

PART I

A Systemic Approach to Organizational Transformation

As organizations grow more complex, the need for skilled leadership becomes greater. One of the important skills managers will need to develop more than ever before is the skill of applying systems. Seeing organizations as complex systems, learning how to think systemically, will help managers comprehend the complexity of organizations and make their management process more effective. This part of the book is dedicated to the theory and practice of systems and systems thinking.



Chapter 1

A Systems View of Organization

As an introduction to this chapter, we would like to use the old Indian story about the blind men and the elephant. The first blind man touched the elephant's side and said, "I think it is a wall." The second blind man touched the elephant's long trunk and said, "Oh, it is just like a snake!" The third blind man touched the elephant's smooth ivory tusk and said, "It's as sharp as a spear!" All three blind men perceived the elephant differently; depending on what part of the elephant they touched. We can say the same thing about an organization, especially when it grows large. Management and employees sometimes have difficulty comprehending the whole organization, and they mainly see it through the prism of their workplace. As an organization grows and becomes more global, more specialization occurs and it becomes more difficult to embrace and see the "whole elephant."

Management needs to make sure that every employee, regardless of what part of the organization he or she works in, can see the whole organization and feel that he or she is an important part of a larger whole. This will allow the employees to recognize that the purpose of their work is in context with and a part of the purpose of the whole organization, that their vision and goals are derived from and form a part of the organization's vision and goals. Obviously, this will positively impact on the organization's performance and make its employees more participative.

Management must learn how to see the whole picture of the organization, which is continuously changing. This will have an impact on the leadership style and the way the organization operates. In this chapter, we want to introduce some metaphors that can be used as prisms through which to see an organization. This may help you to better understand the meaning of an organization and to develop new forms of management.

1.1 WHAT IS AN ORGANIZATION?

You probably are familiar with the frog experiment frequently described by psychologists. When a frog was dropped in a bowl of boiling water, the frog immediately jumped out. But when the frog was placed in a bowl of room-temperature water that was gradually heated up to boiling, the frog was not aware of the dangerous situation. This experiment can be used as an analogy for the process of organizational changes that occur over a number of years. Because the process is gradual, we usually don't react to these changes quickly enough. The organization today is not what it was yesterday, and tomorrow's organization may be absolutely different. Knowledge managers need to periodically review their way of thinking about an organization and have a deep understanding of it to build an extraordinary organization.

It may sound naive to ask a person who has spent ten or twenty years in an organization, "What precisely is an organization? How does it work?" However, ask these questions and you will see that the answers will be different and contradictory; they will show that the majority of people think too simply about the concept of an organization. Because of this, there are a lot of chronic problems in organizations that are not getting solved, even though we work on them very hard. "Organization" has become an everyday term, but we don't always recognize that its meaning is continuously changing. Some authors have even suggested that because of continuous increases in business complexity, organizations will not work in the future. In the introduction to the book *Organization of the Future*, Peter Drucker wrote, "A good many writers, seeing all these changes and all this turmoil, are writing of 'the end of organizations.' That, however, is the one thing we can predict with certainty will not happen. . . ."¹ Certainly there will be a strong need for organizations in the future, but the writing about "the end of organizations" should be perceived by management as a strong signal that the meaning and purpose of "organization" will be going through a lot of changes.

To better understand how to shape today's organizations and ensure that they meet our future needs, it is not as important to seek the best definition as it is to find a way to understand organizations from different perspectives. As a result, this will allow us to become aware of new insights and to create a wide and varied range of organizational improvement.

In his book *Images of Organization*,² Gareth Morgan offers an interesting approach to the study of organizations by using metaphors. We at AMD adapted this approach as a way to analyze and improve our understanding of the concept of an organization. The study and application of Morgan's approach have allowed us to become more open-minded in the process of organizational transformation. In this chapter, we describe our view of the metaphorical concept of learning about "organization" and share some of our practices in this direction.

For most people a metaphor is regarded as a tool that helps us enhance the way we speak, but its importance is much greater than this. Metaphors greatly

influence the way we think, the way we see things, and the way we act. In their book *Metaphors We Live By*, George Lakoff and Mark Johnson wrote, “We have found . . . that metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature.”³ Because of this, it is very important to understand how metaphor works and where its power comes from.

We usually use metaphor whenever we attempt to understand one element of experience in terms of another. For example, when we say, “This manager is a tiger,” we place emphasis on the tigerlike aspects of the manager. The metaphor makes us see the manager in a distinctive, yet partial, way. In other words, by highlighting certain qualities of the manager, we tend to force other qualities into the background. As in our example, by drawing attention to the tigerlike strength or bravery, the metaphor makes us neglect the fact that the same manager may well also be a sloppy pig, a stubborn mule, etc. Our ability to comprehend a broader picture of the manager depends on our skill to see how these different qualities of the same manager can coexist and complement or contradict each other.

This way of thinking can be applied not only to individuals but also to an organization. For example, for many years we used to think about an organization as a machine. This metaphorical concept focuses our attention on an organization that is designed to achieve predetermined objectives and to run smoothly and efficiently like an oiled and well-tuned machine. Because of this kind of mind-set, we have developed a whole set of actions and behaviors that are influenced by the mechanistic way of thinking, moving the human part of an organization into a secondary role. The application of different metaphors to an organization will allow us to enhance the way we think and to broaden our understanding of the complexity and paradoxical character of an organization. Below we will see how different metaphors generate different ways of thinking, which in turn allows us to improve our way of designing and managing contemporary organizations.

1.2 SEEING AN ORGANIZATION FROM DIFFERENT PERSPECTIVES

In 1999 we held a series of seminars on leadership for AMD employees, with a total attendance of more than 500 people from different countries. One of the workshops conducted at these seminars was designed to demonstrate the influence of metaphors on the way we think. To do this, we divided the participants into small groups, supplied them with a list of metaphors, and asked them to think of an organization by using a metaphor selected from the list or one of their own. It was interesting to see how the selected metaphor rapidly formed the group’s way of thinking.

Each group started to think about an organization with categories that came from the metaphor they selected. For example, if they selected the metaphor

“organization as a machine,” their way of thinking about the organization was absolutely different than those groups who selected the metaphor “organization as an organism,” etc. The effect of the metaphor on the way people perceive the concept of an organization was demonstrated with the same strength in all five countries where we conducted the seminars.

Without pretending to make any fundamental conclusions from the data we collected, we believe that the results of this mini-experiment suggest that if an organization accepts a particular metaphor, whatever it should be, the metaphor will influence the way people in the organization think and act. For example, if an organization sees itself as a community, it will live and act as a community, using all elements inherent in a community. Because of this, it is very important to make sure that organizations use metaphors that conform to the internal and external environments of an enterprise and match the needs of the people who work for them.

A large variety of metaphors can be applied to different aspects of organization. However, here we will offer the reader a selected number of metaphors that we feel deserve more attention (see Fig. 1-1). Two metaphors—“organization as a machine” and “organization as a living entity”—will be described in more detail and compared with each other. We will only give a brief description of some other metaphors such as “organization as a symphony orchestra” and “organization as a community.”

1.2.1 Thinking of an Organization as a Machine

When we design, buy, or use a machine, we always know what we want it to do for us. We have a purpose, and we want the machine to serve our purpose. We tune it up, lubricate it properly, plug it in, and let it run. If something goes wrong, we fix it. If a part wears out, we replace it. If the machine starts giving us frequent

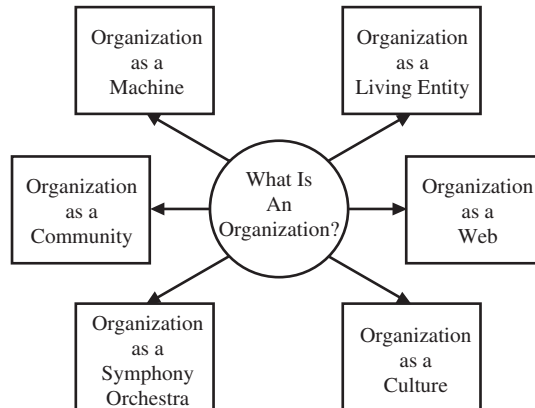


Figure 1-1 Some Metaphorical Concepts of an Organization

problems, we may throw it out and buy a new one. The same thing applies when we think about an organization as a machine. We design the product, establish the process, form the structure, hire and train people, and require them to perform according to policies and procedures. We know the input and expected output. We try to control the overall business processes, and if something goes wrong, we investigate and correct the problem. If a person is not performing properly, we try to “fix the problem,” and if this does not work, we replace the person. The purpose of the organization is to make money.

This is a simplified description of the mechanistic way of thinking that has driven many organizations since the Industrial Revolution. Russell L. Ackoff called this period “the machine age.” In his book *Creating the Corporate Future*, he wrote, “I believe we are leaving an age that can be called the *Machine Age*. In the Machine Age the universe was believed to be *a machine that was created by God to do His work*. Man, as part of that machine, was expected to serve God’s purposes, to do His will. . . .”⁴ This metaphorical concept—the universe as a machine—strongly influenced our way of thinking. We started to mold our world in accordance with mechanistic thinking. We started to see organizations as machines and people who work there as its parts. Gradually, our work became dehumanized. This created many problems that organizations have faced and are trying to resolve without recognizing that the source of most of these problems came from the mechanistic thinking.

This is not to say that the metaphorical concept “organization as a machine” should not be used. This is one of the oldest concepts, which has brought enormous benefits, increasing organizational capabilities a thousand fold. The problem is that by becoming mechanistically oriented, we act like machines and lose our focus on the human aspects of the organization.

To make a point here, we intentionally “purified” the image of the metaphor “organization as a machine.” In real life, organizations use a combination of different metaphors that make the whole organization less mechanistic. McDonald’s is a typical example of a mechanistic organization. All the facilities look the same. The product made in these facilities is also similar. Every franchise has the same set of policies and procedures, and they perform like a great machine. However, this does not mean that McDonald’s is not innovative and does not take care of its people. McDonald’s is also a great example that shows that it is possible in one organization to apply the mechanistic model in some of its functions and at the same time apply different metaphorical models in its other functions. The art of contemporary leadership is to tap the strength of mechanistic thinking and, at the same time, recognize its weaknesses and seek new ways to organize enterprises.

1.2.2 Thinking of an Organization as a Living Entity

Accepting the metaphorical concept “an organization as a living entity” introduces an absolutely new way of thinking that is in contrast with the mechanistic view. It is normal to think that someone owns a machine, but these days it

is difficult to imagine that a living organization has an owner. Living beings communicate with and learn from each other. They have their own purpose, which is linked with the organization's purpose, and they have their own vision, which is aligned with the organization's vision. The employees in a living entity grow together with the organization because they *are* the organization. Employees in a living organization are empowered to do their job. They cannot be controlled like machines. They also participate in the decision-making process and have their own identity.

The metaphorical concept of a living organization will lead you to think about it as a company that has members who subscribe to a set of common values and who believe that the goal of the company supports them and gives them conditions to achieve their own individual goals. Both the employees and the organization have the same driving motive—they want to survive. To survive, they need to grow and expand their potential. We could say that in a living organization there is an unwritten contract between the individual and the company that they will help each other to grow, reach their potential, and expand their working life span.

Using the metaphorical concept “an organization is a living entity” totally changes the viewpoint of the organization's purpose. As Arie De Geus wrote in his book *The Living Company*, “It probably doesn't matter very much whether a company is actually *alive* in a strict biological sense, or whether the ‘living company’ is simply a useful metaphor. . . . *Like all organisms, the living company exists primarily for its own survival and improvement: to fulfill its potential and to become as great as it can be.* It does not exist solely to provide customers with goods, or to return investment to shareholders. . . .”⁵ As you can see, Arie de Geus is emphasizing *survival* as the major purpose of any living system, including an organization. He says, “After all, you too are a living entity. You exist to survive and thrive; working at your job is a means to that end.”⁶ Seeing an organization as a living being is obviously a more progressive metaphor—a metaphor of tomorrow's organization that begins today.

1.2.3 Comparing the Mechanistic and Living Entity Metaphors

Now that you have a general understanding of the two major metaphorical concepts—mechanistic and living entity—we can describe and make a comparison of their strengths and weaknesses.

Let's start with the metaphor “organization as a machine.” This metaphor can be applied when the following conditions exist:

1. When we need to perform a straightforward task,
2. When we have a relatively stable external environment,
3. When the product has a long life span,
4. When precision is a very important component of the process,
5. When people feel relatively satisfied with performing simple tasks,

6. When the work does not require continuous innovation and a lot of creativity, and
7. When the job does not require fast and continuous learning.

In this kind of environment, the mechanistic approach works just great, assuming that the organization's mind-set is not based only on mechanistic thinking.

However, the environment for most contemporary organizations does not fit the seven points described above. Because of this, the metaphor "organization as a machine" is losing its popularity, and this is why organizations have started to look for other metaphorical concepts.

There are still other reasons why the machine metaphor is losing power. Organizations that have been influenced by this metaphor have difficulties being flexible enough and instituting timely changes under the influence of the external environment. Mechanistic organizations are more bureaucratic and have difficulties introducing innovation and creativity. They usually also have difficulties introducing such democratic concepts as empowerment, teamwork, and other forms of employee involvement. This holds true, especially when the percentage of knowledge workers in the organization is rapidly growing. Knowledge workers do not fit in well with the mechanistic approach to management.

Mechanistically structured organizations can have a dehumanizing effect on the employees, especially for the frontline employees who usually do the work. Such an organization fosters mechanistic thinking and creates an atmosphere of ineffective communication because of the multilayer organizational structure and the standardized procedures that cannot embrace all necessary rules and behavior (in particular circumstances). So what is the alternative?

Now, let's move to the other metaphor: "organization as a living entity." One of the major strengths of the living entity metaphor is that it brings management's attention to the fact that an organization is interconnected with its external environment—that it is an open system. In contrast, the mechanistic metaphor makes us think about an organization as a closed system where the connection with the external environment is ignored. From an open-system point of view, the organization performs as an ongoing process and its purpose is survival. From a closed-system point of view, the organization's purpose is focused on specific operational goals, for example, making money. It is important to emphasize the difference here. Survival is a process, whereas goals are end points to be achieved. Reorienting the management's attention from the end point goals to the survival process, and focusing their attention on the external environment (customers, competitors, suppliers, subcontractors, and other institutions), makes them more flexible and gives them a much broader view of an organization. Changing the management's mind-set from a mechanistic to a living entity view of an organization will allow them to see culture, strategy, structure, technology, and the human part of the organization as the interacting subsystems in a larger system—the whole organization.

In a mechanistic environment, management's attention is more focused on the internal environment, on tight control, on policies and procedures, and on standards and specifications. The human part of the organization is not strongly developed. The living entity approach also allows management to see a larger range of options when it comes to business improvement. This comes from the understanding of the existence of different "species" within the organization, which require different approaches to their well-being and development. Comparing the mechanistic and living entity metaphors from a humanistic, innovation, and creativity point of view, the internal environment of a living entity organization is more team- and project oriented, less hierarchical, and more humanistic than the bureaucratic environment in a mechanistic organization.

While describing the positive part of the living entity metaphor, we must, however, also pay attention to its limitations and weaknesses to make sure that there is no misinterpretation or overuse of this metaphor. One of the main limitations of the living entity metaphor is that it influences us to think about organizations and their environments in an excessively concrete way. Organisms live in a natural environment, and that environment determines the life of these organisms. The same cannot be said about an organization and its environment. People create organizations. They are products of people's vision, mission, values, and beliefs.

This suggests that the shape and structure of the organization is not constant and is more fragile than the material structure of an organism. The environment of an organization can also be seen as being a product of the employees' innovation and creativity because it is made through the actions of those who work in the organization. Because of this, it is incorrect to suggest that the organization alone needs to adapt to its environment. The view, derived from the living entity metaphor, that organizations depend on forces operating in the external environment undermines the power of organizations and their employees to create their own future.

A second limitation of the living entity metaphor is related to the assumption of "functional unity." If we observe organisms, we can see their functional interdependence where every element of the whole system works for all the other elements. For example, in a human body, all its parts—the heart, the lungs, the brain, etc.—normally work together to preserve the homeostatic functioning of the whole. In other words, the human system is unified and shares a common life. However, if we look at an organization, we can observe times when the different parts are not always as functionally unified as those of organisms. The living entity metaphor leads us to think and believe that unity and harmony, which can be seen in the world of organisms, can also be achieved in organizations.

One more limitation related to an organism's growth was noted by Russell L. Acroff in his book *Creating the Corporate Future*, where he wrote, "Growth usually occurs in organisms without choice. Nevertheless, purposeful systems [organizations] can deter or accelerate their growth by the choices they make. . . ."⁷

A third limitation must be considered when using the metaphorical concept of a living entity for organizational design. Living entities and organizations are systems that usually have purposes of their own. However, the parts of a living entity do not. For example, the parts of a human system (i.e., the heart, lungs, brain, hands, etc.) do not have a purpose of their own. The parts of an organization do have their own purpose, for example every division, department, and person in an organization has its or his own purpose. When we focus on organizations, we are concerned with three levels of purpose: the purpose of the system, of its parts, and the system of which it is a part, the suprasystem (see Section 17.2).

We can also find other limitations in the living entity metaphor, as we would continue to find when analyzing any metaphor. However, as we see from the comparison of mechanistic and living entity metaphors, the living entity metaphor suits the contemporary organization more precisely. Although there is still a place for the mechanistic metaphor, which can be used if the environment allows, the living entity image of an organization is becoming more and more popular and is establishing its powerful credentials as a form of organization.

Once again, it is important to emphasize the point that an organization should not base its philosophy solely on one “best” metaphorical concept. To better understand the internal and external environments of a particular organization and find the right ways to improve the organization, we need to use a variety of metaphorical concepts that will complement each other.

Below is a brief description of several other metaphorical concepts of organization.

1.2.4 Thinking of an Organization as a Symphony Orchestra

How would an organization look if it were designed based on a symphony orchestra model? In his book *The New Economics*, W. Edwards Deming described the meaning of a system by using a symphony orchestra as a metaphor. He says, “An example of a system, well optimized, is a good orchestra. The players are not there to play solos as prima donnas, each one trying to catch the ear of the listener. They are there to support each other. Individually, they need not be the best players in the country.”⁸ This comparison can also be applied to an organization, simply because an organization is a system.

A symphony orchestra has many properties that are similar to those of a modern organization. Even while the players compete for a name and a position inside the orchestra, there are strong elements of cooperation and collaboration. Each player has his or her own personal mastery, but the symphony can be performed only by working together as a whole organization. All the players complement each other and have the same interest—to perform the best they can to serve the listener’s (customer’s) needs. All of them play different instruments, like working on a different process, but the result is one piece of music at any given time. They collaborate and support each other.

The conductor's role is not so much to achieve control as to facilitate the players to help them attain the greatest cooperation and collaboration toward a specific interpretation of the music. The players (workers) have joy in the work they do. A lot of organizations are introducing elements of a symphonic orchestra into manufacturing life. The leader's activity becomes more like that of a conductor, more like the role of a mentor or facilitator. At the same time as growing high-level specialists, organizations introduce a team-based atmosphere in which the results come from all players working together.

Many scientists and practitioners have used a symphony orchestra as a model of an ideal organization. Peter Drucker, who has a significant influence on the way people think, also expressed his interest in a symphony orchestra as a metaphor of an organization. He wrote, "The prototype of the modern organization is the symphony orchestra. . . . The orchestra performs only because all two hundred fifty musicians have the same score. . . ."9 For an organization, "having the same score" can be related to having the same shared vision, purpose, values, etc. Of all the characteristics of a symphony orchestra, the most impressive in our opinion is the high level of coordinated effort. The interaction and the immediate feedback between the players are so complicated that they can be easily compared with those of a large corporation. However, the way a symphony orchestra achieves coordination may not be exactly the way a modern organization should act. Symphony orchestras do not access the full range of human potential. During the performance, the musicians are expected to perform only as directed by the conductor. Here it is appropriate to bring in another item related to metaphors—the jazz group. The leader acts as a member of the group, and leadership is often rotated among group members. This provides all the members with the experience of learning to be a leader and a follower—of listening and being listened to. Another peculiarity of a jazz group is that the leader faces the audience (the customers). He and his team constantly receive immediate feedback on how they are performing, so there is a continuous learning process going on. Being constantly in tune with the customer's voice is an important component of a contemporary organization. If, as in a symphony, the attention of the players were mainly directed to the score and the conductor, for an organization this would mean that work would be conducted only according to the policies and procedures and that workers would have to make sure they do what the boss says. There are other peculiarities that differentiate a jazz group metaphor from a that of symphonic orchestra. Both metaphors can be used to form a model of a contemporary organization.

1.2.5 Thinking of an Organization as a Community

What images would be evoked when using the conceptual metaphor of an organization as a community? At the seminar mentioned above, people had almost the same opinion about the mechanistic view of an organization. In contrast, when a dialogue on the metaphor of an organization as a community came up, their reaction was different. Some people talked about the contribution

of the organization to the outside world. Others perceived an organization as a community where the element of democracy is largely involved. Still others talked about team spirit and referred to highly initiative opportunities for learning, a higher quality of life, more cooperation than competition, etc. In general, the dialogue generated the greatest interest compared with those for other metaphorical concepts. Why?

In the last decade, organizations have displayed a great interest in such concepts as knowledge creation, self-management, cooperation and collaboration, entrepreneurship and intrapreneurship, and cross-functional teamwork. These and many other concepts related to involvement of people and their concerns about individual growth belong to the characteristics of an organization as a community. This is probably why people are so interested in this timely concept.

Introducing the metaphorical concept of a community certainly does not mean that organizations should ever replace existing “real” communities of interest. An organization will still remain an enterprise with its own purpose. However, this metaphorical concept can help to reshape the organization’s structure and make people feel as though they are working in a community.

As Daniel Kemmis nicely describes in his book *Community and the Politics of Place*,¹⁰ local communities were the places where people learned, through personal discipline and practice, the skills of local participation and the meaning of the common good. Organizations can best serve their own interest by becoming “practice fields” for the skills that will lead to more democratic and collaborative behavior than that which has characterized corporate life in the past. Linking community practice with the organization’s experience is a way of linking the individual to a larger space of interest. This would help to develop both the business and the society by establishing a larger purpose and shared meaning. An organization as a community is a metaphor that reflects not only the needs of an organization but also the needs of our society.

1.2.6 The Web as a Metaphor of Organizational Architecture

In her book *The Web of Inclusion*, Sally Helgesen used the web as a metaphor to express the architecture of a contemporary organization that fits today’s requirements. She wrote, “In architectural terms, the most obvious characteristics of the web are that it builds from the center out, and that this building is a never-ending process. The architect of the web works as the spider does, by ceaselessly spinning new tendrils of connection, while also continually strengthening those that already exist. The architect’s tools are not force, not the ability to issue commands, but rather providing access and engaging in constant dialogue.”¹¹

This metaphorical concept clearly describes an architectural design suitable for a high-performance organization. It also describes the role of the leader as an architect and the tools the leader should use to successfully maintain and continuously develop the organizational “web.” In describing the leader’s role in architectural terms, Helgesen notes, “. . . Such an architect recognizes that the

periphery and the center are interdependent, parts of a fabric, no seam of which can be rent without tearing the whole. Balance and harmony are essential if the periphery is to hold; if only the center is strong, the edges will quickly fray.”¹²

This thought is especially meaningful when we consider the growing tendency of globalization. For example, AMD as a global organization is continuously developing its periphery by building subsidiaries in other countries (see Part III, *Managing in a Global Environment*). At the same time, AMD enhances its corporate capabilities and maintains the necessary balance and harmony between both parts.

These days, we can clearly observe a gradual tendency toward replacing the old organizational architecture, which was based on the hierarchical concept, with a new architecture that reflects the metaphor of a web. Seeing the organization as architecture is another way of seeing the pattern of the whole. This way of seeing organizations complements the concept of systems thinking and seeing the organization as a complex system, which will be described in Chapter 2.

Conclusion

The metaphors we have just described allow you to see organizations in a different light. You probably have your own metaphors that you use to form your own view of the organization. Which is the best one? There is no best one. Each of them has its good and bad points. An organization is too complex to be related to only one metaphor. As a leader, you can select one major metaphor that most fits your mental model and introduce it to your people to help them understand your way of thinking. This main metaphor can be selected as a basis to create or redesign your organizational model. But because every metaphor has its limitations, and some “bad” metaphors have good elements that you might like to introduce, we would recommend that you use all kinds of metaphors as tools to share your thoughts. Making metaphors a way of expressing thoughts has been proven to be very effective.

1.3 THE LIFETIME OF AN ORGANIZATIONAL SYSTEM

Using a living system as a metaphor of an organization, we should say that its major purpose is survival. To survive it needs to grow, and to grow it needs to adjust itself to the external environment. The form of adjustment also depends on the age of the organization. This is why we can see different types or “species” of organizations that can survive in different environments. Just as we can find a camel in the desert, or a polar bear in arctic regions, we can find different species of organizations that survive and grow in different environments. However, there is at least one major peculiarity that differentiates an organizational system from a living system. A living system independent of how well it adapts itself to the environment has a definite lifetime. Sooner or later it must die. An organization, if well managed, can live forever.

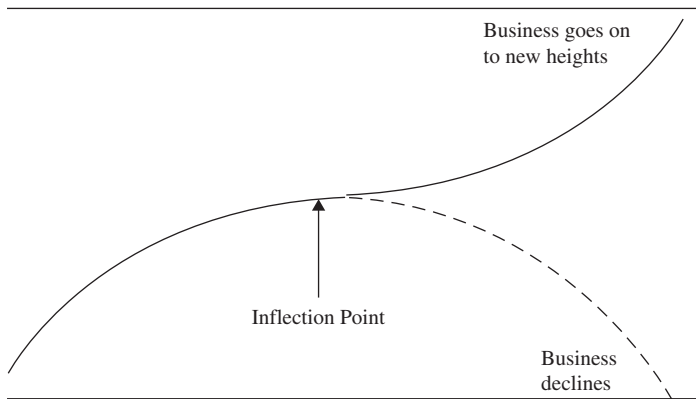


Figure 1-2 The Concept of the Inflection Point

Source: From *Only the Paranoid Survive* by Andrew S. Grove, copyright © 1996 by Andrew S. Grove. Used by permission of Doubleday, a division of Random House, Inc.¹³

This is the right time to introduce the inflection curve concept as described in Andrew S. Grove's book *Only the Paranoid Survive*. An inflection point occurs where existing strategy and structure of the organization dissolves. Here an organization has two options. One is to inject new life with the introduction of new products, technologies, structure, and strategy; the other is to let the organization's business gradually decline and finally disappear as an enterprise. In real life, management does not see the inflection point as we see it in Figure 1-2. The art of management is to foresee the time when the peak will occur and act accordingly on time. There are symptoms and signals from the external and internal environments that management can pick up. Management needs to learn how to listen to them, know how to decode them, and be ready to act and take off for new heights. For example, one of AMD's inflection points was reached in 1999. At that time, the corporation was ready to make a significant change in technology, and launched a new microprocessor, AMD Athlon™ microprocessor, which made AMD a sustainable and significant player in the microprocessor field (AMD Athlon™ is a trademark of Advanced Micro Devices, Inc.). It is quite possible that an organization could miss the shared time period when there is a chance to take off for new heights. An organization must always be ready for an "organ transplant" in the existing system. Separate organs (products) may decay and die, but if there is a culture that allows the right replacement of the old products, the organization will continue to live and grow forever.

1.4 GROWTH AND DEVELOPMENT

What is the meaning of development in relation to an organizational system or an individual? Is there any difference between development and growth? What

is more important, development or growth? Are they dependent on each other? The aim of this section is to elaborate on these issues.

When we talk about “development” and “growth” we usually use these two terms interchangeably, as though they have the same meaning. Actually these two processes are different and are not dependent on each other. For example, a musician or an engineer can develop without growing.

The importance of understanding the difference between these two terms is more than just a matter of semantics, because taking these two processes as the same thing can negatively influence the way management thinks and acts.

Sometimes organizations take actions toward their development, but in actuality these efforts are directed at organizational growth. For an organization as a system to grow, it means to increase in size or the number of employees. For example, when one organization acquires another organization, it may grow in the number of employees and the size of its revenue. From a career perspective, for an individual to grow usually means the growth of his position in the organizational structure.

In contrast, development is an increase in capability and competence. Development of individuals and organizations is a matter of acquiring new knowledge, and it is more a matter of learning than earning, even though learning and earning are usually interrelated. Becoming a knowledge worker is an example of development. Being given the right to work in a team that is usually involved in serious projects is another example of development.

When AMD came up with its faster microprocessor, AMD Athlon™, that was an example of development. In addition to technological or scientific development, which increases the organization’s competencies, development is also reflected in the quality of working life it provides for its employees. This is why, when an organization is included in the list of best companies to work for, it is evidence of organizational development. A well-developed organization can do more with its resources than one that is less developed. There is no shortage of examples where organizations with fewer resources invested in R&D came up with greater results than competitors who spent more on R&D. This is not to say that the amount of resources available is irrelevant. Having the opportunity to invest more money can certainly accelerate the development of an organization.

The point we want to make is that an organization that is better developed can generate greater results from the same amount of money as that spent by a company that is less developed. The same point also applies to individuals. A well-developed individual knows how to spend money more wisely and more effectively.

Growth and development do not conflict with each other. They can reinforce each other. The best evidence that the two processes—growth and development—reinforce each other is when we observe a simultaneous increase in the standards of work and quality of life for the organization and the individuals who work there.

To summarize, we would like to emphasize again that growth and development are two independent phenomena, but at the same time, they can reinforce each other. A lack of resources can limit growth but not development. However, the availability of resources can accelerate development.

1.5 SHAPING THE ORGANIZATION'S ARCHITECTURE

“We shape our buildings: Thereafter they shape us.”

*Winston Churchill*¹⁴

When we think about continuous improvement, we usually think about changing the manufacturing process, buying new equipment, reorganizing the organization's structure, etc., all of which will improve product quality, reduce cost, and delight the customer. However, another no less important area of improvement is organizational architecture, which influences the relationships of all components in the organization. This section provides another view of the organization and the relationship of its parts.

1.5.1 Thinking Differently about Organizational Architecture

By organizational architecture, we mean the pattern of interconnectedness of all soft and hard systems that exist and function in an organization: its plants and subsidiaries, its information systems, its material distribution systems, its documentation and policy systems, its education and communication systems, and the managerial and leadership philosophy that guides the whole organization. The interconnectedness and interrelation of all systems and subsystems form an architecture in which the whole is always greater than the sum of its parts. These days, a new approach to designing an organizational architecture is required.

If you compared a number of organizations to find out which is the best, you would probably see that all of them have almost the same set of systems. All of them have planning in finance systems, material supply and control, information systems, operations systems, etc. If you could go inside those organizations, you would probably not see a big difference between them. If they are from the same industry, they have similar process flows, equipment, etc. But there is an invisible architecture that makes a difference. It is like the effect of a kaleidoscope: always the same parts, but they form different patterns when you rotate the kaleidoscope and form new interconnections of the parts, and the effect of the whole is always greater than the sum of its parts.

The changes in the internal and external environments strongly require organizations to change their way of thinking about organizational architecture. This is because of the tremendous change in technology, in the customers' perception of quality, in the way people think. Knowledge workers require different relationships, different forms of management and motivation. As Trudy and Peter Johnson-Lenz write, “We are now laying the foundation of

a new social architecture made of fiber-optic cable, silicon chips, high-speed switches, display screens, and software through which digital information travels as pulses of light. . . ‘Reach out and touch someone,’ ‘the information superhighway,’ and ‘We bring the world to you’ are literally becoming true. Every day millions of people worldwide use the Internet, an early version of the electronic global brain that connects our small planet.”¹⁵ As you see from this extract, the architecture of the world is rapidly changing. Should we also think of rapidly changing or shaping our organizational architecture? Many years ago, we started to change the old architecture that was based on linear thinking, pyramidal and hierarchical thinking, and creating boundaryless organizations. We have made some progress in changing the way we work and communicate. Cross-functional teamwork, information technology, and telecommunications have also influenced the way we think about an organization. Nevertheless, there is still a long way to go before we start thinking systemically and globally and learning how to see patterns.

Just as the architecture of buildings is different all over the world, our organizations will differ from each other. Just as the architecture of cities is influenced over time, organizations are also impacted by the requirements of time. However, there are always some major principles that underpin the architecture of a contemporary organization. To succeed and stay in business, organizations must continuously follow the requirements of time and keep their architecture adapted to contemporary requirements.

1.5.2 Three Major Principles that Underpin the Organization’s Architecture

There is no one way or one set of principles that can be recommended as a guideline for creating a successful organizational architecture. Every organization has its own needs and specifics, and the architecture should be designed in such a way that it feeds those peculiarities. However, there are always some principles that seem to fit most organizations. In their book *Dynamic Manufacturing*, Robert H. Hayes et al. identified a few major principles that underpin the architecture of a world-class manufacturing organization.¹⁶ Our studies and observations of a number of organizations from different countries allowed us to incorporate those major principles in the architectures of the Manufacturing Services Group (MSG) organizations, because they coincide with the MSG philosophy and objectives in creating extraordinary organizations. Below is a short description of these principles, which in our opinion deserve the reader’s attention.

The first principle is that an organization’s main purpose is to *increase value* for the ultimate customer. Focusing on process improvements, which finally results in an increase of value for the final customer, means continuously searching for ways to reduce non-value-added activities that will result in a reduction of scrap, rework, additional inspection, testing, etc. This principle reflects Taguchi’s philosophy, which requires the continuous reduction of deviations from the customer’s target that causes losses to society (see Section

13.2). In other words, continuous improvement efforts should be oriented on value creation through the elimination of all kinds of waste, independent of whether these measures are undertaken by the supplier or by the customer.

The second principle is *strict discipline*. Here the term “discipline” has a special meaning. It is related to the issue of keeping the promises made between people, departments, and other groups. This includes promises made by the supplier to the customer, promises made by one division to another in the same company, etc. This principle may sound trivial, but if we analyze the reasons for all the problems within an organization, we will probably find that a majority of them stem from not keeping promises: the product was not shipped on time because the supplier overestimated his capabilities; the engineering department failed to make the necessary changes in the design on time; etc. The strict discipline factor is concerned with relationships that are based on keeping the promises that are made to each other. The absence of such discipline introduces a lot of unjustified losses and creates unnecessary tension in the system.

The third principle is *simplicity*. It has become an unwritten rule in AMD that every year engineers from every part of AMD get together annually and conduct a special session to reduce the complexity of our processes. We usually cover the walls of the conference room with paper to generate a dialogue on this subject, and we always end up with plenty of ideas posted on these pages. Considering the tendency of processes to increase in complexity, it is easy to imagine how complicated the processes would be if activities to continuously simplify the processes were not in place. Process simplification is not only a topic for engineering or manufacturing departments. It is a topic for every area in the organization where any activities are going on: in planning, finance, supply management, etc. Process simplification is a source of reducing variation in cycle times, quality levels, yields, setup time, etc.—a source of decreasing uncertainty in the manufacturing system.

The above-mentioned principles—value, discipline, and simplicity—should be the foundation of organizational architecture. Just as an architect designing a building needs customer information to ensure that the functionality of the building matches the needs of the customer, so does management need to ensure that the architecture of the organization satisfies the needs of the three principles mentioned above.

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