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Introduction

A Virtual Enterprise or Distributed Organization is by definition a group of people working on a common project:

- From different/distant places
- By means of Information Technology
- For a limited period of time (at the end of which they can be charged on a different task or project)

Although it nowadays represents a new field of study and analysis, this work is deeply dealing with the technical and cultural aspects linked to the experimented approaches.

On one side it will be described the reliability of the tools aiding the VE, trying to answer to the following question: ”Is this model of organization really applicable owning the right IT tools?”. On the other side it will be evaluated how the cultural binding (meaning the personal cultural attitude) could be a limitation or an advantage in the way to success for a Virtual Enterprise, answering to the question: “How the cultural behavior and background, over the availability of the IT tools, can influence the choices of any single member of the Distributed Organization?”.

This work will try to clarify the path run by the Organizations during the transition to the “post bureaucratic”, which means the overcoming of those

rules adopted by teams and organizations in order to build up protocols aiming to rationalize actions and make working behaviors reproducible within the activities.

The Weberian "ideal type", i.e. the ideal concept of organization is now brushed away and substituted by a new model, which involves the idea of flexibility and objectivity as main roots and which holds inside the technical tools simulating virtual environments under the shadow of the word "contemporarily" and "homologation".

Preface

The concept of organization has been studied from many different perspectives, and each has something to contribute to the development of models for studying the effects of information systems on social organizations. A common denominator of all these perspectives – the byologist's living system, the anthropologist's kinship structure, the sociologist's collectivity, the economist's firm, the management scientist's team, and so on – is the conjoint action of individuals undertaken to achieve common objectives.

This idea is a fruitful point of departure for the construction of a general framework for organizational modeling.

The notion of social organization is as complex as elusive as it is important. However many different perspectives there may be, most observers would probably agree that the basic elements of social organizations, as suggested by the idea of conjoint action of individuals engaged in a common enterprise, include members, relations, activities, and resources. Members may be real persons or abstract entities; relations come in many different shapes and sizes: there are relations between members, between members and activities, between members and resources, and between resources; activities may be differentiated into goal-oriented and non goal-oriented, and each of these may be further subdivided; resources may be dedicated or shared, and they may be owned,

managed, and used by different members or groups of members.

These elements can serve as the building blocks of a large class of organizational models. They can be used to define models based on mathematical theories such as probability and statistics, dynamic programming, classical analysis, and so on, as well as non-mathematical theories drown from a variety of disciplines.

There are infinitely many possible models for any phenomenon. The so called "black box" model developed in control engineering to represent and predict the behaviour of a system is but one of model. This model relies exclusively on the relationships between system inputs and outputs, and is completely indifferent to the internal composition and structure of the various components of the system. The balk box approach is very useful for many applications, but if one is interested in the internal structure of a system, a different approach must be taken.

The modeling approach allows for treating organizations as evolving rather than fixed entities. This is accomplished by handling structure a variable element. In other words, the representation of an organization's structure is nothing more than a "snapshot" at a given point in time. The structure is always subject to revision, pending additional information, and can itself be the object of study. This is essential for capturing the organizational impact of

technology, because the deployment of technical innovations rarely leaves the structure of an organization unchanged. What is more, it integrates in a natural way the process and structural perspectives of organizational analysis.

The notion of *virtual organization* is offered in the spirit of this modeling approach. It provides a framework in which to interpret the changes occurring in business today. We refer to variously as variously as a paradigm or principle to emphasize the lack of any specific organizational form attaching to it.

Virtual organization is most easily understood as a principle of management that as been used to advantage in a variety of applications, including virtual memory, virtual reality, virtual classrooms, virtual teams, and virtual offices (*Harrington, 1991; Mowshowitz, 1994, 1997*). Virtual memory enables the programmer to write code referring to storage not actually available in the computer. Virtual classrooms present students with possibilities for learning not actually available in a given class (*Hiltz, 1994*). Virtual teams allow managers to call on groups of employees who have no formal relation to each other (*Hammer and Champy, 1993*). Virtual offices allow employees to operate in dynamically changing work environments (*Giuliano, 1982*). These phenomena exemplify virtual constructs, sharing a common organizational principle very much akin to the defining characteristics of an algebrical system.

Virtual organization applies to goal-oriented activity. This includes much (but not all) of the activity undertaken by biological, social, and artificial systems. The philosophical foundation of virtual organization is a categorical distinction between needs and the means for satisfying them. This distinction make it possible to manage activities in a way that ensure systemic efforts to find the "best" match between requirements and satisfiers at all times. An analogous distinction plays a critical role in the organization of virtual memory computer systems. Here, logical (or virtual) memory constitutes the storage requirements referenced by the programmer, while the physical memory of the machine comprise the means for satisfying these requirements. The categorical distinction in this case allows the operating system to execute a scheme for optimizing the use of the computer's limited storage capacity.

Chapter I

1.1 - Virtual organization definined

The virtual organization paradigm will undoubtedly come to play a major role in the theory and practice of management. Now manifest in the operations of some innovative firms it is undergoing refinement and elaboration in a variety of context, and experience with it is accumulating.

The term "virtual organization" was introduced in the early 1980s and has been evolving ever since (*Mowshowitz, 1994*).

The vision conveyed by many observes of virtuality is one of unconventional social configurations whose structures and functions are highly dependent on computer-based information technology.

These configurations differ from conventional ones in being unconstrained by familiar spatial and temporal boundaries. Such absence of constraint gives rise to offices and classrooms "without walls" embracing activities distributed over space and conducted asynchronously as well as synchronously. In addiction, it facilitates the structuring of corporations with amorphous boundaries, both internal (between units) and external (between the company and the outside world). "Virtual corporations" have been described in terms of ever shifting job responsibilities and authority structures that permit extraordinary flexibility in modes of functioning, and responsiveness to the environment.

A typical characterization of the virtual corporation is based on the notion of *virtual product,* that is, " one that is produced instantaneously and customized in response to customer demand" (*Davidow and Malone, 1992*). The virtual corporation is depicted as an organization geared up to produce virtual products, one characterized by "just- in-time supply, work teams, flexible manufacturing, reusable engineering, worker empowerment, organizational streaming, computer-aided design, total quality, mass customization, and so on "(*Davidow and Malone, 1992*). This collection of features, found in various innovative firms that rely heavily on advanced information technology, equates virtual organization with specific corporate practices and structures. A list ("virtual checklist") of key features (*Malone and Davidow, 1992*) thus serves as a definition of the virtual corporation.

Whereas Davidow and Malone and others are looking to identify the main features of successful firms in the information society, we are concerned with a more basic question namely, what are *principles* underlying the features characterise of these successful firms. Like Adam Smith, we are not content merely to observe that technology allows for increased productivity; rather we seek to build a theory that can account for the phenomenon. As used here "virtual organization" denotes the main element in a tool kit for the design of organizations; it does not presuppose any particular form of organizations. In the language of knowledge-

based systems, virtual organization is a skin to an expert system shell, rather than an expert system.

The idea of virtual organization in not entirely new in that its defining characteristics can be seen in nascent form in a host of different settings. One such characteristics is the separation of conceptualization from esecution of tasks. Another is the use of objective criteria for the allocation of resources. What is new in virtual organization is reliance on the idea of separating needs from modes of satisfaction as a general principle, applicable to all the functions of management-one that allows for crafting structures that enable management to switch at will between different options for implementing an organization's requirements.

The intellectual origins of the concept developed here may be traced to three disparate fields, namely, computer science, foundations of mathematics, and international business. These fields have contributed the phenomena of virtual memory, metamathematics, and global management, respectively. Contemplation of the advantages to be gained through switching in virtual memory, the dependence of metamathematics on the logical separation of an object system from a metasystem, and the (almost certainly) unconscious utilization of switching by global managers, led eventually to the theory of virtual organization presented here. The theory is offered as an explanation of real phenomena in the world of business, not

necessarily as a prescription of how managers should or should not be have. We do claim, however, that, like division of labor, virtual organization can increase efficiency, lower production costs, and improve the coordination and control of functions. Because managers generally deem these effects desirable, the theory provides a basis for projecting economic and social changes in the future.

Like the factory system before it, virtual organization is dependent on technological innovation. Information technology, in particular, is a key factor in the spread of virtual organization. But note that dependency is not synonymous with simple casuality. Mayor changes in social organization are almost always the result of a confluence of innovations, cultural as well as technological. Typically, a host of innovations are integrated in new socio-technical arrangements. As Mumford (*1934*) has clearly shown, there were factories long before the advent of the steam engine. Cultural changes stimulated the transformation of the handicraft workshop into the pre-modern factory. However, the advantages of the steam engine, particularly is reliability as a source of power, allowed 18th century manufactures to realize more of the factory method's potential for increased productivity. Similarly, computer-communications technology enhances the ability of contemporary managers to exploit virtual organization effectively.

Advances in transportation, communication, and computing technologies have made it possible to manage complex enterprises efficiently and effectively. With these technologies the process of making a product or providing a service can be differentiated, and the component tasks distributed in different places and executed at different times-with complete assurance that the whole process can be *integrated and controlled effectively*.

This enhanced ability to integrate and control is especially dramatic when the components of a production process are distributed throughout the world. Although globalization is not essential to virtual organization, it illustrates the role of advanced technology in this new form of organization. Reich (1983) analyzed the contributions of transportations, communication, and computing to the development of global business. Lower transportation costs, courtesy of container ships, tankers, and other forms of unitized shipping, have made it economically feasible to locate the component facilities of a production operation at great distances from each other. In addition, the ability provided by jet aircraft, to move people and goods at high speeds has enhanced the capacity of management to coordinate globally distributed production functions. Global telecommunications infrastructure in the form of satellites, high capacity terrestrial media (such as fibertropic cable), and computerized switching equipment allows management to monitor and

coordinate an organization's worldwide activity from moment to moment. This infrastructure supports new services, such as electronic mail, facsimile, and electronic data interchange, which facilitate rapid and effective exchange of information within and between firms.

Finally, computer technology provides the means for managing the extraordinary complexity of global operations. Computers are needed for record keeping, scheduling, resource allocation, information management, decision support, and a host of related applications. Every large organization needs computers to perform these functions, but the globally distributed production system could not exist without them.

In short, modern transportation, communication, and computing technologies are key building blocks in global production system. These technologies have made it possible to manage a global business as a virtual organization. Multinational companies have recognized and exploited this possibility, thus furnishing convincing evidence of the practicability of the new organizational paradigm (Barnet and Muller, 1974; Vernon, 1980, 1986; Chandler, 1986; Harrison, 1989; Barnet and Cavanagh, 1994).

1.1.1 - Virtually Organized Task

The example suggests a definition founded on the management of tasks (*Mowshowitz, 1994*).

The cornerstone of this definition is *a virtually organized task*, a goal-oriented activity implemented by an appropriate assignment of *concret satsfiers* to the *abstract requirements* of the task.

Abstract requirements refer to the logically defined needs of a task. Making a product, for example, requires raw materials, tools, and labor. Each of this requirements may be viewed as an abstract need, in the sense that it can be met in a variety of ways. The particular ways-specific raw materials from a given supplier, designated tools in a particular building, named individual workers- in which a requirement can be met constitute concrete satisfiers. This separation of abstract requirements from concrete satisfiers. This separation of abstract requirements from concrete satisfiers corresponds to the distinction between logical and physical storage in a virtual memory computer, which, in turn, corresponds to the distinction between object language and metalanguage in metamathematics.

1.1.2 - Virtual Organization and Division of Labor

Virtual organization is closely related to division of labor. Whereas division of labor is designed to improve the efficiency and effectiveness of production by manipulating the internal structure of a task, virtual organization works by manipulating relations between collections of tasks.

The two principles are thus complementary.

Division of labor signifies the differentiation of roles in the performance of tasks (Braverman, 1974). The term encompasses both social division (as exemplified in traditional craft distinctions) and detailed division (as embodied in the modern factory'fragmentation of work). We are mainly concerned with detailed division of labor. Although this form is in some sense a limiting case of the social division of labor, it constitutes a significant departure from social division.

The new element in detailed division of labor is an implied distinction between tasks and performance: a task (e.g., weaving cloth) may be conceivend as something entirely independent of human performance (e.g., the making of cloth by a weaver). When such a distinction is made, and the idea of a task is abstracted from undifferentiated human activity, it becomes possible, in principle, to think about how a task might be divided into independent subtasks as a systematic way of improving productivity. The ability to do this entails envisioning modifications in the application of human labor that would not even be imaginable otherwise. It implies that tasks could be structured independently of people, and that work could be specialized independently of the tasks a person might be called on to perform. This abstraction of tasks from human performance opened the door to the substitution of machines for human workers.

Henceforth, we will use the term "division of labor" in the restricted sense of its task-structuring aspect.

Division of labor is a divide-and-conquer technique. Generally speaking, it proceeds by dividing a task into number of subtasks whose performance in some order yields a result equivalent to that obtained by executing the original task. Adam Smith gave a clear and convincing account of the peculiar advantages of this technique at the dawn of the industrial revolution. In particular, he described the enormous productivity gains that had been achieved in his day by dividing the work of a traditional pin maker into a number of relatively simple operations performed by semi-skilled workmen in a factory. Division of labor is a basic principle of organization, and Adam Smith's account provides a natural link between this principle and virtual organization.

To comprehend the relationship between division of labor and virtual organization, it is essential to understand just how productivity and efficiency can be enhanced through division of labor. Setting the stage in this way allows for showing how virtual organization complements division of labor at a higher level of organization. The productivity gains attributable to division of labor derive from two subsidiary principles, called here, "simplification" and "combinational freedom". Virtual organization adds a third principle, called "switching".

A production task (or task, for short) may be characterized as an assignment to accomplish something, that is, an assignment designed to realize a

specific end (goal or objective) by given means. The means may be implicit or explicit and may not be completely specified; however, to be a *bona fide* task, an assignment must indicate, in one way or another, just how its end is to be accomplished. It is important to distinguish explicitly ends from means to allow for the possibility of using different means to accomplish the same objective.

The simple expedient of task resolution has remarkable consequences.

In Adam Smith's classic pin-making example, productivity, measured by the number of pins per workman per day, achieved through division of labor, rose by a factor of 240 to 4,800 times the craft rate. A pin maker with craft tools could turn out 1 to 20 pins per day. By resolving the task of the craftsman into about 20 specialized subtasks (such as drawing wire, straightening wire, cutting wire into pin-sized units, etc.), 10 workers could turn out approximately 4,800 pins per day. As explained by Adam Smith, the gain in productivity realized in division of labor comes from the ability to perform a relatively simple task repeatedly. Savings in execution time come from practice and dedication, that is, a workman's performance rate improves with practice, and time is saved by not having to shift from one task to another.

Two fundamental principles underlie task-resolution: *simplification*, and *combinational freedom.* Simplification refers to the relation between tasks and their subtasks.

Resolution into subtasks allows for assigning workers to specialized tasks to which they can devote their whole attention, thus improving performance on each element of the original task, and reducing the time required to shift from on activity to another. Further reductions in execution time can be achieved by re-defining subtasks so as to take advantage of labor saving machinery.

In addiction to saving time and reducing waste in production, simplification facilitates direct cost savings. As Babbage (1835) observed, the subtasks into which a complex task is resolved have varying skill requirements. So, relatively low-skilled workers may be assigned to perform some of the subtasks. Since such workers may be paid less than skilled craftsmen, the simplification achieved through task resolution makes it possible to lower the wage bill.

Combinational freedom is subtler and thus more difficult to exploit than simplification. This feature of task resolution is perhaps best explained with reference to the design of computational algorithms. Consider the problem of determining whether the name "Smith"occurs in an alphabetically ordered list of 1,024 names. One way to resolve the question is to examine each name on the list, starting with the first, until "Smith" is encountered or the list is exhausted. If "Smith" is not on the list (the worst case), this method (known as sequential search) will require inspecting all 1,024 entries.

An alternative search method, which takes advantage of the list's structure, is more efficient. This method proceeds by examining the entry in the middle of the list, that is, the 512th entry, and, if it is not "Smith", discarding that half of the list all of whose entries either precede or follow "Smith". Using the retained half, this procedure is repeated until "Smith" is found or the list is reduced to a single entry. If "Smith" is the first or last entry on the original list (the worst case), this method (known as binary search) will require a mere 11 inspections. So, in this example, the second method gives a nearly one hundred fold reduction in the number of inspection required to complete the task.

As in computation, the resolution of tasks into combinations of elementary operations allows for designing efficient production algorithms. Combinational freedom can thus be seen as the synthesis of differentiation and integration. By differentiating tasks into elementary operations, it becomes possible to integrate those elementary operations so as to reconstitute the original task in a variety of different ways. The power of combinational freedom lies in this variety.

Virtual organization extends division of labor by adding the principle of *switching* to those of simplification and combinational freedom. This principle is embodied in the application of the allocation procedure of a virtually organized activity.

The power of the switching principle is revealed in the relationship of virtually organized activity in general. Recall that a task consists of both a goal g and a procedure P designed to achieve that goal. Conventionally organized activity is the implementation of a task by the execution of its procedure, that is, the execution of procedure P to reach goal g. Virtually organized activity makes it possible to treat goals and procedures independently, that is, this form of organization provides alternative procedures for achieving the same goal together with an allocation scheme for choosing one of them. On the one hand, an "abstract requirement" may be interpreted as a virtual task consisting of a goal g and a variable x ranging over some set of procedures; on the other hand," concrete satisfiers" may be interpreted as ordinary tasks. In this formulation allocating a concrete satisfier to an abstract requirement in is effect an instant action of a variable procedure.

1.2 - Metamanagement: Advantages and Limitations

Metamanagment, like the operating system of a virtual computer, achieves better performance than conventional management by exploiting an organizational trick that permits the systematic use of switching. A first glance, this stratagem may appear to be yielding something for nothing. The benefits of virtual organization are very real, but they are not free.

Before elaborating on the possible costs, we will examine some related cases of apparent "free lunches", with a view to clarifying the organizational trick that makes switching possible.

1.2.1 - Maxwell's Demon

The famous physicist Maxwell constructed a "thought experiment" to show how to second law of thermodynamics might be violated, that is, how the entropy of a closed system could be decreased without a corresponding increase somewhere else. Maxwell proposed to "organize" the molecules of a gas in a closed container by inserting a trap door diving the container into upper and lower chambers. The trap door was to be operated by a "demon" (*Brillouin, 1962*) capable of distinguishing between high and low velocity molecules. Upon detecting a high velocity molecule, the demon would open the trap door permitting it to move into (or remain) in the upper chamber, consigning all the low velocity molecules to the lower chamber.

So it would appear that with this demon you could in fact get something for nothing because eventually all the fast moving particles would be in one part of the container and the slow moving ones in the other. This would involve a decrease in the entropy of the system and, according to the second law of thermodynamics, which is not supposed to happen. We will see later that the decrease in entropy is not really free.

1.2.2 - Task Simplification

Another putative example of getting something for nothing is given by the organizational innovations associated with factory production. The demon in this case is the task simplifier. By breaking down complex production tasks into simpler subtasks requiring less skill than the original, it is possible to achieve dramatic improvements in productivity. Improvements result from savings in labor input, decreased waste, and a lower wage bill. At the dawn of the industrial revolution, Adam Smith illustrated the effectiveness of these organizational "tricks" by comparing the productivity of a late 18th- century pin factory with that of a handicraft operation in the same period. But these gains too are not free.

1.2.3 - Coordination and Management

As not above, the trick in virtual organization is the categorical separation of abstract requirements from concrete satisfiers, which supports switching as a systematic management procedure. Neither this capability nor the capacity of Maxwell's demon nor the task simplifier is free.

In the case of Maxwell's Demon, Leo Szilard showed that the entropy decrease of the closed system is equal to the information required by the demon to distinguish fast from slow moving molecules (*Brillouin, 1962*).

The demon requires information to operate the trap door effectively, and the amount required-calculated according to Shannon's uncertainty measure-equals the decrease in entropy of the physical system. So there really is no free lunch. A gain in one area is offset by an expenditure elsewhere. Nevertheless, within certain limits, the *value* added to the system by the demon may exceed the information *costs*.

Similarly, in Adam Smith's pin factory, the organization of production into controlled sequences of relatively simple subtasks introduces new overhead costs. In handicraft, coordination and management are integrated in the production itself. Factory methods, by differentiating tasks and deploying specialized labor, enlarge the roles of coordination and management and establish them as independent functions. Again, within certain limits, the relatively high costs of coordination and management in the factory are more than offset by decreases in production costs.

Virtual organization also incurs new overhead costs. These derive from new management activities and from the transaction associated with switching. New management activities and from the transaction associated with switching. New management activities and from the transaction associated with switching. New management activities and from the transactions associated with switching. New management activities are needed to organize activity virtually, that is, to analyze abstract requirements (e.g., the components of

a complex product like an automobile), and to track concrete satisfiers (e.g., potential suppliers of components). Moreover, each time an abstract requirement is reassigned to anew satisfier a transaction cost is incurred.

This occurs, for example, when new suppliers are chosen for given components. Switching suppliers requires a number of administrative and logistic changes that take time and resources to complete.

As in the Maxwell Demon and task simplification examples, the overhead costs incurred by virtual organization are small compared to the gains, so long as certain limits are observed. These limits are characteristic of a given production system, that is, an organization in a particular market environment. Switching must be exercised within strict system boundaries in order to avoid excessive costs. These system boundaries are easy to understand in the case of a virtual memory computer system. Users of

1.3 - Metamanagment and Forms of Organization

The virtual organization paradigm is consistent with all forms of organization because the paradigm applies at the task level, and metamanagement may be elaborated in a centralized or decentralized way. Virtual organization does not presuppose any particular control structure, nor does it require specific spatial or functional arrangements. In particular, it does not specify a set organizational design parameters such as

those proposed by Mintzberg (*1979*). The principles of virtual organization may be applied within any of the design areas identified by Mintzberg. Control may be exercised by the top echelon of a management hierarchy or by relatively autonomous managers in a decentralized system.

Virtual organization in also consistent with the contingency theory approach of Lawrence and Lorsch (*1967*). This approach takes issue with attempts to focus on "the one best way to organize in all situations" (*Lawrence and Lorsch, 1967*). However, the theory of virtual organizations are not classified according to how they deal with different environmental conditions. Rather the theory aims to characterize the managerial primitives which managers can use to craft organizational solutions to specific environmental conditions.

The idea of virtual organization does not fit neatly into any one of the images of organization described by Morgan (*1986*). In particular, virtual organization is not a mechanist model. Events and behaviour are not assumed to be deterministic. The switching principle is simply an element in a theory that helps to account for managerial actions under certain conditions.

Global production enterprises-heirs of the managerial revolution documented by Chandler (*1977*) - are perhaps the first significant examples of virtual organization. Although worldwide trade has been conducted for centuries, if not millennia, the global

production enterprise as exemplified by multinational firm such as GE, Shell, Daimler-Chrysler, Microsoft, Toyota, and so on, is a creature of the information age. As noted before, new technology-mainly computer communications and modern transport, together with new management techniques-have made it possible to realize complex production system with component parts distributed around the world. The ability to integrate far-flung components allows organizations to exploit comparative economic advantages such as cheap labor, proximity to resources and markets, political stability and capital markets on a global scale. Yet even the most advanced multinational company of today is but a crude approximation to a full-fledged virtual organization. The use of switching by contemporary multinationals is still very primitive.

1.3.1 - Metamanagement and Switching: Benefits and Limitations

By creating a universe of action with alternative ways of implementing a particular goal, virtual organization provides systematic means for strategy optimization above the task level. This is the essence of metamanagment.

Switching contributes to improved organizational performance in three ways, namely, it (1) facilitates efficient use of resources; (2) enhances organizational responsiveness; and promotes organizational reflection. Switching *facilitates efficient use of resources* by

permitting the allocation of the same satisfier to different requirements at different times. The assignment of satisfiers to requirements at different times. The assignment of satisfiers to requirements is time varying, so satisfiers *x* might be used for requirement *a* at time *t* and for *b* at time *u.* This is the case in virtual memory. At any given moment only a subset of the active users' programs are stored in the computer's primary memory. The correspondence table showing the assignment of primary cells to virtual cells changes as information is shifted between primary and secondary storage.

Switching *enhances organizational responsiveness* by allowing for the allocation of different satisfiers to the same requirement at different times. In this case, satisfiers *x* and *y* might be used for requirement *a* at times *t* and *u*, respectively. For example, at time *t,* company *x* supplies some component to meet requirement *a;* at time *u,* company *y* is the supplier.

Switching *promotes organizational reflection* because allocation procedures demand the explicit specification of the criteria for satisfying particular requirements. It is not possible to build an allocation procedure without clearly defined objectives. The logical separation of requirements from satisfiers-the structural foundation of switching in virtual organization-requires a dedicated activity dealing with optimality criteria or strategy. In conventional organizations, goals are scrutinized, if at all, on an *ad hoc* basis, typically ion

time of crisis; whereas, in a virtual organization, the examination and re-examination of goals is a regular activity of metamanagment (*Faucheux, 1997*).

In short, virtual organization promises greater flexibility and responsiveness. In particular, it can be used to improve resource utilization, achieve better quality products and services, strengthen managerial control, and lower costs. These potential advantages derive from two main sources: systemic use of switching as a management principle and explicit formulation of goals.

Both depend on structuring tasks so as to handle requirements independently of satisfiers. Such a task structure ensures that "solutions" are assigned dynamically to "problems" according to criteria of "bounded rationality". Consider the shipping function in a company's catalogue sales division. Suppose the company serves a regional market and offers four level of service: same day, overnight, three-day, and two-week delivery. Furthermore, suppose the company has a truck and driver dedicated to same-day delivery and uses several outside firms, say, United Parcel Service, Federal Express, and the U.S. Postal Service, for the other service levels.

In a conventionally managed company, relations between the shipping department and the delivery services (including its own truck and driver) are driven largely by chance, personal relations, and habit. Manager Bob just happened to hear something

complimentary about UPS and decided to try it. After a while he got chummy with the local UPS agent and continues to call the agent because he has been doing so for several years. Positive reports about the delivery service reinforce his attachment; negative reports are rationalized away.

When choices are made this way, there is little room for systematic assessment of the match between service requirements and the means for satisfying them. Connections are hard-wired, and the manager's freedom of action is highly circumscribed.

Metamanagment replaces hard with soft connections. Instead of relying on one service for, say, overnight delivery, Bob is always on the lookout for more cost-effective alternatives. He is continually re-examining service requirements, scanning the marketplace for new delivery firms and tracking the performance record of the firm he is currently using. Moreover, he applies the detailed, objective information about performance to switch from one firm to another to get the "best possible" results, that is, to reduce delivery costs and improve service to his clients.

Over time, some service levels (requirements) may be eliminated; for example, same day service may be discontinued; and new ones (e.g., one-week delivery) added. Similarly, some delivery services (satisfiers, like the in-house unit) may be eliminated; and new ones (e.g., Airbone Express) added to the list. Such changes could (and do) occur in conventionally managed

companies, but they occur more or less by chance, rather than by design.

The categorical separation of requirements and satisfiers forces the manager to make the assignment criteria explicit. This is not true of conventionally managed organizations. When, for example, a particular delivery firm is hard-wired to a service, there are few occasions for assessing performance in light of the division's goals, and managers can avoid critical scrutiny of goals. In metamanagment, by contrast, the necessity of dynamically assigning satisfiers (from a teorically unbounded list) to requirements makes assessment of performance unavoidable. Under these conditions, it is necessary, at the very least, to clarify goals and thus to subject them to scrutiny.

Metamanagment expands the universe of opportunities and promotes reflection by providing a framework for exploring requirements, satisfiers, and assignment methods and criteria.

As noted above, virtual organization has limitations. Excessive switching, for example, can raise rather than lower costs. Systemic switching allows for always having the "best" available satisfier for a given requirement. But switching from one satisfier to another is not without cost. Changing from, say, UPS to Airborne Express for overnight delivery, requires some accounting adjustments (e.g., negotiating payment terms and recording a new payment address) and changes in shipment-tracing procedures (e.g., noting a

new set of telephone numbers). If switching is done too often, the saving from alternative satisfiers could be offset by the costs incurred in making the necessary adjustments.

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Chapter II

2.1 - The Virtual Foundations

How are we to envision the organization of the future? This is the question that has preoccupied many now for decades, although it is usually posed as if for the first time. In fact prophecies about new organization have been practically an industry into themselves since the least the 1950s, when Peter Drucker (1959,1968) first began laying out the vision of a postmodern word run by the so called "knowledge workers". Since that time, the discourse of organizational futurology has been joined by theorists as diverse as Alvin Toffler (1970), Daniel Bell (1989), Shoshana (1988), and General Electric CEO Jack Welch (1989). Although typically divergent in their approach and their conclusions, these theorists of the new organization share a common rhetorical framework: the word is changing, traditional bureaucracy is bankrupt, and the future is now – or latest soon.

2.2 - Weber's Bureaucratic Organization

Rather than jumping into an immediate analysis of the virtual organization, it is helpful, according to Weber (*1947, 1978*), to begin by reexamining the theory of bureaucracy. This is the theory that, combined with Taylorism, formed the theoretical backbone of our older rhetorics of organization. To be truthful, any

"new" organization would have probably come as a surprise to Weber. However ambivalently, the man cited with the founding modern sociology tended to understand bureaucratic form of organization as the inescapable telos of the modern Western society. Although it is often rightly stressed that Weberian ideal type indicates a methodological and not strictly normative ideal, Weber insists at several points to the otherwise unmanageable complexity of the modern work enterprise. The basic features of Weber's bureaucratic type can be summarized as follows (*Weber 1947, 1978*):

1. *A discrete set of "jurisdictional areas" separate an regulate spaces pertaining to clearly differentiated functions within enterprise.*
2. *A hierarchy consisting both of the subordination of offices and of individuals, with a resulting separation of levels of planning and execution.*
3. *A management system based on written documents or files and on a staff of people who maintain these files.*
4. *An exclusive focus on the organizational roles specific to particular offices, so as to create a neutral, impersonal environment.*
5. *A stress on technical training, with the use of technical criteria for matters of both recruitment and promotion.*

6. An office system comprised of general rules, which are stable, thorough, and learnable.

Weber's principles of bureaucratic organization continue to serve as benchmark for our understanding of the contemporary work organization.

At the same time, it is impossible to deny that the ideal type Weber sought to describe has lost most, if not all, of its rhetorical currency or late. For years – indeed for much longer that we might care to believe – managers and academics alike have sounded the death knell for Weberian bureaucracy while seeking to define new paradigms that might together be labeled "post bureaucratic". Today, even within most firms, one would be hard pressed to find managers defending any of the bureaucratic tenets listed above. In a recent review of the literature, Charles Heckscher (*1991*) sums up the interesting discursive shift we have recently witnessed:

> *Social theorists and popular writers have lamented the trend [of bureaucracy], decrying the soul-deadening nature of bureaucratic work and raising alarms about the world being lost. Until recently, however, the critics of bureaucracy were rarely found in executive positions. The novelty is that now leaders of large organizations see themselves in the vanguard, attempting to create "post bureaucratic" organizations… And rather then viewing these*

alternatives as jeopardizing productivity, they see a way to make their corporations even better.

Bureaucracy is a bad word in the 1990s, often for quite justified reasons. It is blamed with inefficiency, inflexibility, and general inhumanity; leading business magazines such as Fortune have attended to such realizations with a constant flow of articles with titles such as "The Bureaucracy Busters " (*Dumaine, 1991*). The patron saint of American companies in this war against bureaucracy is General Electric, a massive conclomerate whose CEO preaches against bureaucracy and argues instead for the "boundaryless" company – a company in which, in the words of GE's 1989 annual report (*General Electric, 1989*), "we knock down the walls that separate us from each others on the inside and from our key constituencies on the outside". Needless to say, the word *conglomerate* is itself verboten inside GE walls.

The new rhetoric of bureaucracy's elimination is stirring and usually well-intentioned. To what degree it find itself translated into practice, however, is a question that is difficult to answer. We have seen examples of companies engaged in full-fledged "anti-bureaucracy" campaigns where, for the most part, little has changed other than words and rituals used to legitimate how the work is done. Conversely, we have seen companies where the rhetoric of bureaucracy

remains unchallenged, yet the actual practice of work appears surprisingly *non*-bureaucratic. The confusion only grows when we try to make sense of authors, such as Peter Drucker, who have been proclaiming the advent of new post- bureaucratic organization for the last several decades, updating the estimated time of arrival with every new book or article. Clearly, there is a certain point where talk about the organization takes its leave of whatever organizational realities exists in the world. This is not to disparage the value of "talk", or of "mere rhetoric". To the contrary, such observations are useful to insofar as they help us to understand the language of organization as a discursive system whose connections to the empirical word are complex and occasionally even contradictory.

2.3 - Technology and Society: The Virtual Context

As a starting point, it is necessary to highlight "when" organizations become virtual. It happens simply by virtue of the giddy new "boundarylessness" preached by Jack Welch. The realness of organization wanes – they enter an intermediate realm where they seem, as in Welch's utopian vision, at once real and unreal.

In fact, the term *virtual* has a history and currency that make it uniquely qualified as a way to discuss contemporary issues of organizational structure and design. In the physical sciences, the word virtual has

been used at least since the mid-19th century to refer to structures and objects whose ontological status lies in the fuzzy realm between facts and apparition we have just encountered. In a more modern usage, computers can be said to have a virtual memory when an external data-storing device such as a disk drive can be employed "as if" it were truly the computer's internal memory system. Likewise, contemporary particle physics speaks of "virtual particles" – particles pairs that evolve literally *ex nihilo* and almost immediately annihilate each other.

Since 1980s, new technologies have permitted the concept of virtuality to enter into the popular imagination and everyday life. The success of computer networks such as Internet and Bitnet has allowed people both inside and outside work organizations to experience a form of what has been called virtual space, a nonphysical space in which interacting particles never meet face to face and may indeed be downright deceptive about their true identities. On a still more futuristic note, virtual reality systems promise to permit users to enter self-contained 3-dimensional simulations of reality in which they can chose to "be" a different person, or to "explore" a remote or even imaginary location.

What virtual technologies have in common is their ability to allow a powerful simulation of the physical word by electronic means. The French sociologist Jean Baudrillard (*1988*) has argued that in recent decades,

our entire society has been moving in this direction. According to Baudrillard, our society is in the throes of a passage from a paradigm of representation to one of simulation, to a technological word in which the distinction between real and unreal ultimately collapses and in which the criteria of "realness" finally become disconnected from any question of ontology. Although the validity of Baudrillard's theory is open to question, many of the intriguing new features of our everyday word take on new meaning when framed as aspects of such a transition.

As a paradox, we could even think that organizations has *always already* been virtual – that is, that organizations are essentially fictions constructed by human interpretation as opposed to scientifically definable entities. But it is arguable that the emergence of powerful information technologies from e-mail to e-conferences into our everyday life, has made this fact palpable in a way that it never previously had been.

Sander Stone (*1992*) - one of the pioneers researchers of the virtual realm –has for example noted:

> *"It is interesting that just about the time that the last of the untouched "real world" anthropological field sites are disappearing, a new and unexpected kind of "field" is opening up – incontrovertibly social spaces in which people meet face to face, but under new definitions of both "meet" and "face". These new spaces instantiate the collapse of the*

> *boundaries between the social and technological, biology and machine, natural and artificial that are part of the post-modern imaginary. They are part of the growing imbrication of humans and machines in new social forms that I call Virtual Systems".*

Stone emphasize the power of technology to reconfigure social space and social interaction.

Likewise, to speak of a work organization as a virtual system serves to call attention to the enabling role of technology and the concomitant transformation of certain organizational fundamental: personal interaction, the division of labor, and so on.

As the wide scale introduction of sophisticated IT erodes these features, one encounters "organizational fantasies" that increasingly resemble circulating descriptions of virtual systems: visions of organizations sustained by Information Technology, organizations where the traditional needs of coordinating people and resources no longer apply, organizations that cease to exist as the rationalized, physical systems Weber had once sought to describe.

In 1992, such ideas made their inevitable way into the mainstream with the publication of the first management book to capitalize on the newfound prominence of virtual realm. Entitled The Virtual Corporation (*Davidow and Malone, 1992*), its authors' thesis was that new technologies were causing a revolutionary change in what corporations produced

and how they worked – and that managers had best to adapt lest they be swept aside in the transition. At the heart of discussion was the conviction that IT were helping to do away with the constraints and limitations that have been inherent to traditional organizations.
Yet aside from the explicitness of its terminology, The Virtual Corporation is only a single element of a growing tendency to envision the future organization as a virtual system.

2.4 – The "drop" Weber's Ideal Type

As we explained earlier, this study has the intention to understand virtual organization as an emerging ideal type – as a distilled trend as opposed to a practical or normative reality. This should be a vision that implicitly guides a great deal of current theory and speculation about organizational structure while standing much of Weber's ideal type on its head.
An ideal type of Virtual Organization might be said to have the following characteristics:

1. The disappearance of Weber's material files – the very ontological stuff of organizations – and their reappearance in flexible and electronic shape by means of IT.
2. The replacement of face-to-face communication with computer-mediated communication as a means of conducting the primary activities of the organization, and a concomitant increase in

the role of informal face-to-face communication for purposes of maintaining organizational coherence.

3. The transfer of issues of organizational structure from the realm of the organization of human beings to the organization of information and technology in such a way that, to an observer, the functioning of the organization appears spontaneous and paradoxically *structure-less*, while the functioning of information systems seems at once all-pervasive faintly magical.
4. The networking of individual from technically separate firms (such as suppliers, customers and even competitors) to the extent that clear external boundaries of the organization become difficult to establish in practice.
5. The implosion of bureaucratic specialization into "global", cross-functional, computer-mediated jobs, such that individual members of the organization may be considered holographically equivalent to the organization as a whole.

If an ideal type of virtual organization is thinkable at the present time, its viability is attributable to the seismic shift we have witnessed in technology in recent decades – a shift marked by the development of such things as PC, networked DB, and instant forms of

telecommunication such as the simple e-mail. It is not merely that new technology allows new configurations of people and machines, but that our relationship to technology continuously restructures both our thinking and our discourse. As workplace witness the proliferation of these new "modes of information", people's expectations and projects about organizational life change just as radically, probably more radically, then the existing organizational environment itself.

At this point we can state that the much of the Weberian model is implicitly or explicitly overturned: we witness the vilification of hierarchy, the physical abolition of the "office", the disappearance of the office rules, the reintegration of the levels of planning and execution, and other such inversions of Weber's ideal type.

New, seemingly revolutionary forms of work are celebrated, such as in scenarios of work-at-home, worker empowerment, and computer networking. At the same time, however, the virtual organization marked the new developments in a trajectory begun, but not completed, by bureaucracy.

2.5 – Non-Bureaucratic Virtual Knowledge

Framing the virtual organization in terms of Weber's theory of bureaucracy permits us to see exactly what is at stake in the presumed transition as well as to see what has remained the same.

All too often, a smug picture of the new "information age" cats bureaucracy as a straw man foreclosing an analysis of the shared deep structure of bureaucratic and post-bureaucratic forms of organization.

Deeply analyzing literature, we can easily see information and knowledge not just as a recent innovation in the history of work but as constants that have recently come to fore by virtue of a new conspicuousness.

In very important sense, all organizations are knowledge organizations, although it would be ahistorical to gloss over the variations in *where* knowledge has raised and *how* workers have been permitted to use it. Traditionally work organizations have relied on the compartmentalization expropriation of workers' knowledge in order to differentiate among both levels and functions. Although bureaucratic, such systems are nevertheless knowledge systems. In Weber's (*1947*) blunt words: "Bureaucratic administration means fundamentally the exercise of control on the basis of knowledge".

F.W.Taylor's scientific management – which was to help put Weber's ideal into practice into the first half of 20th century – is also explicitly concerned with the organization's role as processor of knowledge.

In the words of Frank Webster and Kevin Robins:

> *"The chief objective of Scientific Management was to annex and control knowledge – both the savoir-fare*

> *of the workers and also the more systematic knowledge being produced by increasingly organized research and development – because the possession of knowledge and skill represented the possession of control and power (1986)".*

Taylor's goal was to isolate the "brain" of the organization from the producing "body" to create a management sector that could serve as a repository and processor of expropriated knowledge (*Webster & Robins, 1986*).

Drucker, in facts goes so far as to claim Taylor as the founding father of the "knowledge economy", arguing that he was the first to understand that the "key to productivity was knowledge, not sweat" (*Drucker, 1968*).

That Peter Drucker, prophet of the new organization, should find his intellectual roots in F.W.Taylor is perhaps our best indication of the continuities between Taylor's age and our own. Organization control on the basis of knowledge. They are information-processors, or what could be seen in a metaphorical sense as "a kind of human-based computer" (*Poster, 1990*).

The Weber/Taylor bureaucracy is a highly structured input/output system, in which a "store of documentary material" (*Weber, 1972*) is maintained in order both to interact with the external environment and to control the functioning of the organization itself. In the terms we have been using here, one might say

that the bureaucracy functions largely as a virtual computer, as an ingenious way of instantiating the mechanistic, highly functionalized, workings of a computer in a physical arrangement of people, paper and rules.

The common view today is that organizations no longer have to serve this purpose, as new forms of control – and IT in particular – have made it possible to manage in ways much less crude and labor-intensive than the Weberian bureaucracy; we have, so the implicit reasoning goes, managed both to strengthen the control function and to place it still further behind the scenes. If the bureaucratic organization traditionally served as a virtual computer, what is the need for such an organization when "real IT" arrives on the scene, promising manipulations of knowledge previously only envisionable through the mechanism of bureaucracy? When society as a whole witnesses the emergence of a range of a new means of distributed non-intrusive control, what can the perceived role of bureaucracy be other than a nuisance, anachronism, or scapegoat?

What happens, for instance, when the organization's store of documentary material become electronic? At the highest level of abstraction, one could say that the normal rules of time and space – the rules on which the Weberian bureaucracy is founded – cease to apply. Bureaucracies evolved as responses to a particular set of problems in the coordination of both space and time:

they served to serve a flow of knowledge and information at a time when such things were constrained both temporally and spatially. Until the advent of IT, information was tedious to manage, reproduce, and disseminate. As a unique and scarce good. An elaborate spatially extended system needed to exist to control the flow of information from one place to the next.

In a sense, the "objective" structure of the bureaucracy, as represented by the organization chart, was simply a reification of informational infrastructure that by necessity existed within the firm.

Different departments held responsibility for the processing and maintenance of different type of knowledge; each maintained different set of files and lived by complicate sets of rules to determinate how and when information could flow between other areas.

Upper level executives, on the upward flow of data from the departments below them, had access to more condensed form of information that could used in strategic decision making or planning. Because information could not be easily organized or transmitted, getting information and communication from one place to another was a prime form of labor in and of itself.

In the Virtual Organization, however, the file cabinets of bureaucratic ritual disappeared, replaced by devices that shatter the traditional physical instantiations of information and knowledge. To an extent, this

transition is certainly observable today. When employees in contemporary organization use electronic mails or build report from network database, there is no original, physical reality to which this information refers, unless such reference be to a tangle of code and wiring that, to most workers, remain opaque or even intangible.

To adapt the words of Gertrude Stein, there's no longer any there there.

Mark Poster (1986) has explained the transition we cited above thus (extracts):

> *[When language is made electronic] words cannot any longer be located in space and time, whether it be the "real time" of spoken utterance in a spatial context of presence or the abstract time of documents in bureaucrat's file cabinet…*
>
> *Speech is framed in space/time coordinates of dramatic action. Writing is framed by space/time coordinates of books and sheets of paper…*
>
> *Electronic language, on the contrary, does not lend itself to being so framed. It is everywhere and nowhere, always and never. It is truly material/immaterial*

These strange properties of electronic information are the foundation of the virtual organization, with effects that multiply in unexpected ways. The consequences are radical and far-ranging: if the normal structure of

bureaucratic design hinges on the coordination of the time and space, the elimination of time and space as categories is at one and the same time an announcement of the end of the structured organization.

2.6 – The Disappearance of Structure

The idea of organizational structure is in many ways a legacy of the bureaucratic era, one that has decreased relevance in the "immaterial" word of the virtual organization. Since electronic information appears to evade the laws of what might be called Weber's Newtonian universe – it can be everywhere at once, manipulated instantly and effortlessly – it can be said to fundamentally opposed to any outward manifestations of structure, whether this structure be conceived of in technological or organizational terms.

This is not to say that structure disappears altogether in conception of virtual organization; rather, in the implosive manner already described, it simply withdraws from the realm of everyday experience. Although structure does not necessarily disappear per se, this disappearance at the level of ordinary perception is becoming a part of the dominant discourse of organizations. Even in cases where a firm's own technological infrastructure is not very highly developed, it is enough that this antistructural rhetoric

exist in the world at large for it to be replicated within the firm.

For many years the computer system used in large organizations tended to replicate the formal structures that already existed in the firms, and lent to bureaucracy a technological infrastructure that figure prominently in many dystopian prediction concerning the impact of technology in the workplace. In a redundant yet probably unavoidable fashion, information systems reinforced the bureaucratic structures that had been earlier introduced to serve the firm's information-processing needs. Computer systems and software adopted the architecture of bureaucracy, even though it was precisely this architecture that this technologies would later begin to be able to eliminate. Not surprisingly, the language of information systems became the language of bureaucracy: centralization, hierarchy, command, control.

In truth, early forms of information technology were not powerful enough to do anything other than replicate bureaucratic architectures. Over the last decade, however, the new technologies have lived up to electronic information's inherent ability to overcome the limitation of time and space that made bureaucratic organizations necessary. In computers, relational database and open architectures have allowed organizations to maintain database that, at the user level, appear to have no "real" structure at all: data is

assembled and disassembled on a contingent basis and according to the personal need of users. Object-oriented programming now promises to allow software code to become modular and reusable. Huge centralized mainframes have given way to so-called "client-server" architectures in which data can be maintained in decentralized networks to be combined and manipulated at the front end. Factory automation systems rely on "distributed" as opposed to hierarchical control. Likewise, electronic mail and electronic conferencing permit employees to develop ever-shifting organizational structures that decrease the importance of formal hierarchies and organizational boundaries.

With such changes, organizations have shifted to become more holistic and less highly differentiated. One manifestation of it is the oft-discussed "flattening of the organization", the elimination of the layers of middle management that had existed to coordinate organizational knowledge. At the same time, new kinds of electronic connectivity are encouraging the emergence of more complex and contingent structures, not organizational designs per se, but rather shifting emergent structures that form and dissolve according to the actions of organization members and may even involve members of different organizations. Organizational structure thus becomes a transient by-product of employees action, as opposed to a normative model for this action.

As technology withdraws the structures of coordination and control from the plane of everyday life, organizational discourse is coming to extol the absence of structure over its presence. Aspects of this rhetorical shift are already quite evident in the workplace at large, where managers and executives brag about the elimination of hierarchy and the turn of *nonstructured* arrangements of people and information. Leading-edge organizations, even some very large once, may even willfully give the impression of chaos to the first time visitor. For example, at one large telecommunications company, employees were proudly self-conscious about the ad-hoc style in which work was accomplished and elevated the trait practically to the level of obsession. The introduction of electronic mail had allowed a company whose management style was ad-hoc from the first to "formalize" its ad-hocness, with the result that it was almost impossible to make sense of how the company worked. (One director in the MIS function confided that the e-mail had become the driver of the entire company and noted that she received upwards of 200 mails a day. It was largely through e-mail that this woman was able to launch a major system change from a relatively low position in the official MIS hierarchy).

Although some employees bemoaned the lack of procedures and the lack of respect for the discrete responsibilities guaranteed by their job titles and reporting relationships, the de facto disorganization of

the company was for most a source of pride, a sort of corporate identity.

Another employee, again a director, giddily declared:

> *"Where we are it's a free for all. There's no structure and lots of organizational ambiguity. But the good thing about it is not being limited by organizational structure, and not being constrained by having particular people in particular functions".*

This was not hyperbole. Employees preferred to send e-mails to one another rather than meeting face to face; because e-mail permitted one to buck the limitations of status and functions, not to mention the limitations of having a potentially dissenting face to face conversant, anything that could be handled electronically was handled electronically, even if people were only yards away. Information flowed so quickly and so densely that each employee often had a totally different picture of the prevailing organizational reality, of what projects were at what stage or even what projects had been formally initiated at all.

While electronic communication is a powerful new form of coordinating people across time and space, it thus also introduces a new kind of static into making communication less dependent on cues of status, power, and gender (*Poster, 1990*). In addition, electronic communication abhors consensus. Whereas face-to-face groups generally strive towards common agreement,

electronic groups may take several times longer to reach decision (*Sproull & Kiesler, 1991*), and in some situations may resist forming consensus altogether. Whereas contemporary organizational rhetoric stresses the coordinating potential of the new technology, computer-mediated work can often have something of a reserve effect; decoupled from the traditional social bonds of the organization, individuals can become lone beacons whose affiliation with the larger picture is more problematic then during the heyday of bureaucracy. It is foe such reasons that face-to-face interaction may take on an important and not altogether expected role in guaranteeing consensus and coherence in electronically-mediated organizations (*Nohria & Eccles, 1992*).

2.7 – The Apotheosis of Individual

If the bureaucratic ideal type extolled the logic of differentiation, the ideal type of the virtual organization extols a new kind of holism, a utopian ideal of total connectivity. This holism is, however, ambiguous and paradoxical, since the individual employee actually becomes more important, and in a sense more isolated, than ever before. Whereas bureaucracy sees employees only as instances of an abstract "universal subject", the virtual organization extols the powers of the unique individual, often ascribed idealized or superhuman capabilities to him or

her. In a world where reporting relationships and organizational boundaries have lost their former role, every knowledge worker is god.

Of course the trend to isolate workers from their social surroundings is a long-standing one, with a past that extends back to scientific management and to the basic form of bureaucracy itself. What has changed recently it that the individual worker is no longer bound by a strong sense of *dependency* on other aspects of the organization, and that this new independence is coming to be valued in its own right. New cross-functional jobs, whether or not directly enabled by IT, allow the implosion of different functions into a single employee and permit employees to get an increasingly wide-angled view of organization.

As an example, many companies have gutted their bureaucracies and have begun to replacing the legions of clerks with "case managers": employees who can use PC networks to carry out a whole range of functions that had typically been separated into distinct job. Although case managers at the time did not have the training and resources to handle *all* the various aspects of the company's business, it is not unreasonable to assume that with more powerful systems and more trainings such a further collapse of function and hierarchy could be feasible in organizations (*Davenport & Nohria, 1994*). Insofar as it leads to increases in job-interest and productivity, the goal may certainly be worth one.

But in the end, the most interesting thing about the idea of "one-person company" is not its visibility, but rather the rhetorical form in which the idea is advanced in the first place. After all, the idea of "one-person company" makes little objective sense. It is hard to imagine a large corporation staging a "withering away of the state" until the entire company consists of a solitary college-educated woman or man at the keyboard of a PC. Rather, we feel the idea is best grasped as an expression of the rhetorical shift away from organizations and toward individuals as the *locus* of value in the workplace. Introducing the idea of "one-person company" effects a brilliant collapse of the categories of organization and worker, turning the employee into a kind of holographic model of the organization at large. The case manager, in rhetoric at least, thus *becomes* the company.

2.7.1 - Members and Roles

The experience of finding oneself on too many teams is not unusual. Most people are members of multiple groups. We all take part in a constantly changing personal pageant of many small groups simultaneously – family, community, friendship, and affinity groups as well as task oriented work teams. In each group and team, we play different roles. People are not part of groups in the same way that hearts are parts of body.

Only in the extreme (slavery, for instance) does a group own people body and soul.

> *"Like people, roles are integral to groups. People animate roles that belong to the group". (Davenport, 1993)*

The role mediates between an independent individual and his or her expected behavior in the group. What sociologist Erving Goffman (*1987*) calls the basic "unit of socialization", roles naturally arise informally in small groups and are more felt then visible. In larger organizations, roles tend to take on more trappings trough titles, written job descriptions, and personal contracts.

Although one cannot see them, it is possible to experience the importance of roles by talking about your part in a group; roles translate between "*me and we*", between the bottomless complexity of individual people and the comparative simplicity of playing a part in a group.

Roles are easier to see in their more formal presentation as *positions*. People usually diagram positions in relationship to other positions; organization charts show which person reports to whom. Positions clearly belong to the organization that sets them up and can just as easily take them away.

An open position – a formal role – stands by itself as a sometimes gaping hole in the organization, an empty

place in the structure. When a person steps into a position, a classic dynamic arises between the characteristics of the particular person and the legacy of expectations that the role conveys. Once populated anew, the role both shapes and is shaped by the person who occupies it. This becomes even more complex when the team is virtual.

People also carry their formal positions into the many teams they join. Sometimes this is appropriate, sometimes it is not. In virtual teams with limited face-to-face interaction, roles obviously rise in importance. Consider that in virtual groups:

- People typically play multiple roles, often many more then in conventional teams.
- Roles require greater clarification. Expectations need to be made more explicit then in collocated teams.
- As the same time, role flexibility is essential because the process is dynamic and roles change constantly.

2.8 – Power and Authority in the Virtual Organization

Speaking of Virtual Organization, does not avoid to consider them first as Organizations: a complex system of mutually dependent individuals.

The new rhetoric, however, often tends to skip this basic fact, perhaps out of a belief that such systems are, in Nietzsche's phrase, "all too human". In the rhetoric

of the virtual organizations is envisioned a system that can somehow overcome the complex heterogeneity of the standard organization, either through a mystical integration of discrete individuals (as the boundaryless ad one-person companies) or through the reduction of all interaction to virtual interaction.

Again, in many contexts, such goals may be worthy ones. There are, however, a number of potential avenues of critic worth exploring. A foremost task is to enquire whether the rhetoric of the virtual organization might possess ad ideological subtext that has gone unnoticed. This is a particularly delicate endeavor, since the highest priests of the new organizations are generally understood as progressives who seek to liberate humanity from the chains of bureaucracy. For a large number of people, however, the new organizational rhetoric increasingly represents nothing more than an attempt to buy out the last bastions of opposition , by cleverly declaring that the grounds for resistance no longer exist.

From Kevin Robins and Frank Webster – two authors who have proclaimed themselves to offer a "Luddite analysis" of the new information technology – we hear as follows:

> *"The very prevalence of these futurist images that now rain upon us from television, bookstalls, and the press induces us to take them seriously. They represent capital's utopia, its promised post-*

> *industrial land. …Once can readily see the ideological role of this planned, post-industrial society, in so far as it represents dangerous disguise which permit a spurious escape from anxieties surrounding the decisions and happenings of present. By offering a potential exit from the ills of the present, electronic futurism floods in to fill an ideological vacuum." (Frankel, 1987)*

The question of whether the new organization is essentially an ideological disguise runs through a great number of such critics, critics that deserve not to be dismissed out of hand. A likeminded complaint could even be levied against Shoshana Zuboff's (*1988*) most acclaimed work on the transformative impact of information technology in clerical and industrial settings. On the hand Zuboff's *In the age of the Smart Machines* traces both utopian and dystopian versions of where the "dephysicalization" of work might ultimately lead, and contains meditations on the phenomenology of the holistic organizations and computer-mediated work that are undoubtedly important contributions to the literature.

On the other hand, Zuboff in the final analysis comes down clearly on the side of the computer and its power to restructure the way we think about space and power in organizations.

Of course, to levy the charge that *Smart Machines* thus carries an ideologiacal undertone seems not entirely

fair since Zurboff casts herself from the start as "*a liberal humanist out to catalog the world at a unique historical juncture*" (*Zurboff, 1988*). At the same time, however, Zurboff warnings of certain dark possibilities – of, for instance, panoptic power and a new managerial tyranny – should not preclude from asking what purpose her celebration of the upside of informated labor might ultimately serve. It is possible, we ask, that holism-celebrating accounts such as hers may ultimately serve as a smoke screen that just makes the survival of certain traditional power relations in organizations harder to see.

In the view of technological changes, Mark Weiser highlights the necessity to integrate technology within our working life in order to reach a point beyond which technology itself will be so properly fused into our daily life that it will finally have its utopian effect.

> *"…And virtual reality, the outside world and all its inhabitants effectively chase to exist. Ubiquitous computers, in contrast, will reside in the human world and pose no barrier to personal interactions. If anything, the transparent connection that they offer between different locations and times may tend to bring communities closer together" (*1991*)*

On the one hand, there is no doubt that with the time being, the changes that Weiser describes will be more visible, thanks to the certain computer development.

As technology and control systems keep on growing up in power, it is possible that organizational practice may begin to live up more to the utopian visions with which it is increasingly charged.
On the other hand it is possible that it will be always required eloquent promises such as Weiser's one, to chase an idea more than a realistic futuristic chain of events.

Our analysis here has stressed that Virtual Organization is to be understood primarily as a form of rhetoric, that is, as a discourse spoken by managerial professionals – not to mention professors of management – in ways that are not necessarily coterminous with organizational practice itself.
Although many of the dynamics attributed to Virtual organizations are indeed to be found in actually existing organizations we have laid out remains nevertheless a kind of projection, rhetorical mirage removed from the actual daily activities of organizational life.
With this study, we wish to reiterate the distinction between organizational rhetoric and reality strikes us as misleading, and our argument has been as much a defense of taking rhetoric seriously as it has been a description of the rhetoric itself. To draw a dividing line between discourse and actuality – labeling one fake and the other worthy of study – is a mistake that has long plagued the social sciences, and organizational

sciences in particular. Against that tradition, it is time to take "mere rhetoric" seriously, as only such an enquire will grant us true insight into the forces that are already shaping the organizational - or perhaps post-organizational – environment of the century.

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Chapter III

3.1 - Standardization: Technical Basis Overview

The meaning of standardization and its importance to industrial development are well known. Standardization facilitates switching by making it possible to couple and decouple production process without incurring excessive transaction costs.

Virtual organization intensifies the need for standardization. The establishment of standards for tools, products and processes is just as important here as in conventional organizations. But more is required by virtual organization, mainly, standardization in the social domain. This applies, as explained earlier, to organizations and to individual human beings.

Management requires standardized organizational structure and behavior to achieve *interchangenability* and *compatibility*. Interchangeability facilitates and replacement of one organizational unit-employees or departments-by another with essentially the same functionality; compatibility enables two different units, with a minimum of effort, to interact with each other in the performance of a common task.

Both of these aspects of organizational standardization are essential to switching. As noted before, unless concrete satisfiers can be reassigned to abstract requirements smoothly and easily; the transaction costs of switching could nullify the benefits. Interchangeability makes it possible to select any one of several equivalent units, services, or suppliers to meet

some organizational requirement. Compatibility allows a given unit to switch easily from one cooperating partner to another in performing its function. That is to say, a standardized, organizational interface minimizes the problems of disengaging from one partner and reconnecting to another.

The use of Electronic Data Interchange (EDI) for computer-to-computer exchange of structured business forms creates *de facto* organizational compatibility standards, or, as expressed by Kalakota and Whinston (*1996*), "boundaryless relationships". First, standards for electronic communication are introduced, communication come into being. For example, some corporations (e.g., General Motors) and government agencies (e.g., U.S. department of the Treasury) have turned to EDI to decrease the rising costs of paper-based transactions. General Motors was one of the first large corporations to recognize the possibility of achieving enormous costs savings by using electronic rather than paper business forms in transactions (e.g., ordering, invoicing, making payments, etc.) with is many suppliers. Similarly, the United States Treasury recognized the opportunity of using EDI to reduce the paperwork costs incurred in the federal government's interaction with its many contractors .

Essential to the success of the initiatives of General Motors and the U.S. Treasury was the active participation of their various suppliers and contractors. Beyond the adoption of common EDI protocols, this

called for common changes in business procedures within the cooperating firms.

The deployment of EDI implies much more than simply installing hardware, software and netware to facilitate the electronic exchange of structured information. Organizational structures and practices-in all the cooperating organizations-must adapt to the needs of the new EDI systems, and these accommodating structures and practices define *de facto* compatibility standards. Until now adoption of EDI by small businesses has been limited. This is because the bulk of EDI by small business has been carried on proprietary networks whose charges made it prohibitively expensive for small firms. Adoption of the XML standard on the World Wide Web is likely to change this situation. XML provides a platform for EDI messages on the Web, thus creating an inexpensive way for business of all size to become EDI compliant. Extension of EDI to all organizations will stimulate refinement of the structures and procedures required for smooth business to-to-business interactions.

Standards that support business transactions facilitate switching and reduce its transaction costs by simplifying the organizational process of unit-substitution and coupling-decoupling. Organizations and firms can achieve competitive advantages by making use of the standards-therein lies the incentive for adoption. The tendency in large corporations to permit various units to function as relatively

independent cost or profit centers sets the stage for adoption of standard and encourages experimentation with switching. As standardization advances, such switching will be practiced more systematically.

The need for standards in the global arena is illustrated by the operations of companies such as Whirlpool Corporation with joint ventures throughout the world. Whirlpool makes appliances in twelve countries and sells them in 140. About 38 percent of its revenue come from outside the United States. At its joint venture plant in Shangai, American, Italian, and Chinese technicians have had to work together through three translators to set up washing machine production. If a company is to make and sell consumer products such as home appliances on a global scale, it has to offer a host of customized products to meet regional preferences, as well as to manage the logistics of local manufacturing. These requirements highlight the desirability of organizational standards capable of reducing the transaction costs arising from the variability of local language, cultures, and practice.

Virtual organization also calls for standardization of individual behavior. Desirability aside, such standardization is certainly not new in human history. Language, shared culture, rituals, social conventions as codes of conduct are all different forms of standardization, which are essential to many types of social interaction. The new paradigm requires of individuals the capacity to move freely from one

organizational unit or setting to another. Movement within large organizations is a time-honored practice, especially in the careers of managers who may be expected to become familiar with many different aspects of a business. Unique to virtual organizations is the need for behavioral standards to facilitate switching. When one unit is substitute for another, or decoupled from one and recoupled to another, some individuals must adapt to new environments. If the affected individuals have to internalize entirely new behavioral codes and procedures, the costs incurred in such adaptations could be considerable. Behavioral standards limit these costs.

Standardization in the social domain can do for virtual organization what it did for industry in the physical domain. The adoption of standards for fasteners, tool sizes, and so on, made it possible to design things using off-the-shelf components and to fabricate and assemble them with the aid of –the-shelf tools. Off-the-shelf components and tools constitute a fundamental set of building blocks, produced in volume (and thus cheaply) for a variety of applications. The very same type of screw can be driven by the same type of screwdriver to attach a compressor to a refrigerator housing or to fasten a picture tube to the casing of a television set. These building blocks are like the words in a language. Following the rules of syntax, semantics, and pragmatics, one can fashion the words to create expressions of infinite variety and models.

A fundamental set of building blocks for designing, fabricating and assembling social organizations can also be created by the adoption of appropriate standards. Standard organizational components could become interchangeable, just like parts used in manufacturing. One could only guess at the candidates for the social analogue of interchangeable parts. Perhaps individuals with certain specific information processing skills and something approximating sub-departments equipped to satisfy some specific administrative, financial or marketing services would be included.

With such interchangeable components, the possibilities of outsourcing would be extended to a more basic functional level, and the scope of switching in virtual organization enlarged.

3.2 - Meta-Standards and Inter-Translation of Standards

Effective standardization can be achieved in two ways. One approach is to deploy a universal standard by common consent, and make it compulsory for all parties who would communicate and interact with each other. Another approach, made feasible by advances in distributed system and networks, is to permit the use of multiple standards, implemented as protocols and to rely on intermediaries (e.g., computer programs) to translate from one protocol to another.

The availability of translation programs o protocol converters effectively provides a *metastandards.* Viewed from the perspective of a user, there is only one standard, because conversion from one protocol to another is accomplished automatically. Americans, by commonly rejecting the need to learn a foreign language, view English in this light, since other people in the world speak English or translators are available to act as intermediaries.

EDI, as developed in the pre-Internet period, provides a business example of the metastandard approach. Different industries have developed different standards for the same business forms, and protocol conversion programs are used to facilitate the exchange of business forms between companies with different EDI standards the two approaches are not incompatible. In some cases it makes more sense to adopt multiple standards and in others to insist on a uniform standard.

The generic management families of standards adopted by the international Standards Organization for quality management (ISO 9000) and environmental management (ISO 14000) may also be viewed as meta-standards. Both families are process standards dealing with the way in which organizations perform their functions rather than with the results of performance (ISO,2001). ISO 9000 is concerned with how an organization goes about ensuring that its products conform to customer requirements, whereas ISO 14000 focuses on procedures designed to minimize the

harmful effects on the environment of an organization's activities. Neither ISO 9000 nor ISO 14000 is itself a product standard.

Assessment of compliance with the standards and issuance of certificates of compliance are performed by bodies independent of ISO. Typically, a national accreditation body in a given country is in charge of the certification activities performed by independent auditors or commercial services.

ISO issues the families of standards, but compliance matters are handled independently. Since the standards specify requirements for management systems without dictating precisely how the requirements are to be met in a particular organization, they can be viewed as metastandards, analogous to the framework for computer network architecture defined in the Open System Interconnection Reference Model.

These ISO metastandards for management System constitute a first step toward high-level organizational protocols for business functions. Similar standards can be envisioned for most of the functions where outsourcing is currently practiced. Development of such standards will open up new opportunities for the effective use of switching under metamanagment.

People's desire to preserve their own unique culture and ethic identity ensures a role for metastandardization of organizational behavior. Policies of the European Union tend to support this observation. The European Commission recognizes

nine official languages among the now 15 member states. As a result considerable resources are devoted to document translation. In particular, the Commission offers computerized translation services to its functionaries. Rough computerized translations of documents can be obtained on request. Rather than push for the adoption of a single linguistic standard, the European Union recognizes several and provides translator or "protocol converters" to facilitate communication between users of the different standards (i.e. languages).

Militating against adoption of universal standards is the existence of the *facto* or proprietary standards owned by competing firms with large market share. Substantial investments and revenues are often associated with proprietary standards, both for the firms that own them and for the clients who ise them. This may make it impossible to achieve agreement on a common standard.

3.3 - Management and Related Costs

Interaction of moving parts in a mechanical system generate friction and leads to wear and tear on the parts. Metaphorically speaking, the same thing happens in organizational interaction but the wear and tear is called *transaction cost*. The conduct of modern business entails countless transactions internally and externally, and all have an associated cost. "A

transaction occurs when a good or service is transferred across a technologically separable interface" (*Williamson, 1985*). The cost of transaction includes that which is incurred in obtaining information about and searching for a potential transaction partner, implementing a transaction, and enforcing agreements between the parties.

Within a firm activities must be managed, calling for transaction between supervisors and employees. Activities must also be documented, necessitating transactions involving computer applications, personnel and record-keeping systems. Many hands typically perform tasks, so employees need to cooperate with each other. Exchange and cooperation also occur at the organizational sub-unit level, generating inter-departmental transactions. Businesses may acquire materials from outside suppliers, and sell finished products to distributors or directly to customers, occasioning transactions between the firm and other companies. Businesses also interact with banks, insurance companies, law firms, management consulting companies, and a host of specialized service organizations. All of the above types of transactions demand time, resources or money.

Transactions increase with differentiation, and unless measures are taken to control the costs of individual transactions, the total cost will rise and may ultimately reduce profits to an unacceptable level. The potential for crippling increases in transaction costs is a critical

problem for virtual organization, since switching naturally multiplies transactions. Standardization is just the medicine virtual organization needs to reduce the feverish cost brought on by transactions. Significant cost are incurred in the establishment and termination of a *connection* between the parties to a transaction. The precise meaning of connection varies with the nature of the parties. Consider, for example, a relationship between a company and an employee. Establishing a connection entails a number of tasks from recruiting (i.e., advertising a position, examining resumes, interviewing candidates, and checking references) to adding the new employee's name to the payroll, health insurance plan, pension scheme, and so forth. Each of these tasks consumes company resources. Termination is not free either, since severance arrangements must be made and company records altered. Costs can be reduced by the use of standard forms for position advertisements, resumes, and reference letters. Interviews too can be standardized, further reducing transaction costs.

Business-to-business interactions may also entail costs for establishing and terminating connections. Since an organization may consist of several different departments and be represented by a number of individuals with varying functions, transactions between organizations may be more complex than those between individuals. The firm initiating the connection must first ascertain the appropriate

department to contact. Since the names assigned to departments may vary from one enterprise to another, the use of a directory may not be sufficient, and some time might be spent finding the right department. Once contact has been made, the parties must reach agreement on the terms of interaction. This process calls for investment of substantial time and resources by representatives of the companies involved. When there is a meeting of the minds, legal costs are incurred in the preparation of a contract spelling out terms of the agreement.

The cost of establishing and terminating more transient connections is lower, but not negligible. Working with an outside contractor who is paid on submission of an invoice requires less bookkeeping than would be incurred in taking on a regular employee. However, making such a connection usually calls for negotiating a contract specifying the work to be performed, terms of payment, and so on. If this type of connection is made on a regular basis, it can be expedited by using a standard contract.

Company-customer connections may also be transient. Transaction costs associated with the sale of items to an individual, for example, are incurred in ascertaining the prices of the items, computing the total purchase prices of items at the checkout counter of a retail store is now done with the aid of a scanner. The device recognizes the bar code (Universal Product Code) imprinted on a package to identify an item and obtain

its price from a store database. Standardization permitting the use of scanners has already made a significant contribution to the reduction of transaction costs. To complete the checkout counter transaction payment must be made. If a check or credit card is used to pay for the purchase, the checkout clerk usually has to authenticate the payment instrument, either by examining identification or obtaining authorization from a credit card company. Standards for costumer identification and credit card processing also help to reduce the time the clerk has to spend checking out the customer.

Discussion has been sparked in recent years by the success of a business model that appears to reject modern industrial organization. This alternative economic model-called "diffuse industrialization" or "flexible specialization"- is exemplified in the relations between firms operating in the central northeast area of Italy (*Inzerilli, 1990*). Collections of relatively small, owner-operated companies maintain old fashioned relations with their suppliers and distributors, and form a network of organizations. Connections between participants in these networks are based on the idea of long-term relationship, so transaction costs associated with establishment and termination of connections appear to be avoided. Mutual trust between cooperating companies replaces formal contracts in the conduct of business, eliminating or minimizing transaction costs deriving from legal fees. Studies have

documented the success of these networks of companies, but the business model is culture dependent. It appears to be well suited to a relatively homogeneous and non-mobile society. Moreover, indirect transaction costs may be attributable to the social system that enables trust-based transactions in business. Even where the diffuse industrialization model works, it probably cannot compete effectively with virtual organization, despite the transaction costs incurred from the transient connections essential to switching.

3.4 - Coupling and Uncoupling

Systemic use of switching in virtual organization affects the management of a company's operation's operations and its relations with employees, external organizations, clients, and the community. Switching calls for flexibility, favoring temporary relationships based on explicit rather than implicit agreements. To enable such temporary relationships, the parties (individuals, machines, departments, or organizations) to a transaction must be able to *couple and decouple* with ease. Coupling refers to the establishment of a relationship; decoupling, to its termination. The advantage of temporary relationship may be compromised if either coupling or decoupling costs too much.

Outsourcing (i.e., contracting with external organizations or individuals to perform functions that are or could be done internally) exemplifies the need for simplified coupling and decoupling. This practice, which has come into widespread use in recent years, is a precursor of metamanagement. It relies on competition in the marketplace to provide alternative possibilities for satisfying an organization's requirements. Outsourcing can be viewed as a component of switching, enabling a company to obtain the best products or services at the lowest cost or to realize strategic objectives. This is a natural extension of designating activities as cost or profit centers and treating transaction within a firm as exchange in an internal marketplace (*Turoff, 1985*). Management experience in identifying functions and contracting with external firms to perform them is a first step in creating the structure of virtual organization.

Engaging outside firms to provide services is not a new practice. Long before the term outsourcing was coined, many companies had their payrolls processed by specialized software service companies. Similarly, the use of temporary employees is an old practice. Computer and telecommunications technologies have increased the scope of outsourcing by making it practical to process information remotely and to transfer it quickly and reliably over long distance.

Outsourcing, as a particular instance of coupling and decoupling, exemplifies the cut and paste operations

described in chapter 2. In computerized editing system a block of text or an image may be selected (usually by highlighting) and the *cut* or *clear* operation invoked to excise the selected text or image. If *clear* is used, the excised material is eliminated. *Cut* preserves the text or image in a temporary "holding area" for possible placement elsewhere in the same or a different document. Using the *paste* operation, a new block of text or an image may be put in place of the one eliminated. With outsourcing a department or unit is identified and usually "cleared" from the company and a new department belonging to an outside firm in effect is "pasted" in this place . In organizations the trick is to identify a candidate unit or function for outsourcing and to make sure it can be replaced without unduly disputing upstream or downstream activities. As yet there are no simple "highlighting", "cut" and "paste" operations in the realm of social organization, but the standardization of interfaces will make it easier to perform such operations.

Most industries and companies make use of outsourcing. The extent of the practice in the united States is revealed in both the level of expenditures on outsourcing and its growth rate. In a report of survey results, Dun & Bradstreet and the Outsourcing Institute estimate that expenditures for outsourced services grew from about $140 billion in 1996 to more than $400 billion in 2000 (Outsourcing Institute, 2000).

Although slowing as the practice becomes ever more widespread, outsourcing expenditures are still growing at a robust 15 percent annual rate.

Functions related to information technology continue to be the most prominent in outsourcing activity, representing 20 percent of all expenditures reported in the 2000 survey. This category includes e-commerce (e.g., new media and Internet services) as well as traditional information technology functions. Not unexpectedly, the proportion attributed to information technology has dropped over the past few years-it was 30 percent in 1997-as outsourcing has come to be used for all types of business functions. Administration accounted for 15 percent, distribution and logistics 10 percent, real estate and physical plants 10 percent, human resources 9 percent, manufacturing 7 percent, finance 7 percent, customer service 7 percent, marketing and sales 6 percent, transportation 5 percent, and management 4 percent.

Outsourcing has become standard business practice in every industry and in now prevalent in small as well as large companies . Thirty-six percent off all companies with sales over $50 million, and 29 percent of companies with $10 million in sales are now outsourcing. One sign of the "maturity" of this business practice is the emergence of a new corporate title , namely, Chief Resource Officer- "a professional outsourcing-centric executive manager" (Outsourcing Institute, 2000).

Support functions such as customer services or help desks exemplify tasks that are candidates for outsourcing. Many firms that once operated in-house call centers providing customer services by telephone have contracted with specialized teleservices companies to perform this function .

Customer services costs can be reduced by outsourcing since teleservices companies, through economies of scale, can offer lower unit costs than a non-teleservices firm can achieve with its own dedicated staff and facilities. A Business that have yet to develop teleservices can outsource the function and avoid the capital costs of developing one in-house.

Splitting responsibility for a task between an in-house center and a specialized, external organization is called *co-sourcing*. Responsibility for a function such as a costumer services can be shared according to several different criteria. Part of the day can be covered by the company, the rest by the specialized firm. Customer can be allocated to the service centers according to their calling region or the language group to which they belong. The allocation can also be made on the basis of type of product, for example, customers needing assistance with products a, b, or c are directed to enter x , all others to center y.

Outsourcing and co-sourcing can in principle be used to provide any function in a firm. Opting to do something in-house or to have it do by an outside company in strictly a business decision in virtual

organization, one based on cost, quality, reliability, and related criteria. Achieving this degree or flexibility in practice requires further standardization of organizational structure and behavior.

Hostility from middle management and labor unions may impede the growth of outsourcing. A middle manager's job might be diminished in scope or it might disappear altogether as a result of outsourcing. These are clearly not desirable outcomes for a middle manager. More dramatic is the possibility that large number of workers are displaced by outsourcing. Unions do not look kindly on these outcomes either. Both potentially aggrieved parties might cite cases of failures or exaggerated expectation to support their opposition. Failures or exaggerations typically take the form of cost savings that are only a fraction of what management expected, and product launches that are delayed by unexpected difficulties in establishing working relations with external parties. Implementation of procedures to support the coupling of business functions will contribute to neutralizing the potential hostility to outsourcing from middle management and unions.

The need for labor may also be met flexibly, through a form of outsourcing. In this variant, staff is engaged on a short-term contractual basis rather than as a permanent employees. Smooth interfaces promoting easy coupling and decoupling are essential to this kind of staffing. To be effective the requisite skills of

temporary employees or contractors must be explicitly specifiable and such personnel must be able to *plug in* to the contracting organization with a minimum of additional training. Infrastructure for teleworking makes short-term employment contracts attractive to many firms, because the management costs of coupling and decoupling short-term staff can be minimized.

Services providing temporary or contract labor have grown dramatically in recent years. The main purpose of such services in the past was to supplement the permanent workforce, providing "temps" to fill in for employees on vacation, absent because of illness, or to handle temporary increases in the workload. Now, in addition to traditional uses, the contract worker serves as an alternative to permanent employment. Contract labor, as well as regular employees, can be treated in a company's business plan as general production resources. The principal difference between the two being the lower cost of maintaining contract workers, since normally they do not receive pension benefits, they have to pay social security tax for themselves, and may have to arrange other benefits privately as well. On the other side of the ledger, from a company perspective, is the transaction cost associated with coupling and decoupling. Less easy to quantify are issues such as lack of continuity in the performance of functions, and a weak sense of loyalty to the company. Fluid relations between a firm and external organizations such as distributors and suppliers offer

advantages in much the same way as outsourcing and temporary employment contracts. The ability to achieve greater cost-effectiveness by switching from one supplier to another militates against long-term arrangements. However, to realize the potential benefits of switching, information commodities, abstract financial instruments, and organizational standards have to be used to keep the overhead costs in check.

3.5 - Towards "Socionomics"

Virtual organization's need for standards to facilitate the coupling and decoupling of temporarily connected parties will sooner or later stimulate a new discipline, perhaps to be called *socionomics*, by analogy with ergonomics. Socionomics would extend the scope of ergonomics from consideration of the interactions of human beings with their environment to the analysis of interactions of social entities with their environment. A science of organizational interaction is needed to develop sound theory to support empirical research on interfaces, standards and transaction costs to determine the most appropriate ways for metamanagement to use switching in virtual organization.

A variety of models of collective enterprise may be seen in nature, including both animal groups and human societies. At one extreme are the ant and termite colonies that exhibit specialization and cooperation but little or no freedom for individuals to choose roles and

no provision for changing methods of production. Interactions between cooperating parties are fixed and behavior patterns are "hard-wired" in the individuals. Virtual organization is at the opposite extreme.

Guided only by a management paradigm, actors are free to construct their own reality and change it as often as deemed desirable. Individual behavior is programmable and the organization can reinvent itself at will.

The need for a discipline such as socionomics arises from lack of systematic knowledge about optimal ways of operating in virtual mode. Businesses are now experimenting with outsourcing and contract labor-without adequate theory to guide them. As in the initial stages of past innovations, Theory is lagging behind practice. If no effort is made to build theory, practice may suffer. There is no such thing as an absolute good-something of which one cannot have too much-in human affairs. Practice such as outsourcing and use of contract labor could be pushed too far, that is, used in ways that unknowingly-for a time-incur excessive transaction costs or compromise the efficiency and effectiveness of a company's performance. This kind of outcome could discredit the practices themselves and set back the development of virtual organization. Systematic knowledge of organizational standardization and of tradeoffs between switching and transaction costs is needed to guide experimentation.

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Chapter IV

4.1 - Becoming Post-Bureaucratic

Until the mid 1970s, the bureaucratic form of business organization met and far exceeded expectations of probability. Stable markets, steady technological advancement, and mass production with those economies of scale created an environment of constrained and predictable competition. In such an environment, bureaucracy's advantages in efficiency, control, and career incentives produced high profits. However, by the late 1970s, momentous changes on several fronts were destabilizing this environment, throwing its strategic and organizational assumptions into question.

The success of Japanese companies in the American marketplace attracted attention to product quality and development time as new competitive advantages. Both issues illuminated the collaborative efforts prevalent within Japanese organizations. Though U.S. firms adopted quality circles, they were slow to recognize the need for more significant organizational initiatives to meet the increasing competitive pressure. Japanese were simply the most prominent international competitors in a field battling for global markets. At home and abroad, with new technology generating new products and more sophisticated processes for making them, the barriers to entry were tumbling in many industries. The major U.S. firms that had dominated the world for decades were learning that

other companies could generate new ideas faster, manufacture them better and cheaper, improve them continuously, and gradually push their way into sizable market shares. The advantages of efficiency and control, achieved through bureaucracy, were not longer paying off.

In fact, with simultaneous improvement in product quality, development time, and costs as the new competitive standard, bureaucracy became the problem. With each passing year, it becomes clearer that to meet such demands, organizations need to be both effective and efficient, to inspire commitment and initiative from their employees while maintaining a significant degree of control over and coordination of the enterprise , and to motivate this commitment in a manner that keeps costs in check. Furthermore, we have come to recognize that the organizational design features that gave bureaucracy its power in an earlier era a re now hobbling the effort to meet these post bureaucratic requirements.

In this section, we consider how the three features of bureaucracy discussed above-individual performance of tasks, managerial assessment of performance, and hierarchical allocation of rewards-need to change for organizations to become post-bureaucratic and reap the rewards of teamwork. We explain the several practical and political problems associated with each feature, discuss several popular solutions that have been proffered, and assess them, identifying the possible

negative consequences of each solutions. We focus our discussion on how aspects of bureaucracy must change to accommodate teamwork, because, as discussed above, teamwork is emerging as an agreed and integral feature of the post-bureaucratic organization.

4.2 – Teams, Performance, and Rewards

The post – bureaucratic organization envisioned in this book blurs the lines-vertical and horizontal- that demarcate areas of individual expertise, authority, and accountability. Such flexible organizational forms have long been championed from a humanistic perspective (*e.g., Burrell & Morgan, 1979; Ferguson, 1984; Thayer, 1981*), because they typically allow for greater participation in decision making. Flexible forms are currently gaining enthusiasm for a reason less idealistic but perhaps more compelling from a business perspective: the recognition that increasing competitive pressures and inexorable technological acceleration require sacrificing some of bureaucracy's predictability and control to the hope of achieving better and faster integration of expertise. Meeting these new challenges requires a form of collaboration that does not halt or founder on the limits of assigned authority or role but rather is based on the willing contribution of whatever is necessary to get the job done. The common shorthand for such collaboration is *teamwork*. In this chapter, we will add our voices to others' throughout

industry and academia in the United States who propound the importance of teams as an integral feature of the post-bureaucratic organization. We argue that the integration of teams will require a new approach to the division of labor and, perhaps even more challenging to deeply held cultural norms, a new approach to rewards. We are not the first to argue that teams cannot simply be grafted onto existing work and reward structures. The difference in our approach is that we propose fixes that do not simply fix the meritocracy, for example, by assuring individual team members of meritocratic treatment or turning merit-based competition between individuals into merit contests between teams. Instead, we propose that meritocracy is so intrinsically associated with an individualistic, non-cooperative, bureaucratic approach to work that it must be abandoned in the process of moving beyond bureaucracy.

Teamwork is widely touted as a necessary and achievable component of the post-bureaucratic organization. Recent empirical work, however, has found that the transition to teams is slow and painful and the outcomes far less impressive than is commonly thought (*Donnallon, 1992*). It appears that managers have not recognized how profoundly different team works is from the bureaucratic ideal of work and how much the organization must change for teams to flourish. It is only gradually being understood that certain bureaucratic features like a narrow division of

labor and the vertical ordering of titles and authority are not hospitable to team work. Too little attention has been paid to the needed changes to the organizational reward structure (*c.f., Deming, 1986; Kanter, 1987; Lawler, 1990*), although virtually everyone agrees, on reflection, that performance appraisal and compensation must change for teams to work.

The structure of rewards is built on the foundation of the bureaucratic division of labor: increasing rewards are tied to specific roles that are supposed, in the formal model of bureaucracy, to be of increasing difficulty and increasing value to the organization. When we begin to shake that foundation, the reward structure should, theoretically, become precarious. A new division of labor ought to occasion a new distribution f rewards. However, attempts to change rewards are likely to meet with resistance, not just because the division of labor has been rationalized within organizations but also because merit-based opportunity is seen as fair and desirable in the broader culture of the United States. From Weber's (*1946*) earliest description of bureaucracy through contemporary work as diverse as theories of internal labor markets and theories of procedural justice, it is assumed that the rationality of bureaucracies buffers them from arbitrariness and caprice and makes them appear more legitimate. The possibility that bureaucracies do-and now should and must-stray from a purely rational division of labor may not come as a

surprise to academics or practitioners and should only make it easier to adopt teams that cut across traditionally defined roles.

However, it is not popular to admit that organizations do-and now should and must- stray from their rational, merit-based logic in the realm of rewards, particularly if this logic has been used to legitimate decisions about who occupies the positions of greatest authority and rewards. The discussion about departures from meritocracy raises difficult issues about how much organizations-both bureaucratic and post-bureaucratic-have been and will be fair in their distribution of tasks, authority, and rewards. Thus, we see that debates about legitimacy, not just debates about the division of labor and technical efficiency, place obstacles on the path to teamwork and the realization of post bureaucratic potential.

In this chapter, we will explore how the introduction of teamwork raises questions about merit-based rewards, which draws our attention back to the traditional bases of organizational legitimacy and why they might be tenacious. We consider why the reward structure may be the most difficult aspect of an organization to change in the pursuit of post-bureaucratic organizing. Although it may be easy enough to imagine people moving fluidly among tasks without hierarchy's guidewires, it is more difficult to envision the distribution of rewards in a fluid, non-hierarchical manner. Aalternatives to the current reward structure

are difficult to apprehend, but we hope in this chapter to raise issues that will motivate the search. We examine some practices that have been posed as alternatives- such as flatter hierarchies and pay-for-performance-but ask whether these may just constitute meritocracy in another guise and pose the same problems for teams. We may not offer unimpeachable answers to the questions we pose, but we believe these questions must be addressed with new attention and vigor, if the post-bureaucratic organization is to realize its potential.

4.3 – The Traditional Logic of Bureaucracy

The classic statement about the form bureaucracy is found in Weber's (*1946*) famous essay. Taken alone, this essay does not address the ideology and culture that pervades and supports bureaucracy. Considered along with Weber's *the protestant Ethic and the spirit of Capitalism (1976)* and the rest of Weber's considerable *oeuvre,* it advances the argument that certain historic beliefs- the desirability of working hard for ultimate return and the revealed superiority of those who are in society's highest positions- had a crucial, mutually reinforcing relationship with the structures and functioning of a rational bureaucracy. This section reviews these persistent cultural ideas, which we label here as part of *meritocratic ideology.* We then discuss the concept of the rational individual who inhabits the

bureaucracy and finally reviews three features of the bureaucracy on which its rationality and legitimacy hinge but that must change in the move to the post-bureaucratic organization. Our discussion of the ideological underpinnings of bureaucracy is crucial to understanding how the structures of bureaucracy must change, and when they do, the almost obsessive attention to merit-to who gets what and who deserves more-may have to be not merely refined into new forms of pay-for-performance but jettisoned altogether.

4.4 - Meritocratic Ideology

The term *meritocraticy* is a satirical invention of Young (1958) in his fable of unexpected divisive consequences of a truly merit-based future society. The term has since been applied, somewhat more soberly, to late capitalist system of status attainment and reward allocation, usually to distinguish them favorably from class-based or aristocratic system, where birth or family determine outcomes, and to praise these system for elevating the most talented and deserving (*Bell, 1976*). A meritocracy sorts individuals into positions on the basis of their merits. The principles of a meritocratic social order that Daniels (*1978*) defines are:

(1) The selection of individuals for positions on the basis of well-defined merits

(2) Means, such as equality of opportunity, for individuals to develop and display their merits,
(3) A system of attaching rewards to positions.

Scholars have addressed all three of these aspects of a meritocracy. First, different types of merit are defined. In broad strokes, "inputs" such as ability and effort and "outputs" such as performance or contribution are variously regarded as appropriate bases of merit. Second, there have been many attempts (*e.g., Jencks et al.,1979*) to examine whether equality of opportunity exists, specifically by looking at whether forms of merit (such as SAT scores) determine who gets ahead in the United States rather than forms of privilege (such as family income). The ongoing political significance of this debate is that political conservatives generally argue that merit does count, hence correctives like affirmative action and redistribution are not warranted, while political liberals generally argue that merit is the touted but not actual basis of advancement, hence correctives are warranted. Third, organizational researchers have explored how rewards get attached to positions and how individuals move among positions, garnering the reward associated with the position, rather than with their contribution at any given moment (*Baron, 1984*). It is in response to this institutionalization of rewards for positions that Kanter (*1987*) writes that rewards should no longer attach to "status" but to "contribution", essentially an

argument for a return to a "truer" form of meritocracy, which we address further on.

4.4.1 - The Rational Individual in the Bureaucracy

Weber's sociological work does not directly pose a theory of the psicology of the inhabitants of a successful bureaucracy. However this model assumes that individuals are willing and able to defer gratification and work hard now in the expectation of rewards later, specifically monetary rewards in bureaucracy. For bureaucracy to be efficient, such individuals must be motivated by the prospect of a career in which they climb an organizational ladder.

More recent psicological work on motivation, such as expectancy theory (*Lawler, 1973; Vroom, 1964*), elaborates a similar portrait of individuals who work hard if they feel their effort produces a realizable performance that, in turn, produces a valued reward. According to equity theory (*Adams, 1965*), individuals are more satisfied if the ratio of their inputs to rewards is the same as the ratios of others. Individuals in organizations make social comparisons in determining if their rewards are fair (*Martin, 1981; Wood, 1989*). The individual appears as a rational calculator, extrinsically motivated and constantly concerned about using power to win a relatively larger share.

Along with the cultural and psicological concomitants of bureaucracy, three structural features of the

bureaucratic model combine to generate the efficiency, coordination, incentives, and legitimacy required to maximize outcomes in the industrial era. These are reviewed below: individual performance of tasks, managerial assessment of performance, and hierarchical allocation of rewards.

4.4.2 - Individual Performance of Tasks

Part of the logic of bureaucracy is its claim to technical efficiency through the division of labor into subtasks (*Weber, 1946*). Roles are discrete to allow boundedly rational employees to focus on a subtasks, so as to achieve mastery. The perception of control over, and accountability for, one's performance of a specific subtask creates the incentive to work hard and thus reap the rewards linked to the subtasks. Roles are related hierarchically, it is argued, to facilitate employees' learning of ever more complicated tasks and to assist top managers in processing only the important information that is passed upward (*March & Simon, 1958*). Each individual has a bouded place in the means-ends chain of tasks.

4.4.3 - Managerial Assessment of Performance

For bureaucracy to deliver on its promise of technical efficiency, required people to pursue careers within

organizations, as Weber (1946a) outlined and as has been elaborated in the literature on internal labor markets (*Doeringer & Piore, 1971; Osterman, 1984*). In these accounts, employees acquire firm-specific skills to ply as they ascend a ladder of increasingly demanding positions. More experienced employees train and evaluate employees below them, with the understanding that, in training their replacements, they too can move up the ladder. Since the job ladder is supposed to reflect a gradient of fewer to more skills, those in higher positions are thought to be best able both to assign tasks and to evaluate the performance of tasks by those below them. This additional monitoring of task performance is typically justified-or critiqued as a mechanism for increasing managerial control. Bureaucracy is believed to work well because its rules are "impersonal", that is, "like" individuals are treated "alike". Meritocracy is a very common system of rules for assessing performance (*Lawler, 1973; Murphy & Cleveland, 1991*) and is addressed in this chapter; seniority-based rules are another alternative.

4.5 - Hierarchical Allocation of Rewards

Part of the inducement to remain with the firm and work hard is the promise of ascending to higher positions, to which greater rewards are attached. Each employee is supposed to feel accountable for the

successful execution of the tasks within is or her role as the means of earning fair compensation in the near term and promotion in the longer term, both supposedly assigned by an objective and rational authority. Merit, rather than favouritism, is supposed to provide the basis for reward and promotion. Merit based rewards are supposed to assure that employees are fairly treated and feel motivated to work hard and that organizations identify and promote the most productive talent.

4.6 - The Persistence of Bureaucracy

Of course, this description of bureaucracy, even when first penned by Weber, is posed as an ideal-typical description. In fact, work in large complex organizations has rarely lent itself to such independence of action in discrete roles. Adjustments could be made in times when there was sufficient organizational slack, through informal mechanisms that reintegrated arbitrarily differentiated responsibilities (*Heckscher, 1988*). Even if the reintegration was not perfect or timely, the relative lack of competitive pressure allowed the prevailing formal design of work to survive and dominate with little question.

Ch. IV - Bibliography

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