

---

**MILITARY ORGANIZATION IN THE INFORMATION  
AGE: LESSONS FROM THE WORLD OF BUSINESS**

*Francis Fukuyama and Abram N. Shulsky*

---

**THE IMPORTANCE OF ORGANIZATION IN A TIME OF  
REVOLUTIONARY CHANGE**

Technological advances in the areas of telecommunications and data processing (which, together, are often referred to as “information technology”) have given rise to much discussion about “information warfare.” The fundamental expectation behind this discussion is that exploitation of advances in information technology will lead to revolutionary changes in the ways in which wars are fought.

Students of such “revolutions in military affairs” (RMAs) have noted that they often involve major changes in the organizational structure of the armed forces, as well as in the weapons they use and the doctrines according to which they fight.<sup>1</sup> Indeed, since organizational structure both influences and reflects the manner in which information flows into and within the organization, one would expect that an RMA based on information technology would have particularly significant effects on military organizational structure.<sup>2</sup>

---

<sup>1</sup>See, for example, Cohen (1996).

<sup>2</sup>The term “organizational structure” refers to the ways in which the parts of an organization relate to each other: It includes, but is not limited to, the “wiring diagram” showing the subordination and superordination of the various individuals and offices. It is, however, only one of several important related areas in organizational design that have received attention in recent years. Other areas include the organizational process (how work is accomplished); monitoring (how work is overseen); incentives (how individuals are rewarded and promoted); and leadership (how work is supervised and directed). This chapter focuses primarily on structure but discusses some of these other issues as they are related to questions of structure.

Even in cases of RMAs which depend critically on new technologies and weapon systems, organizational questions are nevertheless critical; failure to understand the organizational implications may mean that the promise of the new weapons is lost. Thus, while the German *Blitzkrieg* strategy of World War II depended decisively on the technological advances of the previous decades—tanks, aircraft capable of providing close air support, and mobile radios—it also required certain organizational characteristics. In particular, its fast pace implied that lower echelons had to have the authority to take the initiative to exploit battlefield opportunities; they also had to have more direct, and more rapid, communications with headquarters and other military units that could support them. Front-line *Panzer* units, for example, could request air support directly from the *Luftwaffe* without having to go through higher Army echelons. By contrast, the British and French command structures required unit commanders to go through several intermediary headquarters to communicate with supporting units. (Messenger, 1976, p. 143.)

Many of the organizational characteristics of the German army<sup>3</sup>—“mission orders” (*Auftragstaktik*), the assumption of initiative and responsibility by lower echelons, streamlined administrative and reporting systems—predated *Blitzkrieg* but were consonant with it and were, in fact, important elements in contributing to its success. Failure to understand these components of the RMA hampered the ability of Germany’s opponents to exploit the new systems as effectively.

Indeed, innovations in organizational structure may themselves be the source of an RMA. For example, Martin Van Creveld has argued that Napoleon’s single most important military innovation was the development of a modern command organization, especially the concept of independently operating combined arms corps. This innovation allowed him to control forces far larger than anything fielded in the preceding centuries of warfare.<sup>4</sup>

---

<sup>3</sup>As noted in footnote 2, organizational issues include more than questions of structure or “wiring diagram.” A formal depiction of the organizational structure of the German army would not have looked very different from that of the armies of its opponents; the key difference resided in other organizational features, such as those noted in the text.

<sup>4</sup>This discussion of Napoleon relies on Van Creveld (1985), Ch. 3, especially pp. 58–62, 101–102.

In this case, the RMA did not depend on any major technological advances. Although Napoleon's system depended decisively on his ability to communicate with his corps commanders, who could be spread out over large fronts of up to 70 miles or more in width, his only new communication system was the Chappe optical telegraph, which, however, was not useful for tactical communications in the field because it relied on large fixed installations. Instead, Napoleon relied on organizational innovation to solve the problem posed by the inadequacy of available communication technology. Rather than maintaining tight control, Napoleon granted enough autonomy to his corps to allow them to operate independently for limited periods of time. (Van Creveld, 1985, p. 101.)

Issues of organizational structure are also prominent in the business world, which has also been shaken in recent years by a "revolution" in the way in which large corporations conduct their activities: Indeed, the importance of organizational issues is illustrated by the fact that major advances have sometimes been achieved by reorganization *independently* of any technological advances. For example, the development of "lean manufacturing" by Toyota in the 1950s—arguably the "granddaddy" of the current wave of corporate reorganization—was accomplished without any new technology in the areas of computers and telecommunications. This is true even though an important component of the system—"just in time" inventory management—depended on the rapid flow of information back and forth between Toyota and its suppliers.<sup>5</sup>

The business world has a rich literature on organizational change, as well as extensive corporate experience with reorganization and adoption of information technology. With due deference to the difference between military and commercial organizations, this chapter will attempt to mine that literature for ideas on how to structure military organizations to take advantage of new information technology. First, the chapter will examine the current thinking on corporate organizational responses to information technology. Next, it will

---

<sup>5</sup>According to Womack, Jones, and Roos (1991), p. 62.

[t]he mechanism [for communicating this information] was the containers carrying parts to the next step. As each container was used up, it was sent back to the previous step, and this became the automatic signal to make more parts.

look at some implications for the armed forces of the principles derived from corporate experience.

The business literature is far from conclusive on how to organize to take full advantage of information technology, and even many of the clearest lessons do not apply in a military setting. Nonetheless, a few implications emerge clearly from the discussion that follows. First, the military will need to institutionalize an environment of constant learning, one that includes the freedom to fail. Second, the military will need to redistribute skills toward the bottom of the hierarchy and give more autonomy to lower levels of the military. Finally, and perhaps most importantly, if the military is to benefit from cutting-edge commercial technology, it will need to confront the politically intractable problem of streamlining its unwieldy procurement system.<sup>6</sup>

### **THE EFFECTS OF THE “INFORMATION REVOLUTION” ON CORPORATE ORGANIZATION**

Recent writing on corporate reorganization discusses many ways in which the “information revolution” has had implications for issues of organizational structure. Although the literature resonates with a myriad of “buzz words,” the major concepts can be summarized under three rubrics. The first two are centrally concerned with the question of how information is handled within an organization, while the effectiveness of the third relies on information technology:

- “flattening” organizational structure—to speed up the flow of information within the organization and create the proper incentives for its use
- “informating” (or “digitization”)—to facilitate the collection, processing, distribution, and use of more-detailed and more-timely information throughout the organization
- concentrating on “core competencies”—to emphasize one’s sources of competitive advantage, while disencumbering oneself of functions that can be performed better by others.

---

<sup>6</sup>This chapter draws heavily (and, at times, verbatim) on Fukuyama and Shulsky (1997).

The ultimate goal is to create an organization that can adapt more quickly and flexibly to new information. As one of the seminal articles of this school of thought explained, a key characteristic of an organization will be the way in which information is handled in it:

the typical business will be knowledge-based, an organization composed largely of specialists who direct and discipline their own performance through organized feedback from colleagues, customers, and headquarters.

In its central management, the information-based organization needs few, if any, specialists. . . . the knowledge will be primarily at the bottom, in the minds of the specialists who do different work and direct themselves. (Drucker, 1988, p. 45.)

Many of the current developments in this area focus on the flow of information in an organization and seek to adjust its formal structure (i.e., the “wiring diagram” that defines the formal reporting relationships and the division of areas of responsibility) accordingly. The basic premise, as in the citation above, is that organizations are, and increasingly will be, mechanisms for the processing and exploitation of information. As such, their competitive advantage will come from their superior ability to perform these functions with respect to a given area. The relevance of such a perspective for information-age warfare is clear, but the fact that a military organization’s tasks are more varied than those of a corporation suggests that this perspective must be applied with caution.

### **Flattening: Creating Shorter Data Paths**

“Flattening” an organization typically involves reassigning the functions and authority of one or more layers of middle management, either downward, toward the bottom of the organization (to the workers themselves or their first-level supervisors), or upward, toward the senior management. The overall number of management layers decreases as a result. For example, at Franklin Mint, it fell from six to four after a restructuring; at Eastman Kodak, the distance between manufacturing manager and factory floor fell from thirteen levels to four. (Davidow and Malone, 1992, p. 168.)

The main advantage sought in flattening an organization can be understood in terms of information flows. In the design of a traditionally hierarchical organization, the implicit assumptions are that

sharing information within the boundaries of the enterprise is cost free and automatic and that information flows rapidly, and without obstruction, along the lines of authority as indicated on the organization chart. In fact, information is costly to generate and transmit; the process takes time and effort and is not free from error and distortion.

Information enters an organization at all points, and a great deal of local information comes in at the bottom. For example, the first person to know that a supplier's door panels are misshapen may be the assembly line worker who tries to install them on the automobile frame. There are obvious advantages for an organization that can process the latter kind of information close to its source and make use of it. A more-hierarchical organization, by contrast, would require that information entering at the bottom be passed up a multilayer managerial hierarchy for processing and decision and then that the result be passed back down again for action.<sup>7</sup>

The movement of information through a hierarchy does not just slow down the process; there is also the risk that the content will be distorted as it is handed off from one level to another. It is common in bureaucracies for each level to pass along only that information it thinks the next level above or below it wants or needs to hear. The result is necessarily an overall loss of precision, as well as time, as the information passes through the hierarchical structure.

In addition, there is an "agency" problem: Each level in a hierarchy has its own bureaucratic interests and therefore may shape the information that it transmits to suit that interest. Thus, although centralized, hierarchical organization creates the appearance of effective and detailed control, this is often an illusion because those at the top may have only a poor or distorted view of what is going on in the organization's depths.

Flattening also contains some risks, however. Since flat corporations retain a hierarchical structure in which senior managers still have

---

<sup>7</sup>Of course, as anyone who has worked within such a hierarchical organization knows, individuals typically develop personal ties with other parts of the organizations that enable them to short-circuit this process; it is generally understood that doing things "by the book" can be unnecessarily slow and cumbersome. Much of the discussion of flattening involves the working out of this common insight.

ultimate authority to control the behavior of their subordinates, the elimination of middle managers implies that the span of control for senior management necessarily increases, decreasing their ability to supervise their subordinates' activities or identify problem areas.

Flattening may also risk the loss of what may be called a "middle perspective," i.e., the perspective on standard operations held by a first-level supervisor, who is intimately familiar with the routine but is not enveloped by it. The observations of such supervisors (the corporate versions of noncommissioned officers) may be crucial for innovations: Higher-level supervisors may lack the detailed knowledge of day-to-day operations, while those engaged in the actual operations may lack the time and ability to reflect on them.

The corporate penchant for flatness obviously raises the question of whether a similar reorganization—extending the span of control and reducing the number of command echelons—makes sense in a military context as well. In the late 1950s, the idea that increased flexibility of command would be required to operate in a tactical nuclear environment led to the Pentomic Army concept, in which the brigade echelon was abolished.<sup>8</sup> To compensate, the span of control at the division and battalion level was increased to five battalions and five companies, respectively. Although the concept was soon abandoned as mistaken, it may be that, from an organizational point of view, it was premature rather than simply wrong.

While the corporate literature suggests that such flattening could be a useful step, it must be kept in mind that it is not a goal in itself, but only a possible means toward the ultimate goal of creating an organization that can react more quickly to events, especially unforeseen ones. Another means of accomplishing the same desired result (the shortening of data paths) would be authorizing the skipping of echelons for certain types of communications. The familiar device of the "directed telescope," whereby a higher-level commander empowers an agent to gather information directly from a unit several layers

---

<sup>8</sup>See Bacevich (1986), Ch. 5, for a discussion of this reorganization. The driving force behind the Pentomic Army concept was the need to prepare to fight on a battlefield on which both sides were prepared to use tactical nuclear weapons. Many of its features are related to the issue of tactical nuclear weapons and are not of interest here. What is of interest here is the attempt to "flatten" the Army by eliminating an echelon below the corps level.

below him in the hierarchy, is such a method for speeding up communications with a subordinate who is involved in a particularly critical operation. Similarly, if the high-level commander visits a front-line unit personally, he has effectively shortened the data paths by skipping the intermediate echelons.

In the military context, data paths are often shortened in a more *ad hoc* fashion. Such improvisation is often necessary, although it does run the risk of creating confusion if the bypassed intermediate levels are not informed of what is going on. An extreme version of this phenomenon may occur during military operations other than war (MOOTW), in which individual actions can take on a larger political significance. For example, the actions of a single squad in a Haitian city could have significant repercussions for the entire operation, especially if they were to be captured on tape by the Cable News Network and broadcast to the world. As a result, the White House officials might, under extreme circumstances, wish to be in direct communication with units on the ground, both to receive reports directly (otherwise, they could find themselves in the uncomfortable position of receiving press inquiries about events of which they had not yet been informed) and to direct actions on the ground (to avoid unwanted incidents).

While this type of political “micromanagement” is typically unwelcome, it may be on occasion inevitable given the politically sensitive nature of many MOOTW. As opposed to this type of *ad hoc* echelon-skipping, in which the challenge is to balance the advantages of flexibility against the confusion that can be created when intermediate echelons are left in the dark concerning matters about which both their superiors and subordinates are aware, one could envisage a policy decision to mandate direct communication between nonadjacent echelons with respect to a given function. For example, it might be possible to mandate that a company or battalion report certain types of logistics information directly to a theater-level support agency, bypassing the intervening echelons.

In general, a thorough study of future command and control in the armed forces should involve a review of all the functions performed by the command hierarchy to see which levels were crucial for each, and which merely performed relatively mechanical functions of transmitting, aggregating, and/or processing data on its way from

one echelon to another. New information technology would enable one to design shorter, more direct communication paths that, with respect to a given function, bypassed the echelons that did not have a substantial role to play.

### **“Informating”**

Information technology obviously has great potential for speeding up the flow of information and ensuring that it gets to the right place at the right time in the right format. At the same time, new means of communication can be counterproductive if they lead to information “overload,” the swamping of communication circuits with routine reporting that interferes with the transmission and reception of critical information. Moreover, the additional reporting burden on subordinate units can interfere with their ability to fulfill more-crucial tasks.

One solution to this difficulty goes by the name of “informating,” which is the application of automation to information processes to minimize the reporting burden, avoid “information overload,” and gain the greatest possible value from the available data.<sup>9</sup> The key is to automate the required information processes and then tailor the display of the data to the particular needs of the various consumers at different echelons and with different responsibilities. Automation can be applied to data collection, transmission, aggregation, processing, and presentation.

In such a system, information is collected automatically or as a by-product of other operations. One of the best-known examples of this is the Wal-Mart system, in which the information that a particular product has been sold, which is obtained at the checkout counter when the bar code is scanned, is used not only to calculate how much the customer owes but is also transmitted to a companywide

---

<sup>9</sup>The word “informat” was coined by Shoshana Zuboff to describe the process by which information about the “underlying productive and administrative processes through which an organization accomplishes its work” is automatically generated, processed, communicated, and displayed. This provides “a deeper level of transparency to activities that had been either partially or completely opaque,” which is intended to facilitate the effective management of those activities.” (Zuboff, 1988, pp. 9–10.)

database. Without increasing the workload of the checkout clerk, and without burdening other company employees, timely and detailed sales information is collected for processing and use.

The information is then aggregated and processed to meet the needs of various users within the company. In a retail organization, for example, this information might be aggregated to supply top management with a sense of the immediate trends in the overall business of the company. The same information can also be used in a more detailed and targeted fashion, for example, to order more of a given product that is selling rapidly; in some cases, suppliers could be directly tied into the retailer's data system and receive orders automatically. With less urgency, historical sales data can be analyzed to spot longer-term patterns in consumer preference.

In some cases, the processing is done automatically according to preset algorithms, delivering a predetermined product to designated users. In addition, the processing algorithm could be configured to recognize certain situations as requiring the intervention of management (e.g., sales figures that change rapidly in a short time, wide discrepancies between stores with similar customer bases, etc.) and "alert" the appropriate official. Finally, the database can be interrogated by managers who wish to know more about how a specific product is selling, how one region differs from another, what the seasonal trends are, etc. The manager of a store can compare his own sales figures to those of neighboring stores or of stores situated in neighborhoods that are similar in socioeconomic terms to determine how well he is doing and in which areas he might be able to improve.

Thus, the data are made available to a wide variety of users within the organization in formats specifically tailored to their needs. This avoids the problem of "information overload," the swamping of users with large amounts of routine data, which makes it harder for them to focus on what is of particular importance. In addition, this is accomplished without burdening a large number of employees with the transmission, aggregation, and processing of the data, tasks that can absorb a great deal of time and energy in traditional organizational hierarchies.

A military analog to this system would be one in which transmitters on vehicles automatically report their position (as determined by a Global Positioning System receiver), either to a central database or

on a net. This information would then be processed to display the position of a defined set of vehicles when required by a commander. (Similar systems are used in the commercial world to enable trucking companies to track the locations of the vehicles in their fleets.) Similarly, the usage and status of petroleum, oil, lubricants, and ammunition could be determined by sensors and transmitted; the same might be possible for data on the operability of vehicles.

With appropriate processing, this information could be made available to a variety of users in formats tailored to their requirements. For example, higher-level commanders could review the information in a more aggregated form, while those at lower levels might want to see it on a battalion by battalion, company by company, or vehicle by vehicle basis. At the same time, the same information could be aggregated into a form useful for logistics planning; with appropriate security precautions, data that are classified when they deal with specific identified units could be made available, once aggregated and otherwise sanitized, on an unclassified basis.

In designing such a system, a key point to be kept in mind is that, because a vast amount of very specific and “low-level” data is reported from each unit (e.g., the petroleum, oil, and lubricant levels for each and every vehicle), the resulting database contains altogether much more information than any one user could possibly use. Thus, the danger of “information overload” is real; if any user were to receive all, or even a significant fraction, of the total amount of data contained in the system, he would be hopelessly swamped. Thus, the systems for aggregating and processing the data are as crucial as those for collecting them in the first place. If the latter outrun the former, the result is likely to be a system that is less useful than the less sophisticated one it replaces.

“Informating” can be seen as a decentralizing influence, since it enables information to move more flexibly throughout the organization (including laterally), not just in vertical reporting channels. At the same time, informating depends on the existence of standards that are enforced universally. Each part of the system (sensor, communication device, information processor, output device) must be compatible with the other parts. While the various subsystems can be developed independently, they must adhere rigorously to the standards and protocols that will enable them to interact with each other.

For this reason alone, the adoption of such a system cannot be seen as a merely technical issue; rather, it inevitably acquires a “political” dimension, since it requires that different parts of the organization reach some type of agreement. While this might be accomplished on the basis of consensus among the various parts, it is more likely to require the forceful intervention of the leadership.

While informing facilitates decentralization and rapid execution, it can have the opposite effect as well: For example, the availability of more-detailed and current information may tempt superior echelons to “micromanage” decisions that should be left to their subordinates. Similarly, the potential availability of large amounts of data could inhibit rapid decisionmaking, tempting the commander to keep searching for more and more information long after he should have made his decision.

A more subtle danger could arise from the fact that, in the course of structuring the data flow and developing the processing algorithms, one has in a sense incorporated into the information system a certain set of organizational procedures. If members of the organization come to view certain processes as “black boxes” (i.e., they pay attention only to the result of the process, while ignoring how it actually operates), they may be less likely to think about innovative ways of changing them. Thus, while the automating of information processes is the key to reaping the advantages of advances in information technology, it must be balanced by the ability to retain visibility of the entire process, to interrogate it in unconstrained ways, and to make incremental adjustments to it.

### **Concentrating on “Core Competencies”**

The notion of “core competencies” is a challenge to the more traditional view of a corporation as tending toward an integrated organization that itself performs all the vital functions (and many not so vital ones) that are important for the conduct of its business. For example, a traditional integrated manufacturing corporation might not only design, assemble, and market its product but might also manufacture components; mine, grow, or trade the raw materials it uses; and service the product, to say nothing of managing the pension fund and running the employee cafeteria.

The traditional understanding among economists of why firms tended to integrate a wide variety of functions under a single management structure had to do with transaction costs.<sup>10</sup> Contracting for goods and services through market interactions was frequently costly, particularly when complex, hard-to-evaluate goods and services were involved, so companies tended to bring these functions in house, even though the companies were not able to perform them as efficiently as could others outside the company who specialized in these functions. With the introduction of cheaper, more-sophisticated information technology, many of the costs of dealing across firm boundaries began to decline, becoming less than the costs associated with the inefficiency of producing a good or service in house:

Increasing market efficiency [made possible by the use of IT [information technology] for linking buyers and sellers] . . . implies that firms should focus more carefully on the few core competencies that give them strategic advantages in the marketplace. They should buy the additional, more peripheral products and services they need instead of making them. (Malone and Rockart, 1991, p. 132.)

The term “virtual corporation” is often used to describe a company that has divested itself of all but a few key functions, its “core competencies”; ideally, these are functions that it can perform better than anyone else and that provide the company its competitive advantage. Although much of the literature emphasizes the importance of information technology in facilitating the coordination with suppliers that a virtual corporation requires, it should be noted that information technology does not suffice: There must be a sufficient degree of trust among the business partners as well. The amount of trust required varies with the type of good or service being purchased: Buying sandwiches for the company cafeteria is one thing; farming out a delicate manufacturing process (as when a “fabless” semiconductor company limits itself to design work, while hiring another firm to actually fabricate the chip) is another matter entirely.

The model of the virtual corporation is of some relevance to the military, particularly in such areas as procurement, logistics, and other

---

<sup>10</sup>The *locus classicus* for this argument is Coase (1937).

forms of noncombat service support. Even in these cases, however, the question of trust is likely to loom larger than in the corporate world. It may be more efficient for the armed forces to farm out maintenance work on certain types of sophisticated weapon systems; however, a key issue would have to be whether the civilian contractor can be relied on to perform the maintenance if it must be done in a combat theater, where its employees or equipment might be at risk. For example, the Civilian Reserve Air Fleet system, by means of which civilian aircraft are made available to the armed forces in time of crisis or war, does not require the airlines to allow their planes to be flown into air bases that have come under enemy fire.

With respect to the combat functions themselves, the logic of the “core competencies” argument suggests a higher degree of specialization among units, with less “organic” support contained in each individual unit. However, the problems of coordination are much greater in combat than in the world of business; each individual commander is likely to try his utmost to retain control of the support functions that he requires to achieve his mission.

### **IMPLICATIONS FOR THE U.S. ARMED FORCES**

Before discussing the implications of recent corporate developments for the U.S. armed forces, it is worthwhile noting that, in many cases, the corporate changes are in fact imitating military experience, although this dependence is typically not made explicit. For example, much of the corporate literature talks about the importance of “teams” and the advisability of emphasizing social or group incentives, not just individual incentive, to motivate exceptional performance. This mirrors military concern with “group cohesion”; military organizations have long realized that motivational techniques directed at the individual (e.g., promotion, medals) are insufficient in combat and have to be augmented by the inculcation of small-group loyalty.

Similarly, the emphasis in the corporate literature on “empowering” lower levels of the hierarchy recalls a much remarked-upon feature of the Prussian and German armies for well over a century:

In the final account, the German Army’s system of organization reflected a deliberate choice, a conscious determination to main-

tain at all costs that which was believed to be decisive to the conduct of war: mutual trust, *a willingness to assume responsibility*, and *the right and duty of subordinate commanders at all levels to make independent decisions and carry them out*.

To generate independence, freedom had to be granted. To train men toward responsibility, authority had to be delegated. To create trust, reliability and long standing acquaintanceships had to be assured. A direct outcome of these considerations [was], in the first place, *the German regulations which, as compared to the American ones, did not go into great detail and did not attempt to prescribe solutions in advance. A decentralized system of administration left much to the discretion, not to say intuition, of individual commanders and men*, but at the same time put complete and undivided responsibility squarely upon their shoulders. (Van Creveld, 1982, p. 165. Emphasis added.)<sup>11</sup>

In general, it may well be that, while armed forces have always been regarded as the prototypical strictly hierarchical organizations, they in fact have always been “flatter” and more flexible than most corporations (especially in wartime). This may seem paradoxical until one considers the different environments in which the two types of organizations operate. However hierarchical a military organization may appear on paper, the confusion, uncertainty, urgency, and stress of combat require the implementation of many contemporary corporate nostrums, such as individual initiative at lower levels, lateral communication, and teamwork. On the other hand, a manufacturing plant operates in an essentially artificial environment (i.e., a factory designed for a specific operation, producing a range of predesignated products, etc.) that can be regulated in a much more detailed fashion.<sup>12</sup>

Thus, while the manifest differences between corporate and military organizations preclude the automatic application of the lessons of the former to the latter, we should not be surprised if some ideas

---

<sup>11</sup>Another example of corporate borrowing would be the adoption of the practice of preparing formal “after action” reports to capture the lessons of the corporation’s experience in a given matter.

<sup>12</sup>A further irony is that the army popularly regarded as the most rigidly hierarchical—the Prussian or German army—in fact operated in a manner most consonant with the recent corporate literature.

from the corporate world turn out to make good sense for the U.S. armed forces.

### **Organizational Structures**

As has been noted, the primary advantage of flattening an organization is to improve the flow of information from those who have it to those who are in a position to act on it. In general, reducing the number of management layers not only speeds up the flow of information from initial acquirer to ultimate user (since it has fewer stops to make along the way) but can also increase its accuracy (since there are fewer opportunities for distortion, either inadvertent or deliberate).

It should be noted, however, that this argument focuses on a single, if very important, function of middle management: the aggregation, filtering, and transmission of information. It is of course precisely with respect to this function that the advances in information technology suggest that flattening is desirable, since information technology facilitates this work and may enable the automation of much of it. On the other hand, middle management serves other functions as well: It provides leadership to subordinates, performs various specialized functions, and serves as a training ground for future high-level leaders. In considering whether a flatter structure is appropriate, the armed forces must look carefully at these functions as well.

Of these, the leadership function is the hardest to analyze. Organizational literature addresses this issue under the rubric "span of control," i.e., the number of subordinates who report to a given superior. As noted above, some corporate reorganizations that follow the recent trends in organization theory have resulted in spans of "control" that run from 20 or 30 to hundreds of subordinates. Obviously, this is only possible because, in these cases, the superiors do not have to "control" their subordinates in any "hands-on" manner; for the same reason, superiors cannot be expected to be responsible for teaching their subordinates necessary skills or for nurturing their growth as potential future supervisors or executives.

In cases such as these, nonprofessional subordinates are regarded as capable of performing their (limited) functions autonomously, while subordinates who are professionals in terms of their training and

responsibilities are seen as capable of guiding their own work. In the latter case, “control” comes from the subordinates’ sense of the standards of their profession (e.g., doctors in a hospital, who take their bearings from the standards of the medical profession and resist allowing the hospital administrator to tell them which course of treatment to follow).

For the armed forces, the leadership function is much more complicated. In combat, the span of control is important because superior commanders must provide direction to their subordinates. No matter how much initiative the latter are permitted or encouraged to take, and no matter how good the information flow to them, the need for concerted, decisive action will require that, on some occasions at least, superiors actually direct the actions of their subordinates. This places some limits on the feasible span of control, regardless of the use to which information technology may be put, although only experimentation in realistic exercises will provide insight into the question of how large that span of control can be.

Even in peacetime, the armed forces face unique leadership challenges. To a greater extent than in the corporate world, commanders of combat units are expected to provide professional and personal leadership to their subordinates.<sup>13</sup> This also implies a limit on the span of control. Thus, with respect to the leadership function, the corporate experience may not be very revealing.

In some cases, it might be possible to reallocate the various specialized functions performed by a command echelon (whether combat or support functions) to accommodate a flatter organizational structure. In fact, even with the current number of echelons, some functions can be concentrated at higher levels. For example, the centralization of logistics could, in some instances, rely on information technology to achieve efficiencies.

It is with respect to the training function that some of the most difficult dilemmas regarding flattening may be expected. In the corporate world, it has been noted that the elimination of middle man-

---

<sup>13</sup>However, the recent emphasis in the corporate literature on the phenomenon and importance of “mentoring” provides another example of how the corporate world has adopted certain ideas from the military.

agement layers may mean that newly promoted executives are not as well-prepared for their new responsibilities as previously. For example, at Wal-Mart, the introduction of the automated reporting system described above was accompanied by a much flatter organizational structure than in a typical retailing operation; the elimination of local warehouses and subregional centers means that an up-and-coming junior executive goes directly from the position of store manager to being responsible for an entire region.

This problem may be even more severe for the armed forces, since the gradual progression through the ranks is the most important mechanism for training top leadership. If an echelon is removed, some way will have to be found to compensate for the experience that officers would have gained by commanding at that echelon. Indeed, the problem is much more important for the armed forces than for a corporation, since the latter can recruit outsiders to become high-level officers, whereas the armed forces must “grow” their own.

In the corporate world, lateral transfers (as a way of broadening an executive’s experience) and formal education have been used to deal with this problem.<sup>14</sup> The armed forces already use these training mechanisms. An additional possibility, also used in business training programs, would be games and simulations; as information technology makes it possible to have more and more realistic simulations (especially of command functions), this may be an important way of compensating for any decrease in “hands on” experience.

### **Creating a Learning Institution**

The questions of organizational structure discussed so far have concentrated on the issue of facilitating the flow of information through the organization in support of its current activities. The rapid pace of technological change in the commercial world and the increased pressures of global competition have also focused attention on the necessity of making an organization more adaptable, i.e., able to change more rapidly in response to new information about technological advances, market conditions, the competitive environment,

---

<sup>14</sup>For a discussion of this issue, see Weber et al. (1990).

etc. This problem obviously faces the armed forces as well, especially if we are currently in a period of revolutionary change in military affairs.

The rapid pace of change creates uncertainties with respect to all areas of activity of the armed forces. In addition to procurement decisions, doctrinal questions relating to tactics and organization will be subject to frequent change. As corporations have discovered, major changes in information systems can have wide-ranging effects throughout the organization, many of which come as surprises as the members of the organization learn how to use the new system and exploit more and more of its potential.<sup>15</sup> Hence, since information technology is evolving particularly rapidly, one must expect higher-than-usual degrees of turbulence.

Although the implementation of a new information system often requires a high degree of centralized control (for example, a large amount of “clout” may be required to ensure that the different parts of the organization adopt compatible information technology equipment and systems), the process of refining it and learning how to make optimal use of it requires a great deal of experimentation. For example, while “digitization of the battlefield” may well lead to major changes in the Army’s organization, there is probably no way to design an optimal structure now. The information systems that current and evolving information technology will make feasible will have unpredictable effects on how war is fought.

This suggests that a major goal must be making the armed forces a more adaptive organization, especially for the period during which this major transformation will be taking place. There will have to be a great deal of experimentation to discover the best use of the new information systems and to refine them to exploit their full potential. Part of this experimentation will have to involve new organizational forms as well; for example, a major issue would be whether, given the new information systems, it makes sense to institute a greater span of control and hence a flatter organizational structure with fewer echelons.

---

<sup>15</sup>This point is the central thesis of Shoshana Zuboff’s discussion of the “informating” of paper mills. (Zuboff, 1988.)

This suggests a major change in the way in which the armed forces prepare for the future. In principle, their behavior in this regard should be characterized by

- constant experimentation with new ideas and methods as the new information systems are absorbed
- pursuit of multiple alternative solutions
- careful analysis of actual operations to extract the maximum amount of information from real-world experience
- willingness to make frequent, small changes in methods and structure as new lessons are learned.

This approach may seem unnecessarily messy. However, a recent study of particularly successful companies noted that, although they invest in R&D in areas that appear promising to them, they often do not have a very clear idea of the precise products in which that technology will be incorporated. The history of successful companies contains many cases in which important products were launched seemingly by accident, although the ground had been prepared by the cultivation of technological expertise and a willingness to innovate “on the fly”:

In examining the history of the visionary companies, we were struck by how often they made some of their best moves not by detailed strategic planning, but rather by experimentation, trial and error, opportunism, and—quite literally—accident. What looks in hindsight like a brilliant strategy was often the residual result of opportunistic experimentation and “purposeful accidents.” (Collins and Porras, 1994, p. 141.)

Fostering this type of experimentation imposes a number of requirements. First is the issue of financial resources. Ideally, an experimental unit ought to have some funds available to procure items on a trial basis without having to go through normal procedures. This would be especially true of information-technology equipment, which evolves very rapidly and which is available “off the shelf” in great variety and sophistication. Expertise should be available at the unit level to help in this regard; for example, the XVIII Airborne Corps’s “science advisor” provides the components of that unit with information concerning current technological develop-

ments that could be of interest. A network of such science advisors could assist units in this regard and serve as a mechanism for disseminating positive experiences from one unit to the rest of the armed forces.

Money is not, however, the only resource that would be necessary; the units must have the time to engage in this type of work. The current high operational tempo of the armed forces, which is due to their involvement in various MOOTW, poses one obstacle in this regard. Beyond that is the issue of readiness levels; to the extent that a unit must maintain a high readiness level, its ability to devote time and effort to experimentation will be limited. It is thus an important question whether a designated experimental unit, such as the Army's Experimental Force,<sup>16</sup> should be required to maintain high readiness as well.

When corporations experiment, they may be able to tell right away whether an idea is a good one or not, since they are involved in their business on a day-to-day basis. For the armed forces, of course, things are different; the real test of a new tactic or organizational structure does not come until it is tried in actual combat. Thus, a great deal of effort must be put into developing methods for trying things out in a test environment that is as close to the real thing—combat—as possible. Such resources as Red Flag and the National Training Center are vital for this effort.

Thus, the third key resource, in addition to money and time, is access to test facilities. At present, for example, units are rotated through the Army's National Training Center for training and evaluation. The goal is to ensure that they are qualified according to current doctrine and to evaluate their capability and readiness. Increasing the adaptiveness of the Army would require that such facilities also be made available for experimentation. However, this goal is not compatible with the training and evaluation goals; the new methods being tested may not require the same skills as those for which the unit is to be qualified, and it would be unfair to evaluate unit or commander competence on the basis of actions taken as experiments, some of which should be expected to fail. Thus, time on current facilities will have to be reallocated, or new facilities will have to be created.

---

<sup>16</sup>Known as EXFOR, it is formally the 1st Brigade, 4th Infantry Division, Mechanized.

Although for this reason (i.e., the advantage of continual testing in the marketplace, as opposed to episodic testing in actual combat) it is inherently easier for corporations to experiment than for the armed forces, other aspects of the issue may be similar. For example, both corporations and the armed forces face the problems of disseminating information and ideas from an experimental unit to the rest of the organization; ensuring that service in the experimental unit is attractive to high-quality personnel and that good performance in it will be appropriately rewarded; and protecting the experimental unit against political pressures emanating from the rest of the organization.

Disseminating information and ideas often turns out to be harder than it might seem. For example, Xerox, in its Palo Alto Research Center skunk works, developed many of the concepts that are basic to personal computer operating systems today. Nevertheless, in part because these ideas were not effectively communicated to the rest of the corporation, Xerox lost out on a potentially lucrative market.

An experimental unit's potential can be limited if the organization's personnel do not see service in it as an attractive career option. This type of problem requires high-level attention to make sure that the organization's promotion system does not favor those who have risen via the traditional stepping stones over those who have served in experimental units.<sup>17</sup>

There may be a tension between these two needs: disseminating information from an experimental or innovative unit versus protecting the career prospects of those who serve in it. The reason is that interchange of personnel between experimental and conventional units is an effective way of disseminating new information and ideas, while one way of achieving the latter goal is to create a separate career track for these personnel, to make sure that their career opportunities are not slighted by members of the larger organization. This however, may tend to isolate them in certain positions, thereby

---

<sup>17</sup>In this regard, it is worth noting that former Chairman of the Joint Chiefs of Staff GEN John M. Shalikashvili, commanded the 9th Infantry Division, the Army's "high-technology test bed" intended to develop a new type of light division, from June 1987 to August 1989. His tenure, however, marked the end of the division's life as an experimental unit. (Mazarr, 1990, p. 25.)

reducing the flow of information. In the Army, for example, the creation of a separate branch for the Special Forces may have helped the promotion prospects of officers with that specialty, but at the cost of limiting their presence in infantry units, thereby hindering the flow of information and ideas.<sup>18</sup>

Finally, the experimental unit must be protected from any political pressures that might emanate from the rest of the organization, either because of competition for resources, because it seems to threaten other parts of the organization, or because of jealousy or any other cause. Essentially, this is a job for the top management, since the experimental unit will not be likely to have its own resources with which to fight. (In the case of the armed forces, it may be that there is congressional interest in the experiment, which could be an important source of support.)

In general, this will mean that the head of the organization must take an interest in the effort. In this regard, a service chief suffers a major disadvantage as compared to a corporate chief executive officer (CEO). A CEO is likely to be in his position for ten years or more, while a chief's tenure is, as a practical matter, limited to four years. It is possible to outwait a service chief, but not the average CEO.

### **Personnel Policy: "Freedom to Fail"**

The types of changes discussed above will require adjustments in the personnel system to accommodate them. There appear to be two major issues: encouraging risk-taking and improving training and competence at the lower levels of the organization.

Many voices in the armed forces have spoken out against the "zero defects" mentality and in favor of instituting the "freedom to fail."<sup>19</sup> This is particularly important if one wishes to foster an adaptive and

---

<sup>18</sup>This thought was expressed to the authors of the study from which this chapter is adapted (*The "Virtual Corporation" and Army Organization*) by some infantry officers in the XVIII Airborne Corps.

<sup>19</sup>According to GEN Dennis J. Reimer, "we must display positive, creative leadership, *stamp out this zero defects mentality* and create an environment where all soldiers can reach their full potential." (Reimer, 1996, p. 6. Emphasis added.) General Reimer emphasizes throughout the article that the "zero defects mentality" puts tremendous pressure on commanders not to report candidly about problems in their units.

innovative culture, in which individuals are encouraged to try new methods and to attempt unorthodox approaches. Obviously, some of these attempts will fail; if the system is not able to distinguish between failures that are inevitable in the course of reasonable experimentation and those that result from incompetence, innovative behavior will be seen as too risky. For example, the Israeli Army has the reputation for overlooking serious failures when they are seen as resulting from the taking of reasonable risks and when the individual's positive characteristics are considerable. Thus, Ariel Sharon's unauthorized move into the Mitla Pass in the 1956 Sinai Campaign, which resulted in large casualties, did not derail his military career.

Institutionalizing "freedom to fail" is probably particularly difficult to accomplish in an era of downsizing, when there is extra pressure to separate, or not to promote, individuals who would otherwise be considered to meet the standards of the organization. In such an atmosphere, those charged with these difficult decisions are likely to seize on an obvious mistake as an easily defensible justification for a negative evaluation. Unless counteracted, this is likely to induce too much caution into the organization, as everyone comes to fear that a single mistake could be his last. This problem is exacerbated by the overall political climate, which tends to regard every mistake or failure as a scandal.<sup>20</sup>

Concomitant with providing "freedom to fail," the system must be able to adequately reward successful innovation; in particular, to avoid discouraging experimentation, the reward for extraordinary success resulting from "out of the box" thinking must be sufficient to overcome the penalties for failure. Otherwise, trying something new that may or may not work out will appear to be a losing proposition in terms of one's own career.

In this regard, corporations have a major advantage over the armed forces: Their promotion systems are "demand pull" rather than "supply push" in nature. In other words, they promote someone when they have a vacant position to fill, whereas the armed forces promote according to a schedule that is first keyed to the candidate's

---

<sup>20</sup>The same problem exists with respect to procurement, which is discussed below.

length of service and only then looks for a suitable vacancy in which to place the officer. This means that the corporate promotion is tied to a specific position, and the corporation then looks for the eligible candidate who promises, on the basis of prior performance, to be able to do the best job in it. This favors the candidates who have attracted attention to themselves by means of superior performance, as opposed to those whose records are unblemished.

At the same time, the “demand pull” system favors those who have had challenging assignments in the past (since they have a better opportunity of achieving something sufficiently out of the ordinary to attract attention), as well as those whose patrons or “mentors” are in a position to affect the selection (since patrons will have a better sense of the talents of those who have worked under them than of those with whom they have had less contact). For a corporation, this is not too serious a problem, since there is no expectation that its promotion system will be “fair,” in the sense of giving everyone an equal chance to rise to the top.

Emphasizing exceptional success, as opposed to the absence of obvious failures, makes the selection process more subjective; there is bound to be a greater difference of opinion as to what constitutes a significant achievement denoting exceptional competence than as to what is a blunder. This implies the risk that “politics” (in the pejorative sense of clientism, the favoring of those in one’s own “clique”) may play a greater role in the selection process. It also means that it will be harder to operate a servicewide selection process, since a greater familiarity with specific actions will be required to make judgments. Unless Officer Efficiency Reports can be made more informative, it may be harder for board members who do not know those being considered to make decisions about them.

In any case, changes in government personnel systems in this direction will be difficult to attain. This difficulty stems from the necessity of the government to be seen as acting in accordance with certain notions of “fairness” that do not necessarily apply to private organizations, such as corporations. For example, as noted, the promotion system of a corporation can be openly subjective; no one expects every employee to have an equal shot at rising through the ranks, let alone becoming CEO. In governmental organizations, on the other hand, although everyone understands that politics (in both the

higher—public policy—and lower—clientism—senses of the term) plays an important role, the overall system must, in principle at least, be seen as being fundamentally fair and objective.

### **Personnel Policy: Distribution of Skills in the Organization**

If organizations are to be flatter and more adaptive, they will require a greater distribution of skills throughout their various levels. Those at the lower echelons will be called on to act more independently than before; many parts of the organization will be expected to engage in some experimentation, and innovation will not be the preserve of a few specialists. This implies not only the need for more training, a trend already in evidence in the armed forces, but also a recognition that those at lower levels in the hierarchy can play an important role in achieving overall success and can make an important contribution by improving their skills while remaining at their present level in organizational terms. In other words, promotion need not be regarded as synonymous with career development and “success.”

In corporations, for example, specialists may not be “promoted” if that means that they would have to give up exercising their special talent and become managers; an excellent computer programmer may in fact make an indifferent manager. Instead, the company can reward the specialists by increasing their salaries, giving them more challenging work to do, and assigning them “mentoring” responsibilities by which they impart their knowledge and experience to younger specialists.

Many of these techniques may not be feasible in the armed forces; salary, for example, is set by law and is associated with rank. Among civilian government employees, grade and, hence, salary level are heavily determined by the number of employees one supervises. The critical issue, however, is the “up or out” personnel system, which implies, for example, that an excellent commander at the tactical level must either be promoted to a higher level of responsibility or be separated from the service. The situation may be even worse with respect to one whose specialty (for example, intelligence) tends to lack billets at the higher levels; it may be difficult for the armed forces to retain the services of such specialists over the long term, even though it may be in their interest to do so. This contradicts the

notion of the “flat” organization, in which the retention of skills at the bottom of the hierarchy is crucial.

### **“Revolution in Business Affairs”: Procurement**

The problem of dealing with periods of revolutionary change shows up most dramatically in the area of procurement; especially with respect to major weapon systems, such as a new fighter or tank, the lead time between starting the R&D process and fielding the new system in large numbers is measured in years if not decades. In an era of rapid technological advance, such lead times can seriously hinder the ability of the armed forces to field the most effective weapon systems possible.

While some of this lead time is inevitable, given the complexity of the systems involved, the problem is exacerbated by the regulatory environment in which the procurement takes place. The difficulties involved in procuring information technology have been especially great. This is not surprising, given that technological progress in this area has been particularly rapid; a cumbersome procurement process guarantees that it will be impossible to acquire state-of-the-art equipment. It should be noted that, within the U.S. government, this problem is not unique to the Department of Defense. Other agencies have had similar problems procuring up-to-date information technology and related equipment; for example, the inability of the Federal Aviation Administration to modernize the air traffic control system has led the administration to propose that a government-owned corporation, which could ignore federal procurement regulations, be created to handle this function.<sup>21</sup>

---

<sup>21</sup>Vice President Al Gore has proposed the creation of a “businesslike government-owned corporation, funded by user fees and working outside of traditional governmental constraints.” See Gore (1995), pp. 30–31, 123. Of course, it is an open question whether, as a practical political matter, such a corporation could avoid the detailed regulations with which, for example, privately owned defense contractors are burdened. In particular, it is not clear whether the corporation’s favored treatment would survive the first scandal that could in any way be traced to its freedom from “traditional governmental constraints.” In other words, the more fundamental problem results from the “zero defects” mentality, prevalent in the political system as a whole, for which a clear mistake (moral or intellectual) that costs \$1 million is a much more serious matter than an ongoing inefficiency that wastes many times as much money each year. In any case, it is worth noting that corporations, too, often have

Designing a full-scale reform of the government procurement process is far beyond the scope of this study.<sup>22</sup> More importantly, given the amount of energy that has been devoted to this task and the number of studies that have been produced concerning it, one is forced to conclude that the prospects for a thoroughgoing reform are not particularly good. Indeed, there are some constraints (similar to those noted in the discussion of personnel systems) under which government operates that do not apply in the private sector.

For example, the American automobile industry, generally following the Japanese model, has tended to forge closer and longer-term relationships with particular suppliers, moving away from the notion that every contract should be competed among as many suppliers as possible on the basis of price. The underlying view is that a long-term relationship, on the basis of which it is possible to share information and expertise, will produce a better quality-and-price mix in the long run than will an “arm’s length” approach that constantly forces suppliers to compete with each other. While the automobile company may not, because of diminished competition, get the best price on every contract, the argument runs, its steady suppliers will, for various reasons,<sup>23</sup> gradually improve in efficiency and hence offer lower prices in the long run.

In general, however, this strategy may not be available to a government agency. The key difference is this: If Ford is satisfied with a supplier, nobody believes, for reasons of “fairness,” that Ford nevertheless has an obligation to consider the bid of another potential supplier; it can proceed on a “sole source” basis as it sees fit. The philosophy guiding government contracts, on the other hand, is very different: In principle, they are supposed to be open to all bidders,

---

problems instituting major information systems; even the most flexible procurement system has trouble keeping up with the fast pace of developments in the information technology world.

<sup>22</sup>For a discussion of the problems plaguing the procurement system, especially as it involves information technology, see Kelman (1990).

<sup>23</sup>The supplier will be able to plan his production better, since he will have a better sense of precisely what parts will be needed, when, and in what quantities. By tapping into the automobile company’s expertise, he will be able to improve his production processes; working closely with the assembly plant, he will get quicker feedback about the quality of his product and can fix defects sooner. See Womack, Jones, and Roos (1991), pp. 146 ff.

regardless of the costs or benefits involved. (There are, however, some exceptions, which are discussed below.<sup>24</sup>)

In addition to the concern for equity, the same “zero defects” mentality is at work here, reflecting the generalized lack of trust affecting the entire political system. This makes it difficult, for example, to relax procurement regulations so as to provide officials with more flexibility; presumably, the detailed rules are designed to make sure that the procurement officials do not play favorites among possible suppliers (or worse).

On the other hand, it might be possible to devise some ways around the procurement system. The purpose of these expedients would be twofold: First, they could facilitate the timely acquisition and utilization of equipment that might not otherwise be available. Second, by showing what is in fact possible, they might serve to change the political climate in ways that would ultimately make a full-scale reform more feasible. In short, instead of attempting a head-on attack against a strongly fortified and heavily defended position, one should seek to infiltrate, undermine, and eventually subvert it.

One possibility would be to make greater use of the skunk works concept, i.e., “umbrella” contracts with a given company, which allow for rapid amendment and modifications that can be negotiated on a sole-source basis. In effect, this short-circuits the government’s procurement regulations and makes use of private industry’s ability to operate quickly and flexibly. It would also foster a close relationship between the program office and the contractor, which could familiarize the officers and civilian government officials in the program office with commercial practices. This could tend to increase pressures to reform the standard procurement system.<sup>25</sup>

---

<sup>24</sup>Federally funded research and development centers, of which RAND is one, is the exception that comes most readily to mind.

<sup>25</sup>Commercial firms themselves use skunk works, for much the same reason: to provide a venue for technological experimentation and progress unconstrained by the company’s own bureaucratic procedures. However, the dissemination of skunk works’ experiences to the rest of the corporation cannot be taken for granted: In some cases, such as Xerox’s Palo Alto Research Center, the parent company did not absorb advances made by the skunk works. The same forces that necessitate the creation of the skunk works in the first place can, if not countered, negate its usefulness.

Typically, skunk works have been used for secret (“black”) programs; the secrecy in which these projects have been shrouded, imposed because of the sensitivity of the technology involved, had the additional benefit of helping them avoid the usual types of controls associated with the defense procurement regime. However, the skunk works format also makes sense for projects that are not particularly sensitive and that, like many information technology initiatives, make use of commercially available technology.

Another possibility would be to use “wartime” procurement procedures during MOOTW. As is well known, a new hard-target penetration bomb, the GBU-28, was developed during the Gulf War in a six-week period, and was used just before the cease-fire to destroy a leadership command, control, and communication bunker.<sup>26</sup> One could search for (or create) other opportunities for doing the same thing. Thus, the political saliency of the current operations in the former Yugoslavia is sufficiently high that it might be possible to procure systems to support it under a “wartime” exception to the rules.

For example, one could argue that air-implanted sensors for surveillance of base perimeters, for convoy security against ambushes, etc., would be sufficiently useful that suspension of the procurement regulations should be authorized to allow rapid procurement: Since such devices have been used in the past, no technological advances would be required to develop and procure a useful system. Given the danger widespread minefields pose for the success of the Bosnian mission, development of new mine-clearing techniques and equipment on an emergency basis could be justified. Similarly, one could search for opportunities to telescope the development process by the deployment of systems that are not yet in the operational inventory, such as the Joint Surveillance and Target Attack Radar System in Operations Desert Storm and Joint Endeavor and Predator in Operation Deliberate Force.

In general, opportunities of this type should be sought out, both to exercise the system so that it will be better able to operate rapidly in case of war and to highlight the cost of the current regulatory regime. One might attempt to institute a system whereby, in the case of any

---

<sup>26</sup>U.S. Department of Defense (1992), p. 148.

ongoing operation, some amount of money would be made available for the development and procurement of equipment under “wartime” rules. A similar procedure might even be adopted for selected major exercises; for example, some funds could be made available early in the planning process for the development and procurement of equipment considered particularly relevant to the exercise.

### **ORGANIZATIONAL STRUCTURE MUST REFLECT OBJECTIVES**

The study of the corporate reorganization literature can provide many useful insights into questions of organizational structure, process, etc. As noted, the corporate world possesses a major advantage as compared to the military: It engages in its primary activity on a daily basis and can continuously assess, on the basis of real-world experience, whether a given organizational structure, strategy, or procedure is beneficial. The marketplace forces corporations to seek constant improvements in their methods; even a huge corporation, such as General Motors or IBM, can be successfully attacked in the marketplace by a much smaller competitor if the larger company becomes complacent. Thus, one would expect that the corporate world would be the source of a series of organizational innovations, many of which would be worthwhile.

Nevertheless, innovations that are successful in one organization cannot simply be applied to other commercial organizations, let alone to military ones. Rather, they must be thought of as part of the “tool kit” with which one approaches the question of how a given organization should be structured; you would not try to build a house without a hammer, but that does not mean that everything is a nail or that nails are the appropriate fasteners in each case. The objectives of the given organization must be the starting point.

Obviously, military organizations are different from commercial ones. Perhaps less obviously, the variation among military units and missions is such that the same organizational structure will not be appropriate for every situation. The type of structure that is suitable for major theater war may not be what is required for a smaller contingency or for MOOTW. For example, MOOTW make more salient the problem of coordination between military and political deci-

sionmakers: Thus, it may be important to shorten the path between the units on the ground and the National Command Authorities.

Another major distinction would be between the current relatively small volunteer force and the type of force that might be raised by conscription during a general mobilization to fight a major war. With respect to many of its characteristics, the latter force would have to resemble not the “knowledge” organization of current theorists but the more rigid, hierarchical structures of the past. In such a force, it would be hard to reach the levels of training possible in the smaller, longer-term force; thus, less authority could be safely delegated to lower echelons. Instead, the less welltrained personnel either would require closer supervision by superiors or would have to follow more-detailed rules or standard operating procedures. This would imply that spans of control would be smaller and, hence, that there would be more “middle management” layers in the hierarchies.

### **EXOGENOUS POLITICAL CONSTRAINTS**

Finally, note must be taken of those exogenous political constraints on organizational structure, i.e., the constraints imposed by the larger political system, which can be changed only slowly, if at all. As noted, the pervasive “zero defects” mentality—which tends increasingly to regard every error as a scandal—poses problems for many of the types of organizational innovation discussed above. More generally, it creates a problem for any attempt to disperse authority within an organization and to allow lower levels of the hierarchy to exercise initiative. While a rigid, “top down” method of control will not prevent all problems (and, in fact, it creates many of its own), it at least has the advantage of *appearing* to provide control. This appearance may be illusory, but it has its political uses—when something goes wrong, the existence of a complex set of rules, not all of which, in the nature of things, will have been obeyed, means that it will be possible to find someone to blame. Furthermore, in response to a disaster, one can always add a new layer of regulations or controls to show that one is doing something to prevent the problem’s recurrence.

While these tendencies are strong in any bureaucratic setting—there appears to be an ingrained tendency that favors predictability over effectiveness—they are particularly strong in government. This will act

as a constraint on the degree to which flattening and experimentation can be pursued, at least under peacetime conditions.

However, while these constraints cannot be ignored, they ought not be accepted fatalistically, either. In any attempt to look at organizational questions in the U.S. armed forces, one must keep them in mind. However, the problem of reorganization involves not only designing an improved structure, but figuring out how to implement it as well.

## REFERENCES

- Bacevich, A. J., *The Pentomic Era: The U.S. Army Between Korea and Vietnam*, Washington, D.C.: National Defense University Press, 1986.
- Coase, Ronald, "The Nature of the Firm," *Economica*, Vol. 6, 1937, pp. 386-405.
- Cohen, Eliot, "A Revolution in Warfare," *Foreign Affairs*, Vol. 75, No. 2, March-April 1996, pp. 46-48.
- Collins, James C., and Jerry I. Porras, *Built to Last: Successful Habits of Visionary Companies*, New York: HarperBusiness, 1994.
- Davidow, William H., and Michael S. Malone, *The Virtual Corporation: Structuring and Revitalizing the Corporation for the 21st Century*, New York: HarperCollins, 1992.
- Drucker, Peter F., "The Coming of the New Organization," *Harvard Business Review*, Vol. 66, No. 1, January-February 1988.
- Fukuyama, Francis, and Abram N. Shulsky, *The "Virtual Corporation" and Army Organization*, Santa Monica, Calif.: RAND, MR-863-A, 1997.
- Gore, Al, *Common Sense Government: Works Better and Costs Less*, New York: Random House, 1995.
- Kelman, Steve, *Procurement and Public Management: The Fear of Discretion and the Quality of Government Performance*, Washington, D.C.: AEI Press/University Press of America, 1990.

Malone, Thomas W., and John F. Rockart, "Computers, Networks and the Corporation," *Scientific American*, September 1991, pp. 128-136.

Mazarr, Michael J., *Light Forces & the Future of U.S. Military Strategy*, Washington, D.C.: Brassey's (US), Inc., 1990.

Messenger, Charles, *The Blitzkrieg Story*, New York: Scribners', 1976.

Reimer, General Dennis J., "Leadership for the 21st Century: Empowerment, Environment and the Golden Rule," *Military Review*, Vol. LXXVI, No. 1, January-February 1996.

U.S. Department of Defense, *Conduct of the Persian Gulf War*, Report to Congress, April 1992.

Van Creveld, Martin, *Fighting Power: German and U.S. Army Performance, 1939-1945*, Westport, Conn.: Greenwood Press, 1982.

\_\_\_\_\_, *Command in War*, Cambridge, Mass.: Harvard University Press, 1985.

Weber, Joseph, et al., "Farewell, Fast Track: Promotions and Raises Are Scarcer—So What Will Energize Managers?" *Business Week*, December 10, 1990, pp. 192-200.

Womack, James P., Daniel T. Jones, and Daniel Roos, *The Machine That Changed the World: The Story of Lean Production*, New York: HarperCollins, 1991.

Zuboff, Shoshana, *In the Age of the Smart Machine: The Future of Work and Power*, New York: Basic Books, 1988.