. This permanently updated data base may be consulted by all the people concerned, wherever they are in the world, when they meet a difficulty or face an uncertain situation.

The two “organizational apparatuses“ described above support capitalization of knowledge. Competence groups introduce standardization of competencies, and the data base on sales negotiations is intermediate between standardization of competencies, standardization of results, and functional support\(^{71}\).

11) *Some old models of organization*

We presented above the twelve most common types of organization. Other types have been used in the past, which are often variants or incomplete models. We present below some of them. We say they are old models because they were identified more than twenty years ago. But to various degrees they still exist in practice.

**The Taylorian organization**

The Taylorian organization is named after Frederick Taylor, one of the first organization specialists at the turn of the XIXth century. The characteristics of this type of organization are as follows:

- the division of labour is done in such a way that each elementary task can be done by an unskilled worker.
- the division of labour is performed by specialists: workers do not participate in this operation. The specialists use “time and motions studies“ to determine sequences of gestures which optimize performance. More generally, there exists a sharp distinction between those who decide and those who execute.
- the operators' work consists in following procedures and respecting “standards“ on such questions as speed of work, dimensions of fabricated products and scrap rate. Salary and incentives are often based on the respect of procedures and standards, and on the surpassing of performance standards. Work relations and union activity is often heavily influenced by the negotiation about what will be considered as “fair standards“.

The Taylorian organization is a mechanistic structure.

**The hierarchical organization**

For most people, a “hierarchical organization“ is an organization where each hierarchical superior has total power over his or her people and all responsibility for the unit's results: he or she defines, allocates, coordinates and controls the work done by his or her subordinates. The model as presented above has an ingrained contradiction whenever the structure has at least two levels in the hierarchy, for example a plant with several departments, or a Sales department with several sales areas: it is impossible for both the middle manager and the higher level manager to have complete power over the organization.

Hence the notion of hierarchical organization is necessarily incomplete: it should be completed by the description of the process through which “broad directions“ given by higher levels are operationalized by their middle managers (then there is standardization of results), by the exchange through which higher levels calibrate their orders as a function of comments and suggestions made by subordinates (then there is mutual adjustment), by the

\(^{71}\) Part of the data on Gaslic come from Météis (1997).
great performance gain which accrues when subordinates may function “as usual“ because there exist some established habits, or “on their own“ because they know enough (then we have standardization of work processes or standardization of competencies). Hence to say that an organization is a hierarchy amounts to forgetting four coordination mechanisms which have been proved empirically to provide immense performance gains. It can also be shown that the notion of hierarchical organization is incomplete and mistaken in that it forgets the existence or various types of organization, and the importance of the eleven coordination systems presented in paragraph 8.

The staff and line organization

“Staff and line organization“ was the name given to the first structures which recognized the important role which people outside the hierarchy might play. These “staff“ people were supposed to be there only to advise managers, and “staff expertise“ was contrasted with “line authority“, the only authority recognized in this organizational model. The word “line“ refers here to the hierarchical line, and hence to the old Fayol (1916) idea that unity of command is a necessary feature of any successful organisation.

The “staff and line“ model of organization can no longer exist as before. Some reasons for this disappearance are as follows:

- staff people, even if formally confined to serving the hierarchy, progressively acquired non negligible power. That this was inevitable is well explained by the model Crozier developed much later (1969): staff people, since they have a competence not possessed by line managers or anyone else, control an “uncertainty zone“ and derive their power precisely from there.

- Mintzberg recognized that, under the same heading, “staff“ in fact comprised several very distinct activities (those of technostructure and those of functional support).

- organization scientists as well as practitioners progressively recognize that unity of command is not a necessary condition for efficient organization. The first organization science people were right in thinking that, when we look at an organization and at its management, a “unity“ of some sort must be maintained. They thought that this unity is in the hierarchy. It is now thought that the unity is in “the business“, i.e. in the raison d’être of the organization. And organization science discovered that performance may increase if the decision rights of the hierarchy, formerly presumed as total and not to be tinkered with, were decomposed in a coordinated manner into decision rights allocated to various people.

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72 Hence, most research published on “transaction cost theory“ is fundamentally false when it says that there are only three means to organize economic activity: market, hierarchy, and hybrids between the two. In fact we have seen in the present chapter that the organization cannot be seen as “a hierarchy".

We have also seen there are several types of organization. Some types may be better than the market and others have inferior performance. Anyone who claims that market is either superior, or inferior, to all types of organization is probably mistaken.

Transaction cost theory has attracted considerable scientific interest. See for example Williamson (1975, 1998). This approach brings us very useful considerations on the consequences of opportunistic behavior on organization, and on decisions about whether the firm should “make or buy“, or whether it should integrate vertically. The latter two elements have obvious consequences on the “frontiers of the organization“, a question not discussed here. Probably, what transaction theory has produced has still to be better incorporated into what has been presented in this chapter.

But, even if it is true that the hierarchy is very important, taking its existence into account is still not enough to know how the organization functions. It may be rightly said that the hierarchical relation is the framework within which the behavior of organization members take place. But giving the framework is surely not enough to know which behavior will probably develop. The present chapter deals directly with such behavior.

73 Henri Fayol is, with Taylor, one of the founding fathers of organization science. He did not create a full blown model of organization, but offered a set of “management principles".
This conception is at the root of the diagnosis model presented in this chapter. A decomposition of decision rights which is “intelligent” and “well thought through” may bring improved performance, and we saw that it may go as far as granting circumscribed autonomy to baseline operators (for example in structures based on competencies, in structures based on results, or in adhocracy), as well as strategic initiative to middle managers or even to people situated lower in the firm (for example in ABB-type and Burgelman-type divisionalized structures). It can also be shown that the “staff and line view” is inadequate in that it does not allow the empirical recognition of the types of organization and coordination systems.

**Classical organizations**

Some authors contrast the “new forms of organization” they propose with so-called “classical organizations”. This appellation is mostly used to designated the hierarchical and the staff and line organizations, sometimes adding to them the organization by product, by function, by project, and the matrix organization which we shall present in Paragraph 13. Some other authors use the expression “classical organizations” to designate the five basic structures recognized by Mintzberg in his synthesis of the organization science literature (1979). Still other authors, mostly in the transaction cost theory, use this expression to refer to market, hierarchy, and clan. Some “laggards” even consider that the classical organization is the Taylorian structure, all others being called indiscriminately “post-Taylorian”. The reader is thus advised to be prudent when he or she sees the expression “classical organization”.

**The small and medium-sized firms**

It is frequently said that small and medium-sized firms are by nature supple, agile, flexible, reactive, and that the small number of people in them leads to easy communication, quick decisions, and a good climate. This folk theory is almost entirely false. First, this “model” only applies to simple structures where the top manager is a real entrepreneur, i.e. a man or woman who acts decisively to seize opportunities, to adapt to constraints and to mitigate threats, and who decides alone on all aspects of the firm’s functioning (these are Mintzberg’s entrepreneurial structures). These types of organization exist, but they do not form the majority of structures in small and medium-sized firms. For reasons we cannot detail here, the decomposition of decision rights presented in this chapter seems much more precise and empirically founded than the one classically used in agency theory (Fama and Jensen, 1983:303, as quoted in Charreaux, 1999:119-120). Agency theory considers that in all decisions two actors must be present: the agent should take care of initiative and of implementation, and the principal should have the ratification right (choosing among initiatives) and the control function. This conceptualization does not take into account the empirical realities which organization science has unveiled concerning the rich, complex, contextual, diverse and variable set of actions which have to be performed to reach a decision and to implement it. On this topic see Desreumaux and Romelaer (2001), Lambert and Romelaer (2002), Romelaer (2002c, 2002d). Because it does not take this knowledge into account, agency theory is unable to see that firms may be managed in the different ways which we recognized in our twelve forms of organization. It incorrectly equates “type of organization” with “type of legal structure”. Such is the case for example in Jensen (1998), where the modelization of the internal functioning of organizations is rudimentary, presumably because it does not take into account the knowledge produced by organization scientists like Lawrence and Lorsch, Woodward, Burns and Stalker, March, Mintzberg, Crozier, Perrow, Child, and many others.

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75 This description of the firm is also a myth used to justify legal, fiscal, and economic protection of the private entrepreneur, often identified with the main driving force of economic development. It is also used in the view of innovation as the main driver of progress (the small firm manager being the agent of Schumpeter’s “destructive creation”).
fact we have seen that many small and medium-sized firms are organized as structures based on competencies or on results, as adhocracies or as mechanistic structures. The inner functioning of these structures is quite at variance with the model given above. A fast-food restaurant, an architecture firm, and a start-up in biotechnology generally cannot have a simple structure and be successful.

Second, it may be observed that the climate is not always good and that communication is not necessarily fluid in small and medium-sized firms with simple structures. It is not uncommon to find an authoritarian top management, poorly tolerated by the workforce and by the middle managers, and to find conflict and jealousy between collaborators, who try to attract the boss’s attention, to obtain favors, and to have the blame fall on others whenever problems appear.

Moreover, simple structures are not all managed in an entrepreneurial manner, to say the least. If top management is overburdened, decisions may no longer be taken as decisively as would be required, and if it is mainly competent in technical matters, then the firm risks being poorly managed from a marketing and finance point of view. Simple structures may have a conservative and immobilistic top manager, who clings to old recipes for new problems, and whose competencies have been poorly updated over the past twenty years. Nevertheless, small and medium-sized firms all have a common characteristic. Whatever their type of organization, the smaller size allows people to know better what is happening throughout the organization, and hence coordination is facilitated, provided members are not too geographically dispersed. This may explain why family-owned small and medium-sized firms have on average better financial performance. But this is only on average.

12) Some recent models of organization

The recent models of organization we present below are not absolute novelties. We shall say that they are recent either because they were recognized less than twenty years ago, or because in our opinion they have important development possibilities even if they are not very much used at present.

The virtual organization

Some use the expression “virtual organization” to designate organizations which manage an activity mainly performed by people who are not employees of the organization. The number of employees of the firm may represent only 10% of the total workforce necessary to perform the activity managed by the firm. The organization is the small “pivot” of a large activity system.

Benetton had a structure of this type in the 80s: most production was done by subcontractors, most selling was done through franchisees. The firm kept some strategic productions for itself. It also kept a modicum of production to develop and update the production standards which it imposed upon subcontractors (hence standardization of results was used in managing them). The activities kept in the “core firm” were (1) selection and control of subcontractors, (2) animation of franchisees, (3) management of advertising and of brand image, and (4) product policy. Some of the coordination in the group was also produced by a deep, dense and long-lasting set of financial and personal relations in the geographical region where the firm was born. More recently, coordination in Benetton is also produced by computerized information systems and EDE (electronic

76 Besides selecting and controlling subcontractors, a virtual organization may also devote resources to maintaining and developing their competence, for example through the continuing education of their workforce (if not through interventions in their recruiting and personnel appraisal).

77 Using Granovetter’s terms, we can say that the organization was embedded into an intricate local social structure.
These tools allow management to have real-time information on which production lines have increasing or decreasing sales, and hence to re-route products from places where they do not sell to places where they do. These management tools also permit the automatic transmission of fabrication orders by the “pivot firm” directly to production workshops in subcontractors; this allows the delivery of goods in selling points around one week after an upsurge of demand has been detected.

AFS-Skandia, as described by Hedberg and Olve (1997), pushes the virtual character of the organization to a level rarely met elsewhere. This firm is a subsidiary of Skandia, which is a Swedish insurance company. AFS sells financial products, created by fund managers, to individual investors. It has around 60 employees, who serve around one million clients through numerous partners: partner firms are scattered around the world, and in total they have around 70,000 employees. Partners are periodically sent CD-ROMs containing information on products, sales training documents and videos, as well as videos to use on their portable computer to make presentations to clients. Partners may also use the firm’s computer system, which is accessible from anywhere in the world. Partners often communicate informally, exchanging information and helping each other. Hence coordination is by and large produced by standardization of results and by standardization of competencies, with some amount of mutual adjustment. CD-ROMs also play the role of functional support. It may be said that the firm’s raison d’être is to sell knowledge, products and a management method.

Structures of this type are more and more numerous, thanks to Internet, intranets, and computerization. But to say that an organization is virtual is not sufficient to decide which management methods are best, nor is it sufficient to predict its performance, its potential dysfunctions, and its potential capacity of reaction to problems and opportunities (economic downturn, rapid growth, internationalization, etc.). For example, the level of standardization of competencies is much higher in AFS-Skandia than it was in Benetton in the 80s.

In fact, each of the twelve main types of organization we presented may be made more or less virtual.

A hospital organized as an SBC may extend its frontiers through tele-medicine, to the point of contributing to the treatment of patients a thousand miles away.

Concerning new-product development, adhocracies including members scattered around the world exist in companies as varied as DuPont (chemistry), Corning Glass (glass products) and Technip (engineering for large projects, including refineries for example). These are all virtual organizations, but they are very different from each other in terms of internal structure, management methods, workforce composition, and performance. Hence virtual organizations may function in many ways: they do not form a homogeneous type of organization.

**The network organization**

A network organization is an organization composed of fairly independent units which have at least part of their activity in common. The units may be legally independent structures, or all belong to the same group. In the latter case the network is a type of divisionalized structure different from the six we mentioned in paragraph 9.

There are two main ideas in the notion of network: a common action is decided only if each contributor agrees, and each member may withdraw from the network (although there are often rules which specify delays and property transfers associated with such withdrawals. Such rules are barriers to exit).
The network naturally has an “internal structure”, i.e. fairly regular methods or habits according to which the work to be done in common is defined, as well as the allocation of work among members, and the coordination. This structure often includes a specialization of members: thus in some Italian industrial districts, one of the member firms performs most of the export operations. Also, the inner structure often includes standardization of data to allow the coordination between the tasks done by members, and some level of standardization of work processes for the division of business. Various committees and other bodies intervene simultaneously in investment decisions and in the sharing of profits: besides a managing council (which functions with both formal and informal rules), there is often a dense net of intertwined interpersonal relations and informal subgroups. Actions common to all network members are often combined with a wealth of bilateral cooperations. The strategic apex of the network, i.e. the set of actions contributing to the governance of the network, is heavily loaded with mutual adjustment.

The network is thus, in principle, an “organization of equals“, in which hierarchical arguments may not be used to coordinate actions. In fact, some are “more equal than others”: either they control essential uncertainty zones, or they have a more central position in the communication and decision systems, or else they derive a leadership role from the competence they have and from the initiatives they take.

Examples of networks are to be found in industrial districts, in cooperation networks within decentralized divisionalized structures, and in some “grupos economicos” formed by Latin American firms (Granovetter, 1998). One can also find networks in any professional milieux, in the local economy, in the local elite, in pressure groups and lobbying forces, as well as among actors in any activity sector; final goods producers, parts producers, designers, distributors, etc. are all linked to each other.

The existence of networks is an additional indication that an organization is not simply “a hierarchy“.

**The learning organization**

Some specialists use the expression “learning organization“ to designate organizations which particularly develop individual and/or collective learning capacities. In our opinion, it is not really a type of organization: learning may take place in all types of organization. Each of the twelve types of organization may be made more or less a learning structure:

- a simple structure is a learning organization if the top manager always acquires knowledge, and reflects this learning in what she asks from her collaborators,

- a mechanistic structure is a learning organization if the Methods or Information Systems people produce procedures which reflect ever increasing understanding and competence.

The expression “learning organization“ is more aptly seen as a name for a heterogeneous set of organizations whose only common characteristic is that they are higher than the average in terms of learning. They may be very different in terms of structure. They may also be very different when it comes to the origin and to the nature of the new knowledge, and in terms of which members of the organization play a role in learning, or are affected by the learning:

- a mechanistic structure may learn more because Methods people develop new knowledge. But it may equally learn if top management periodically calls in academics to teach them up-to-date methods, or else consultants to tell them what they should modify in their approach.

- a mechanistic structure may be said to learn more if Methods people develop new methods, but also if they learn to adapt their methods to new productions, new regions or new markets.
- a mechanistic structure may also be said to learn more if operators learn how to use more procedures. And even there, it makes quite a difference whether management has an equalitarian policy (i.e. it tries to have each operator progress equally), a development policy (i.e. it tries to have each operator progress as much as he or she can), or an elitist policy (i.e. it tries to have 10% of operators who progress\textsuperscript{78}).

Hence, the expression “learning organization“ may have many different meanings. Even if one focusses on a subset among the learning organizations, those where all employees may learn and progress, and at the same time progressively develop more autonomy in the job, it is clear that such learning is possible in structures based on competencies, in adhocracies, in structures based on results, and even in mechanistic structures where operators are allowed to participate in the updating of procedures and methods.

The expression “learning organization“ is also ambiguous since many formal and informal organizational devices may contribute to learning, namely every device we saw in the coordination system dealing with competencies (Paragraph 8). Organization research has shown that learning goes much further than mere transfer of knowledge from someone who knows to someone who learns, followed by the application of the new knowledge to practical situations. Knowledge may be constantly improved through learning by doing (sometimes called “reflective practice“), which can be more or less individual or collective, spontaneous or directed, formal or informal.

Orr (1991, 1996) identified an interesting informal, collective and spontaneous learning organization. He observed a group of photocopier machine repair technicians. They were supposed to work according to procedures developed by the Technical department, but they did not use them because they did not find them usable. Each technician knows how to solve a number of problems, each problem generally being associated with a specific concrete situation\textsuperscript{79}. When a technician meets a difficulty he cannot solve, he calls a colleague, and they discuss possible solutions. The discussion consists in trying to apply to the present problem the knowledge gained in the concrete repair situations each of them has met. The solution is discovered through trial and error, mutual adjustment, and mobilization of the “stock of repair histories“ each technician has. When the solution is found, it adds to the stock of histories of repairs, which is partly individual to each technician, and partly shared. Such group behavior is called a “community of practice“ or a “competence group“ (the first expression is more often used when the behavior is informal, the second when knowledge development is managed, as in the Gaslic example presented in Paragraph 10).

The expression “learning organization“ is also ambiguous if it is not explicitly linked to a medium to long-term perspective, and to the objectives of the learning. For example, a firm going from one management fashion to the next may be called a “learning organization“ since it learns new things constantly. Such irreflective following the fashion of the day is not necessarily a good thing.

\textsuperscript{78} The elitist policy is currently used in several cases: (1) when the firm wants to identify the future first level managers; (2) when the firm wants to have 10% of polyvalent employees, to be able to withstand variations in the nature of the activity; (3) when the firm wants to split the workforce into a core group and a peripheric group. The core group members are induced to learn and they are offered good salaries and decent contractual stability. The peripheric group is not the object of much attention and investment from the firm. The number of employees in this group is adjusted up and down according to variations in economic activity.

\textsuperscript{79} This is called “grounded knowledge“ and “holistic knowledge“: what is known is not much associated with generic concepts and methods, it is associated with specific concrete objects, people and situations. The knowledge is composed of “histories of repair situations“, each history being a whole including elements such as the symptoms of malfunction, the type of use the client made of the photocopier, the nature and frequency of past breakdowns, the apparent care for photocopiers and equipment in the client organization, etc.
The “garbage-can“ organization

An organization is said to be of the “garbage-can“ type if there is ambiguity concerning what to do, how to do it, or who will do it. In other words, preferences are unclear or changing (or objectives are several), people may have different views about what should be done to reach a given objective (i.e. the “technology“ is fuzzy), and participation may fluctuate: a job may often be given to several people, or else people are fairly free to involve themselves or not in the various tasks to be accomplished.

In such circumstances, if a problem or an opportunity appears, the people involved and the way the task will be tackled crucially depend on the set of other problems and opportunities at the time the question is considered, as well as on the involvement of organization members in the other tasks and issues.

Empirical research has shown that garbage-can organizations regularly exhibit about twenty properties which allow us to predict some of their behavior (Cohen, March and Olsen, 1972; Romelaer, 1994b).

Admittedly, this description does not give us a complete “type of organization“, since it does not take into account the partial stability which exists in most organizations in terms of division of work, of objectives, of methods or habits for doing such and such a task, or in terms of governance structures, coordination mechanisms, and coordination systems.

But, though very incomplete, the garbage-can model does predict organizational events and modes of functioning which have been empirically validated in various settings like the top management group of a geophysics company with 6,000 employees, like international promotion and transfer decisions concerning managers in large firms, like the internationalization of telecommunication firms, as well as in universities and colleges80. There are reasons to believe that the model is also applicable in creative advertising agencies, innovative organizations, and most top management processes.

In fact organizations where garbage-can aspects play a sizable part are close to adhocracies, notably because of the intensity of mutual adjustment. But proximity does not mean that they are identical: adhocracies are generally subjected also to a kind of direct supervision (the project manager) and to standardisation of results (the project specifications in terms of cost, functionalities, and delay)81.

13) Bases for grouping activities and units in the organization

Present knowledge in organization theory and practice seems to indicate that it is necessary for organizations to group activities into job positions, and people holding jobs into organizational units, the grouping being stable over periods which may last from several months to several decades. Most of the time, each unit is headed by a full-time manager.

The way in which the grouping is done depends on the organizational structure. It also depends on the choice of one or two “dimensions“ along which the grouping is performed. This paragraph presents the advantages and drawbacks of the modes of grouping most commonly met in practice.

81 The interested reader may find developments on a special case of garbage can organization in Romelaer (2002c, see the part on the “political arena“ in the section on innovation in structures based on competencies).
**Grouping along one dimension:**

organization by function, by product, by type of client, by technology, by competence, by process, by “strategic business unit”, by “groups of assets”, by project, etc.

One of the most common modes of grouping activities is the one used in the organization by function, described in Figure 11 below.

**Figure 11**

The organization by function

A firm is organized by function if each department groups all persons and equipment dealing with the same part of the value chain. The most common functions are R&D, production, and sales. A function may be divided into sub-units dealing with smaller parts of the value chain. A production department may thus include units specialized in forge, foundry, finishing, machining, surface treatment, painting, assembly, tests, conditioning, etc.

The coordination between the functions is generally done through two mechanisms: First, norms are imposed upon “intermediate productions” of the various units (hence standardization of results plays an important role). Second, plans for production, sales, and other activities, are coordinated to insure a production flow with no bottlenecks and minimal inventory of “in process” parts. This planning may be done through a combination of direct supervision, mutual adjustment between unit managers, occasional adjustments made by discussion between operators, work by planning specialists, use of production software like MRP, use of Just-in-Time methods, etc.

Organization by function is not the only option available. Alternatively, an organization may be structured by type of client: specialized units are created to deal with individual clients (this is called BtoC, for “business to consumer”), to deal with firms (this is called BtoB, for “business to business”), and/or to deal with “large accounts”. Likewise, the structure may be organized by type of product, by technology, by project (we have seen this in the case of the adhocracy), and still other dimensions may be used for the grouping.

To describe an organization, it is very unsatisfactory to say simply that it is organized by function, by product, or otherwise. To understand how the organization works, what are its advantages and potential problems, as well as to manage it, it is also necessary to say how the work is organized in the units, and how the activities are coordinated within and between units. The functioning of the organization is for example very different if the units are mechanistic structures or adhocracies.

However, the fact that a firm is organized by types of clients, by projects, by processes, or otherwise, has an important consequence; it signals which management questions will usually be perceived and dealt with first, and possibly also best. If the basic units are groupings by types of clients, people working in one unit will have their attention permanently focussed on the type of client they serve, and they will become specialists of how to serve the clients in question.

At least six reasons explain the necessity of grouping people into units: (1) the need to control; (2) the need to coordinate, i.e. to manage interdependencies; (3) the need to maintain coherence, to have units which are understandable by their members as well as by inside and outside partners; (4) the need to manage, i.e. to plan work, to solve problems, to identify and to seize opportunities, to deal with incoming demands; (5) the need to economize: to minimize movements of parts, people and information, to abide by
technological indivisibilities, to reap the benefits of economies of scale; and (6) the need to confront uncertainties in the environment, particularly those which are crucial to the realization of the strategy.

Each of these reasons provides criteria which may be used, alone or in combination, to determine what is the best mode of grouping. For example the “client-centered organization” is very sensitive to the strategic imperative (n°6 above). The “organization by process” is very sensitive to the strategic and economizing imperatives (n°5 and 6 above). Another example is the method suggested by Mintzberg: first group into basic units activities which have “reciprocal interdependencies”, then take units which have “sequential interdependencies” and group them into departments, and finally take into account the “pooled interdependencies”.

The firm is not totally free in its choice of the dimension along which it will group activities into job positions and jobs into units. First, we saw in the diagnosis method (paragraph 7 above), that the choice is necessarily contextual and embedded. The advantages and drawbacks of a change depend on the probability with which it will be understood and accepted by the workforce, on the learning speed of the organization, on the competencies which may be found in the job markets, and on the reactions of clients, competitors, and other outside “stake-holders”.

Second, constraints exist which limit the choice, notably in technology and communications. An automobile constructor cannot afford to have a body-shop in each state of the US, or an assembly plant in each German Land. When it comes to communication, grouping geographically distant activities and people into organizational units was at best clumsy, if not altogether impossible, at the beginning of the XXth century. The situation changed a little with the telephone, telex and fax. The change we are undergoing with Internet and Intranet is much more radical. Companies like DuPont and Corning Glass already have project groups for the development of new products, whose members may be scattered all over the world. Hence NTIC (new technologies for information and communication) have substantially enlarged the degree of freedom the firm has regarding the mode of grouping of activities, jobs, and units. So-called “virtual organizations” may only exist thanks to NTIC.

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82 The interdependence between two activities A and B is reciprocal if A and B depend on each other (like plane repair and plane operations in air transportation, an example given by Mintzberg). It is sequential if B depends on A but the reverse is not true (assembly depends on machining, sales depends on production). It is pooled if both A and B share a common resource (investment budgets, company image, top management time, etc.). It should be noted that the nature of the interdependence is only partly “objective”. It is also sometimes a deeply rooted cognitive representation, and sometimes a management choice. In the personal computer business, Dell made a radical (and very successful) innovation through considering that production should follow sales, while competitors oscillated between programming the two together, and selling what they had planned to produce.

83 The reason may be found both in “technological indivisibilities” and in “economies of scale”.

84 These organizational innovations must be analyzed with the methods developed in the present chapter. For example the virtual project groups will function very differently depending on the mix of mechanisms they use for coordination: sequence of mandatory steps in the innovation process, power of the project manager, importance of mutual adjustment and of the three classical objectives (cost, quality, and delay, sometimes named “the Holy Trinity” in project members’ parlance). Hence introducing “intranet project groups” does not introduce a new world which rules out everything which had existed previously. Also, it must be added that sizable aspects of classical modes of functioning necessarily remain present. In DuPont's experience, intranet project groups with distant members do not totally suppress the need for “real meetings” where members are physically present: the number of plane trips and other travel is not reduced to zero, it is “only” decreased by 60% (Miller, 1997).
Any grouping along one dimension encourages coordination along this dimension and makes coordination more difficult along all the other dimensions. For example, if a mass distribution firm is organized by region, and if it has a handful of “decoration and design” specialists in each region, then it will be more difficult for them to maintain and develop top expertise in their activity. Decoration groups in different regions may also have a hard time coordinating with each other, and this may create problems since it is necessary for clients to recognize the “visual identity” of the firm. These difficulties come from the fact that the “function” (here decoration and design) is a dimension which is “transversal” with respect to the “region”, which is the basis for grouping.

One may consider solving the problem through grouping all decoration and design specialists into a single central unit placed directly under the Sales Vice President: the group of specialists will then have a critical mass allowing them to develop expertise, and they may be called on as needed by the regional and store managers. But this “produces” people who will be less knowledgeable about (and possibly less sensitive to) local needs and realities. Hence the choice of a dimension for grouping is more a question of balance than a question of optimization.

It may even be that, since each mode of grouping has drawbacks, the sensible attitude consists in changing the mode of grouping every five years or so: decoration specialists moved to a central department will progressively forget local realities, but they will nevertheless remember enough of them if they have worked in a regional office for five years in the fairly recent past.

Alleviating coordination problems created by a given mode of grouping may be done through several means, which are all by necessity partial solutions. We saw above the possibility of centralizing one function. Other possibilities exist, like using communities of practice (having decoration specialists meet periodically to exchange ideas about their practice), like the standardization of results (developing a visual chart), or like the standardization of work processes (developing a procedure for the decoration of a new store, and for periodic revamping of interior design). It is also possible to have one person whose mission is to coordinate along a “secondary dimension”. For example, product managers commonly have no hierarchical power: they are there to remind people in production, R&D, advertising and sales, that all actions taken with respect to a given product line need to have some coherence.

Some organizations take the question further, and organize simultaneously along two dimensions. These “matrix organizations” are presented below.

Many organizations are hybrids when it comes to the mode of grouping they choose. Three examples may be presented to illustrate this:

- Xerox has its production organized by product categories, but has a common sales force for all products, with regional sub-units, and some units devoted to different types of clients.
- Washing-powder producers have production facilities common to many products, but their sales forces are usually specialized by brand.
- In hospitals and clinics, one can find units defined by type of illness (thoracic surgery, endocrinology, nephrology, etc.), which is an intermediate mode of grouping between the organization by product and the organization by competencies, as well as units defined by

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85 The fact that grouping activities along one dimension makes coordination more difficult along all the other dimensions applies to all modes of grouping. For example, in an organization by function, sales activities are frequently performed for different types of products and different types of clients with different needs. Hence a uniform organization of sales activities induces problems for product management and for dealing with some types of clients.
the type of patient (pediatrics, gerontology, etc.), which is a mode of grouping akin to the organization by type of client.

Naturally each mixed mode of grouping has its own advantages and drawbacks: when a child with kidney problems comes to a clinic, it is not clear whether she should be taken care of by nephrology or by pediatrics.

**The matrix organization**

One calls “matrix organization“ a three-level organization in which, for example: (1) headquarters has product managers and regional managers as direct subordinates; and (2) the manager of each basic unit depends both on a product manager and on a regional manager, both of whom may give him orders. For example the managers for “household telephone“ and “business telephone systems“ are each responsible for their product lines all over the world, and the managers of “North America“ and of “Europe and Middle East“ are each responsible for all product lines in their respective geographical areas. Hence the manager for “business telephone systems“ in Germany has two hierarchical superiors.

All modes of grouping seen in the preceding section may be used to create matrix structures: products and regions as in the example above, but also expertise and projects, technology and products, etc.

Matrix structures have been adopted by firms which wanted to avoid dysfunctions which necessarily appear when a single mode of grouping is used to define the units. But working under two superiors is not simple, to say the least. Sometimes, one of the two dimensions dominates in practice: everything functions as if there existed a single dimension for grouping, with a dose of transversal coordination, and with frustration and conflict in addition. Also, astute managers of basic units may play each of their superiors off against the other, and lead them to neutralize each other. The basic units are then less coordinated than they would be if the structure were organized more simply along a single dimension: the putative solution in fact leads to regression. The most frequent case is however the one where basic unit managers are torn apart between two bosses who give them conflicting orders, from which there ensues a loss of efficiency and a good deal of unproductive stress. The “matrix form“ is in fact an incomplete model. To see how such an organization functions, it is mandatory to know how the basic units are structured, what are the coordination mechanisms and the coordination systems within and between units, and what habits develop when the “business telephone systems“ manager and the “Europe and Middle East“ manager do not agree on the pricing policy in Germany, for example.

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86 Such domination may depend on local conditions, for example if one of the two superiors is more competent or energetic than the other. The domination may also exist throughout the organization, for example if managers taking care of one of the two dimensions have an expertise which is more recent or less legitimate in the organizational culture.
References


