A review of
Structure in Fives; Designing Effective Organizations

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Abstract

This review of Henry Mintzbergs book is a part of my thesis literature study. Here I will review the essence of Mintzbergs work. He discusses the design and structure of organizations, finding several patterns and parameters that influence the organizational structuring. Among his most famous findings are the five organizational structures; The Simple Structure, the Machine Bureaucracy, the Professional Bureaucracy, the Divisionalized From and the Adhocracy.

1 Main message & purpose

'Designing effective organizations' address the situation in which all organizations exist. With an offset in essential organizational parts and actors, Mintzberg delivers an distilled and concise interpretation of collaboration mechanisms, power distribution and structural issues. The book is the product of Mintzbergs survey of available literature on the subject, he purposefully wrote the book for practitioners, thus making it a lot more comprehensible compared to much of the other work available in this field.

The book consists of two main parts, first a presentation and a discussion of the basic elements in organizational design. This builds up a foundation from which adjustment of key factors leads to the extraction of five basic structural designs in the last part of the book.

Throughout the book, Mintzberg notes how the number five is repeated in most of the key aspects. He defines five organizational parts, five coordinating mechanisms and five types of decentralization. Each of these topics contains a set of factors which influences the emerging structure. But as Mintzberg notes before starting to define the 5 key structures; 'There is no dependent or independent variable in a system, everything depends on something else'.

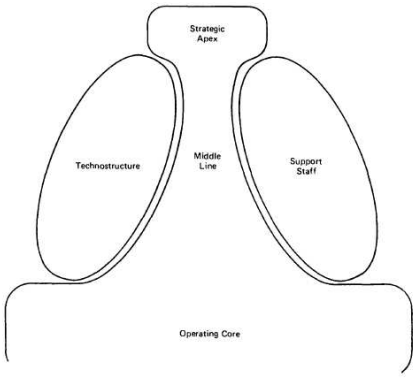

Figure 1: The five basic parts

This statement clarifies another final observation made by the author that, due to the inherent complexity of dealing both with people and complex systems, few real organizations fit into a distinct structural model.

2 A review of Organizational Design

Mintzbergs different groupings when dissecting organizations are; The different parts of the organization, coordination mechanisms, design parameters, contingency factors & organizational structures. In this review of Mintzbergs work, each of these areas will be touched briefly and some will be dealt with more thoroughly. But because a change in each of the elements can spawn massive changes in the rest, it seemed appropriate to include them all. But basically organizational structuring is primarily concerned with the division of labour and the coordination of work processes.

2.1 Dissection of an organization

2.1.1 Organizational parts

Figure 1 has almost become the trademark of Mintzbergs work. This structure embodies Mintzbergs definition of every organizations basic parts.

The Strategic Apex is the organizations head with the top managers and directors. They act as the head, or brain, of the organization, conceiving visions and strategic goals. Their primary job is to maximize the organizations return on investment.

The Middle Line comprises all the employees who delegate the work to the operating core in concordance with the lines drawn by the strategic apex. The height of the middle line typically depends on the size of the organization. The purpose of the middle line managers work, is

to manage the unit for which he has been given responsibility. Periodically he delivers performance feedback to his own managers.

The Operating Core includes all employees who directly works with producing the organizations products. This part of the organization is where the organization usually produces its business value.

The Technostructure represents the organizations analysts and specialists who define which techniques and tools should be used by the operating core, this is known as standardization. Because of this, they are not considered a part of the operating core. The technostructure can operate on all levels of an organization, depending on its type.

The Support Staff can include several groups of people in the organization, their primary purpose is to support the rest of the organization by ensuring them the optimal settings for doing their work. This description matches as varied groups as the employees who empty paper baskets to those who performs the organizations accounting.

2.1.2 Coordinating mechanisms

In order to achieve the targeted goal, every organization needs to complete a number of tasks. Usually tasks are interdependent or at least required to be of a certain standard. This all requires coordination, and again five possible solutions for doing this is presented.

Work can be *directly supervised*, typically through specific orders or one-to-many monitoring of the work processes. This usually means that every worker or group, reports directly to one manager. A manager may have to supervise several groups, increasing the span of control.

Standardization is the next coordinating mechanism. *Standardization of work* means that every work process follows a predefined path and a set of rules. *Standardization of outputs* sets up measures for the outcome of the work. And finally *standardization of skills* can be deployed to ensure that everyone has the same knowledge and qualifications. This implicitly should lead to the same result as standardization of both work and outputs, but is often used when standardization of these are not possible.

Finally, *mutual adjustment* lets individuals coordinate their own work. And as the mechanism name implies, communication between peers are the crucial activity which makes this possible. Because of its high level of cooperation, it is used equally often in both very small and simple organizations, and the very large and highly complex.

2.1.3 Design parameters

Mintzberg reviews nine different parameters used in organizational design, they are divided into four different groups.

Individual position design parameters
The bricks of all organizations are its employees, so how their jobs are designed and how they adjust to the organization has a high impact on the entire organization. The first of the three parameters in this category is *job specialization*, and can be done in two dimensions. Horizontal job specialization is the most dominant form as it defines the breadth of tasks assigned to an organizational position. Vertical job specialization happens when an employee both administers the tasks, and performs them. Changes in the job specialization parameter is known as either job enlargement or job enrichment, depending on the dimension the job is expanded in. If an employee simply is assigned more tasks, the job is enlarged, but if the employee instead is given more control over the tasks already assigned, the job is enriched. Obviously, job enlargement seldom generates the same motivation with the worker as job enrichment does. Jobs of complex nature, which is specialized primarily in the horizontal dimension is referred to as professional.

Behavior formalization is the second parameter in this group, it is basically a regulation of how the employee is expected to behave within the organization. Usually formalization is done either by the position, the work flow or by rules. In the end it is about ensuring control and reducing the uncertainties. Organizations known as bureaucracies uses formalization extensively as their main coordination mechanism. The less formalized and in effect standardized, an organization is, the more organic it is said to be.

The third parameter is *training and indoctrination* and this determines the extent to which skills and knowledge are standardized. Training is the process where job related skills and knowledge are acquired and indoctrination is the process of adapting to the organizational norms.

Superstructure design parameters
Organizational designers face the problem of structuring and distributing the man power and skills available within the organization. The two most obvious considerations they face are how to group these people, and how large the groups should be.

Unit grouping is a fundamental part of organizational structuring because this is the fundamental mean to coordinate work. Grouping has at least four important aspects; better supervision, sharing of common resources, common measure of performance and encouragement of mutual adjustment. So unit grouping can stimulate two of the most common used coordination mechanisms, direct supervision and mutual adjustment. There are several possible bases for grouping and Mintzbergs mentions the six most commonly used. Namely grouping by knowledge and skill, by work processes and function, by time, by output, by client and finally by place. Likewise Mintzbergs identifies four different criteria organizations uses for selecting their bases for

grouping, work-flow interdependencies, the work process, the scale of work and the social relationships present in the work. Most of these relates to efficiency and value-chain concerns, but they also take the personnel situation in consideration knowing that how people relates influences the success probability highly.

All these bases and criteria's points to two general groupings, by market or by function. Basing the grouping on function emphasizes knowledge, skill, process and function, and shows an primary concern for process and scale interdependencies. Whereas market grouping opts for work flow coordination and specialization, here the organizations structure will be highly influenced by the market it targets.

Besides the choice of how to organize the unit grouping, the *unit size* are also an important consideration. The unit size should relate to the used, or desired, coordination mechanism. The larger the unit, the harder it will be for the supervising manager to perform his/hers job. So large units will often be found in organizations using coordination by standardization, and most frequently in the operating core where the formalization is greatest.

Lateral structuring parameters
Mintzberg argues that it is necessary to consider not only the organizational superstructure, but also to think about how to ensure quality, stability and consistency within the organization. Two parameters are identified in this category.

Planning and control systems measure and evaluate the organizational system, its outputs and processes, to determine everything goes as planned or if tighter control is needed. This is a typical feedback loop which involves several parts of the organization. Two types of planning and control systems exist. Performance control focuses on regulation of performance and results of the monitored unit. The primary purpose of performance control systems is usually to measure and motivate, measurement can be based on financial, efficiency or throughput interests. Motivation comes from trying to live up to the performance goals, and reaching them. Performance control is often a key design parameter in market based structures.
Action planning is used when specific decision and actions are predetermined for the outputs. This makes it a lot more concrete compared to performance control. Due to this it is most often used in functional based structures. But it is also often seen used when the organization is in a state of crisis and it needs to stabilize its structure and production.

Liaison devices are another way of implementing planning and control through mutual adjustment. They provide connections between different parts and units within the organization. This device is often used when there is a lot of communication between these positions and going through the normal vertical channels simply is too inefficient and tedious.

Decision making parameters
Decisions, depending on their influential range, are closely coupled with the concept of power. So determining who makes decisions in the organization, is essentially a mapping of power.

Mintzberg includes a depiction of how control is spread out over a

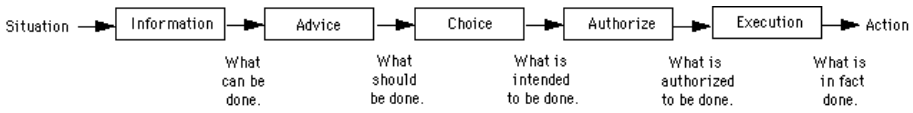

Figure 2: The five basic parts

continuum of the decision process. The decision process breakdown illustrates how power usually not rests at a single position, although we tend to regard powerful positions as the places where the red or green light is given. But this is strictly formal power, a lot of the decision process also involves informal power. The 'Choice' and 'Authorization' steps is gripped by formal power, whereas the 'Advice' and 'Execution' of decision is influenced by informal power. Managers may dictate certain actions, but in the end the workers could ultimately disregard these and do it their own way.

Distribution of organizational power is the centralization/decentralization problem. If the decisions are made by a single person or group, the organization is strictly centralized. Often, mainly because of human limitations with grasping complexity and vastness, distributing the power yields better results. This solution is known as decentralization, and depending on the degree of implementation, it can have massive impact on several organizational aspects. Depending on how power is dispersed, decentralization can become either horizontal or vertical. The power distribution is at the same time determined by the structure, and influences it. But decisional power tends to rest at the level in the organization where the necessary information is needed.

Most people are motivated by a sense of responsibility and the ability to decide, at least, over themselves. So decentralization is closely related with the popular term empowerment used in today's organizations.

Decentralization can be divided into two categories; Selective Decentralization happens when power over different kinds of decisions rests in different parts of the organization, and Parallel Decentralization is when decisional power for many kinds of choices are placed in the same part.
When the organization is being vertically decentralized, decisional power is delegated down the line of authority, from the Strategic Apex all the way down. Horizontal decentralization is basically the shift of power from managers to non managers. Depending on the organization's demographic composition, horizontal decentralization brings power to

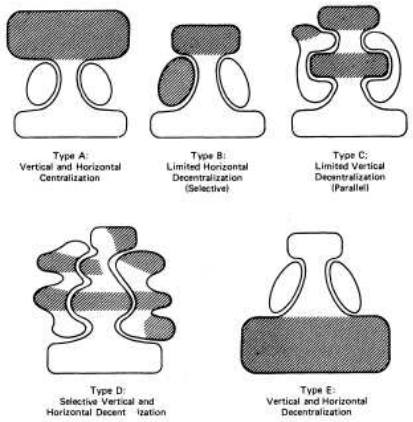

Figure 3: Decentralization models

analysts, experts, owners and members.

Mintzberg uses these decentralization groups to define five types of decentralization, these are shown in figure 3. The shaded area indicate the parts special power in decision making, to their relative size in the organization. The general pattern is that the more work processes are formalized, the more power is centralized in the groups or parts who define the work.

2.1.4 Situational factors

These factors form the idea that structure reflects situation. In other words that the organizational structure will be influenced by several factors of which some can be controlled and others can not.

Age and Size is the first factor mentioned by Mintzberg, often as organizations and humans alike age, they grow into a formalized rhythm. Leading to a standardized way of doing things, which may be deliberately chosen or a product of coincidence and habits. Size also typically dictates a level of standardization and formalization, typically because the coordination mechanism in large organizations often are based upon standardization.

The *Technical System* are the tools used to transform inputs into outputs. Mintzberg cites Woodwards three production types; unit, mass and process production. The production type used influences the span of control and how the organization is grouped. If the technical system is very regulating, it often leads to a formalization of the operating core and to a bureaucratic system. If instead the technical system is very sophisticated and difficult to understand and use, the operating core will become more professional, resulting in a more decentralized organization.

Every organization exists in a context, an *environment* they typically can not control. The environment is normally described by the following characteristics; stability, complexity, market complexity and

hostility. Stability often leads to centralization whereas a dynamic and complex environment forces the organization to decentralize and become more organic.

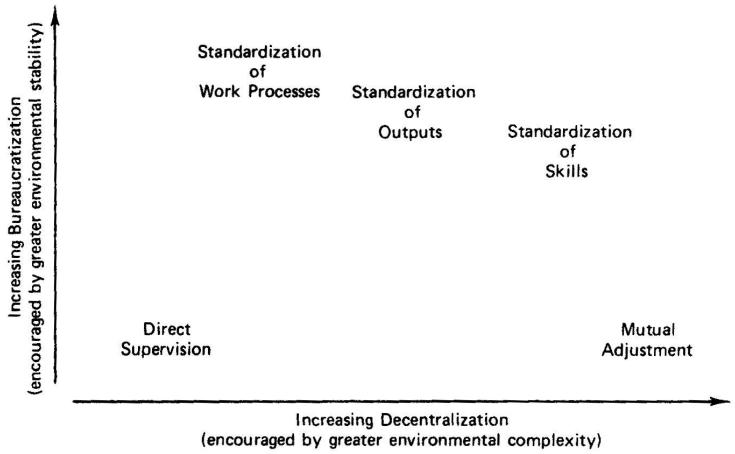

Figure 4: Coordination mechanisms based on decentralization and bureaucratization

Figure 4 illustrates the essence of several of Mintzbergs hypothesis. Namely how the different coordinating mechanisms thrives under different environmental circumstances. The more complex the environment is, be more decentralized the structure will be. And in dynamic environments, organizations tend to be more organic.

Power is the final contingency factor Mintzberg involves. The structure and coordination mechanism often reflects how power is enforced in the organization. External control makes the organization extra careful about its actions, leading to a higher degree of formalization and centralization.

2.2 Organizational archetypes

The five key parts in the organization, viewed isolated, tends to pull in different directions from one another. Depending on the parameters reviewed in the last section, and who dominates the pull, the emerging structure leads to five typical configurations. Each type has a prime coordinating mechanism, a key organizational part, some main design parameters and situational factors. These pulls are illustrated in figure 5.

2.2.1 The Simple Structure

This is the most basic structure, and is characterized by its lack of being elaborate, both in structure as it has no tech- or support parts but it

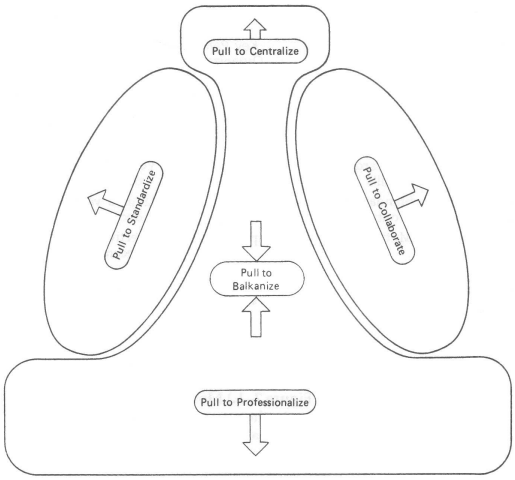

Figure 5: The Organizational pulls

usually also has very little formalization and standardization. The main coordinating mechanism is direct supervision by the strategic apex, which normally is very small often consisting of just a single person, thus making it the most important organizational part in this structure. Overall the organization is usually also very small, and often quite young.

The structure is highly centralized which, due to its size the organization is very flexible and adaptive, but because of the high importance and influence of the strategic apex, some confusion between strategic and operating issues can occur. The process tends to be highly intuitive and non analytical, hence the missing techostructure, and it often thrives on uncertainty.

The surrounding environment could at the same time be both simple and dynamic, and should it become hostile, other organizational structures have a tendency to revert back to the simple structure.

2.2.2 The Machine Bureaucracy

As the name implies, this structure can be described by a machine metaphor. Its work processes are highly defined, and each part has an explicit function which is a part of a greater whole. The Machine Bureaucracy and Frederick Taylor[1] are often grouped together ideologically. This structure is primarily recognized by the foundation of routine it imposes on its work processes. Tasks are highly specialized, and it has a sharp distinction between line and staff workers, all guided by strict rules.

Coordination is achieved by standardization, and no middle line in any other configuration is as developed as in this structure. Every mid-

[1]F. Taylor (1856-1915), American engineer known for his theories on improving industrial efficiency

dle line manager has three distinct tasks; to handle the disturbances that arise in the operating core, to act as a liaison with the technostructure analysts and propagate their standards to the operating core, and finally to support the vertical information flow in the organization.

Because of its reliance on standardization, the technostructure gains a large amount of informal power in the organization, this is mainly gained from the operating core. But the main power lies in the strategic apex, and the process of strategy making is definitely a top down affair. The Machine Bureaucracy is typically found in large mass production firms, especially when they grow old. The environment is usually very stable, which is convenient as this configuration is fundamentally non adaptive and has very conservative strategies. This structure is obsessed with control and it strives hard to eliminate all uncertainty, often even by trying to control the external environment. Conflicts are usually not resolved but just bottled up and suppressed.

The same characteristics that makes the Machine Bureaucracy strong, are also its Achilles heel. Because the operating core consists of employees which are under tight control and supervision always performing simple repetitive tasks, this configuration is often viewed as being 'inhumane'. The introduction of unions caused serious trouble for the management of Machine Bureaucracies, as it meant they potentially could lose control over one of its most important elements, the production facility.

2.2.3 The Professional Bureaucracy

When the work performed by the operating core becomes so complex that only the workers themselves fully understands its contents, they gain more control over the actual work processes. This move embodies the Professional Bureaucracy. This configuration uses coordination by standardization of skills, and is in effect the only organizational structure that allows standardization and decentralization to coexist. The standardization is closely related to the training and indoctrination exerted on the employees, and therefore largely lies outside the control of the organization itself.

The Professional Bureaucracy emphasizes the power of expertise and this is also one of its strongest technological assets. The use, and limitations, of expertise is called pigeonholing the problem at hand. This follows when the professionals work requires performing two basic tasks, first to categorize what the client needs and choose which template solutions fits the situation best, and then next to execute the chosen program. This makes diagnosis a very fundamental task, but it also reveals some of the problems Professional Bureaucracies face. Namely the situations where a problem does not fit into a known solution model. The high reliance on professionals also imposes as risk of getting employees who are incompetent or uncooperative.

Because of its professional workers, the operating core becomes the key organizational part, but it is usually supported by a very elaborate support staff. The middle line is very short, and if often populated by

professionals whom also participate in the operating core. The technostructure is very small and without importance. The Professional Bureaucracy is highly decentralized in both dimensions, but because the support structure is so large, a parallel machine like configuration sometimes emerges in this part.

As a consequence of the decentralization, the strategic apex is not that powerful, instead it is mainly concerned with handling disturbances in the structure, and ensuring the right resources for the professionals. Because the work requires difficult, but well defined, skills. The environment can be both stable and complex. Stable because the problem solved by the organizations are persistent, and complex due to the problems nature.

Finishing of the configuration description, Mintzberg states that its a fact that complex work cannot be effectively performed unless it comes under the control of the operator who does it.

2.2.4 The Divisionalized Form

Compared to the other configurations, Mintzberg chooses to spend extra attention on this organizational structure. Perhaps because of the global influence and power possessed by organizations of this type.

Like the Professional Bureaucracy, the Divisionalized From can be viewed as a set of near autonomous units contained within a larger superstructure. These units are controlled by a central management structure, often referred to as the headquarters. Each division within the organization can theoretically have different substructures, but in reality the divisions has a tendency to approach the Machine Bureaucracy as time goes by.

The managers of each division is given a certain amount of power, but he reports back to the headquarters, and in order to ensure an organizational valid measurement system, the coordinating mechanism has to be standardization of outputs. This is ensured by a performance control system.

So the Divisionalized Form configuration focuses on the structure between the divisions and the headquarters. Their responsibility is to handle the management of the strategic portfolio, the allocation of financial resources, design and implementation of the performance control system, appointment and removal of divisional managers. They also monitor the general divisional behavior as bad publicity and problems in a single division quickly can spread to affect the entire organization.

There are different reasons for structuring an organization by the Divisionalized Form. The prime reason is that the organization reaches a size where its value chain is partitioned and it gets harder to define the key product outcome. As the market diversifies, the organization spreads it activities accordingly and eventually the market based structure and diversification results in divisionalization. Running the organization as multiple divisions has several advantages; the first is the efficient allocation of resources, especially capital among divisions,

the second is that training of divisional managers is easier, thirdly it spreads the risk across several activities thus making the organization less vulnerable. Finally, the advocates of the Divisionalized Form says it makes the organization more strategically responsive.

Mintzberg provides counterarguments for many of these advantages, but in short he sums it up by stating that loose coupling turns out being more riskier than no coupling. Furthermore the performance control system which is the backbone of the Divisionalized Form, can also be one of its biggest liabilities. Maximizing performance and evaluating results from a strict, often economical related, set of variables, can cause the organization to disregard softer social issues which in the long run may harm the organization if left unrecognized.

2.2.5 The Adhocracy

When the environment is dynamic and the problems that the organization profits from solving are complex, the organizational structure has to be both very flexible and adaptive. Knowledge and skills are required to solve tasks, which because of their complexity often spans several problem domains. Therefore information is very valuable, and an uninterrupted flow of it, is crucial in ensuring the optimal solution.

These criteria fits poorly within the other configurations, so organizations living in this context often structures as an Adhocracy. This is a very organic structure with very little behavior formalization. Jobs are highly specialized horizontally, and the employees are professionals. Contrary to the other configurations, large parts of the organization are organized into ad hoc project teams which solve specific projects. This team grouping makes mutual adjustment the favored coordinating mechanism.

On a daily basis, the organizations work force may grouped into functional units, but if required by the managers, almost everybody can participate in temporary market based units. Intergroup coordination and communication with the strategic apex is done by the use of liaison devices.

Nobody in the organization monopolizes the power to innovate, and management typically does its best to ensure a setting that nurtures creativity and innovation. One of the primary tools in achieving this, is trying to let employees operate outside their normal expertise domain as this may spark unconventional ideas. Since innovation often is inhibited by patterns, the organization should try to avoid any use of standardization for coordination.

Several subtypes of the Adhocracy exists, the two most dominant are the Operating Adhocracy and the Administrative Adhocracy.

The Operating Adhocracy is characterized by a very large and very important operating core. Here client based problems are solved, and typically the administrative and operative work blends together in a single effort.This somewhat resembles the Professional Bureaucracy as it relies on its specialists. But where the bureaucratic approach is to

pigeonhole the problem into a solution, the Operating Adhocracy tries to find a creative and unique solution to each new problem.

The Administrative Adhocracy undertakes projects just to serve itself. Different from the Operating Adhocracy, this configuration keeps a sharp distinction between the operating core and the administrative component. The operating core is usually organized as a separate unit which is accessed by a boundary standardized by outputs. In some cases the operating core may even be non existent, totally outsourced to other organizations.

The strategic apex, although small compared to other configurations, plays an important role in running the organization. Because of its use of independent solutions and experts, projects are solved in a tense context where matters of opinion, personal politics and ideas often collide. Contrary to the Machine Bureaucracy, this tension is not subdued, but instead tried reverted to productive energy. Furthermore the strategic apex often acts as salesperson's and liaisons to the external environment, due to its high reliance of project based work, the future is not predictable and a steady flow of client projects is needed to ensure the survival of the organization. The high reliance on communication is also one of the potential problems Adhocracies face, the large amount of time spent on communication, both informal, written and in meetings, can eat up a lot of the available resources.

Over time, many Adhocracies tend to restructure themselves as Professional or even Machine Bureaucracies, typically because it starts focusing on a fixed product range instead of a dynamic one.

3 Conclusion

Mintzberg sums up his work in the final chapter with a discussion on the use of his theories and configurations. The five different organizational parts each pull in their own direction, and the part exerting the most forceful pull will indicate what structure the organization has or will develop in the future.

Settling with any of the configurations in pure form, although harmonic, is often unrealistic because of the mixed internal organizational pulls. A more feasible view is that of the hybrid structure where organizations structure themselves differently in the individual parts. Often the structure changes as the organization ages, Mintzberg identifies two patterns depending on the environmental context the organization starts in. Both environmental and strategy changes may drive the organization to a restructuring, but Mintzberg notices that the structural transitions often lag the new conditions that evoke them. This seems very reasonable considering the cost and risk of restructuring. Employees will generally be conservative regarding changes and some will likely try to resist it.

As an inspirational twist, the last pages in the book introduces a possible sixth configuration called the Missionary configuration. As the name implies, this configuration is quite different, it achieves coordination by standardization of norms. Membership happens by indoctri-

nation and the organization is kept together by its ideology. Although this configuration is not fully researched, it is often found in non-profit organizations. To some extent it is present in organizations that emphasizes an ethical and moral influenced strategy.

Overall, Mintzbergs theories are very useful tools in the process of understanding and analyzing organizational structure and behavior. Equipped with the five configurations, any organization can be mapped into the five basic parts. Understanding these parts and their present role within the organization, compared with the actual structure, gives an indication of the challenges facing the management and workers.

Let us end this study of Mintzberg with his reminder to organizational designers that there is no single structural variable that is significantly correlated with performance.