ARMY ORGANIZATIONAL EFFECTIVENESS JOURNAL

MANAGEMENT SCIENCE

SYSTEMS SCIENCE

BEHAVIORAL SCIENCE

The Systems Integration Publication of the U.S. Army
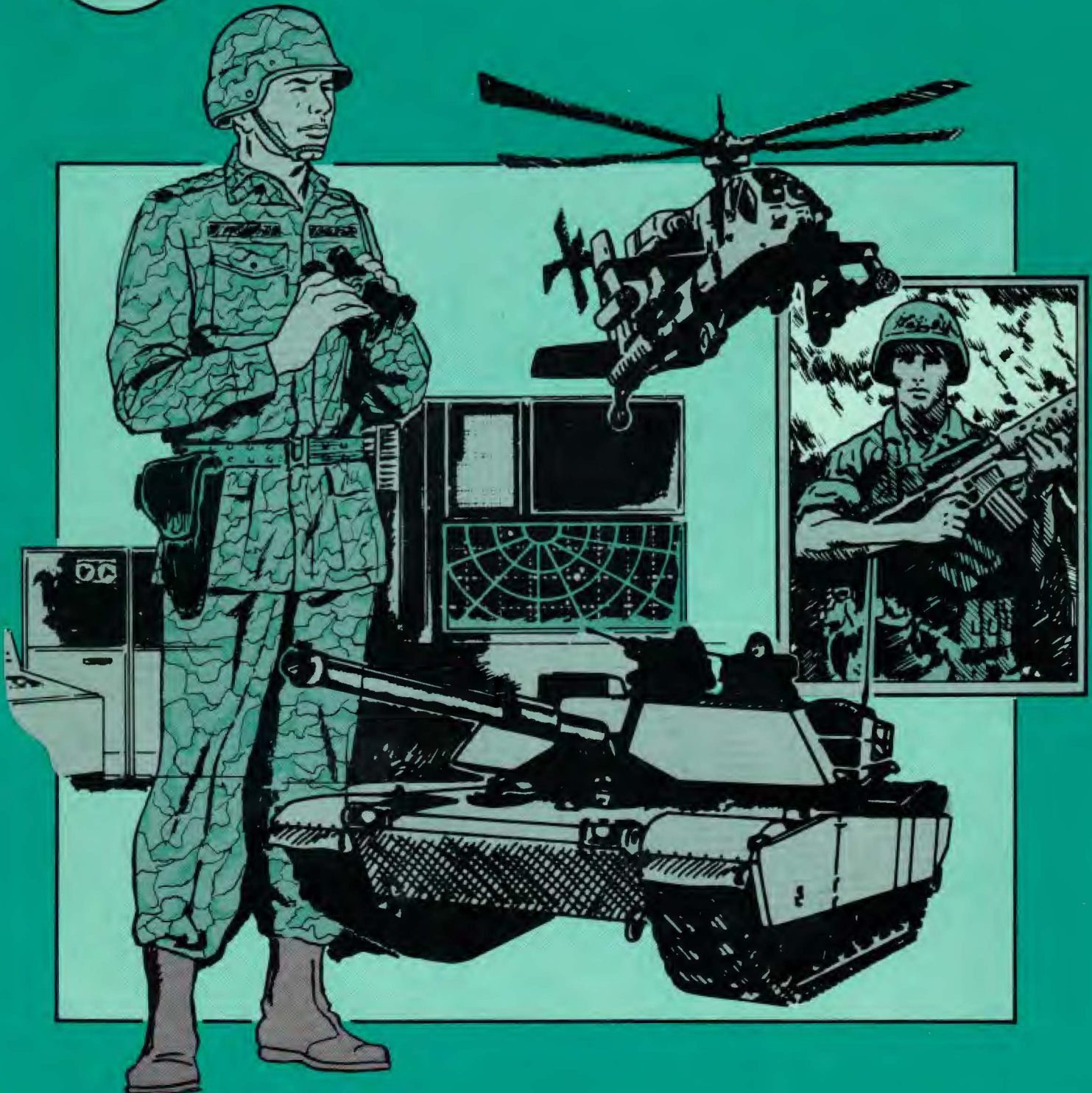
Editor's Comments

The *OE Communique* has been renamed the *Army Organizational Effectiveness Journal.* This name change reflects the new focus of the OE program. As part of this new focus, systems integration will be addressing large organizational, systemic issues. To support the OE program, we are asking for articles that address:

- OE implementations at division/installation level and higher.
- Force Integration issues.
- Management of change in large, complex organizations.
- The management and processing of information.
- The integration of complex systems.
- High-level Strategic Planning.
- Management Information Systems.
- Large Organizational Issues.

The *Army Organizational Effectiveness Journal* depends upon your quality input. If you have any questions on the subject matter, please call me at AV 929-6014.

Due to late publication of this issue, UPDATES do not appear. In their place, the next issue will introduce OE ACTIVITIES, featuring high-level OE experiences selected from HQDA, OECS and MACOM.

Guide to Contributors

The *Army Organizational Effectiveness Journal* publishes manuscripts that (a) provide ideas and methodologies to assist the process of integrating large systems and managing information, (b) disseminate new theoretical concepts, and (c) provide a forum to exchange innovations and lessons learned in the use of systems integration techniques.

The journal depends upon your quality input from the field. The criterion for being published is the **content** of your article, not your writing ability. We seek articles that share first-hand experiences in the areas of: integrating large, complex systems; improving the decision-making process at high levels; improving and accelerating the

Announcement

On 18-20 April 1984, the Department of the Behavioral Sciences and Leadership at the United States Air Force Academy will host the **Ninth Biennial Psychology In The DOD Symposium** in Colorado Springs, Colorado. Information about the Symposium may be obtained by writing or calling Major Thomas Ulrich (Program Chairman) or Major Frank Wood (Symposium Chairman), Department of Behavioral Sciences and Leadership (DFBL), United States Air Force Academy, Colorado Springs, Colorado 80840. Telephone (303) 472-3860/3861.

flow of information; resolving intersystem conflicts; and, dealing with types of issues like Force Integration. And, we encourage you to submit all other articles that pertain to the interaction of high-level systems.

Submit only original work not under consideration for publication elsewhere. Make sure your article is cleared for publication before you submit it and does not contain classified information. Optimal length of articles is 2,000 words, with references kept pertinent and minimal. Refer to all graphics in the text, and place actual tables, charts, graphs, etc. at the end of the manuscript; artwork is welcome. The article should be typed on 8½" x 11" paper, **doubled spaced,** with ample margins (2" top, 1½" sides and bottom).

Mail two copies of your manuscript, along with a short biographical sketch and b/w photo, if desired, to the Editor at:

If you have any questions, please call:

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Commandant's Comments

Colonel William W. Witt

A major challenge for our Army in the future will be the integration of complex systems at higher organizational levels. Traditional functional boundaries must be crossed to get the unity of effort needed for accomplishing Total Army Goals. The Organizational Effectiveness Center and School will produce specially trained officers to advise division/installation level and higher commands on the identification and resolution of Systems Integration problems.

Recently the DAIG special inspection on Force Integration established that the Army has problems in the areas of integrating Army systems. The IG found that many Force Modernization considerations were not adequately coordinated, including doctrine, automation, policy, communications, programming, facilities and others. Across the board there was a problem of proactive planning, coordination, and integration in the Force Modernization effort. But Force Modernization is only one of many significant changes now underway in our Army.

Technological breakthroughs in both the soft and hard sciences are occurring at an increasingly rapid pace. The Army is in the midst of the most massive and turbulent period of modernization and reorganization since mobilization for World War II. This effort is pervasive and impacts on all our organizations and systems related to doctrine and organizational structure, as well as equipping and manning the force. These systems all *interact* to produce unforeseen problems and opportunities for the future. As we deal with these problems and opportunities we must fulfill a critical need for the Army of 1986. That need is the assurance that as we make these necessary changes, they will enhance rather than degrade our readiness, and that the enhanced readiness can be sustained by our Army in the field.

The problems and opportunities for the Army of 1986 are Armywide, they are extremely complex, and they require the effective integration of often competing systems. As our Army and its functions become more technically advanced, we respond by specializing. And, as we specialize, our perspective becomes narrower and therefore more limited. To overcome that limitation we must actively concentrate on the integration of functions and the systems in which they operate.

The OE community has been on a very steep learning curve during the last seven years. In many ways it has outstripped its industrial and academic counterparts. Organizational Effectiveness has been making regular, significant contributions to the Army's challenges. With time, these challenges have changed in response to increasing complexity. Continuous refocusing is necessary to ensure that we're solving problems right and, more importantly, that we're solving the right problems. How can the Organizational Effectiveness staff officer and Organizational Effectiveness Center and School be refocused to respond to the challenges of 1986?

We at the OE School have been working since the first of August to develop a Systems Integration curriculum for the new OESO. Systems Integration deals with people, technology, resources and concepts. It is defined as "the achievement of unity of effort across functional and echelon boundaries through the use of behavioral, management and systems sciences to meet the challeges posed by change in our Army."

Systems Integration technology comprises three disciplines: Behavioral, Management, and Systems Science.
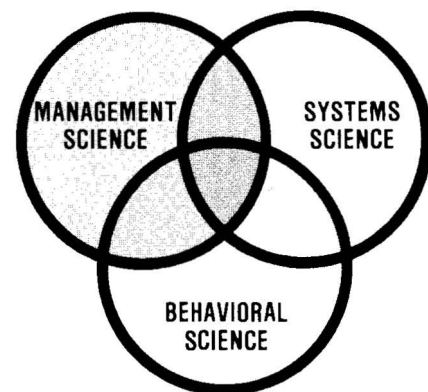
Behavioral Science is the foundation of Systems Integration and serves as the basis for the new OESO's influence. Effective integration can only be accomplished through people. A knowledge of organizational development will equip the OESO with the requisite skills to deal with the most critical element of Systems Integration—people.

Management Science assists in achieving effective decision making by applying quantitative methods to the processes of planning, organizing, directing, coordinating,

and controlling. OESOs must have an understanding of the capabilities of quantitative analysis and the mechanics of resource allocation. Management Science provides a background to the OESO's ability to look systemically at issues. Additionally, Management Science will provide appropriate skills that allow the OESO to communicate in terms of analytical and quantitative implications.

Systems Science will provide the OESO with a "big picture" perspective. The integrator must understand how the many parts of an organization interrelate and work together to form an effective whole.

The use of computer-generated information is fast becoming crucial to quality decision making. High-level commanders need to be aware of the availability and capabilitiy of automated decision support systems. The new OESO will receive training which will provide the necessary skills to properly advise the commander on how to best use available information resources. The OESO, working to clearly define the commander's information needs, will serve as a link between the commander and information resources.

The glue that bonds these disciplines together is information. To effectively carry out the systems integration function, the OESO must be able to analyze, define, and improve information flow within the command. Organizational efficiency is, determined in large part, by how well people within organizations process information.

Fulfilling the role of a staff officer, the new OESO will work in a problem-solving cell, directly under the Chief of Staff or Commanding General, of a division or higher-level headquarters. Although the new OESO will work for the command group, his effectiveness will depend extensively on a very close working relationship with the other staff agencies within the command, and his ability to communicate up, down, and across the chain-of-command.

Along with his more traditional OE role, the OESO's primary responsibility will be to provide the commander with detailed recommendations to improve systems interfacing and to minimize the disruptive effects of change to the organization. The OESO will have additional, but equally important, responsibility to serve the various staff agencies within the command. He will do this by closely working with staff officers to eliminate obstacles that would prevent effective interfacing and interdependencies. Unhindered by restraints that are inherent in traditional staff function design, the new OESO will work to provide the means by which staffs can interface. He will identify new sources of information, facilitate coordination, and provide the staff a perspective that can be used to do the job better.

Armed with knowledge of the three sciences comprising the Systems Integration technology, and advantaged by a firm understanding of how the Army operates, the new OESO will enhance the way a command functions—how it sets goals (based on the process of PMA), handles information flow, develops human resources, uses computer-generated information, transfers technology, and countless other processes. His influence will be based on his knowledge of how to improve overall unit effectiveness through better systems interfacing and working through people.

As Army commanders find themselves facing the complexities of rapid change, OE must grow by incorporating the necessary methodologies that will assist commanders in meeting the rigorous requirements for unit effectiveness in today's Army. Over the past several years, OE has made a significant contribution to the Army, and OESOs in the field have assisted commanders in all areas of organization development. Now, the fusion of problem-solving disciplines, exemplified by Systems Integration, will greatly expand OE boundaries; at the same time, OE efforts will be focused on increasing the probability of finding realistic, operative solutions to solve systemic problems within the Army of the 1980's and beyond.

In closing, I emphasize that I look forward to this expansion of OE capabilities. In the pages of this journal, we will continue to pass along to you new developments here at the school, and we encourage constructive ideas that will help bloster these efforts. □

Sociotechnical System Design For Military Organizations

Captain(P) William F. Barko

Viewing an organization as a **sociotechnical system** implies a merger of the mechanism, or *technical system,* with its human operators, or *social system.* The concept that a sociotechnical system can be *designed* to optimize production as well as quality of worklife is a valuable tool for guiding an organization toward high performance.

Although this concept was already instrumental in solving problems of the British coal mining industry in the late 1940s, it didn't receive widespread attention in the United States until the 1970s when various universities began researching its application.

In 1980, the OE school hosted a conference to discuss the potential for sociotechnical systems design in the Army. Since then, projects in five diverse settings have shown benefits of increased reenlistment, SQT scores and promotions, along with reduced absenteeism, accidents and IG complaints.* Sociotechnical systems design is gathering momentum among Army leaders as a viable method of dealing with issues and problems posed by organizational change.

The design process comprises several phases: the organizational scan, the social system analysis, the technical system analysis, a joint-system diagnosis, and the design itself (see Figure 1). As these phases are described in this article, it will become apparent that designing a sociotechnical system requires innovative intervention that can revise work methods, rearrange technology, and restructure the organization.

Organizational Scan

The first phase of the sociotechnical system (STS) design process is an organizational scan. The purpose of the scan is to identify *components of the organization*—purpose, mission, products, culture, philosophy, environment, boundaries, problems, issues, etc.—as well as the *units of operation* responsible for completing specific tasks.

In the scan phase, the organization is viewed as a system of interrelated elements that convert materials and knowledge (input) into finished products (output). This flow from input to output comes about by a series of transformation processes. Figure 2 dipicts this action and shows how activities within the organization can be regu-

Figure 1
Sociotechnical System Design Process
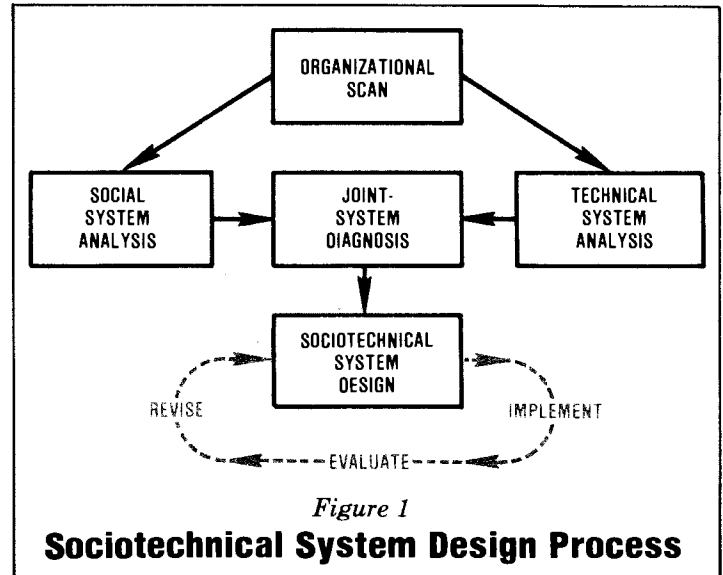
lated by feedback, which reveals mismatches between desired output and actual output.

Social System Analysis

A social system in a work environment is composed of work-related interactions among staff. It is the coordinating and integrating *buffer* between the technical aspects of work and the demands and constraints of the environment.

The social system has been analyzed in numerous ways over the developmental years of STS design. Usually, however, the analyses contain similar basic elements. First, *roles* that jointly contribute to the transformation of input to output are identified. Second, from among these roles, *focal roles* most crucial to the transformation processes are determined. Third, a *role network* is developed that describes the relationship between organizational roles and focal roles and

Figure 2
The Organization As A System
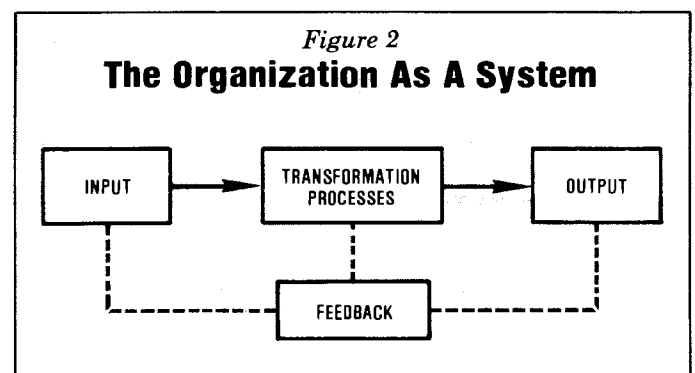
*Contact the author for details of these projects.

demonstrates when, why, and how the roles interface.

Each role of the role network is then evaluated (high-medium-low scale) according to job design qualities: autonomy, feedback, skill variety, task significance, task identity, and future opportunities. These ratings reflect whether the people fulfilling these roles are provided opportunity to satisfy their own needs and goals through the work itself, and consequently do better work.

Technical System Analysis

During the technical analysis phase, units of operation are examined to isolate *production tasks,* the specific steps that must be taken to convert input to output. Within each production task, categories of circumstances are enumerated that could create disruption in a smooth input/output transformation; these categories are called *variances.* Among the variances, those that would be absolutely disastrous to the input/output process are labeled *key variances.* Figure 3 illustrates a variance matrix for the process of entering a hospital.

A *variance control matrix* bridges the technical and social analyses. As shown in Figure 4, this form designates who will control key variances, and what activities are required to control variances, and also suggests technological changes.

Allowing variances to be controlled as close to the source as possible is critical to the success of effective STS design. In many cases this means that workers, not supervisors, are responsible for controlling variances.

Joint-System Diagnosis

After both the social and technical systems have been analyzed, the analyses should be evaluated in preparation for STS design. The variance control matrix discussed previously, a check for representative data collection, and specific job considerations are important aspects of the joint-system diagnosis.

You must make sure that the analytical data has been collected by people throughout the organization who represent a cross-section of the total system. These people, or *task force,* can extract information from various *employees* including the organization's *experts,* then make recommendations to the *command group.* In turn, the command group can review the data and offer guidance that will be useful for design. Furthermore, a *consultant* can provide continuity by training task force and command group members in sociotechnical theory, and by providing feedback throughout the design process.

The joint-system diagnosis should also evaluate whether the analyses have adequately covered job

Figure 3
Variance Matrix For Entering A Hospital
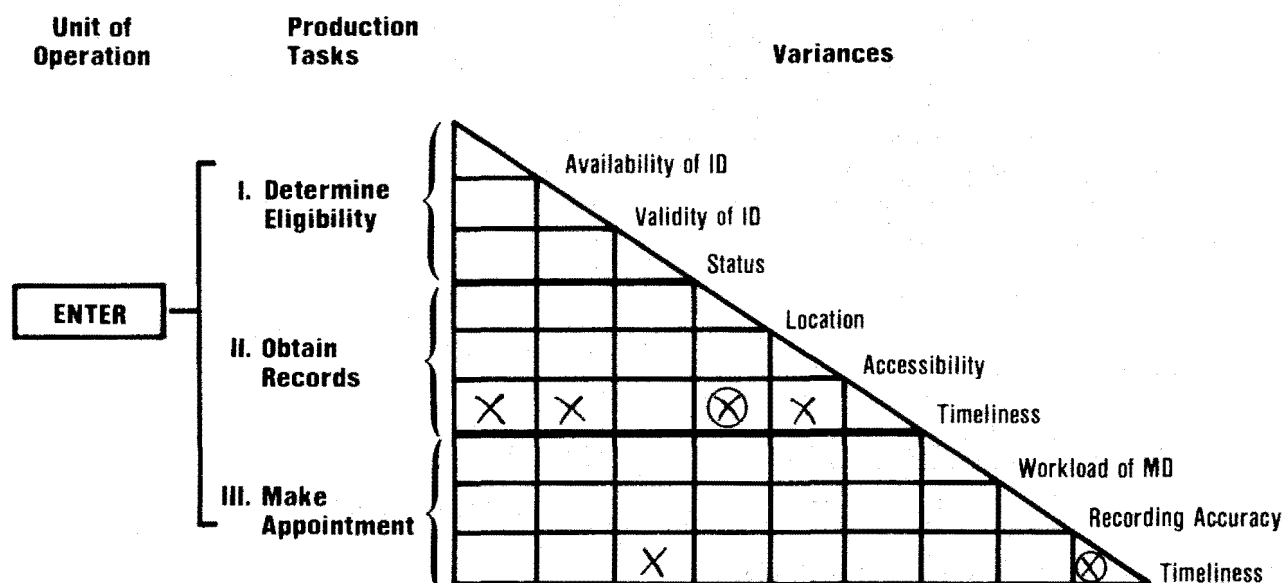
1. Identify units of operation that must occur if you are going to have an output.

2. After considering every single step you must take to produce acceptable health care service, develop a list of potential categories (variances) within which certain circumstances could disrupt the smooth flow in providing health care.

3. Determine whether any of the variances cause or exacerbate any of the other variances. If the two interact, place an x in the box where the two variances interact.

4. Review the matrix and circle key variances which, if they occurred, would be absolutely disastrous to the smooth and efficient flow of patient care.

Figure 4
Variance Control Matrix

KEY PROCESS VARIANCE	NAME OF UNIT OPERATION				ACTIVITIES REQUIRED TO CONTROL	INFORMATION AND SOURCES OF INFO RELATED TO CONTROL ACTS	SUGGESTIONS FOR JOB OR ORGANIZATION REDESIGN	SUGGESTIONS FOR CHANGES IN TECHNOLOGY
	WHERE OCCURS	WHERE OBSERVED	WHERE CONTROLLED	BY WHOM (ROLE)				

considerations that have emerged after years of experience in sociotechnical work.

Job Considerations For The Individual
- Optimum variety of tasks within job.
- Some auxiliary and preparatory tasks.
- Meaningful pattern of tasks.
- Optimum length of work cycle.
- Scope for setting production standards.
- Elements worthy of respect in community.
- Contribution to utility of product.

Job Considerations For The Group
- Interdependence of jobs.
- Stress level of individual jobs in group.
- Individual jobs contribute to utility of end product.
- Linkages enforce overall task.
- Scope for setting standards and getting feedback.
- Control over boundary tasks.
- New jobs designed to accommodate minimum requirements of workers.
- Promotion channels sanctioned by workers.

STS Design
The aim of STS design is a high-performing work system—the best fit of the social system and technical system to meet the demands of each as well as the environment in which the organization exists.

The principles discussed thus far are the building blocks of effective organization design. The STS approach attempts to move an organization from its present operating paradigm to a new

Figure 5
Organizational Paradigms

PRESENT	IMPROVED
Technological imperative	Joint optimization
Man, an extension of the machine	Man, a complement to the machine
Man, an expendable spare part	Man, a resource to be developed
Maximum task breakdown, simple narrow skills	Optimum task grouping, multiple broad skills
External controls (supervisor, special staff, procedures)	Internal controls (self-regulating systems)
Tall organizational charts, autocratic style	Flat organization chart, participative style
Competition, gamesmanship	Collaboration, collegiality
Organization's purpose only	Members' and society's purpose also
Alienation	Commitment
Low-risk-taking	Innovation

paradigm, as characterized in Figure 5.

The foundation for most sociotechnical design is based on A.B. Cherns' experience and the writing of major STS theorists, from which nine key principles have evolved:

Compatibility — The design must be compatible with the objectives.

Minimum Critical Specificity — No more should be specified about a job than is absolutely essential.

Variance Control — Unprogrammed events or deviations from standard should be dealt with as near to the point of origin as possible.

Multifunctional Principle	Design the organization so that it can achieve its objective in more than one way.
Boundary Location	Roles that require shared access to knowledge or experience should be within the same departmental boundaries.
Information Flow	Information systems should be designed to provide information to the organizational unit that will take action on the basis of the information.
Support Congruence	The system of social support should be designed to reinforce the behaviors that the organization structure is designed to elicit.
Human Values	An objective of organization design should be to provide a high quality of work-life.
Incompletion	As soon as a design is implemented, its consequences indicate the need for redesign.

Although STS design should be based on these nine criteria, there is no magic formula for design. The task force that has been thorough in its analysis and diagnosis, that has provided sound recommendations to the command group and received helpful guidance in return, is well prepared to develop solid criteria for effective organization design. Whether as a scenario, a unique model, or any other format, the design should be presented in the most comprehensible and useful way possible for the organizational members. And the designers should always be aware that the design needs to be implemented, evaluated and revised continually to best serve the organization.

Process Evaluation

Technique does not drive organizational design! Throughout the design project, overemphasis on form will make the process irrelevant to the issues and goals of the organization. Technique must be closely aligned with the values that involve people in change, encourage experimentation, allow flexibility in procedures, promote self-regulation, and provide discretion in jobs.

Some early assumptions about the work environment have held up to the scrutiny of numerous tests and evaluations of work design projects over the last 30 years. For example, *people work better* when they are provided with opportunities

to satisfy their own needs and goals through autonomy, feedback, variety of skills, task significance, task identity and future opportunities. Moreover, *tasks are performed better* when people are multi-skilled, responsive to change, and when problems are solved at their source. In addition, *the organization accomplishes more* when: it is able to detect and respond to changes in its environment; the relationship between the social and technical systems is optimized so that members are involved, and organizational leadership, structure, and policies provide complete support; and cooperation is increased across all levels of the organization.

Because the STS design process generally takes from 3 months to 2 years to complete through the design phase, firm organizational commitment is necessary to achieve high payoffs. During the process, however, many roadblocks may arise that distract the organization from completing STS design. Among them are core group turnover, lack of time and rewards, task force burnout, leadership decision delays, loss of support by failure to diffuse the original effort, shifts in organizational demands, managerial lack of understanding of sociotechnical theory, and lack of review and adjustment mechanisms.

Experience has shown that it is not overly difficult to collect data based on the principles presented in this article. But preliminary research by the Army Research Institute on evaluation of an STS effort shows that it is most difficult to associate the STS effort with increases or decreases in selected evaluation criteria. Therefore, a method of evaluation based on goals or outcomes could provide useful information to leaders on the effectiveness of STS design.

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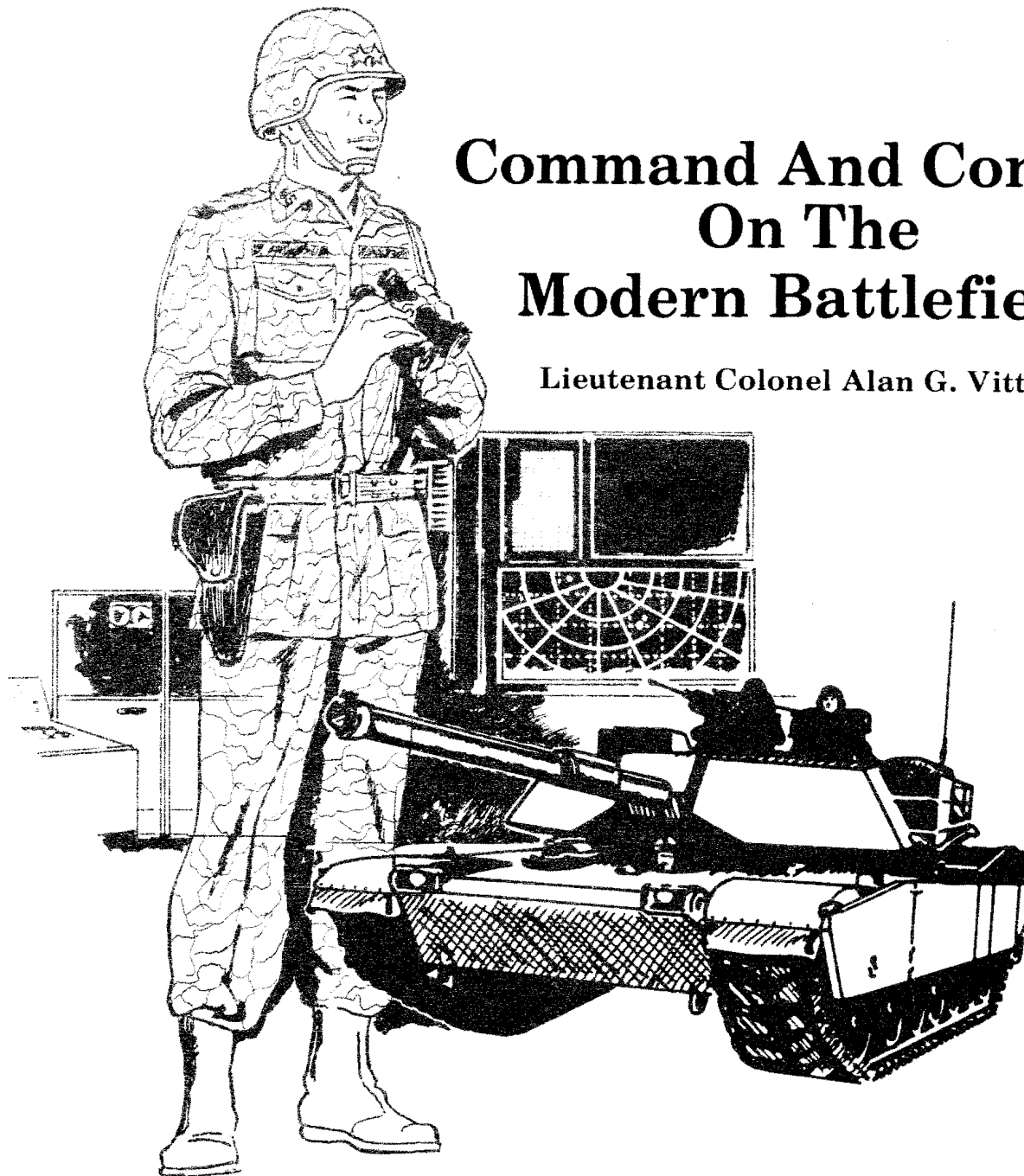
Command And Control On The Modern Battlefield

Lieutenant Colonel Alan G. Vitters

The environment in which the Army will fight the first battle of the next war is changing rapidly: weapons with increased speed, range, and accuracy will be used; units will be maneuvered great distances in short time periods to achieve decisive results; and communications technology will advance at such a rate that its only limitation will be the capability of users to understand and direct its application. In recognition of these changes, a new Army doctrine is evolving— AirLand Battle. But the key to it all remains the ability of commanders to orchestrate the divergent parts of battle to achieve a victorious outcome, that is, **command** and **control.**

This article describes the USAREUR Organizational Effectiveness Network's recent involvement in WINTEX/CIMEX 83 and shares some lessons learned pertaining to ADP (automated data processing) technology, command and control, and staff processing.

The Information System

During WINTEX/CIMEX 83, a biennial NATO-wide command post exercise, more than sixty Organizational Effectiveness Consultants, augmented by a small team of reservists on active duty, were called upon to conduct an objective, independent evaluation of the USAREUR Command and Control Information System (UCCIS).

An evolutionary system in USAREUR under the DCSOPS, UCCIS is composed of computer software designed to meet the information needs of tactical staff areas (personnel, intelligence, and the like) for use on the World Wide Military Com-

mand and Control System (WWMCCS) terminals. In addition to evaluating the development of subsystems in terms of performance, interfaces, user friendliness, and required changes, consultants were also challenged to analyze the effectiveness of battle staffs in processing tactical information.

To accomplish exercise objectives, the consultants who normally operate in small, independent teams at the division level, temporarily changed their normal mode of operation and "networked," thereby focusing activities on a common project throughout the theater. The scope of the WINTEX Evaluation, later called WINTEX-EVAL 83, included a week-long pre-exercise workshop in 16 player locations throughout Italy, the Netherlands, and Germany. The players adhered to a formal evaluation plan of survey administration and data collection.

ADP Technology

There are numerous applications for ADP on the modern battlefield and its *potential* is widely recognized. At its best, ADP represents fast, accurate, timely and secure information processing. On the other hand, computer terminals are vulnerable to power outages, are costly, and often require operators to be specially trained. ADP technology and its effective application clearly represent a potential combat multiplier of the future.

Another impact of expanding automation on the modern battlefield is the change in people's behavior; for example, the impact of ADP on the traditional "evening briefing." Formerly, senior commanders and their staffs have communicated critical information on past, present, and future events in a rather routine manner. But ADP technology is changing that by providing the capability for instantaneous, real-time (realistic) data and analysis. Commanders can now have tactical information available at any given moment on the status of operations. However, the demise of the evening briefing is not without its psychological impact.

"There are potential pyschological problems in eliminating the evening SITREP as well as dispersing the CP." (McGrew and Jutte, 1982). There are senior commanders and senior staff officers who 'grew up' under the old centralized system in which a tremendous amount of 'socializing' occurred during the SITREP and in which they were able to lift the flap of the tent of their nearest counterpart in order to coordinate or simply talk about the current situation or a future operation. The dispersed CP and the implementation of the SPADS (Staff Planning and Decision Support System) concept eliminates face-to-face interaction.

A more subtle factor, but just as powerful as socializing, is the visibility one derives from being around a senior commander. Gone will be the days of the traditional staff officer or subordinate commander who personally briefs the commander about his particular area. The need for visual, auditory and kinesthetic validation by the commander and the briefer cannot be ignored. Our observation is that the senior staff officers (0-5s and 0-6s) resisted the SPADS concept because of these visual, auditory, and kinesthetic factors.

One other significant observation is that the senior officer, under the SPADS concept, has less to react to, and this creates a sense of boredom or uninvolvement on his part. The intensity of the battle is not conveyed as powerfully as under the traditional mode. In actuality, this new concept frees our senior officer for more *proactive* behavior and less *reactive* behavior. The problem we identified is that senior officers typically have been highly involved in reactive behavior. They must be retrained to think in the proactive state. This will not only create an environment for better planning, but it will also allow the more junior officers and NCOs the freedom to develop their own expertise in the individual fields.

Battle Staff Processing

Battle Staff Processing refers to the activities of trained consultants as they assess, action-plan, intervene, and provide feedback to battle staffs conducting tactical activities in combat or during simulated combat conditions (Vitters, 1983).

S.L.A. Marshall may have been the first process consultant to provide valuable insights on the morale of American soldiers during World War II. In 1973, during the Yom Kippur War, the Israeli Defense Forces (IDF) employed military psychology units to provide reports to the Corps Commanders and the General Staff on morale, organizational climate, performance and the leadership effectiveness. In 1975, the first group of Army-trained Organizational Effectiveness Staff Officers conducted battle staff processing activities at Ft. Benning, Ft. Leavenworth, the National Training Center, and during such exercises as Cardinal Point II and WINTEX.

Numerous lessons were learned during WINTEX/CIMEX 83 as tactical players became more familiar with the capabilities of ADP Technology and its application to the battlefield, and as OE consultants analyzed that process and gained experience with battle staff processing. Although it is generally assumed that commanders need more information, WINTEX 83 has demonstrated that, if anything, most commanders and their staffs suffer from chronic *information overload.*

Numerous delays are often experienced by personnel attempting to transmit information, and

nets are literally filled with traffic of all kinds. In response to overload, many tactical communicators are reacting in the ways identified by Miller (1960) in his research on information overload. Dysfunctional behaviors, such as omission of content, errors, filtering and finally, escape from the terminal, are often demonstrated. Information overload also exists because the assumption is that commanders need the information they want. In many instances, much information is collected because no one is certain what information is required or how it will be used. WINTEX 83 has shown that many tactical units need to come to grips with their wartime information requirements. As one officer has bluntly put it: "Until we get down to considering only the *critical* elements of information in our staff training—and how to get the boss to provide the needed guidance supplemented by ADP which will assist, not confuse the preparation of plans and orders—all the studies in the world (e.g., WINTEX Eval 83) won't help. The military has to buckle down and decide exactly what it wants in an operational sense and then focus on tools from high tech to assist in providing it."

WINTEX/CIMEX 83 provided USAREUR's OE consultants an opportunity to provide on-the-spot feedback to tactical units, improve unit operations and effectiveness, and identify future training areas. Some immediate results were modified to improve command briefings, revise tactical SOPs, clarify player roles and relationships, and make physical layout changes that facilitate communication flow.

John Diebold has noted that "the organizations that will excel in the 1980s will be those that manage information as a resource." WINTEX/CIMEX 83 has demonstrated the role that ADP and organization development technology can play in enhancing tactical command and control, thereby increasing battlefield competence and the probability of "winning the first battle of the next war."

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Quotes

Criticism, like rain, should be gentle enough to nourish a man's growth, without destroying his roots. —**Frank A. Clark**

Some people speak twice before they think once. —**Arnold Glasgow**

Nothing great has ever been achieved without enthusiasm.
—**Ralph Waldo Emerson**

Total Force Modernization:
Life at the Bottom of the Totem Pole
Lieutenant Colonel Bruce T. Caine

During this decade, the U.S. Army will upgrade its fighting capability by fielding numerous new weapons systems. With the innumerable actions that are associated with making such a change, proper management is vital in order to minimize the adverse impact on the receiving units. This article considers actions that can be taken at the installation and unit level to accomplish this task.

Have you ever looked at the expression on the figure at the bottom of a totem pole? How would you describe it—strained, resigned, perplexed, slightly bemused, or is it concerned, determined? A hint of confidence may be there, and certainly strength, but the weighty dual responsibility of anchoring the entire organization into the ground and supporting the stack of figures above it rarely allows that foundation figure the luxury of excessive self-confidence.

When the strong winds of a turbulent environment buffet the entire structure, causing the top to vibrate, the base must remain firm even if the soil is alternately softened and hardened by rain and sun. Both good times and bad will threaten the stability if neglect is followed by frantic, uncoordinated repair efforts. But, if the totem pole was well designed, with just the right balance of flexibility and firmness, and is planted deep in the soil of traditions and values, it will weather well and retain its position of honor among the institutions and symbols of the society that constructed it.

Accepting the broad relevance of the analogy, the Army's modernization efforts are a bit like that totem pole. The farseeing eagles at the top and the anchor figures at the base are linked together by a series of interdependent commands that, unfortunately, like the figures on some totem poles, each appears to have a separate focus and unique perception of the world.

To make things more difficult, the middle of the force modernization totem pole appears to be multishafted rather than a single, integrated, well-coordinated whole. New equipment, new organizations, new personnel management
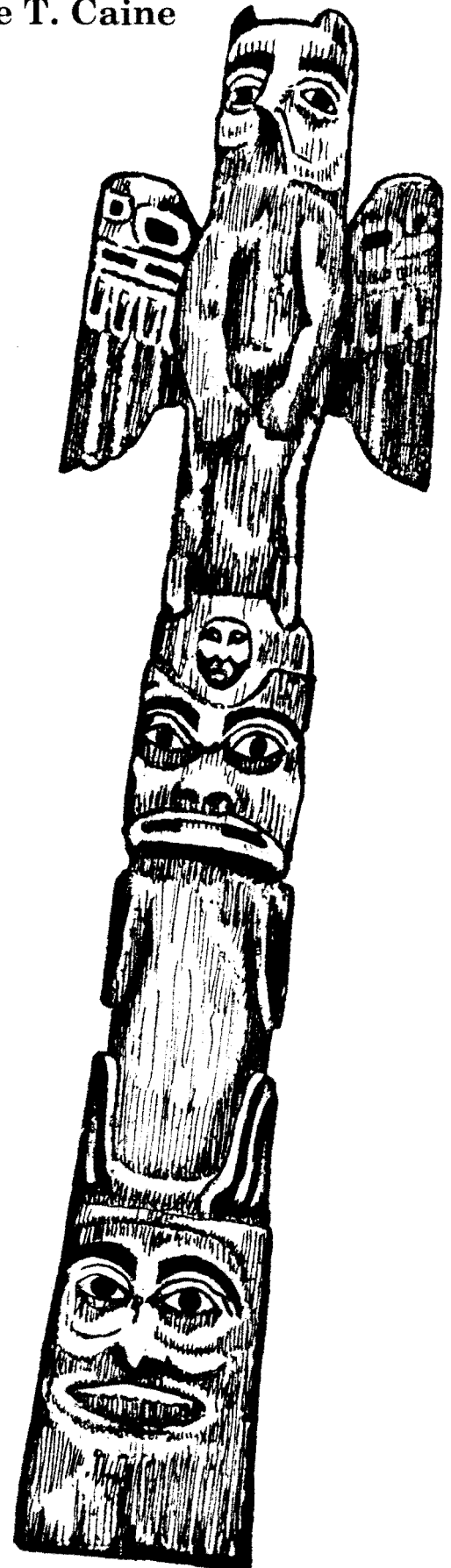
Total Force Modernization
Multidimensional Dynamic Interaction

Division 86
Force
Structure

MTOE

New
Equipment
Fieldings

US
Regimental
System

Supporting
Personnel
Policies

DTMS/BTMS
Training

Management

Exercises/
Evaluations

**Total Force
Modernization**

Equals

**Combat
Effectiveness**

Budget/Facilities

MTOE — Modification Table of Organization and
Equipment

DTMS — Division Training Management System

BTMS — Battalion Training Management System

NG — National Guard

AR — Army Reserve

POMCUS — Pre-positioning of Materiel Configured to Unit Sets

Displaced
Equipment

NG/AR Training

POMCUS
Deployment
Mobilization

AirLand
Battle Doctrine

Figure 1

policies and new doctrine, originating from a unified vision at the top, have been managed as distinct activities or, at best, as marginally related subjects. While this may be functional at certain levels, for the bottom of the totem pole—the unit and installation—these modernization efforts are intimately interrelated and mutually dependent.

The model at Figure 1 is this organizational change manager's effort to represent the multidimensional, dynamic interaction called "Total Force Modernization." Its eight elements form the view from the bottom of the totem pole.

Total Force Modernization

As the most widely recognized portion of the modernization effort, the fielding of new equipment (everything from a helicopter rescue hoist and battery charger to the *M1* tank and *Black Hawk* helicopter) is normally referred to as "force modernization." A limited number of dedicated planners have been added to operations or logistics staffs at major headquarters to coordinate this expensive and highly complex activity. But, as the model shows, new equipment fielding is only one of eight key dimensions.

If one thinks of the model as a roulette wheel or a carnival pinwheel, the issue of the day at the

troop-unit level could well be identified by a spin of the wheel. Yesterday, the bounding ball landed on facilities' plans and budget considerations; today, it is on Division 86 transition plans; tomorrow, our emphasis may be on common equipment shortfalls and airlift requirements for soon-to-be-issued new equipment. Next week, we may return to a critical review of the evolving AirLand Battle doctrine or to an analysis of lessons learned from our cohesion, operations readiness, training (COHORT) experience as they might apply to the implementation of a U.S. regimental system. More in line with reality, all eight may be active simultaneously depending on the information available to the unit planner.

Regardless of which issue is hot, the others influence it and are influenced by it. More than any other facet, training management may reflect this best. Division 86/Army 90 structural redesigns require modification of Army Training and Evaluation Programs. New weapons systems and support equipment require adjustments in individual and small-unit training and updated skill qualification tests. New systems and changed organizations require modified ranges, new facilities and adjusted POMCUS (pre-positioning of materiel configured to unit sets).

Equipment displaced by the introduction of new systems must be processed for transfer to other units and supported by Active component training teams (actions which take time and critically needed trainers away from their units). Leaders must study the evolving AirLand Battle doctrine and assimilate its principles into their unit standing operating procedures (SOPs) and training programs.

Clearly, total force modernization will result in enhanced combat readiness only if this dynamic integration is effectively and efficiently accomplished at every level of the totem pole. But nowhere is this integration more crucial than at the unit level.

Maintaining The Fragile Balance

Think a minute of a playground seesaw. Piled on one end, like a group of energetic preschoolers, are all the missions and requirements a unit is expected to accomplish. Included is everything from baseline activities like personnel actions and barracks maintenance to major joint training exercises like REFORGER or a visit to the National Training Center. Perched on the other end, like a smaller group of second graders, are resources. These include fixed resources like time and highly variable resources like dedication. At the fulcrum are the unit leaders, commanders and their staffs, who are just now able to maintain a fragile balance between the two arms of the seesaw which is weighted slightly in favor of the mission side (see Figure 2).

Now along comes an exuberant "teenager" called modernization, full of idealism, energy and new concepts, who begins to push on the mission side! This is the situation with total force modernization today. A somewhat awkward teenager, the multidimensional force modernization effort has the potential to override the delicate balance unit leaders are now maintaining with great effort. Further, it could potentially swamp the unit with overwhelming, although well-intentioned, change.

Managing Multidimensional Change

At a recent Organizational Effectiveness Center and School workshop on organizational design and redesign, the principal speaker was Dr. G.K. Jayaram, a management consultant and organizational development theorist. Jayaram suggested that organizational design and change management is a neophyte academic discipline which is hampered by a paradox. To study change scientifically requires well-controlled, comparative experimentation, but, in most organizational redesign situations, resource constraints prevent this form of investigation.

The organization must reorganize before it can experience the effects of the changes in any total sense. Once redesign is accomplished, the new structure gains a life of its own and returning to a previous structure may appear more difficult than living with the new design, regardless of the newly discovered problems.

Total Force Modernization
Maintaining the Fragile Balance

AGI — Annual General Inspections

LATT — Logistic and Training Assistance Team

DRF — Division Ready Force

EDRE — Emergency Deployment Readiness Exercises

NG — National Guard

AR — Army Reserve

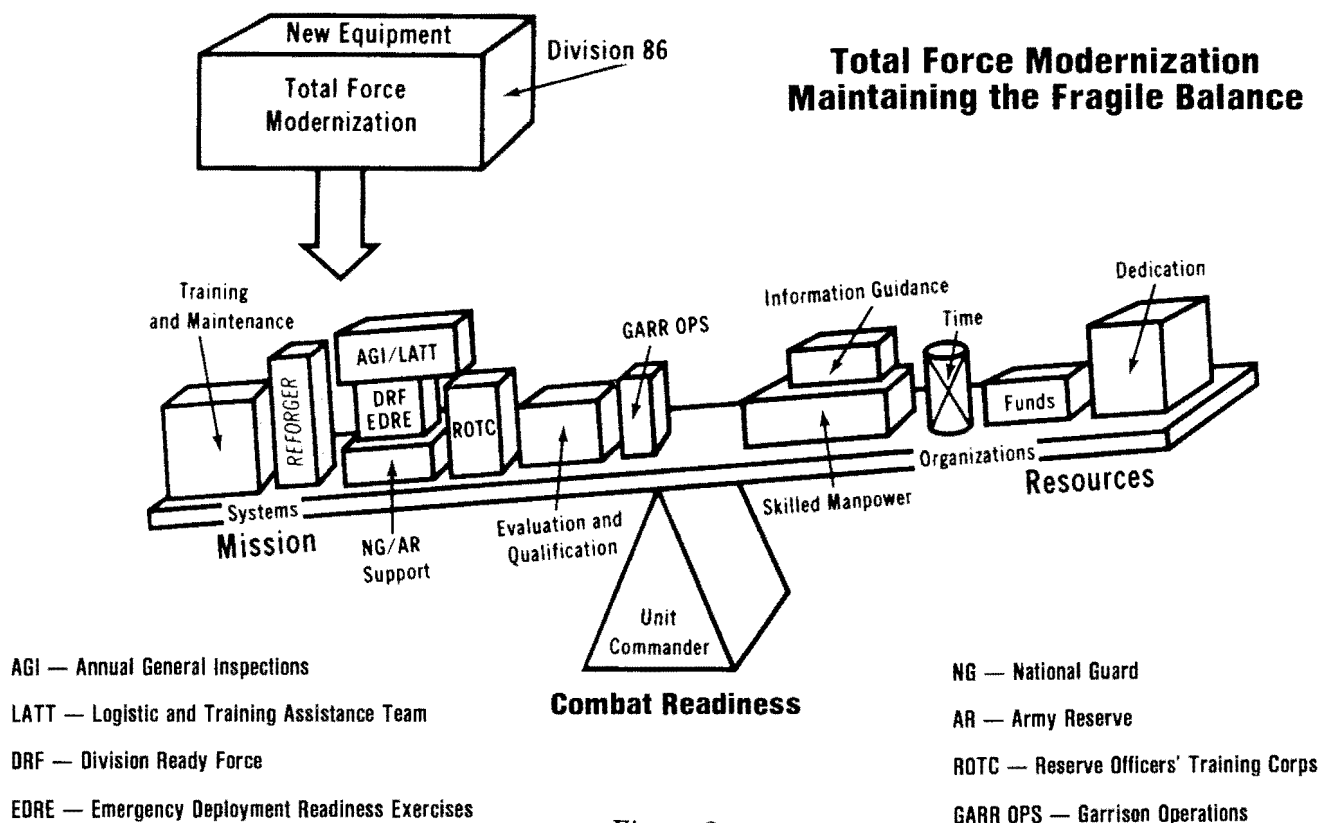ROTC — Reserve Officers' Training Corps

GARR OPS — Garrison Operations

Figure 2

Of course, there are experimental procedures which can be and are used to evaluate a proposed change prior to implementation. Computer-assisted modeling, war games and simulations have become commonplace, and operational testing of new equipment strives to duplicate the demands of regular troop use. Partial or full-scale unit test beds, such as that now in operation in the 9th Infantry Division at Fort Lewis, Washington, are costly in the short term but may produce performance data not obtainable by any other means. Test programs such as COHORT allow us to assess the efficiency of new personnel management procedures.

In all of these cases, the effects of change on a subset of the total system are assessed and extrapolated to the entire organization, with the recognition that the extraordinary management procedures used for the test are unlikely to be duplicated in the larger application. The assumptions, theory and hypotheses upon which the experiment is based establish its relevance for general application, but no experiment or test can fully duplicate reality.

In an environment of multidimensional change, the cumulative impact of these extrapolations is not simply additive but, rather, the product of a complex, multiplicative function. Changes in one dimension of our model prompt adjustments in others. These, in turn, influence further facets in an ever-increasing web of interdependencies. Planning in such a turbulent environment has much in common with operational planning in an active combat environment. Since we are trained to function effectively in the uncertain environment of combat, we should be able to apply this knowledge and experience to the management of total force modernization.

The Waves of Change

In his recent book, *The Third Wave,* Alvin Toffler predicts the emergence of a new civilization that is truly revolutionary in that it challenges all of our old assumptions about the human condition. Toffler notes that many of today's changes are neither independent nor random. He argues that organizations today and in the future require smarter executives capable of specifying and treating multiple goals and finding policies that can accomplish these multiple goals through optimizing several variables. Military leaders in peacetime have long wrestled with the need for effective performance on a variety of missions and with the requirement to satisfy multiple "bottom lines" such as those reflected on the left side of the seesaw and others generally known as "quality of life."

Units in the United States and overseas are now being buffeted by repeated waves of change that promise to continue for years to come. Without reducing any standing missions, planning and execution of new equipment fielding, restructuring of Division 86/Army 90 and implementation of a U.S. regimental system must be accomplished in a resource-constrained environment.

Reductions in Officer Distribution Plan allocations to key planning headquarters and continued shortages of critical enlisted specialists and non-commissioned officers in the units that will receive many new items of equipment are realities. Modernization will require an ever-increasing level of effort over the next eight to 10 years as new systems, organizations and programs continue to be assimilated while those on hand are sustained.

In a very real sense, planning for implementation and sustainment must be conducted concurrently. The AirLand Battle concepts of looking deep and looking wide must become the operating principles of our modernization efforts just as they are evolving as part of war-fighting doctrine.

Strategy for Total Force Modernization

The mission of total force modernization is to develop the most capable, readily responsive and economically feasible land combat force possible. Such combat effectiveness will be achieved, however, only if we pay careful attention to our organizational value structure which includes such concepts as personal responsibility, mission orientation and a can-do spirit. Further, we must develop strategies and tactics to effectively manage change and regulate the demands placed on leaders and soldiers.

As portrayed in the seesaw model, we place heavy reliance on dedication to offset the demands of multiple missions. In many ways, dedi-

cation is both our most resilient and yet potentially fragile resource. Only by controlling the stress of change through reduced turbulence can we ensure that faith and trust in the organization will remain high at all levels.

For our purposes at the bottom of the totem pole, strategy will be equated with a fully coordinated, comprehensive master plan for total force modernization. Anchored on our mission and value structure, the master plan must be based on a detailed, long-range assessment of all eight force modernization dimensions as well as other standing unit commitments.

Force modernization actions must be superimposed over long-range exercise and evaluation schedules. Also, they must be integrated with such annual events (for Continental United States (CONUS) units) as Reserve Officers' Training Corps (ROTC) summer camp support, National Guard and Army Reserve training assistance, gunnery programs, National Training Center visits, emergency deployment readiness exercises, annual general inspections, logistic and training assistance team visits and skill qualification tests.

New equipment fieldings and organizational transitions must be programed by the Department of the Army and the major Army commands based on additional variables such as production schedules, manpower projections and readiness priorities. Therefore, unit commanders and staffs must adapt their master plans to the schedules provided by higher headquarters. Unless major fieldings and transition actions are programed by major headquarters with due consideration to the other missions and requirements which they have imposed on units, excessive conflicts will inevitably arise. Leaders at all levels share the responsibility for identifying potential conflicts and resolving those that arise despite the best efforts at preventive planning.

Just as in the development of a tactical plan, a logical concept of the operation must guide detailed force modernization planning. Given the mission and objective area, we must develop a progressive sequence of time-phased actions. Just as in preparing for a contingency operation in an unfamiliar and potentially hostile environment, it would allow us to bring all forces together at the required time to establish a "beachhead," consolidate a base of operations and execute required operations from this solid base of support.

The key factor here is information—readily available, timely, complete, and confirmed and stabilized at the critical point in time. This allows planning at lower levels to be conducted in an environment of relative certainty. The unit training environment is turbulent enough without the added shock of floating fielding dates,

constantly shifting personnel policies and frequently changed authorization documents.

For new equipment fielding, the informational beachhead is established by the Army Modernization Information Memorandum (AMIM), an annual compendium of technical, financial and training data; the recently instituted Department of the Army Force Modernization Master Plan which establishes the broad "scheme of maneuver" for key fieldings and structural transitions; basis of issue plans; and detailed materiel fielding plans. Confirmed major Army command distribution plans, fielding schedules, published TOE (table of organization and equipment) and MTOE (modification table of organization and equipment) changes, and information on training programs for operator and maintenance personnel also provide essential data. Unless these documents are available to executing unit planners with enough lead time to ensure required actions are completed, the beachhead is in jeopardy.
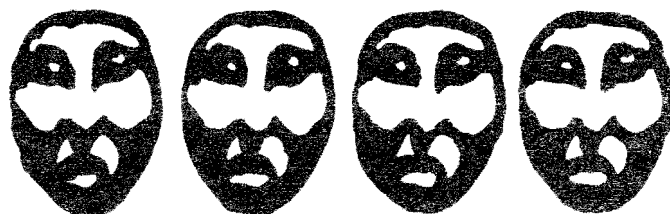
To build combat power and to sustain operations using the new equipment, modernized doctrine and training guidance must be available and repair parts and maintenance guidelines must be on hand. In addition, properly trained personnel must be assigned to units configured appropriately to make optimum use of the new equipment. These are well-recognized needs and have been formalized into the policy of "Total System Fielding" (see Figure 3).

This policy, at least in theory, permits the installation or major unit commander, on the recommendation of receiving unit commanders and his force modernization planners, to request a delay in the fielding of a new system if all required support will not be available or other priority unit commitments such as a major exercise conflict with the planned fielding. The decision to accept a new system rests with the major Army command commander who must weigh the merits of such a request against the total modernization effort.

The phrase "in theory" is used in recognition of our "can-do" philosophy and the reality that a rejected fielding may result in the unit being moved to the end of the distribution sequence for that particular system. Depending on the commander's risk assessment, the cost of accepting a fielding with known deficiencies may be outweighed by the costs of lost priority for the system and the resources that will eventually support it.

Total System Fielding

Requirements for effective total system fielding include:

- End items—for example, the AN/TTC41 automated switchboard.
- Prime mover (when required)—for example, the 1¼-ton truck.
- Support equipment—for example, a trailer-mounted generator.
- Ancillary equipment—for example, test measurement, diagnostic equipment and tool sets.
- Authorized stockage list and prescribed load list.
- Publications: technical manuals, Soldiers' Manuals, skill qualification tests, and the Army Training and Evaluation Program.
- Ammunition.
- Manpower spaces.
- Designated primary military occupational specialty.
- Qualified personnel.
- Fielding funds.
- Documentation: table of organization and equipment and modification table of organization and equipment.
- Military construction, Army, facilities.
- New equipment training: training plans, school schedule, training team, introductory briefing team, and materiel fielding team.
- Training aids.

Figure 3

The decisionmaker must also recognize the interactive effects of change in one dimension of the total force modernization circle on the others. Will a delay in fielding in a stateside unit disrupt the planned issue of equipment in POMCUS or the projected relocation of displaced equipment to Reserve component units? The strategy for total force modernization is clearly as complex as that of warfighting and requires the same information processing, development of alternatives, rational assessment, measured judgment and prioritization of actions.

Since modernization is an ongoing campaign, we do not have the luxury of conducting strategic planning without the distractions of operations already in progress. This is a major challenge for change managers who must ensure that strategic planning for future operations is given ample command attention on a continuing basis despite the overwhelming demands of current and short-term requirements. As in combat, we must fight the present battle, plan tomorrow's actions and project future operations simultaneously. And each level of action must be tied to the master plan and the general strategy.

Total Force Modernization Operations And Tactics

Strategy may be seen as a relatively fixed aspect of planning which changes only as a result of major shifts in the environment. But operational concepts and tactics should be reasonably flexible and designed to respond to existing demands or to create the desired conditions for successful performance in the near term. For total force modernization, this level of planning includes the designing of management organizations, the establishment of systems and procedures, the building of information-sharing networks and the development of an organizational climate adapted for effective change management.

Throughout our military education, we are taught to apply the principles of war as general common-sense guidelines to our deliberations of strategy, operations and tactics. With a bit of literary license, these principles can also be applied in developing action plans for force modernization.

Objective

The principle of the objective is clearly appropriate, and, in the broadest sense, we have defined our objective as enhanced combat effectiveness. But there are a series of intermediate objectives as well. These include the interim transition phases of the Division 86/Army 90 program where units will reorganize with current or partial issues of modernized equipment, the fielding of each item of new equipment, and the progressive development and evaluation of AirLand Battle doctrine and the training publications to support its application in the field.

Each of these and numerous other intermediate objectives must contribute in a logical and progressive way to the attainment of the final objective. As in combat, coordination of effort and proper time sequencing are keys to the application of the principle of the objective to force modernization, and it is the master plan that must provide this mission orientation.

Offense

Applying the principle of the offense to total force modernization requires a bit more imagination. In battle, the attacker seizes the initiative and strives to maintain freedom of action. I believe the force modernization planner must do likewise. By aggressive pursuit of information and careful analysis of trends and environmental conditions, he develops the data base for analyzing alternative courses of action and discovers opportunities to exploit the interdependencies of various modernization requirements.

For example, can the fielding of related but separately managed items of equipment be scheduled so as to reduce the training time costs for units through concurrent deprocessing and integrated new equipment training? Can displaced equipment handoffs to Army Reserve or National Guard units be programed to immediately precede or coincide with annual training periods so that new equipment training for the receiving units can be conducted in a concentrated period? These are "offensive" operations that allow the unit to retain freedom of action in a turbulent environment.

Economy of Force

The principle of economy of force may be the most important for the force modernization planner. As the seesaw analogy illustrates, total force modernization has the potential to overwhelm any unit that does not carefully manage its resources.

Yet not all force modernization actions require the same intensity or magnitude of effort. Division 86 will require only minor reorganization in certain units, while others will undergo wholesale realignments. Items of new equipment programed for only one or two units on an installation require much less coordination than a system that will be fielded in many. Receipt and deprocessing of systems that replace current equipment place unique strains on an installation—for example, preparing the "old" equipment for turn in, storage or parking space during the exchange, and so forth—that a system providing a totally new capability does not.

While each of these examples suggests opportunities for economy-of-force operations, the greatest savings may be achieved in the area of administration. The process of fielding of new equipment will be repeated numerous times over a period of several years and is ideally suited to management by exception. The development of comprehensive regulations, standing operating procedures and routines will reduce the need for producing a detailed directive or letter of instruction for each fielding and will permit exceptional management efforts to be concentrated on high-impact systems without neglecting others.

It is critically important that we apply only those resources needed to do the job and no more. This includes the time required to draft, staff and administratively prepare letters of instruction that often duplicate standing guidance and recognized responsibilities. In the mode of fragmentary orders, local materiel fielding agreements (MFAs) will be drafted at a prefielding conference attended by representatives of affected units and agencies to formalize the "who, what, where and when" of a specific fielding. When signed, this MFA together with the SOPs will govern the fielding process.

Principle of Maneuver

The principle of maneuver, like the offense, suggests the use of initiative and discovery of the best means to accomplish the objective. Maneuver planning requires the analysis of avenues of approach, the phasing of actions and the integration of resources and capabilities within a careful assessment of the total situation. In a changeable environment, flexibility and responsiveness are essential to the execution of maneuvers.

Force modernization planning and execution places similar demands on commanders and staffs. Just as effective maneuver depends on the close cooperation of the entire combined arms team, total force modernization requires closely coordinated and systematic actions by a wide variety of agencies and organizations. As we maneuver through the complex maze of interdependent force modernization actions, we must exploit our opportunities to enhance readiness at minimal costs and discover innovative ways to overcome roadblocks to successful management.

Two maneuvers that will enable us to make optimal use of our opportunities to maintain readiness are interim structural transitions and combined fieldings. To date, however, only the former is part of the accepted force modernization design.

Interim Division 86 transitions (the conversion of units to a new structure without fully modernized equipment) have much in common with an envelopment in that they are intended to temporarily bypass major obstacles to securing the objective of enhanced combat effectiveness. For example, converting a maneuver battalion to its Division 86 structure of four line companies prior to the issue of *Bradley* fighting vehicles or *Abrams* tanks allows the unit to concentrate on revising command and control procedures and unit tactical and logistical SOPs, realigning garrison facilities, and studying modified doctrine and tactics without the added burden of simultaneously mastering a complex new weapons system.

Once the structural and procedural foundations are in place, the unit can concentrate its efforts on consolidating its readiness gains with the fielding of new systems. Once the envelopment and consolidation are complete, the new capabilities can be exploited in a cohesive and integrated manner.

This sequence of events is planned for pacing items, such as the *Abrams* tank, the Multiple Launch Rocket System and the *Black Hawk* helicopter, with their major impact on units and installations. However, the vast majority of new systems have yet to be integrated into a well-programed master plan which ensures that mutually supporting capabilities are achieved in a logical manner.

As presently programed, new equipment fieldings are individual system oriented. Each system is managed, in large measure, independently of others. Dates of issue to units are based on system production schedules, the Department of the Army Master Priority List sequence and, to some limited extent, unit and installation activity calendars. A review of distribution plans quickly reveals that many related systems are not scheduled for simultaneous fielding in a particular unit nor can an installation expect to avoid an almost constant sequence of minor fieldings.

Such fragmented modernization produces continual turbulence and imposes numerous training disruptions on receiving units, particularly when fielding dates are not confirmed until six months prior or less. This situation also forces personnel managers and force development planners to constantly review and update personnel and equipment authorizations as new systems and their operators, maintainers and supporting materiel are added and displaced personnel and equipment are deleted, often in an off-line or exceptional management manner. The concept of combined new equipment fieldings is one possible solution to this practically unmanageable situation.

Combined new equipment fieldings have much in common with penetration maneuvers in that they will require a concentration of effort, the suppression of distractors and an orientation on the deep objective of enhanced readiness. Combined fieldings could take one of three forms: dedicated installation fielding periods, consolidated unit fielding periods or a combination of these two.

Most CONUS installations and overseas units have standing commitments that preclude the fielding of new equipment at certain times during the year. For example, support for an ROTC summer camp requires large numbers of personnel and ties up many storage and maintenance facilities that might otherwise be dedicated to fielding activities. By careful programing, one or two periods could be selected for intensified fielding of all nonpacing items of equipment due for issue during a particular fiscal year, with each pacing item provided a dedicated period of its own.

Such a consolidation would require considerable coordination among fielding agencies. It would, however, encourage an across-the-board review of personnel and equipment changes that would allow these to be incorporated into authorization documents and unit requisition ledgers in an efficient and timely manner rather than in the piecemeal manner currently employed.

Consolidated unit fieldings would conceivably require even more initial coordination, but they have the potential to significantly enhance unit readiness and truly reduce training distractors. There are currently between 400 and 700 new systems at some state of development or fielding. Each type of unit on an installation, such as the infantry, signal or aviation battalions, will receive a variety of new systems. A number of them could, by advanced coordination among major Army command staff system managers and U.S. Army Materiel Development and Readiness Command product managers, be programed for simultaneous issue to an installation.

The limiting factor, of course, is the varied state of development of even closely related systems. Yet those that are available within a given fiscal

year could be issued during a single designated period that was selected with regard to the unit's standing requirements and training calendar.

In addition to reducing training distractors, consolidated type-unit fieldings would permit force development, logistics and personnel managers to focus their review efforts to ensure all changes in authorizations identified in the AMIM and the materiel fielding plans are incorporated into a revised MTOE. By fixing the unit consolidated fielding periods well in advance, fully coordinated schedules of document updates and requisition submissions can be established that will reduce off-line management and the crisis action nature of many current fielding efforts.

The third alternative for consolidated fielding is a combination of the previous two. With some new systems being issued to a variety of units at an installation, an installation consolidated period is called for. And, in certain years, unit-specific periods could be scheduled to permit joint fieldings. Together, these would significantly enhance the unit's capabilities.

Unity of Command

Unity of command is so well ingrained in our philosophy that it hardly seems necessary to consider it. Yet the diversity of players in the total force modernization arena, and the fact that each is involved in unique activities that are often treated as independent rather than interdependent, suggests that this principle and its corollary, unity of effort, must be evaluated.

Clearly, total force modernization requires the active involvement of senior commanders at every level. That commanders must weigh the competing demands for resources and establish priorities is obvious. But their requirement to ensure that concern for today's missions does not totally consume the attention of their subordinates is less well recognized.

A short-time perspective and an excessive concern for near-term requirements are possibly the greatest threats to the force modernization process. We must teach ourselves and our fellow soldiers to be "practical futurists" if we are to achieve optimum combat effectiveness. Guided and encouraged by our commanders, we must visualize the integration of numerous new systems and units and evaluate the capabilities and limitations of these innovations before they are fielded. We must take the time to study the future.

Ideally, tactical seminars and technical discussions of new equipment and new organizations will become prominent activities for unit officers and noncommissioned officers. These can be supported by service school presentations, but, to be effective, these seminars must receive active and sincere command emphasis. Doctrinal analysis and conceptual thinking must not be neglected.

In a more traditional sense, unity of command is required to provide centralized strategic direction at the installation level while encouraging decentralized execution based on well-defined missions and established procedures. A single agency, responsive to the commanders, must be established to serve the integrative function for total force modernization efforts. The mission of this force modernization agency is to ensure unity of effort and the effective management of multidimensional change.

Manpower constraints and the complexity of force modernization, however, preclude the establishment of a fully staffed "super agency." For many installations, a more realistic solution is provided by a matrix management design that taps already existing resources and capabilities. The modified matrix management organization portrayed in Figure 4 combines unity of command with effective decentralized coordination and planning.

The hub of the matrix network is a small Force Modernization Division (FMD), immediately responsive, in our case, to the G3/director of plans and training (DPT). In recognition of the interdependencies involved, the FMD is charged with overall coordination of all eight dimensions of total force modernization. In a very real sense, the chief, FMD, is the organization's futurist charged with "looking deep" and "looking broad" on all aspects of modernization. While the FMD is the focal point of long-range planning and serves as the integrator for the total process, nearly the entire installation is involved, in one way or another, in the modernization effort.

At the command level, regularly scheduled force modernization command reviews provide a forum for senior decisionmakers and their principal advisers to receive in-process reviews on current and near-term actions, and to receive general informational briefings. The results of the force modernization command review process provide the strategic and broad operational direction to the overall effort, as well as decisions on specific issues of command interest. For example, the decision to accept or reject fielding of a specific item of equipment with known total system fielding shortfalls would be made in this forum.

At the staff agency and subordinate-unit levels, a force modernization action officer (FMAO) is appointed as the agency's or unit's point of contact in the force modernization network. The FMAO serves as the integrator of force modernization actions within his organization, to include information sharing and planning, and may serve as his boss's futurist. The communication links between the FMD and unit or agency FMAOs are

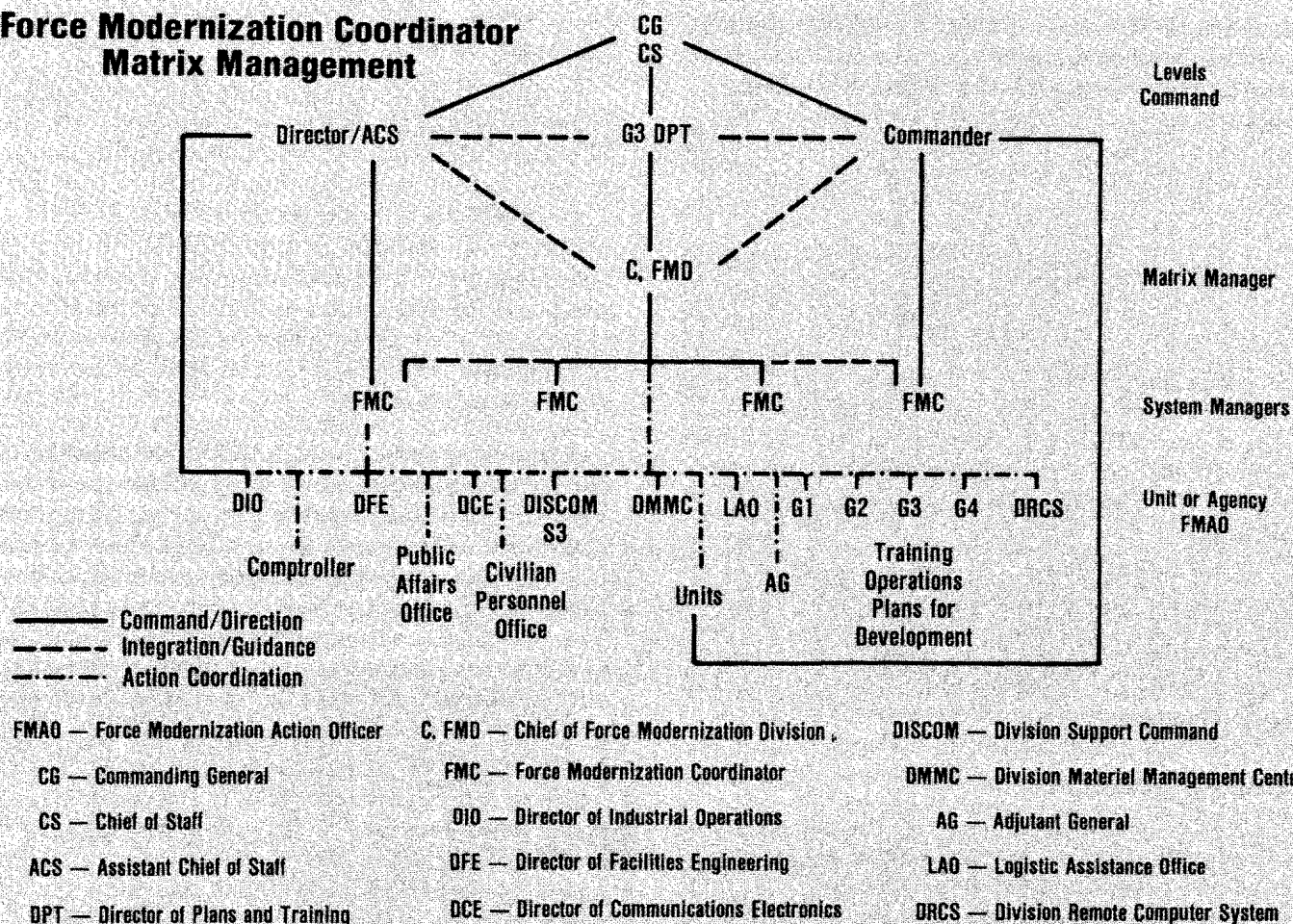## Force Modernization Coordinator Matrix Management

Figure 4

direct and open both laterally and vertically. This network supplements normal command and staff procedures within specified boundaries and is designed in true matrix fashion to facilitate coordination, planning and information sharing.

Linking the FMAOs and the FMD for new equipment fieldings are a group of matrix managers called force modernization coordinators (FMCs), system managers or system coordinators. These FMCs are charged with the detailed planning, internal coordination and supervision of the total system fielding of a particular new item of equipment or a small number of related systems.

As stated above, manpower constraints at the installation level (and at such major headquarters as U.S. Army Forces Command) preclude the assigning of a large number of dedicated FMCs to the FMD. Certain systems may be managed by the members of the FMD, especially during the early stages of organizational development. However, the majority of new systems will be assigned to principal and special staffs, units and even selected post agencies. Assignments are made along functional lines and in recognition of the future assignment of the system to a specific unit or units.

For example, a system such as the *KY57* and *KY58 Vinson* speech secure devices, which will be fielded in all divisional units, is best managed by a divisional special staff officer—in this case, the assistant division signal officer. In contrast, a system due to be fielded in only one unit, such as the *AN/TAS3* test set and thermal night sight maintenance facility, can be managed most effectively by an FMC from the divisional maintenance unit that will receive and operate this vital support capability.

The FMC is a classic matrix manager in that he must serve two (or more) bosses simultaneously. For force modernization actions, the FMC responds within the matrix to the guidance provided by the chief, FMD, who is delegated the authority to speak for the installation or division commander with regard to those actions and responsibilities assigned by regulations governing force modernization and as established as strategy by the force modernization command review process. Since the FMC is an installation or unit staff officer, he must also respond to his regular organizational chief for both force modernization actions charged to that agency and assigned to him for action and other routine assignments.
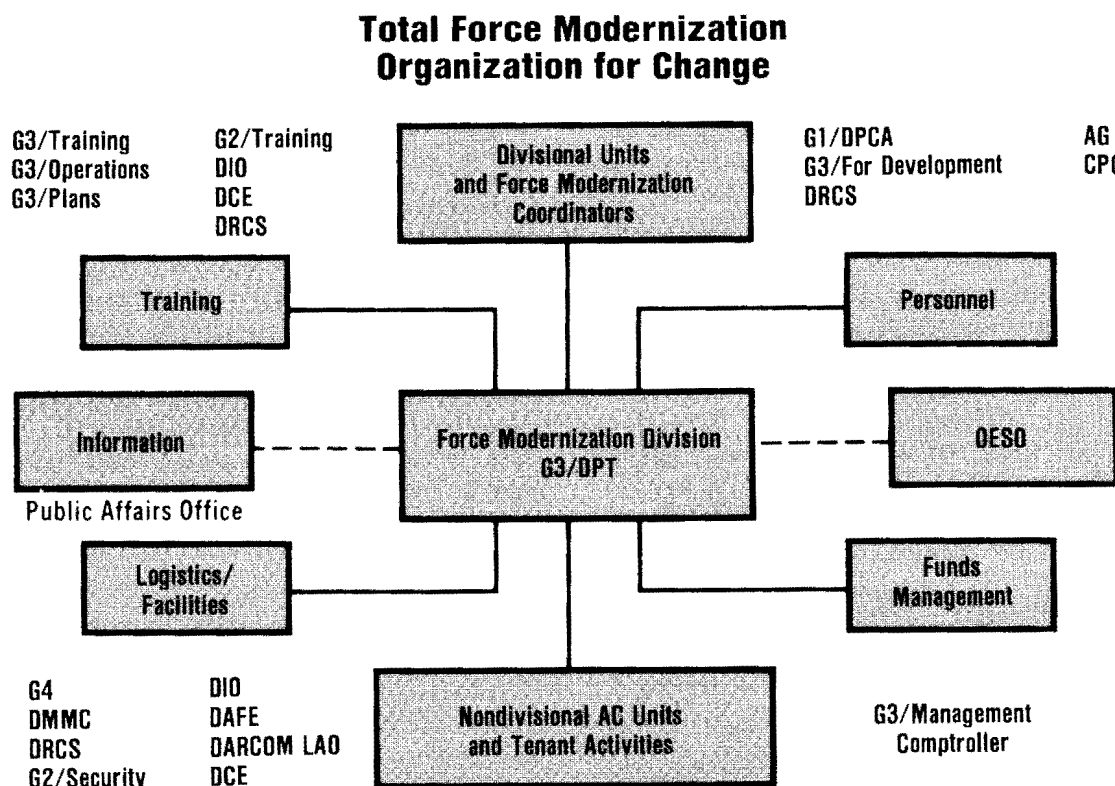
As conflicts will inevitably arise in such an arrangement, conflict resolution procedures must be established that encourage direct coordination between the chief, FMD, and the affected agency chief or unit commander. Should these efforts be unsuccessful, the issue can be "kicked upstairs" to the G3/DPT in his role as operational coordinator or to the command group. Advanced planning and active participation by unit commanders and principal staff officers in the force modernization command review process will keep these conflicts of priorities to a minimum.

Due to the complexity of force modernization issues, regularly scheduled meetings of FMAOs and FMCs, chaired by the chief, FMD, are essential. The Force Modernization Coordinating Council (FMCC) is the action officer level, long-range planning, problem-solving and information-sharing body (see Figure 5). The FMCC sup-plements and complements the day-to-day actions of FMCs and FMAOs. In addition, it serves as the principal advisory body to the force modernization command review.

The executive committee of the FMCC, called the Force Modernization Standing Committee (FMSC), is composed of selected divisional and installation FMAOs with exceptional involvement in force modernization planning. The FMSC conducts preliminary research and analysis, drafts policy options and action plans, conducts AMIM reviews, prepares the agenda for the FMCC and serves as a crisis action team.

Unity of command is well served by this diverse planning network. Through this matrix, commanders at the bottom of the totem pole retain control of the force modernization process in their units and make optimum use of the total organization to plan and execute required actions.

Total Force Modernization Organization for Change

G3/Training   G2/Training
G3/Operations   DIO
G3/Plans   DCE
   DRCS

Divisional Units and Force Modernization Coordinators

G1/DPCA   AG
G3/For Development   CPO
DRCS

Training

Personnel

Information

Public Affairs Office

Force Modernization Division G3/DPT

OESO

Logistics/ Facilities

Funds Management

G4   DIO
DMMC   DAFE
DRCS   DARCOM LAO
G2/Security   DCE

Nondivisional AC Units and Tenant Activities

G3/Management Comptroller

Force Modernization Coordinating Council

DIO — Director of Industrial Operations

DCE — Division Communications Electronics

DRCS — Division Remote Computer System

DPCA — Director of Personnel and Community Activities

AG — Adjutant General

CPO — Civilian Personnel Office

DPT — Director of Plans and Training

OESO — Organizational Effectiveness Staff Officer

DMMC — Division Materiel Management Center

DAFE — Director of Facilities Engineering

DARCOM — US Army Materiel Development and Readiness Command

LAO — Logistic Assistance Office

AC — Active Component

Figure 5

Security

As in other military endeavors, the requirements for security must be measured against the needs of those who must execute plans to know the details in sufficient time to prepare properly. Many key force modernization documents, such as portions of the AMIM, major Army command new equipment distribution plans and certain Division 86/Army 90 programs, are classified at the confidential or higher level. Such classifications are based on the need to prevent disclosure of pending changes in readiness and capabilities to unauthorized sources.

While this is a legitimate concern, the need to conduct wide-ranging coordination involving classified information among geographically dispersed agencies places a severe strain on planners. Current guidance permits open discussion of a new system in conjunction with the major unit or installation to receive it within six months of fielding. Public disclosure of specific units and fielding dates can be made, however, only 30 days in advance. Since long- and short-range unit training plans under the Battalion Training Management System are developed for periods of 15 months and three months, respectively, the present limitations severely restrict the visibility that new equipment fieldings and transition actions can officially receive.

Unless commanders and staffs down to company level are constantly reminded of force modernization actions through their training plans and calendars, the pressures of normal unit activities will tend to obscure the need for advanced planning at the unit level where materiel fielding plans must be reviewed, school quotas requested and filled, MTOE changes analyzed, requisitions processed, facilities checked, and training, evaluation and exercise plans coordinated.

It is my personal belief that a sliding 12-month window is needed to permit unclassified discussions of fieldings and transitions so that detailed planning with all affected agencies can be completed in a timely manner. If such a system is not implemented, requisitions for new equipment, which designate the unit of receipt, the number of systems and suggest a fielding date, could be considered classified documents. Other requisitioning actions, mission support plans, local maintenance contracts, unit master training plans and many similar documents that extend beyond the six-month boundary would likewise border on classification. This is one issue where the top of the totem pole must take corrective action.

Surprise

The principle of surprise is related to that of security. But, given the extended development time of new systems and organizations and our open public information and congressional review procedures, surprising a potential adversary with a force modernization development is unlikely. We, however, must avoid surprising ourselves.

There is simply no place in the force modernization arena for surprises. New equipment must never arrive unheralded at an installation nor should changes in doctrine, training guidance or policy be imposed without advance coordination. Recalling the seesaw analogy, surprises have great potential for upsetting the fragile balance. Open and continuous communication both horizontally and vertically at all levels of the totem pole is the best insurance against this unwelcome possibility.

Simplicity

The final principle, simplicity, provides an excellent summary to all that has already been presented. While the dynamic and interdependent nature of force modernization may appear to make simplicity an unattainable ideal, it must, rather, be the essence of all that we do. Regardless of the level of command, clear, well-integrated plans and procedures must be developed to move force modernization from a crisis management to a systematic and routine mode of operation.

Locally designed fielding SOPs, established review and evaluation procedures and support structures, and regularly scheduled assessments, coupled with an effective master plan, will reduce the potential complexity and confusion of force modernization. The matrix management system will ensure that planning is conducted in an expeditious manner and execution is accomplished by existing agencies and the directly involved units.

This system rightfully places great trust in the ability, good judgment and dedication of leaders, managers, soldiers and civilian personnel in the organizations at the bottom of the totem pole. These are the people who must draw together, in a mutually supportive manner, all of the resources to accomplish this critical mission. Our tasks will never be simple, but, if planners at higher echelons also achieve the necessary integration of effort, force modernization will approach the ideal of simplicity.

The Military Unit As Prosumer

The interdependencies of total force modernization can also be viewed using another concept from Toffler's *The Third Wave.* Industrial society has, until recently, operated on a separation of the producers of goods and services and the consumers of these commodities. Toffler cites numerous examples of the blurring of the line that has separated producer from consumer. More and more people are engaging in self-care, self-help and production for personal use. We are becoming what he calls "prosumers," doing for ourselves and increasingly being recruited by industry to help design products.

In the area of combat developments, this involvement is not new. Military personnel have always been involved in the conceptualizing, designing, testing and fielding of new equipment, doctrine and organizations. But, today, more than ever before, this involvement is expanding. At the unit level, we find ourselves tasked to assist in the operational testing of a wide diversity of new equipment and, in some accelerated development programs, to accept a prototype system, to evaluate its worthiness and to devise solutions to the deficiencies that are uncovered.

If we take the time, we are also able to influence the development of doctrine and organizational structures through comprehensive reviews of draft manuals and TOEs. But we must take the time! The crush of today's requirements and tomorrow's challenges all too often allow us to neglect our roles as prosumers in the designing of the future, and this is the greatest threat to total force modernization. We must accept that our most important task at the unit level is managing multidimensional change and that the essence of successful leadership in the 1980s and beyond is adaptation to change.

Dr. Hans Selye, in the revised edition of his 1956 classic, *The Stress of Life,* asserts that life is largely a process of adaptation to the conditions in which we exist and that health and happiness lie in successful adjustment to everchanging circumstances. For the U.S. Army and the nation at large, a failure to effectively adapt to change could be catastrophic. We must master change and make it our ally. The total force modernization process described in this article is one unit's strategy for doing just that.

Lieutenant Colonel Bruce T. Caine is the professor of military science at Northeastern Missouri State University. He received his master's degree and Ph.D. from the University of Florida. He has served as an instructor in the Department of Behavioral Sciences and Leadership at the U.S. Military Academy and as S3 of the 1st Brigade and as chief, Force Modernization Division, 1st Infantry Division (Mechanized), Fort Riley Kansas.

Quotes

Don't look back. Something might be gaining on you. —**Satchel Page**

In technology . . . we are entering a period of turbulence, a period of rapid innovation . . . But a time of turbulence is also one of great opportunity for those who can understand, accept, and exploit new realities. It is above all a time of opportunity for leadership. —**Peter Drucker**

The greatest test of courage on earth is to bear defeat without losing heart.
—**Robert G. Ingersoll**

Unit Diagnosis Questionnaire—
An Alternative To The GOQ

Major(P) Michael J. Alvarado
Major Jerry R. Highfill

Time is of the essence! Perhaps a hackneyed phrase, it no less accurately describes the plight of Reserve Components. Trying to fit a year's worth of training and administrative tasks into 36 training days annually, compounded by meeting the demands of multi-layered headquarters, the Army Reserve or National Guard unit knows unquestionably that its most precious and limited resource is time.

GOQ Alternative

In our continual search for ways to save time at the Readiness Group in Denver, we OE consultants have designed a new assessment survey to replace the more time-consuming and costly GOQ (General Organizational Questionnaire). Although the GOQ by its very nature is a survey instrument that facilitates assessment by sampling many people in a condensed period of time, it is not without shortcomings.

Perceived as "the OEC's survey," the GOQ does not involve the client in preparation of questions and thereby leaves the client without *ownership* in either the survey or the data it generates. While the GOQ describes what is going on in the organization, especially negative issues, it does not *prescribe* solutions. Also, the GOQ is *long* and consequently takes a lot of time to administer. Using two 80-column computer cards for each respondent, the GOG requires a large data deck that is bulky and *unweildy* to collate.

These concerns about the GOQ led us to design a survey that would more closely meet our needs as well as our clients'. The result is the Unit Diagnosis Questionnaire (UDQ), which has its foundation in several sources.

From Marvin Weisbord's Six-Box Model, the UDQ incorporates an assessment of six dimensions (categories of activity) in an organization: **purpose, structure, leadership, helpful mechanisms, relationships,** and **rewards.** The UDQ is also derived from an instrument developed by Robert C. Preziosi as presented in "The 1980 Annual Handbook for Group Facilitators" (Pfeiffer and Jones). To Weisbord's six dimensions, Preziosi adds a seventh: **attitude toward change.**

Tailoring the UDQ to make it more meaningful to the Reserve Component, three other dimensions were addd: **mobilization/readiness, training,** and **technology.** These latter dimensions profile a unit's knowledge and support of FORSCOM, as well as Army goals and objectives. They also provide the commander with subordinates' perceptions of unit training and mobilization programs, while giving the OEC a basis for recommending to the commander a Readiness Group Branch Assistance Team.

The ten dimensions of the Unit Diagnosis Questionnaire allow consultants to view the Reserve Component unit as an integrated system.

Testing The UDQ

After constructing the UDQ, we tested it in a number of Reserve Component units. Shorter than the GOQ and limited to a single 80-column computer card for each respondent, the UDQ did not take as long to administer and was easier to collate. And like the Weisbord Model it is patterned after, the UDQ is both descriptive and prescriptive. But whereas these initial results were encouraging, clients still tended to think of the UDQ as "the OEC's survey." To facilitate the client's ownership of the UDQ, we developed a method that allows the client to compose the survey. We give the client/commander ten pages, each containing one dimension (*purpose, structure, leadership,* etc.) and several related statements, as shown in Figure 1. Within each dimension, the commander selects five* statements that would best reflect the opinions and attitudes of unit personnel. If the statements provided do not meet the commander's needs for measuring particular dimensions, the commander can devise addtional or replacement statements.

The consultant then puts together all the dimensions and accompanying statements in a custom booklet with explanatory introduction and answer sheet (Figure 2) and administers the UDQ. Clients appreciate their increased involvement in the survey process and acknowledge a feeling of ownership in the UDQ and the data it generates.

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*Actually the number of statements per dimension is flexible because the answer sheet will accommodate up to 60 statements.
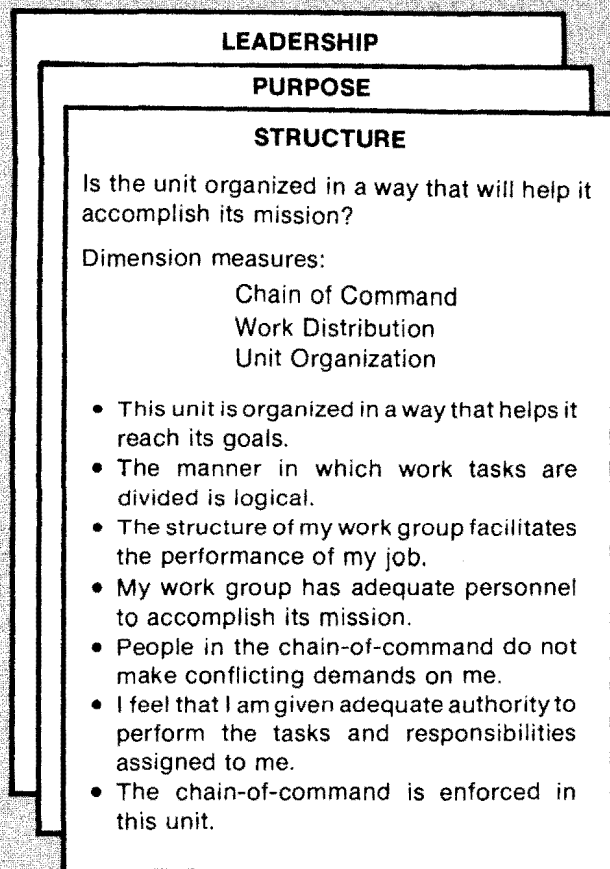
Figure 1

UDQ Sample Dimensions And Statements

LEADERSHIP

PURPOSE

STRUCTURE

Is the unit organized in a way that will help it accomplish its mission?

Dimension measures:

Chain of Command
Work Distribution
Unit Organization

- This unit is organized in a way that helps it reach its goals.
- The manner in which work tasks are divided is logical.
- The structure of my work group facilitates the performance of my job.
- My work group has adequate personnel to accomplish its mission.
- People in the chain-of-command do not make conflicting demands on me.
- I feel that I am given adequate authority to perform the tasks and responsibilities assigned to me.
- The chain-of-command is enforced in this unit.

REWARDS

RELATIONSHIPS

ATTITUDE TOWARD CHANGE

Is this unit ready for change? Will this unit accept change?

Dimension measures:

Attitudes toward past and
future changes in the unit.

- This unit is not resistant to change.

- This unit is introducing enough policies and procedures.

- This unit favors change.

- I like to change things about my job.

- This unit has the ability to change.

- This unit is willing to try new improved methods of doing work.

- Changes made in the past have helped this unit grow.

TRAINING

MOBILIZATION/READINESS

HELPFUL MECHANISMS

TECHNOLOGY

What are the relationships that exist between personnel and equipment?

Dimension measures:

Equipment Availability
Equipment Maintenance
Availability of Publications

- I have no difficulty operating the equipment I use.
- I have the material necessary to accomplish my tasks.
- The equipment I use is adequate for me to do my job.
- Adequate publications are available to assist me in my job.
- The equipment I use is well maintained.
- New people coming into this unit are issued all their equipment without delay.
- I use the operator's manual to perform operator's checks (PMCS).
- I know when the equipment I use requires the next scheduled service.
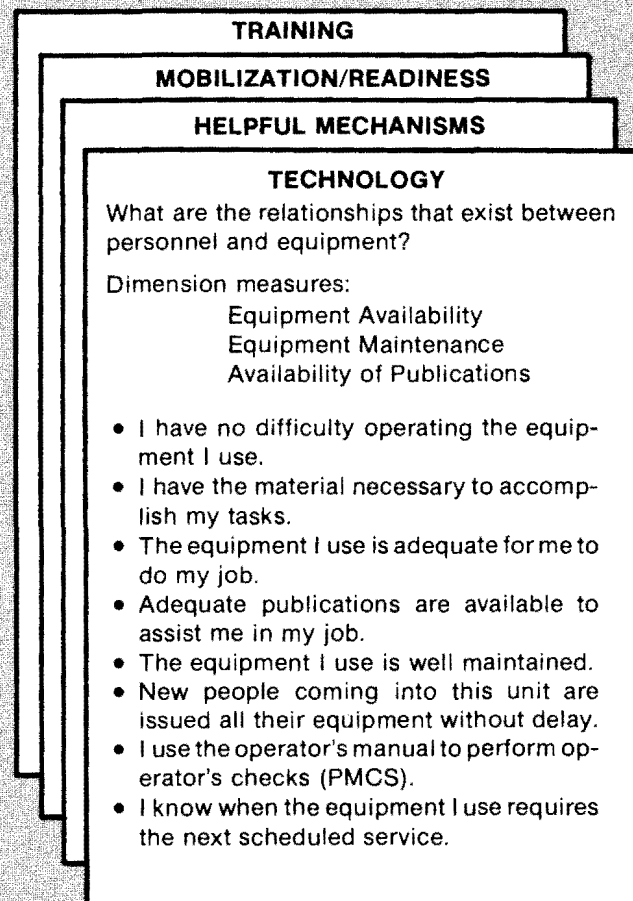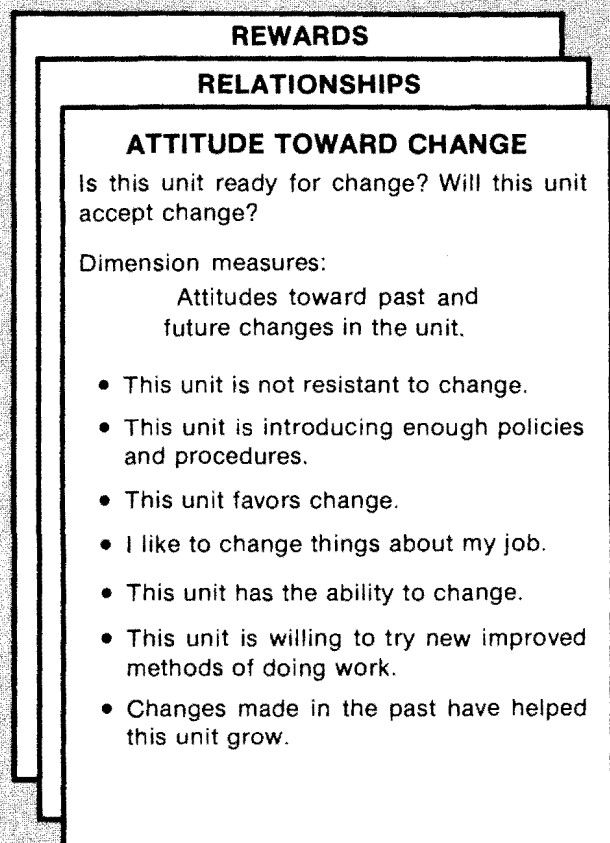
Figure 2
Typical Introduction And Answer Sheet In Custom UDQ Booklet

From time to time, military units find it useful to analyze themselves. For the analysis to be useful, it is necessary to find out from the people who work in the unit how they feel. The information you provide will be used by your commander to improve the effectiveness of your unit.

If the results are to be helpful, it is important that you answer each question as thoroughly and frankly as possible. This is not a test, and there are no right or wrong answers. Do not put your name anywhere on this questionnaire. For each statement, please circle only one (1) number to indicate your thinking. If a question does not apply to you, leave it blank.

Your individual responses will be transferred to computer cards to be combined with those of many other people and summarized in statistical form. A report will then be prepared for the commander/supervisor of your unit or workgroup. Care will be taken so that no information will be provided that would allow any single individual to be specifically identified by the commander/supervisor.

Compliance is voluntary. There is no effect on the individual for failure to disclose information. However, please answer all statements—unless you have an extreme reluctance to do so—so that your answers will contribute to a more accurate assessment of your unit or workgroup. Most people enjoy responding to this questionnaire; we hope you will, too! Return all sheets of this questionnaire.

AUTHORITY: Title 10, United States Code, Section 3012   **PRESCRIBING DIRECTIVE:** AR 600-46

UDQ ANSWER SHEET

Use the following scale to indicate your agreement or disagreement with the UDQ booklet.
Circle your response for each question.

1	2	3	4	5
Strongly Disagree	Somewhat Disagree	Undecided	Somewhat Agree	Strongly Agree

CARD 1 (KEYPUNCH ONLY)

1) 1 2 3 4 5	1__/	26) 1 2 3 4 5	26__/	51) 1 2 3 4 5	51__/
2) 1 2 3 4 5	2__/	27) 1 2 3 4 5	27__/	52) 1 2 3 4 5	52__/
3) 1 2 3 4 5	3__/	28) 1 2 3 4 5	28__/	53) 1 2 3 4 5	53__/
4) 1 2 3 4 5	4__/	29) 1 2 3 4 5	29__/	54) 1 2 3 4 5	54__/
5) 1 2 3 4 5	5__/	30) 1 2 3 4 5	30__/	55) 1 2 3 4 5	55__/
6) 1 2 3 4 5	6__/	31) 1 2 3 4 5	31__/	56) 1 2 3 4 5	56__/
7) 1 2 3 4 5	7__/	32) 1 2 3 4 5	32__/	57) 1 2 3 4 5	57__/
8) 1 2 3 4 5	8__/	33) 1 2 3 4 5	33__/	58) 1 2 3 4 5	58__/
9) 1 2 3 4 5	9__/	34) 1 2 3 4 5	34__/	59) 1 2 3 4 5	59__/
10) 1 2 3 4 5	10__/	35) 1 2 3 4 5	35__/	60) 1 2 3 4 5	60__/
11) 1 2 3 4 5	11__/	36) 1 2 3 4 5	36__/		
12) 1 2 3 4 5	12__/	37) 1 2 3 4 5	37__/	**DEMOGRAPHICS**	
13) 1 2 3 4 5	13__/	38) 1 2 3 4 5	38__/	1) 1 2	61__/
14) 1 2 3 4 5	14__/	39) 1 2 3 4 5	39__/	2) 1 2 3 4 5	62__/
15) 1 2 3 4 5	15__/	40) 1 2 3 4 5	40__/	3) 1 2 3	63__/
16) 1 2 3 4 5	16__/	41) 1 2 3 4 5	41__/	4) 1 2 3	64__/
17) 1 2 3 4 5	17__/	42) 1 2 3 4 5	42__/	5) 1 2 3 4	65__/
18) 1 2 3 4 5	18__/	43) 1 2 3 4 5	43__/	6) 1 2 3 4 5	66__/
19) 1 2 3 4 5	19__/	44) 1 2 3 4 5	44__/	7) 1 2 3 4 5 6 7	67__/
20) 1 2 3 4 5	20__/	45) 1 2 3 4 5	45__/	8) 1 2 3 4 5	68__/
21) 1 2 3 4 5	21__/	46) 1 2 3 4 5	46__/		
22) 1 2 3 4 5	22__/	47) 1 2 3 4 5	47__/		
23) 1 2 3 4 5	23__/	48) 1 2 3 4 5	48__/		
24) 1 2 3 4 5	24__/	49) 1 2 3 4 5	49__/		
25) 1 2 3 4 5	25__/	50) 1 2 3 4 5	50__/		

FOR OFFICE USE ONLY

	73	74	75	76
UNIT/ORG CODE				

	77	78	79	80
CASE/SEQ				

UNIT: _____

Reducing The Data

Statistical manipulation of the UDQ can be as simple or sophisticated as the user desires. The UDQ can even be scored by hand to determine the amount of variance for each of the ten dimensions in relation to the neutral score of 3, *undecided* (see answer sheet, Fig. 2).We have modified the standard GOQ control deck as a means of processing the survey, but the statistical analysis remains the same as that for the standard GOQ. This allows the consultant to use a familiar method of data reduction.

We are considering the possibility of using a personal computer to score the UDQ and perform statistical analysis. Several commercially available statistical software packages can be used. A small portable personal computer would be a tremendous asset to unit assessment, and by adding a card reader, the consultant could administer and score the survey almost immediately. Moreover, results could then be used to structure interview questions. In the interest of savings, this approach would dramatically reduce assessment travel time and cost, and give immediate feedback to the commander.

Utility, Validity, Reliability

In addition to involving the client directly in the survey preparation, the utility of the UDQ is apparent in other ways. It identifies strengths and weaknesses in a unit, as well as areas that might benefit from an OE effort. The UDQ, based on a familiar organizational development model, compliments and supports other assessment methods. By involving a wider cross-section of the unit than is achieved through interviews alone, the UDQ provides focus for the development of subsequent interview questions.

In terms of validity—the degree to which the instrument actually measures what it is intended to measure—the UDQ appears to be as valid as the attitudes or opinions expressed by the respondents. Care has been taken to ensure that the statements contained in the UDQ are valid and phrased in a way that will not confuse the respondents.

The reliability of the survey—the degree to which it consistently measures that which it measures—has been tested by running eight separate iterations of the survey in eight different Reserve Component units. Independent of the UDQ, we have conducted interviews structured around the Weisbord Model in those same eight units. In all cases, the data generated by the UDQ has been replicated by the information obtained through interview questions. We do not, however, recommend using the UDQ as the sole assessment method. Like most survey instruments that raise more questions than they answer, the UDQ is best suited to involve a maximum number of personnel in a first-cut assessment of the organization, and as a basis to formulate interview questions.

Time/Cost Saver

The UDQ is not the panacea to all problems encountered during assessments. It does, however, provide an alternative to the GOQ and saves time and money besides. If we are successful in our efforts to introduce the use of portable computers as an aid to processing the UDQ, then we can even further reduce consultants' assessment time, travel time and cost, and the client's time as well. Ultimately, this approach will yield benefits for both the Reserve Components and the Readiness Groups. □

Major Alvarado   Major Highfill

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MAJ Jerry Highfill is OE Team Chief, 24th Infantry Division (M), Ft. Stewart. Before taking this assignment in July 1983, he was an OE Consultant with the Readiness Group, Denver. MAJ Highfill has a B.S. in Business Management and Administration from Coker College, Hartsville, S.C., and graduated from OECC 1-80. (AV 870-8508/8509)

Comparison Of Management Science And Organizational Development

Captain Kenneth C. Robertson, Jr.

Management Science (Operations Research, OR) is the the application of the scientific method to the study of the operations of large, complex organizations or activities. It applies scientific methods, techniques, and tools to problems involving the operation of systems so as to provide those in control of the operations with optimum solutions to the problems.

Organization Development (OD) is a system-wide process of data collection, diagnosis, action planning, intervention, and evaluation. It aims at: enhancing congruence between organizational structure, process, strategy, people, and culture; developing new and creative organizational solutions; and developing the organization's self-renewing capacity. It occurs by collaboration of organizational members working with a change agent using behavioral science theory, research, and technology.

Regarding major characteristics, Management Science:

- Focuses on managerial decision making.
- Applies the scientific approach to decision making.
- Examines the decision situation from a broad perspective; that is, applies a systems approach.
- Uses methods and knowledge from several disciplines.
- Relies on formal mathematical models.
- Depends on electronic computers.

Whereas, Organization Development:

- Creates self-directed change to which people are committed.
- Creates system-wide change effort.
- Places equal emphasis on solving immediate problems and long-term development of an adaptive organization.
- Emphasizes (more than other approaches) a collaborative process of data collection, diagnosis, and action for arriving at solutions.
- Often leads to new organizational arrangements and relationships that break with traditional bureaucratic patterns.
- Uses change agent with knowledge about organization design, management practice, and interpersonal dynamics as well as skills in working with individuals and groups.

ORSA Speciality And Education

Operations Research Systems Analysis (ORSA) is an Officer Professional Development (OPD) speciality, code 49, the proponent for which is the Combined Arms Center (CAC) at Ft. Leavenworth, Kansas. Officers with SC 49 or projected SC 49 may apply for fully funded civil schooling in ORSA at the following: Florida Institute of Technology, Georgia Tech, Stanford, Colorado School of Mines, Tulane, Northwestern, Air Force Institute of Technology (AFIT), and the Naval Postgraduate School (NPS).

The Combined Arms Operations Research Activity (CAORA) is institutionalizing and initially funding a 2-year cooperative program at Ft. Leavenworth in conjunction with the University of Kansas. It is a 36-credit-hour Military Intern Training Program SC 49, which includes 24 semester hours of ORSA, an 8-month intern project (6 cr hr), and a military related ORSA project (6 cr hr). Graduates will receive a Master of Engineering Degree (emphasis on ORSA). The program began 9 September 1983 and is 20 months long. The initial class will have 11 DA civilians. Point of contact is Ronald G. McGee, Director of Studies and Analysis, CAORA, AV 552-5488.

The Army Logistics Management Center (ALMC) at Ft. Lee, Virginia, in conjunction with the Florida Institute of Technology (FIT), is offering a partially funded (VA Educational Benefits) program leading to an MS in Operations Research. Officers must first complete the 12-week ORSA Military Applications Course I (ORSA MAC I) at the ALMC. Undergraduate degrees in science, engineering, or mathematics are required for acceptance into the FIT/ALMC program. It is a 48 quarter-credit-hour program lasting a total of 15 months, which includes the 12-week ORSA MAC I (6 grad cr hr with FIT). The curriculum for this ORSA engineering program includes these required courses: Computers and OR 1, 2, 3; OR 1, 2, 3; Linear Programming; and Statistical Data Processing. Elective courses include: Decision Theory; Inventory/Queing; Introduction to Simulation; Design of Experiments; Time Series Analysis; Reliability; and Cost and Economics. Point of contact is Mr. William Creed, Resident Director, ALMC FIT Office, room 130, Building 1250, Ft. Lee, VA 23801 (AV 687-2722) or Mr. Jose Antunes, ORSA Committee, ALMC, ATTN: DRXMC-LS-S, Ft. Lee, VA 23801 (AV 687-2365).

The ALMC at Ft. Lee also offers ORSA MAC II,

a 3-week refresher course for officers who have already completed an ORSA tour, a 1-week ORSA Familiarization Course (same as ALM 38-46 Correspondence Course), and a continuing education program, which are 3- to 5-day specialized courses for Captains and Majors working in ORSA. Dr. Max Woods and Dr. Sam Perry from NPS are working on an ORSA corresponding studies program, but it is still in the inception stage.

Officers in the ORSA speciality can obtain a graduate degree in either ORSA Business or ORSA Engineering. ORSA Business seems to be more applicable to OE than ORSA Engineering.

Standard Solution Procedures

Because certain types of problems are encountered repeatedly in organizations, a set of standard solution procedures (also called tools and techniques) have been developed in Management Science to handle these prototype problems. Some of the managerial problems for which MS/OR provides solutions are: allocation distribution, network, competitive situations, inventory control, waiting lines, predicting the behavior of a system, and others such as sequencing and routing, maintenance and replacement, search, and bidding.

The MS/OR tools and techniques used to solve these problems include: decision tables, decision trees, mathematical programming, branch and bound, network models, dynamic programming, Markov Chains, game theory, inventory models, waiting line (queing) models, and simulation models. The one-to-one matching of problem to technique does not always hold. In some instances, a particular tool can be used for several prototype problems; in other situations, one problem can be addressed with several tools.

MS And OE Relationship

Traditionally practitioners of OD and MS/OR have not had a particularly close relationship, despite some similarities between these disciplines. Both fields approach organizations from a systems point of view. Models are used as a way to represent systems or problems in OD and MS/ OR. Both areas are keenly interested in decision-making and problem-solving processes and use adaptations of the scientific method to solve problems and assist decision makers. Cost effectiveness, cost-benefit analysis, cost-benefit ratios, and systems analysis are several of the methodologies

that have been developed in recent years in MS/OR which attempt to measure the effectiveness and efficiency of managerial systems. OD has also emphasized a results orientation and cost-benefit analyses.

The differences between MS/OR and OD can be described in very general terms. MS/OR applies rational algorithms to problems and takes a normative approach. In the field of OD, problem-solving and decision-making are considered in the context of social and organizational processes. Another difference is that mathematical models are used extensively in MS/OR, while analog type models are more often used in OD. The largest disparity between OD and MS/OR is that each field addresses different properties, features, and dimensions of organizations.

MS/OR Instruction

Management Science/OR skills that would be necessary to incorporate into systems integration include statistics and quantitative analysis; these would better prepare course graduates to process and interpret large volumes of data of various kinds. Specifically, the statistics or quantitative analysis instruction should include measures of central tendency, measures of association, sampling techniques and sample size. Other topics which may be appropriate to incorporate into systems integration are Program Evaluation Review Technique (PERT) and Critical Path Method (CPM), which are network models used for controlling and planning complex projects. Other areas that system integrators should be familiar with include: time series analysis, decision theory, topics in mathematical programming, distribution models, and queing theory.

Prospective systems integration attendees who have not been exposed to statistics/QA and ORSA in graduate study programs or at their military advanced courses, should be encouraged to complete any or several of these Army Correspondence Courses: Basic Statistics (FI 921); Simple Linear Regression and Correlation Analysis (FI 922); Statistical Sampling (FI 980); Operations Research (FI 097); and Operations Research/ Systems Analysis Familiarization Course (ALM 38-46). These courses are available from the Army Correspondence Course Program. □

What You Don't Know Can Hurt You
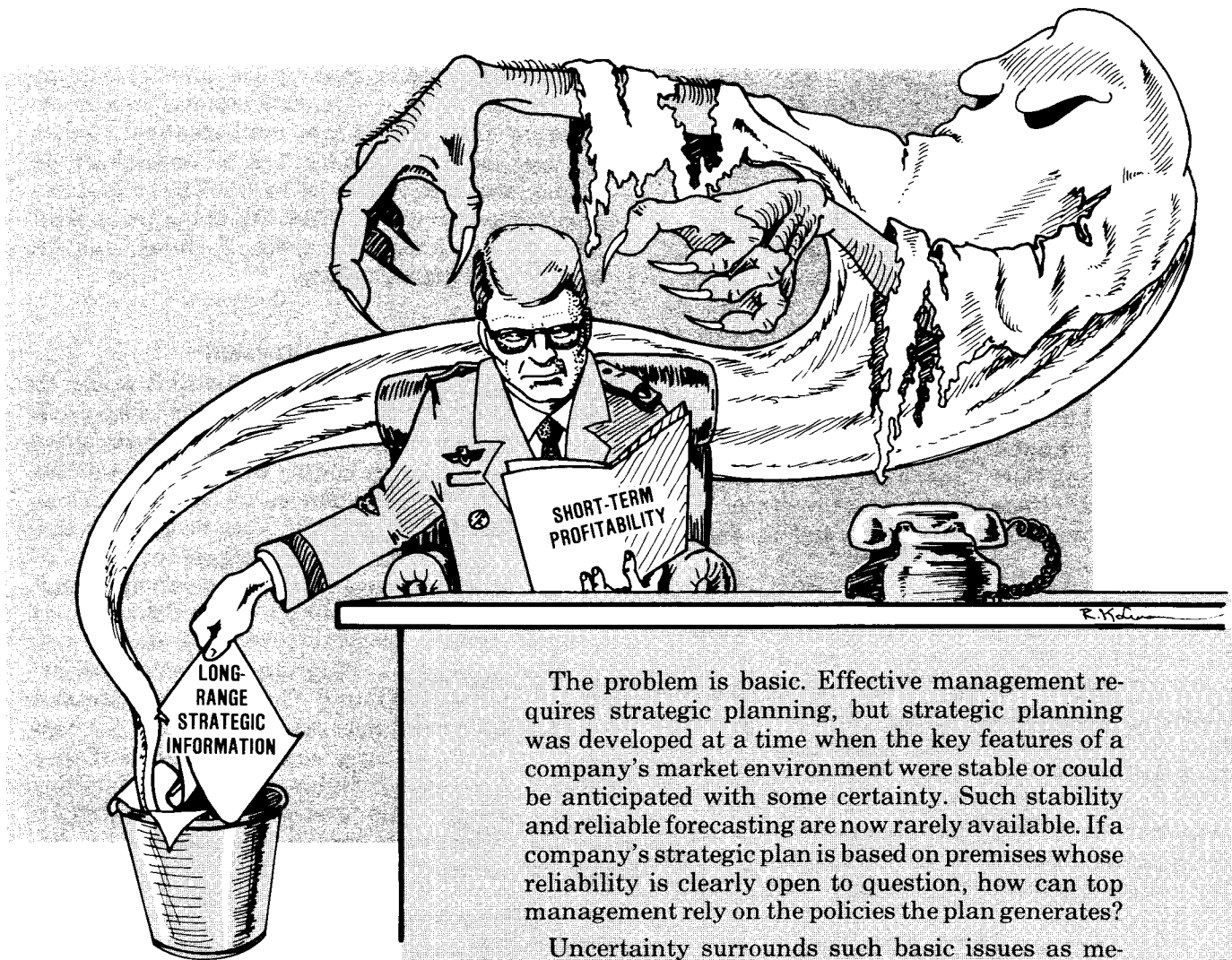
Nathaniel H. Leff

Professor at Columbia University's
Graduate School of Business.

The problem is basic. Effective management requires strategic planning, but strategic planning was developed at a time when the key features of a company's market environment were stable or could be anticipated with some certainty. Such stability and reliable forecasting are now rarely available. If a company's strategic plan is based on premises whose reliability is clearly open to question, how can top management rely on the policies the plan generates?

Uncertainty surrounds such basic issues as medium-term market growth in the U.S. and in global markets; the identity and characteristics of the company's future competitors in a world where major new players are emerging in many industries; the likelihood of significant international currency changes that can alter the profitability of investment and financing decisions; and technological developments that come increasingly from unexpected sources.

Some companies have, in effect, abandoned strategic planning to concentrate on short-term profitability. Others have looked to government to restore predictability to the economic business environment. Neither approach will work. Nevertheless, strategic planning need not fall into disuse. Managers have available the means for adjusting to a world in which uncertainty has taken new forms and reached new levels.

In many cases, the antidote is better information. The information that could dispel many uncertainties is often available from outside sources and from within the company. But many businesses have failed to recognize intelligence management as a top managerial job whose effectiveness will determine company performance in many areas.

Quick Response

A well-developed information program can provide the knowledge necessary to reduce areas of uncertainty on some topics, and on other issues to transform uncertainty into manageable risk. Most important, an improved information system gives companies the quick response capability they need to adjust swiftly as events career from their expected trajectory.

Once corporations see the uncertainty problem as an information problem—and one that can be managed—they have already taken a major step toward finding a solution. As companies begin thinking systematically about information management as a way to increase their strategic effectiveness, the need for certain moves becomes apparent.

First, dealing with the information needs of strategic management is a top-level managerial function. A high-level perspective is necessary to identify both companywide needs and resources. It would also help overcome such standard problems as the frequent case in which the company is providing people with more data but less useful information. A top-level perspective usually helps, too, in dealing with situations where people cannot identify their information needs. What you don't know can hurt you.

Once responsibility for strategic information is established, improvements can follow. A company's middle-level line managers, for example, are an essential part of any mechanism for quick response to shifts in the company's business environment. Being on the firing line, they can be the first people to note when conditions are departing from what the strategic planners had anticipated. Unfortunately, organizational structures rarely provide for rapid feedback and interaction between line people and strategic management. Further, to translate ongoing business events into warnings for strategic management, line managers need a conceptual framework that enables them to fit their observations into an overall pattern. Too often, however, training programs give these executives canned analysis rather than a sense of how systems work and, therefore, of the broader implications of their line experience.

Internal company seminars can be a useful remedy. Sessions for systematic discussion can help provide the analytical framework required, and they enable companies to tap a valuable source of information for recognizing unexpected changes in the company's operating environment. Midcourse corrections can be more timely and effective when line managers are part of the information process that generates the changes.
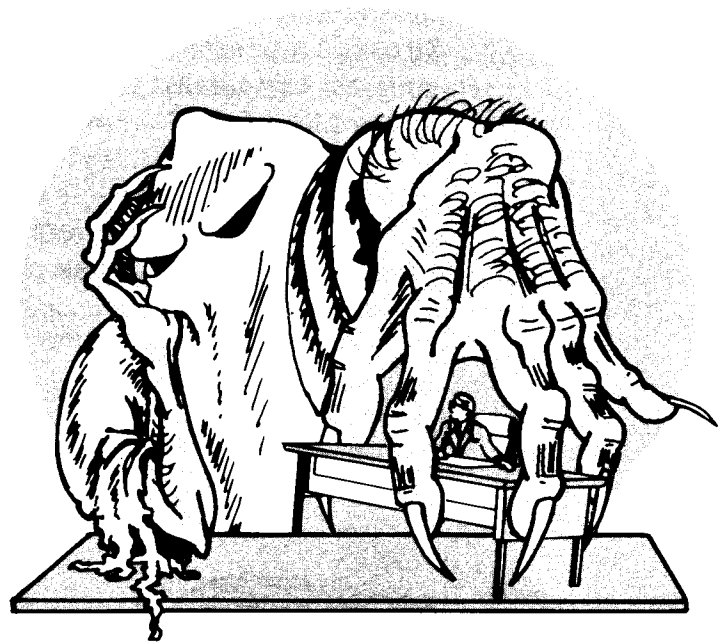
Captives Of Their Assumptions

Systematic thinking about the information needs of strategic management also focuses attention on the underlying assumptions on which company plans depend. These assumptions are sometimes explicit, but often they are simply taken for granted as self-evident truths. In either case, it is crucial that they be subjected to critical examination and testing against reality. Strategic plans have foundered because their core assumptions were too "obvious" to require challenge or scrutiny.

How can companies avoid becoming the captives of their assumptions? Outside directors and consultants can play a useful role, both by asking questions and by introducing new factual and interpretive materials. Encouraging alternative perspectives from within the corporation is also essential. Discussion and questioning serve two functions. First, they force the people who formulate the dominant assumptions to do their homework. Second, insertion of contrary views into the planning process helps avoid ossification of management attitudes. Executives who have been alerted to events that may occur contrary to their expectations are less likely to be caught off-balance when changes occur. And managers who are aware of different contingencies are less likely to be psychologically overcommitted to plans that are rapidly going out of date. New developments need not become costly surprises. □

Stress is a pervasive aspect of modern life. It is recognized as having an especially deteriorating effect on those individuals who are placed in demanding jobs and who have little control over their environment. A staff officer at a joint headquarters is in such a position. This article describes some of the stresses in a joint headquarters and offers a few techniques for preempting the harmful effects of those stresses.

Stress:

A Management Challenge For The Joint Headquarters

Major G.K. Richardson

A joint headquarters presents a complex patchwork of stresses. These stresses are brought about by the rapid flow of information, immediate need for rational recommendations and decisions affecting large forces, sensitive political considerations, long-term effects of actions implemented, military risks of dealing with unknown factors, and unforeseen actions of enemy and ally alike. Because computers will not work with unknowns that require human intuitive powers, the staff officer becomes the primary target for incoming stressors.

Until fairly recently, the presence of stress was not fully recognized as a factor capable of degrading an individual's staff work or even his health. However, pervasive U.S. involvement in world affairs and technological improvements in information flow processing have combined to present a joint headquarters staff with a myriad of time-sensitive situations to deal with while maintaining a productive balance in their interpersonal relationships. This balancing act is difficult enough to perform during "normal" day-to-day living and is intensely complicated by any emergency or crisis.

Considerable evidence indicts stress as a central factor in interfering with the rational and effective response of individuals to crisis. Philip Goldberg, in his book on executive health, describes the cycle of stress as leading, "to physical and psychological weaknesses of varying intensities. The person so affected does not *function* at full capacity. As a result, he or she becomes more vulnerable to future stress." For the joint staff officer to effectively break this cycle he must develop ways of coping while maintaining, and even improving, staff relationships. Most of us have adopted coping mechanisms that allow us not only to live with stress but disguise its presence and effects. Generally, whatever the individual or group experiences as a successful mechanism for coping with or avoiding the stress of a crisis will be used again and again.

Several improper reactions to stress are possible, including: withdrawal, attack, cynicism, questioning of goals or instructions, feigning boredom, or refusing to take the initiative. Groups may also avoid the stress of crisis by engaging in serious irrelevant conversations or by analyzing past interactions which have little or no relation to the immediate threat. Confronted by an increasing rate of uncertainty and stress, the staff officer is likely to fall back on one of the improper reactions and worsen the situation. Unfortunately, it is at just this point that the staff officer is most in need of all his intuitive faculties.

Interview data for this paper was gathered from both staff supervisors and action officers at a large joint headquarters. The questions asked during the interview were designed to allow the officers complete freedom of expression. An analysis of their responses yielded four primary stress elements: *time, knowledge, communication,* and *organization.*

Time Stressors

The interviews generated many intense descriptions of time-related stress. The most frequently stated irritant was the unplanned and almost always short-fused requirement to answer an inquiry for which there was no simple answer or for which the answer might be rapidly overcome by events. This demand often caused the responsible officer to stop work-in-progress to spend the necessary time writing an intelligent response conforming with command policy.

Rapid change in the strategic military environment requires the joint staff to process greater amounts of information in ever-decreasing avail-


able time. This requirement puts unrelenting pressure on the staff officer to react quickly. The increased responsibility of a joint headquarters magnifies the complexities of this type of stress. Computerization has assisted in quantifying and coding much of this massive input of information, but it has also forced the staff officer to present the commander with many more alternatives. As Henry Kissinger once said, "The absence of alternatives clears the mind marvelously." Conversely, experiments have shown that the greater the number of alternatives, the longer it takes to reach a decision and act upon it. Timely reaction to vacillating issues of great importance is a primary stress producer for the joint staff officer.

Knowledge Stressors

Career progression for an officer serving on a joint staff often depends upon his ability to present his knowledge of a problem to the commander or other senior officials. Here, however,

the interviewed officers described two primary stress-producing issues that were more basically related to their knowledge demands: assignment overlap and getting the "right guy" to solve the problem.
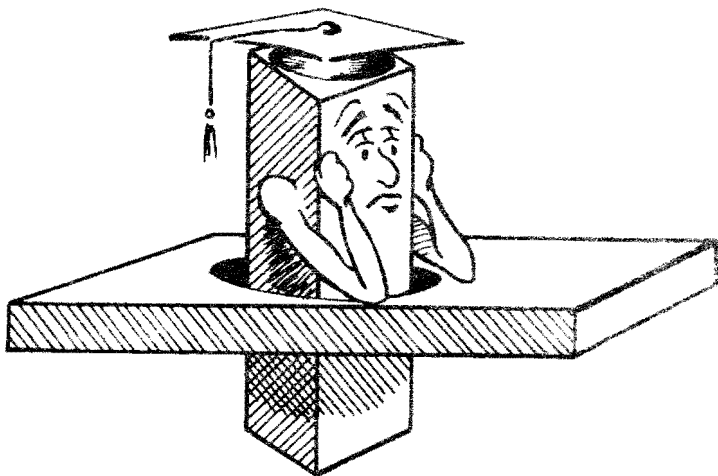
Introduction to the organization was often a blurred, one-day hand-shaking tour through those staff sections familiar to the sponsor. In the complex joint staff, that familiarity was limited. Many of the staffers the newly arrived officer met where dual-hatted, which served only to further confuse the initiate. In many instances, the new officer's predecessor had either departed the command or was involved in out-processing (moving the family, selling a house, or interviewing for a post-retirement job). In this perplexing environment, the new officer was expected to rapidly "get up to speed" and become the expert in his area.

The interviewed action officers universally stated that the organization did expect them to be experts in their areas. However, they also noted that their expertise, expressed as a recommendation for a certain course of action, rarely survived as originally conceived. Over a period of time, many staff officers said that they began to preceive their job as not being directly linked with the end product (war plans). The feedback obtained by those officers from this process confused rather than defined future projects. Staff officers whose suggestions had repeatedly vanished became suspicious and privately angry. In this atmosphere, imagination and productivity frequently were stifled.

Organizational Stressors

The character of a staff officer's relationship with his boss and others on the staff will most often determine the way he responds to crises. Large complex organizations such as a joint headquarters assign each staff officer to a specific task or role. The role structures his activities and interactions with the other members of that staff.

Joint headquarters do this, much like business organizations, to be functional and to survive in a highly abstract and competitive environment. However, this structurally severe approach often depersonalizes relationships and causes an over-emphasis on positional power rather than cooperative interaction. Joint headquarters, if they are to achieve their goals, must coordinate the actions of widely separated individuals who are "each concerned with only a piece of the whole yet whose input is essential for a meaningful whole;" for example, submitting a plan to the JCS.

Functional dependence between staff officers and sections means that one person's task can be accomplished only if certain others perform their jobs satisfactorily. An individual's capability for processing massive amounts of information is finite and therein lies the rationale for organizations: to classify and code inputs. In a rapidly changing military situation involving volumns of reports and frustrating unknowns, cognitive over-stimulation can, to a large degree, degrade predictive ability and the capacity to absorb, manipulate, evaluate, and retain information. All are essential qualities in an effective staff officer.

An additional stress producer for a joint staff officer is tied to headquarters' structural retreat from one of the basic principles of traditional organizational theory, unity of command. The principle holds that each individual should have just one boss. However, as in most complex organizations, "this state of affairs is in general realistically impossible even if it were desirable" (Kahn). A quick glance at a joint headquarters organization chart could lead to the misconception that each joint section is a somewhat separate entity capable of performing its mission within that division. In practice, the opposite is true. Interstaff coordination of actions and planning with other staff divisions is absolutely essential. Although it is a common practice to assign a problem to one of the divisions, that problem will nearly always be expressed as a broad operational concern and will require exhaustive coordination across the entire headquarters. For the staff officer detailed with an assigned action, this means a continuous cycle of gathering data, developing, presenting, and revising solutions, and gathering more data. Some steps of the cycle require the staff officer to obtain agreement from other divisions before the commander receives the plan. Frustrations, delays, and rapidly changing world events are just some of the stressful possibilities for the joint staff officer.

The already complex nature of a joint headquarters is increased by the composition of its staff. Officers are assigned with widely varied backgrounds, experiences, education, and often unique expressions for common military concepts.

This initially unfamiliar and often unpredictable environment only adds to the sense of unease of the newly assigned joint staff officer. A common statement was "I've been here a year and am just now learning who can help me and who can't."

Communication Stressors

The structural difficulties described earlier also cause many intraorganizational communication problems. Frustrations of this nature range from incomplete and/or late guidance to poor or undefined channels for information flow.

The character of a complex joint headquarters and the complicated, but necessary, structure cause frequent confusion between supervisor and staff officer. This condition results in an action-officer perception that "confused orders are being issued" and a supervisor perception that "orders are being executed ineptly." Feedback from the ultimate user was either nonexistent, directed to the wrong staff section, or filtered by intermediaries. The obvious result of this fractured communication was more stress and additional suspicion within the system.

Currently, most staff officers in joint headquarters are inundated with computer data and other information. However, this provides no guaranteed method of coping with the stress-producing factors in the headquarters. Indeed, improved technology in the form of faster communications, more efficient computers, and even structural reorganization often merely provides more stress as the system stretches and contracts to accommodate the latest innovation.

The joint staff officer is dealing with an environment in constant transition and the traditional safeguards against stress (tight lines of control and systematic prioritization) may not always be available. How then does the action officer, staff supervisor, and ultimately the entire organization effectively cope with this potentially degrading phenomenon?

Traditional management practices have focused on treating the effects of stress once the crisis is over. However, treatment of symptoms is only a recognition that some stressful situation existed and that it resulted in some kind of damage (disruption of headquarters functions, perhaps mission failure, or on a more personal level, ulcers, migraines, or worse). Dr. Hans Selye, founder of the International Institute of Stress and author of *Stress Without Distress*, reminds us that excessive stress can not only degrade work efficiency but can actually shorten life. Dr. Selye compares a person's ability to withstand stress to a deep deposit of oil. Once it is brought up and burned, it is gone. The joint staff officer, working in a high-stress environment, spends his portion rapidly. He then becomes a prime candidate for physical maladies which, if not immediately life threatening, may lay the foundation for an early coronary.

Psychiatrists have constructed a list of harmful reactions exhibited by those under stress. The following are some to the warning signs:

- Constant anxiety at work or home.
- Difficulty getting along with others.
- Pushing the panic button at even small disappointments.
- No longer receiving joy from small pleasures that used to be satisfying.
- Suspicion of others' motives.
- Cynicism.
- Fear of situations that previously never caused concern.
- Feelings of self-doubt and inadequacy.

Appearance of these reactions indicates some degree of harmful stress in a person's life.

There are several positive practices available to both individuals and organizations that can improve the environment and in turn contribute to improved efficiency. A great deal of controversy accompanies most stress treatments because the treatment is often perceived suspiciously by those to whom it is being applied. However, some useful preventions have come from recent research, and that research forms the basis for the suggested preemptive measures. The intent is to propose ways to *keep from becoming stressed* rather than getting unstressed.

An individual's attitude will play the dominant role in responsiveness to pre-stress activities. To become better prepared to weather the deleterious effects of a crisis, mentally and physically, a person must possess more personal resources (deeper oil deposits) than are taxed by job requirements. There is more involved in withstanding the rigors of stress than merely knowing the latest project's requirement. As Goldberg states, "It involves a holistic *awareness* of one's physical, mental, and emotional reaction to stress, the impact of that reaction (on yourself and others) and the ability to translate the reaction into positive interpersonal development."

Two possible responses and effects to stress are shown at Figure 1. The type and intensity of a person's reaction (or adaptation) is filtered by certain strengths everyone possesses—some to a greater degree than others. The response of a staff officer to a difficult project with a short suspense may be positive or negative. Positive reactions might include clarifying the task, organizing the work, and executing it with precision and speed. Conversely, a staff officer with weakened individual strengths may attempt to avoid the project or,
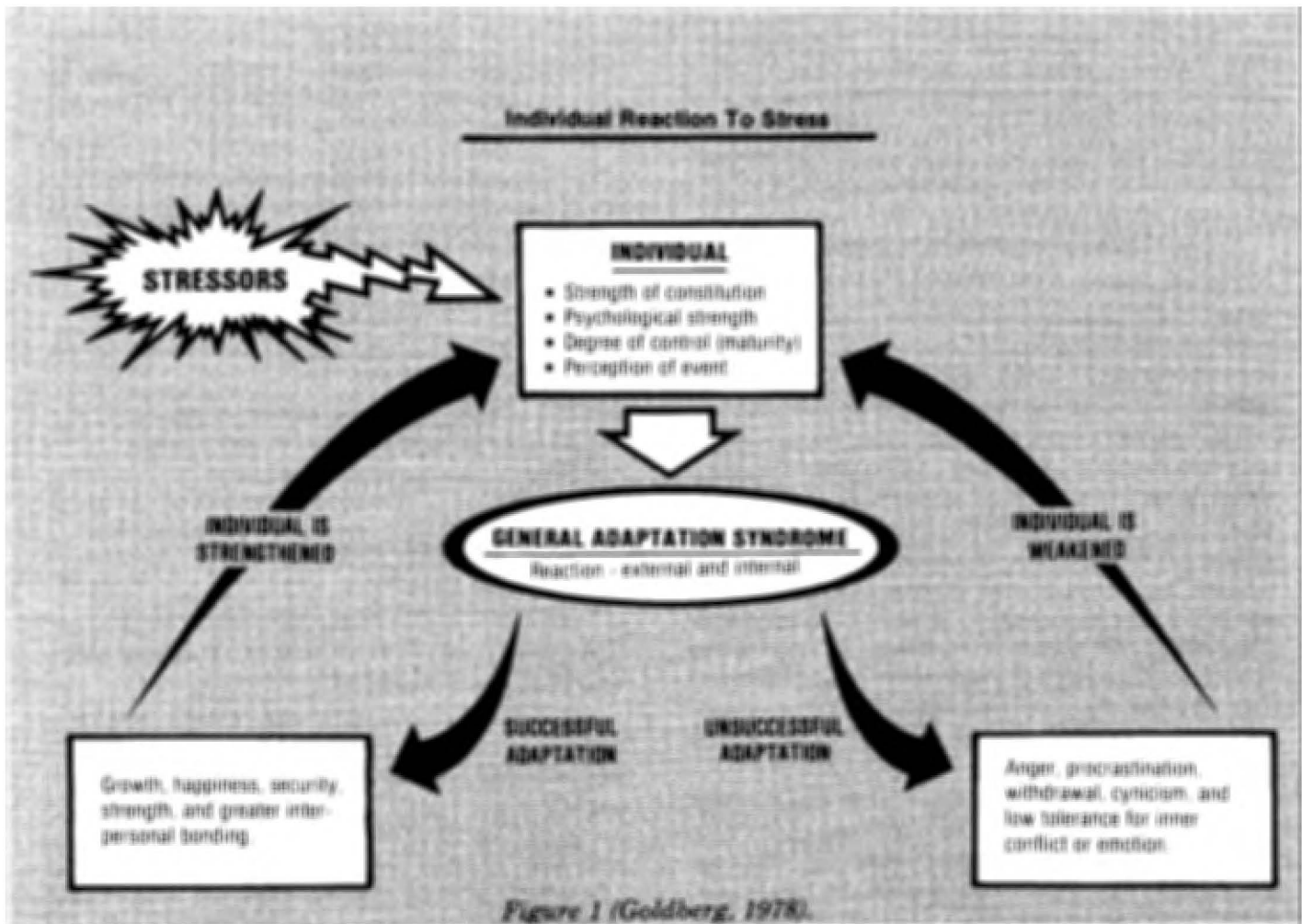
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Figure 1 (Goldberg, 1978).

failing that, "blow off steam" about his unfair treatment, delay working on the project, and set himself up for a greater vulnerability to some future stress.

Individual Reaction To Stress

A study of Illinois Bell executives who had undergone intense stress illustrated that people who were involved in themselves, believed they had control over their lives, and preceived change as an opportunity or challenge rather than a threat remained healthier than those who tended to be negative.

Stress reduction techniques and improved management practices offer some workable methods of avoiding and/or coping with stress. The following are some of those methods applicable to a joint staff officer and his organization.

Techniques: Individual, Supervisor, and Organization

Much of the research on stress (including combat stress) concludes that individuals with a strong sense of autonomy (self-management) perform more effectively than those without that sense. The joint headquarters, staff officer, and supervisors all equally share the responsiblility to develop an environment for reinforcing stress-resistance.

Several techniques for building a stress-resistant attitude have been developed. Some of the techniques are practiced by workers (individual responsibilities), several are supervisory procedures, and others are organizational refinements toward modifying the attitude of the headquarters.

Individual

The foremost responsibility of the individual staff officer is to get control of himself (self-management). Personal stress may be reduced and/or avoided by adopting the following practices.

Good nutrition. A staff officer or anyone else under stress may often eat carelessly or not at all. An individual with an imbalanced diet is very likely to become nervous, lethargic, irritable, and unable to concentrate on the task at hand. A well-balanced diet is a key long-term prevention practice.

Regular exercise. Bottling up accumulated stresses inside instead of releasing them will quickly cause the individual to feel like a time bomb ready to explode. But, of course, that reaction is not socially sanctioned in a joint headquarters. In fact, in all organizations, particularly in the higher levels, "tolerance is very low for the maverick who allows his behavioral excess to render himself ineffective or disturb the work of his co-staffers" (Lang).

The staff officer must have somewhere to turn to release the pressure. The recommended method for this is vigorous physical exercise—that which has an aerobic effect. Although this technique is not offered as a prevention of any specific stress, it is effective in improving a person's overall physical condition. This in turn enables the individual to better withstand future stresses.

Awareness of personal stressors. Some stresses bother one person more than another. Being aware of those events which cause intense, negative stress can enable the staff officer either to avoid that event or, if that is impossible, allow him to take a more rational approach to the problem. A staff officer needs "a higher sensitivity, sounder judgment, greater openness to change, and a larger, broader focus on the whole" (Goldberg). His failure to achieve this view can seriously degrade his effectiveness during crises.

Time management. Poor time management is a nightmare of stress-filled self-abuse. Procrastination only compounds all aspects of a crisis and is major cause of disjointed staff execution and planning. Effective management techniques are essential for productive staff work and reduction of the stress associated with always being "behind the power curve."

Recreation. When it's time to play, play. Periodic interruption of stress gives an individual time to take that "more rational view" and reestablish the balance necessary to build resilience.

Supervisor

Supervisors are uniquely situated to affect stress reduction in a positive manner. They are positioned close enough to the problems to observe effects of stress on the staff workers, and far enough away to ensure a dispassionate view of the requirement. Supervision is a demanding requirement subject to severe criticisms from above and below. However, the staff officer supervisor has several stress-reducing techniques available to him.

Prediction of future requirements. Many interviewed staff officers said they needed more "pre-warning" on incoming exigencies. They also said that supervisors should get and give correct guidance *on time*. Dr. J.D. Adams, in *A Program For Improving The Management Of Stress*, states, "In departments where managers did a good job of preparing their subordinates for changes, lower levels of strain. . .and high levels of felt work-effectiveness and felt satisfaction and growth were reported." A supervisor's willingness and ability to monitor and predict the incoming requirements can largely reduce the stressful impact of those requirements.

Consistency. A Jekyll and Hyde day-to-day management style increases interpersonal con-

Sensitivity to stress signals.

Some of the dysfunctional symptoms of stress have been previously described. A staff officer exhibiting one or more of the symptoms as new behavior is probably experiencing an unusually high level of stress and could benefit from counseling. The supervisor, being aware of the staff officer's task and many aspects of his personal life as well, is ideally suited to conduct that counseling.

Development of job descriptions.

A supervisor can ensure that each staff officer works to standards of performance that are clear and appropriate for his stage of development.

Communicate.

An organization's *raison d'etre* is invalidated if the members do not know what is required of them and why. Communication orchestrates the entire headquarters' actions. Supervisors interpret not only what is said but what is not said. They squash rumors, confirm facts, and give authentication to the headquarters' internal messages. At the same time, a supervisor can provide a stress-reducing forum for the staff officer by serving as his listener. An effective listener/supervisor gives his officers the clear message that they are a very important part of the headquarters. Good listening is time-consuming but imparts to the staff officer some feeling of control over

events and a heightened sense of his importance in the organization. Both of these circumstances release stress and, beyond that, provide motivation.

Organization

A joint headquarters is a complex mega-system comprising many disparate elements trying to function in concert. The commander of such an organization is mightily challenged to maintain structure and function as stress is applied. The organization's response to requirements, embodied in the commander's decisions, describes the primary purpose of the joint headquarters system: problem solving and decision making.

> In such a system. . .the means whereby information, decisions, and actions are brought into conjunction involve a complex interplay between positions and between levels. This constant interplay is the essence of modern organizational competence (Olmstead).

It is also the essence of the organizational challenge to reduce stress and thereby improve the effectiveness of the entire system.

The interface or "fit" between organizational goals and individual goals will, to a great extent, dictate the stress level in the structure. The system exists to direct and control individuals. They, in turn, will respond to the control in a positive or a negative manner. An organization concerned with encouraging positive responses in a fast-changing environment will also have a high level of flexibility. An effective information flow process can provide that flexibility.

The following are a few questions a commander and his primary staff could ask about information flow in their joint headquarters.

- How well does information flow up, down, and laterally?

- Do staff officers receive feedback from any final action on their project?

- How are organizational goals received at the lowest level? (What filtering occurs at the intermediary level?)

- Is the organization awash in information (info overload)?

- How do people in the headquarters find out information? (Pre-warning or bomb-dropping?)

Perhaps an organization asking these questions can identify some of their systemic stressors and those areas where either structural or process improvements could be made.

Conclusion

Stress is difficult to observe in its early stages and even more difficult to live with in the form of ulcers, tension headaches, poor general disposition, or worse. The pressures existing in the demanding environment of joint headquarters provide a great challenge to both personal and organizational stress management.

Staff officers and supervisors require a high degree of sensitivity toward the early warning signs of stress. Only then can the necessary healthy adjustments be made to cope with or avoid that stress. It is certain that staff officers in joint headquarters will continue to be set upon by exigent political and military crises. It is just as certain that the growing body of knowledge about this debilitating phenomenon will provide more and better techniques for confronting and living with it.

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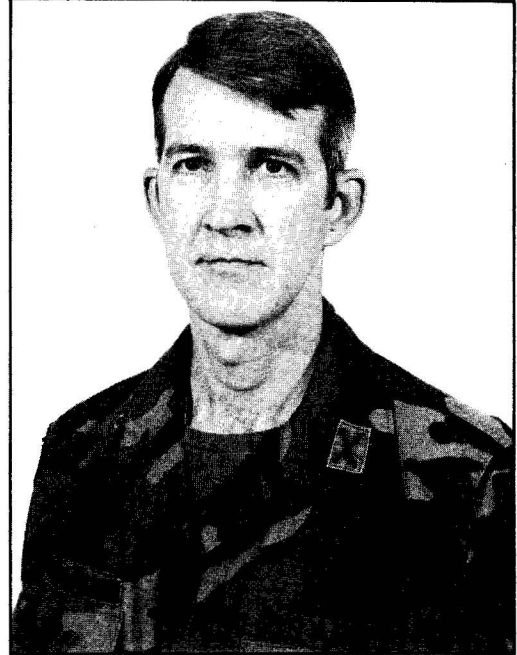
MAJ Gary K. Richardson is an OE consultant and senior instructor at the U.S. Army Field Artillery School, Ft. Sill, Oklahoma. He is responsible for providing internal consultation to the FA School, teaching OE and Leadership to OAC, OBC and NCOES courses, and periodically assisting the III Corps Artillery and the Ft. Sill Center and Staff OECs. MAJ Richardson was certified as an Organizational Effectiveness Consultant in 1981. His previous assignments include command of two firing batteries, XO of an FA Bn in Germany, and command of an area in USAREC. MAJ Richardson holds a Master's degree in Management and is a graduate of the Armed Forces Staff College.

Quotes

I can pardon everyone's mistakes but my own. —Cato

Things turn out best for those who make the best of the way things turn out.
—John Wooden

TIME MANAGEMENT

Captain John M. Fowler

Charles Murrah, in an article in *Nation's Business,* quotes the singer and actress Della Reese as saying that of the two most significant things in her life, *time* and *thought,* time is the more important, for without it one could not think.

Time is a problem for business executives and public administrators, and the management of time is, and shall remain, one of the most significant resources an effective manager must allocate.

However, while the lack of time is not an issue for executives, managing other people's (subordinates) time as well as their own *is.* Managers or executives (these terms are being used synonymously) will have enough time available if they use it properly and effectively.

Alec MacKenzie in an article, "How to Make the Most of Your Time," believes that the telephone is the single worst waster of time for the manager. But I believe the problem is a more complex one. Wasted time, besides being avoidable, represents a significant monetary deficit to any organization. For example, if a first line to middle manager, with a $20,000 salary (based on a 8-hour workday, 3 weeks of annual leave and 9 holidays) is ineffectively employed for only *1 hour* a day, it will represent a $2,400 liability to the organization. Similarly, an executive earning $30,000 a year represents a $3,700-plus liability.

The results of ineffective time management are obvious—there is insufficient time for effective personnel management and decision making, and managers cannot achieve superior performance if first they do not gain control of their time.

Therefore the executive, who often cannot manage the precious resource of time, is typified as a quasi-leader burdened by making his own appointments, attending unproductive meetings to which he should have sent one of his subordinates, and performing other "jobs" normally expected from his subordinates. Under such poor management, the subordinates will either complain that they never have an opportunity to see the manager, or continue to allow him to maintain his present marginal management techniques, thus increasing his already burdensome workload. The results of poor management of subordinates and of time will haunt the executive as the ghosts of Christmas haunted Scrooge. An effective manager must be the master, not the servant, of his time.

Myths About Hard Work and Time

One myth about time management is that the harder one works the more one gets done. Unfortunately, there is no direct relationship between hard work and positive work accomplishment. It is much better and more productive to work smarter than harder.

Another myth is that the person who is *apparently* very active accomplishes a lot and obtains visible results. Therefore, the busier one appears to be, the more successful one is. But work is judged by **results** achieved **not** by *time* spent and *energy* expended. The successful executive obtains results by managing time resources and people effectively.

In addition, many executives "devote" a considerable amount of their time to their jobs. A Daniel Howard survey of typical executives concluded that they work approximately 63 hours per week—53 hours in the office and 10 hours at home. Such "workaholics," however, are in serious danger of impairing their efficiency, for studies also show that efficiency declines rapidly after an 8-hour day.

Moreover, the "Frekvensor" experiment, a survey conducted in Sweden, has revealed some interesting facts about the time management of Volvo car manufacturing executives. Executives were spending too much time handling current day-to-day problems and not enough time on long-range planning, and they were performing too many subordinate tasks.

Executives, therefore, must learn how to discharge their duties within the normal time they have—the workday, and they must learn to manage their time better.

Time and Motion Studies

Recognizing that hard work alone is not sufficient to obtain results, managers have taken advantage of scientific research data, namely, time and motion studies, to assist them in becoming more productive and in reducing operation costs. The first example of time and motion studies occurred at the Midvale Steel Company in 1881 by Frederick W. Taylor. His analysis of the performances of coal shovelers resulted in a modification of the shape and handle length of shovels and an improvement of the workers' productivity.

Traditionally, time and motion studies have focused on workers in factories and on assembly lines. Little attention was paid to executive time management. However, a series of video tapes, *Managing Management Time*, produced for the United States Army by William Oncken, depicts steps in management that enable managers to evaluate their management time.

William Oncken's Time Graph

According to Oncken, the consumption of time at "work" covers vocational time—the manager works in areas in which he is best qualified academically and by experience; and managerial time—the manager accomplishes goals through the efforts of his subordinates. However, as the manager moves up the ranks of an organization, he participates less in vocational time and more in managerial time.

Oncken explains time management further by using a three-dimensional time graph: X-Input axis, Y-Leverage axis, and Z-Output axis; each axis contains three components.
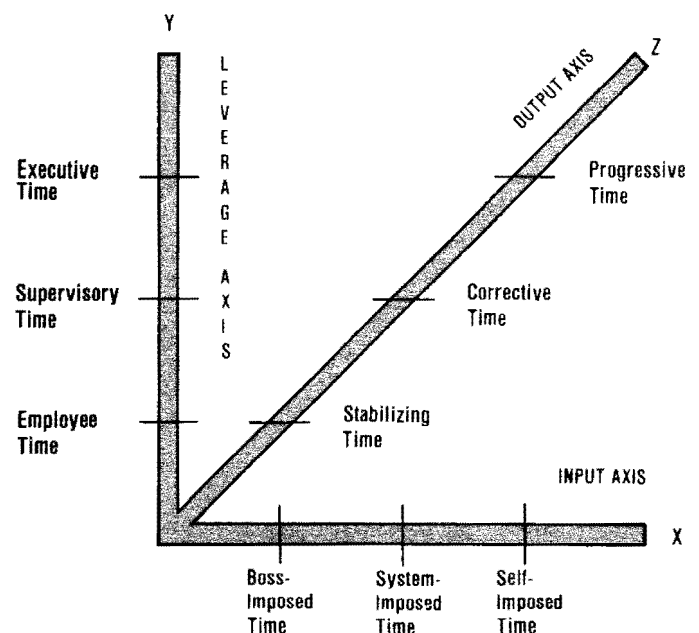
The parts on the X-input axis are:
- Boss-imposed time—performing tasks for the boss who requires compliance with his directives to ensure that organizational structures remain intact
- System-imposed time—complying with specific requirements, regulations, and "red tape" necessary for effective management. Examples include staff meetings, monthly reports, forms being filled for other departments and staff officers within the organization
- Self-imposed time—developing innovative plans to improve existing conditions within the organization.

One might ask how does the manager get control of the boss- and system-imposed times so that there is enough time to plan for contingencies? To accomplish this the manager must look at his own job from his boss' perspective, determine its requirements, then come up with an idea or a solution to a current problem. After developing the idea fully he presents it to his boss who realizing its worth immediately accepts it as his. The manager has thus gained the boss' confidence and will always be part of the team because he "thinks"for the boss.

Training his subordinates to make their own decisions is also important because the executive is able to maximize his self-imposed time. He can supervise his subordinates while managing his time effectively.

Oncken's Time Management Graph

The Y-leverage axis is the second axis on the time graph. Oncken defines leverage as the ability to advance one's self through the efforts of others. Leverage is acquired when the executive has control of the X-input axis and is successfully delegating responsibility to his subordinates. If he fails to delegate responsibility he will gain little if any leverage because **he** is doing **his** subordinates' job.

Three components on the Y-leverage axis are:
- Employee time—the manager is interested only in vocational not managerial time, and therefore gets only a 1 to 1 ratio leverage
- Supervisory time—the manager assigns tasks to his subordinates and acquires a 1 to N (number of subordinates) ratio leverage.
- Executive time—the manager delegates responsibility to his subordinates and thus operates at the optimum level on the leverage axis. However, he must keep abreast with his subordinates' work and should not get involved unless it is absolutely necessary. Care must also be taken that working at this level does not isolate him from his subordinates.

The third axis is the Z-output axis whose components are:
- Stabilizing time—refining yesterday's solutions to this year's problems.
- Corrective time—finding tomorrow's solutions to this year's problems. Often, however, the solution to the problem is already overdue and is easily identifiable
- Progressive time—planning for the future by anticipating eventual solutions to the next year's problems. It is at this level that the manager receives the greatest dividends for effective time management.

On the time graph, the professional manager, "pro," is always located at the intersections of the self-imposed, progressive, and executive times. It is at this point that one finds the "pro" maximizing his leverage over his subordinates and controlling his time most efficiently. In contrast, the position on the graph that portrays the least desirable time management is the intersecting of boss-imposed, stabilizing, and employee times. Unfortunately, too many managers are nearer this location than the "ideal" one.
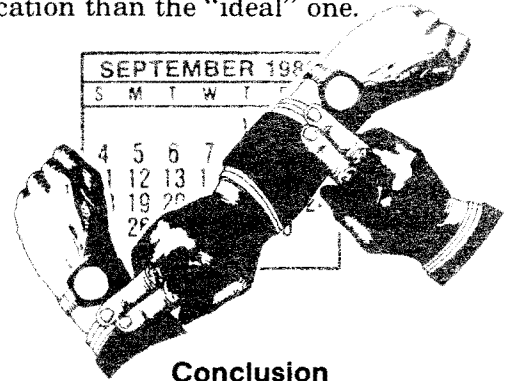
Conclusion

Regardless of the managerial style (McGregor's Theory X and Y, Maslow's Hierarchy of Needs, Herzberg's KITA, or Blake's Managerial Grid) that is applied to motivate subordinates and accomplish missions, the manager must use his time effectively. According to Peter Drucker, everyone wants your time; but the difference between a "pro" and an amateur is how they use time and how they let others use it.

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Force Modernization— Doctrine, Organization and Equipment

Lieutenant Colonel Lawrence M. Jackson II, U.S. Army
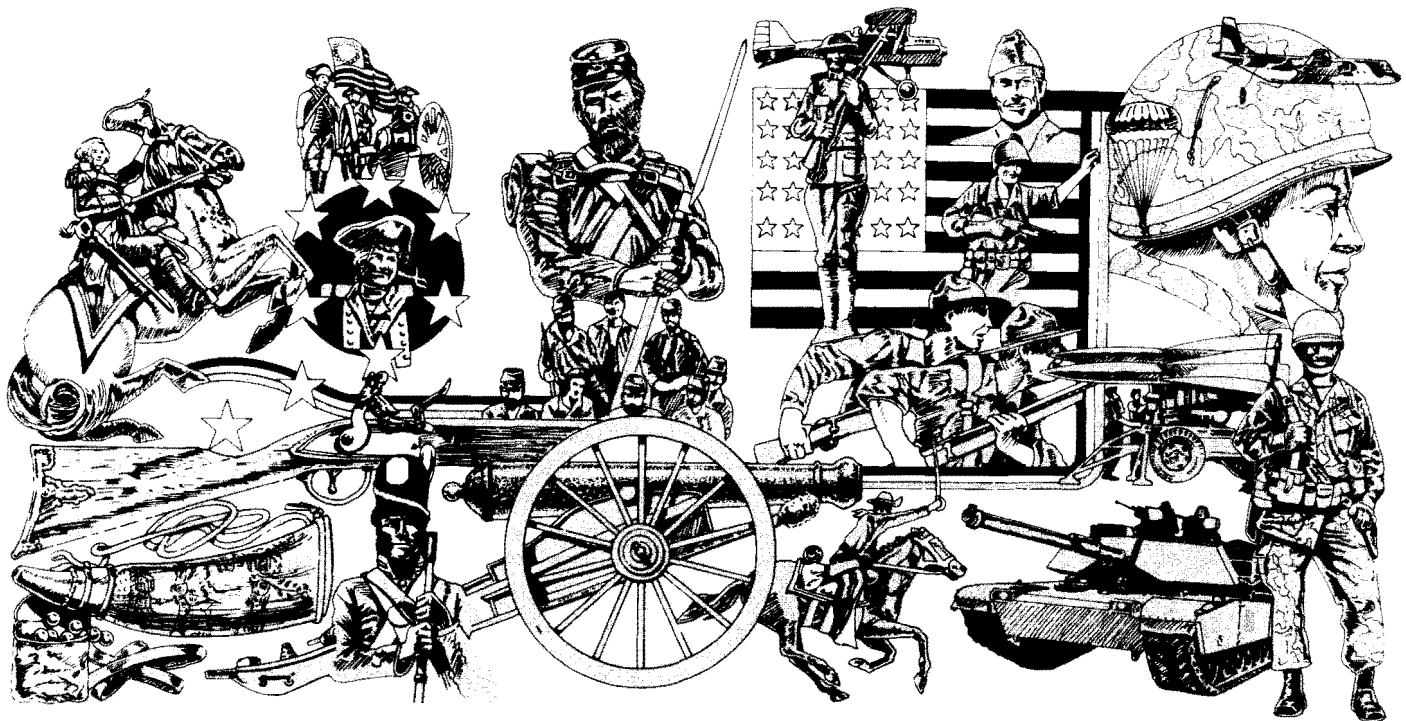
The Army division of today, and for the next few years, will be a division in transition. The U.S. Army is in a period of equipment modernization greater than any time since this country mobilized for World War II. In the 1980s and 1990s, most of the Army's major systems will be replaced by others with greater capabilities. This technology transition—modernizing the Army—is being paralleled by equal improvements in war-fighting capabilities of our potential enemies. At the same time, division organizations are in transition, improving organizations to best employ and sustain the new systems capabilities.[1]

Additionally, the AirLand Battle doctrine contained in Field Manual (FM) 100-5, *Operations*, represents an evolutionary modernization of our previous doctrine. Our efforts at modernizing doctrine, equipment and organization should ensure that all three areas remain complementary. The purpose of this article is to outline some of the issues concerning force modernization's relationship to the AirLand Battle doctrine.

The force structure of the Army is determined by our worldwide commitments. The Army must be able to fight and sustain operations in the heavy force environment of Europe. Yet substantial portions of the Army must be prepared for other missions around the world. The design of units for other wars must provide for deployable and sustainable forces capable of worldwide operations in extreme terrain and weather conditions against varied enemy forces.

Force design decisions have been made for the forces oriented for the NATO war. Equipment and organizational decisions are now being implemented to start the transition of those organizations.[2] The contingency forces for the Army's other worldwide commitments are also being modernized. Efforts by units and the service schools are aimed at creating strategically deployable, sustainable forces capable of fighting anywhere in the world, including reinforcing Europe if required.[3]

As with anything new, most of us spend considerable energy trying to learn more about the "facts" of the new. Modernization and division transition require equal attention to the capabilities of new equipment and new organizations. Our efforts in this learning process often hide the elements of the "old" that apply to new organizations or equipment.

The "old"—the lessons of history, the tactical fundamentals and troop-leading procedures—combined with the "new"—the improved capabilities of the changing organizations and equipment—provide organizations that are more capable of executing the AirLand Battle doctrine. More importantly, the doctrinal employment of these organizations will be developed and refined from the combination of emerging concepts and practical field experiences. Our methods of employing these organizations will be as evolutionary as the organizations themselves.

The complementary aspects of doctrine, organization and equipment are not unique to our current modernization efforts. A review of previous efforts with the "Pentomic" divisions and Reorganization Objective Army Divisions can no doubt show the same relationships of these three aspects. In 1958, Major (later Lieutenant General) John H. Cushman, while discussing the "Pentomic Division," pointed out that "doctrine, like the division itself, is in a period of test and transition."[4] He concluded with a quote from U.S. Continental Army Command Training Text 7-100-2, *The Infantry Division*, March 1957:

The composition of the division is the result of intensive study of many types of organizations over a period of several years. Many of its features have been tested in the field, others may require change after additional experience. . . .A basic purpose of this (training) text is to provide a body of doctrine. . .as a point of departure in controlling and operating this organization effectively. The imagination and inspiration of intelligent leadership . . . the unchanging element, is the foundation on which success of all units in combat will depend.[5]

Those comments could just as well apply to our current modernization efforts.

We must understand the division organizations' capabilities in order to correctly employ them. A comparison of the new heavy division to the previous division shows some significant differences (see Figure 1).[6] We immediately focus on the new:

• The cavalry brigade (air attack) with its additional brigade command and control capability, its consolidated aviation assets and the cavalry squadron under its maintenance and administrative control.

• The three brigade headquarters with increased staffing for continuous operations and the organic scout platoons for improved reconnaissance and security.

• The mix of tank and mechanized battalions (five and five for mechanized divisions and six and four for armored divisions) with their *Abrams* and *Bradley* vehicles which provide increased lethality, survivability and mobility and which significantly increase night and limited-visibility fighting capability.

• The division artillery with its increased fire control capability through the tactical fire direction system, improved target accuracy through ground and air-laser designators, and increased firepower through improved ammunition and weapons such as cannon-launched guided projectiles and Multiple Launch Rocket Systems.

• The air defense artillery with its improved division air defense gun protection for the brigades and the engineers with their improved forward combat engineering capability.

• The division support command with increased capability to sustain continuous operations with its forward support battalions.

• The chemical company with a refocused capability for chemical decontamination and smoke generator support.

Yet the old and the new divisions have common functional elements:

• Command and control.
• Close combat maneuver.
• Cavalry.
• Field artillery.
• Air defense artillery.
• Engineers.
• Signal.
• Military intelligence and electronic warfare.
• Nuclear, biological and chemical (NBC) defense.
• Combat aviation.
• Military police.
• Combat service support.

Figure 1

Present H-Series

Division 86

|	
ARMD DIV	-Armored division
HHC	-Headquarters and headquarters company
BDE HHC	-Brigade headquarters and headquarters company
DIV ARTY	-Division artillery
AVN BN	-Aviation battalion
DISCOM	-Division support command
MP CO	-Military police company
ARMD BN	-Armored battalion
TAB	-Target acquisition battery
S&T BN	-Supply and transport battalion
DMMC	-Division materiel management center
SIG BN	-Signal battalion
MECH INF BN	-Mechanized infantry battalion
GS BN	-General support battalion
MAINT BN	-Maintenance battalion

AG CO	-Adjutant general company
ADA BN	-Air defense artillery battalion
DS BN	-Direct support battalion
MED BN	-Medical battalion
FIN CO	-Finance company
NBC DEF CO	-Nuclear, biological and chemical defense company
MI BN (CEWI)	-Military intelligence battalion (combat electronic warfare intelligence)
ENGR BN	-Engineer battalion
CAV SQDN	-Cavalry squadron
ACAB	-Air cavalry attack brigade
CSAB	-Combat support aviation battalion
MLRS	-Multiple Launch Rocket System
ATK BN	-Attack battalion
CHEM DEF CO	-Chemical defense company
FSB	-Forward support battalion

The combination of the efforts of these organizations and the contributions of the Air Force, Navy and the Marines on any battlefield result in combined arms. Now and in the future, the combining of those efforts requires the application of mission, enemy, terrain and weather, troops and time available (METT-T) regardless of the status of division transition.

One danger in focusing on an "86"-type organization is the effect on "now" tactics. The application of the AirLand Battle doctrine must be such that a division can fight today, six months from now, three years from now or 10 years from now. Developing a "Division 86" doctrine and "Today's Division" doctrine will not satisfy that requirement. Very few serving soldiers will ever see the complete Division 86. Future technological breakthroughs, the production base capabilities and yearly purchases of equipment all contribute to a dynamic evolving organization rather than a fixed goal to be achieved by a specified date. Soldiers in the field must be prepared to employ combined arms regardless of the status of transition.

Our focus on transition should be on how to combine unit and equipment capabilities to carry out the doctrine rather than to develop a doctrine to match organizations and equipment. A historical parallel can be found in the pre-World War II German and French armies. Both sides had relatively equal equipment. In fact, some could argue that there was a slight technological advantage to the French army. The German army, however, applied a superior doctrine by uniquely combining available forces in the right combination.

Building upon its World War I experiences and observations of experiments done by other armies, the German army conducted field tests with mockups in the late 1920s and early 1930s to develop doctrine prior to the arrival of equipment.[7] That same opportunity is here now for the U.S. Army. Doctrine has been modernized with the new FM 100-5.[8] It is time to apply unit and equipment capabilities to that doctrine. Our doctrine procedures and techniques can be refined regardless of the status of transition.
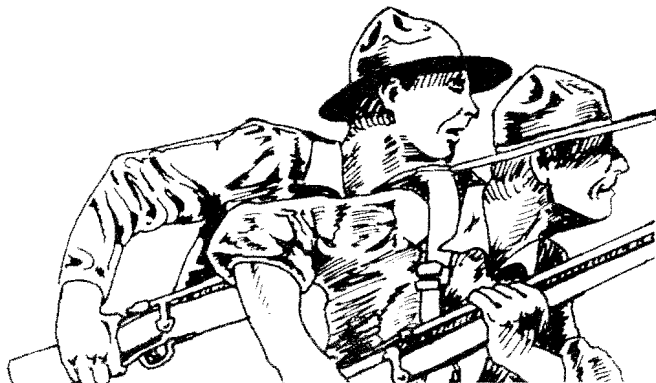
The transition of divisions will result in Active and Reserve force variations that will tend to produce unique problems for each division. In the process of transition, some organizations will change from their current H-Series tables of organization into interim organizations with the current onhand equipment or new organizations with low-technology equipment. For example, some tank battalions will convert with *M60A3* tanks rather than with *M1* tanks. Those transitional or interim organizations will be in the force structure well through the 1980s. Other organizations, because of the availability of high-technology items such as *M1* tanks and *M3* cavalry fighting vehicles, will convert directly into a new organization with high-technology equipment.
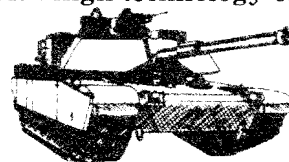
Thus, we see the problem. At which point do we create a special doctrine to match the division? When just a few tank battalions have been converted? Later, when the tank battalions, the headquarters and the air defense artillery battalion are in the final configuration? When the mechanized infantry battalions and the military intelligence battalion join the converted column? Or do we use METT-T to apply the capabilities of the units to implement the AirLand Battle doctrine?

Modernization has a dual impact. First, we must recognize the increased capabilities of the equipment. Second, we must understand the capabilities of the employing organizations. Knowledge of those capabilities is necessary when assessing the impact of modernization on division tactics. Although all organizations are changing and need to be analyzed, let us look at two heavy division organizations—the division cavalry squadron and the maneuver battalions—to see the relationship between doctrine, organization and equipment.

The substantial organization and equipment changes to the division cavalry squadron have a marked impact on its role in division tactical operations. Organizationally, the squadron changes from its present armored cavalry structure to a balanced two ground/two air cavalry troop structure (see Figure 2). Its equipment configuration is even more dramatic when compared with the current organization. The new squadron's organizational equipment reflects its reconnaissance and surveillance roles and is highlighted by the absence of main battle tanks. The combination of organization and equipment changes decreases its combat capabilities but increases its reconnaissance and surveillance capabilities.
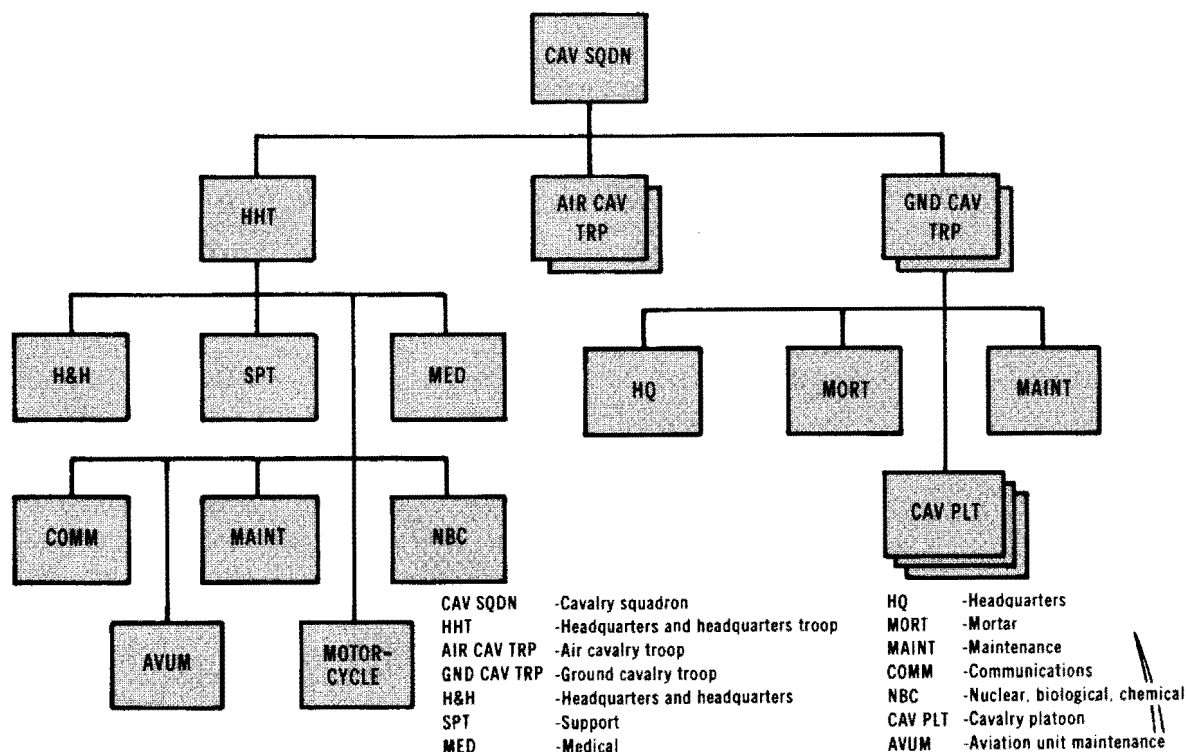
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CAV SQDN	-Cavalry squadron	HQ	-Headquarters
HHT	-Headquarters and headquarters troop	MORT	-Mortar
AIR CAV TRP	-Air cavalry troop	MAINT	-Maintenance
GND CAV TRP	-Ground cavalry troop	COMM	-Communications
H&H	-Headquarters and headquarters	NBC	-Nuclear, biological, chemical
SPT	-Support	CAV PLT	-Cavalry platoon
MED	-Medical	AVUM	-Aviation unit maintenance

Figure 2

Commanders recognize the substantial combat capability of the present squadron. For example, common missions for the present armored cavalry squadrons are to defend in the covering force area often on the main avenue of approach, conduct economy-of-force operations in wide sectors or guard the front or flank of a protected force.

The new squadron is organized to accomplish these battlefield tasks:

• Conduct detailed reconnaissance and surveillance within and as necessary to the front, flank or rear of the division on a mission basis.

• Facilitate command and control for the division commander by reporting information as required between division and the brigades.

• Assist in the movement of units within and through the division area.

• Provide circulation control for vehicular traffic and refugees.

• Conduct radiological monitoring and survey and chemical detection in the division area.[9]

The ground cavalry troops are organized to perform surveillance, acquire information, locate the enemy and assist in command and control of friendly units.[10] The supporting mortars and the accompanying fire support team provide the necessary fire support. Because of the troops' lighter vehicles, it is improbable that the squadron would conduct the heavy combat missions often assigned to current cavalry organizations. The security mission of screen would be more common than guard or cover.
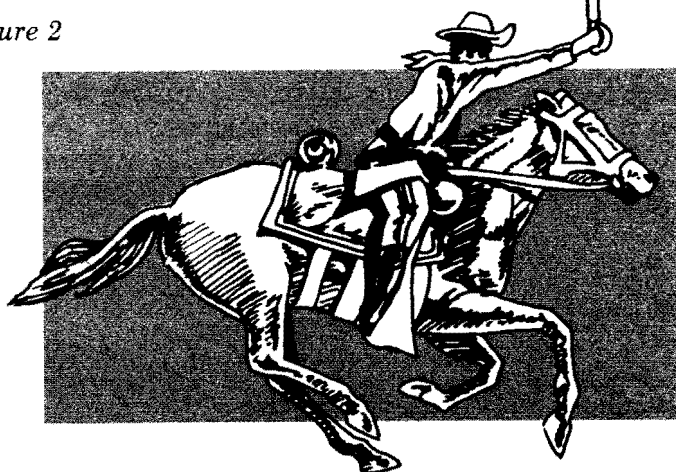
The air cavalry troops with their scout and attack helicopters can task organize to provide combination scout-attack teams, pure scout teams or pure attack teams. The air cavalry troops provide the capability for rapid surveillance and reconnaissance of wide areas, along extended routes or zones, and to distant points within and to the front, flanks or rear of the division.[11]

Two new organizations in the headquarters troop—the motorcycle platoon and the NBC reconnaissance platoon—provide additional capabilities. The motorcycle platoon's sections could be used with the other cavalry troops or under squadron control for reconnaissance and surveillance in rear areas as messengers or as road guides. The NBC reconnaissance platoon performs the reconnaissance mission formerly done by the H-Series NBC defense company. The squads of the NBC platoon conduct independent NBC reconnaissance or work in conjunction with other troops.[12]

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Mission orders must be the rule when employing either type of squadron. The cavalry squadron commander, not the G3, detemines what combination of cavalry squadron assets are necessary to accomplish his assigned missions.

The maneuver battalions—the tank and mechanized infantry battalions—provide an increased close-in continuous combat capability (Figure 3). Their structures provide:

• An increase from three to four maneuver line companies.

• Increased leader-to-led ratio with smaller companies and platoons.

• Creation of single weapons companies with the consolidation of infantry company mortars and improved *TOW* vehicles in the headquarters and antitank companies.

• A common headquarters company support base to facilitate combined arms operations.

The battalions are easily task organized to form combined arms task forces. The creation of the company team, something done frequently now, will depend on the analysis of METT-T. Controlling the battalion scouts and mortars, and supported by tactical air, engineers, artillery and air defense, the task force commander and his staff are better able to create the combined arms

effect on the battlefield. The company commanders, as battle leaders, lead in a "do as I do" mode and focus their weapons to accomplish their portion of the combined arms battle.[13]

The increased suppression capability of the *Bradley* fighting vehicle's 25mm cannons balanced against a reduction in the number of infantry battalion mortars requires a closer relationship between the maneuver battalions and the close support artillery. Battalion mortars will provide responsive smoke and only limited suppression.[14] A responsive organic smoke capability allows the task force to exploit the thermal sight capability of the tanks and fighting vehicles. By defining the battalion mortar role, the direct support artillery can orient the bulk of its basic load on target destruction ammunition such as dual-purpose, improved conventional munitions, cannon-launched guided projectiles and artillery scatterable mines.

Bradley vehicles overwatch tank company movements with 25mm cannon fire suppression and light armor destruction capabilities and with *TOW* missile pinpoint destruction. Able to bypass pockets of resistance because of an increased mounted combat capability, deeply penetrating task forces aim for the disruption of the structured enemy formations by attacking artillery, lines of communications and command and control.

Characteristics

• Integration of combined arms normally at battalion

• Larger battalions—smaller companies and platoons

• Battalion staff capable of continual operations

• Common support base

• Maintenance consolidated in headquarters companies

Division 86/H-Series Comparison

• Battalion tanks: 58 versus 54

• Tank companies: 4 versus 3

• Tanks per platoon: 4 versus 5

• Battalion mortars: 6 versus 4 (Mechanized company mortars eliminated)
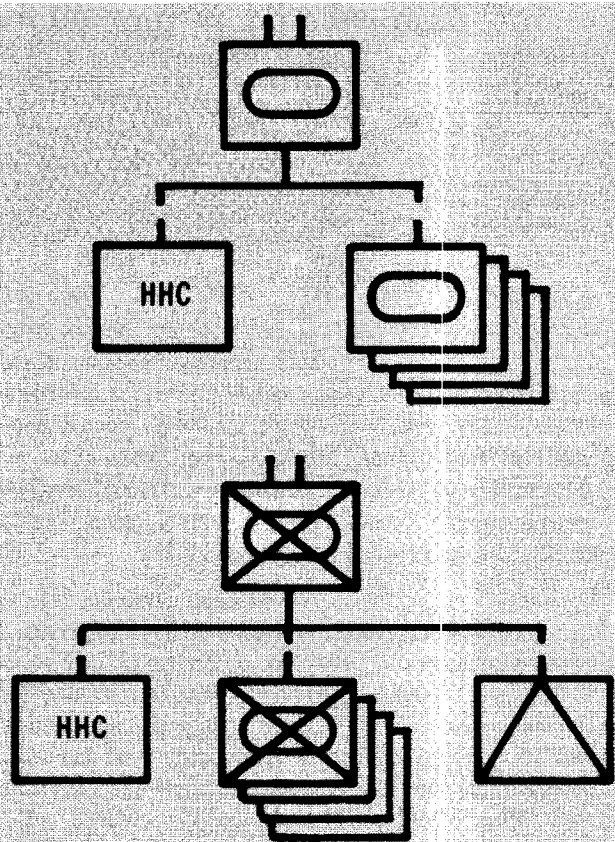
HHC-Headquarters and headquarters company

Figure 3

The complete transition of these battalions and other units will take time, and commanders will face the problem of transition organizations. We will see varying mixes of high and low-technology organizations. *M1* tanks, *M113* infantry, *Vulcan* air defense and *M109*-series artillery all appear to have different mobility characteristics. We naturally focus on this mobility differential, particularly with the *M1* tank and the other combat vehicles. Figure 4 shows aspects of the *M1* mobility differential that should be considered. Once the battalion commander solves his own internal problems, the apparent mobility differential of other supporting arms may be solved.

Another example of overemphasis on the *M1* mobility differential is a scenario calling for an *M1* battalion to cross a division sector to reinforce another brigade.[15] The apparent problem is the road speed of the *M1* tanks. There are many possible solutions: Send the battalion tanks pure and pick up any required infantry, mortars, scouts, air defense or engineers from the gaining brigade; send the tank companies and have them fight under control of task forces in contact; or send the battalion task force as is and move at the speed of the slowest combat vehicle—the tank battalion's *M125* mortar carriers. An analysis of METT-T can lead to other solutions.

Finally, when considering *M1* or other vehicles' road speed, we must be aware of the other restrictions to apparent mobility. Battlefield clutter, congested routes, damaged bridges, moving supply columns and other moving task forces will create conditions similar to the World War II battle for Saint-Vith where opposing generals were forced to become traffic cops at choked intersections.

Today, the congestion on the available routes of movement coupled with enemy air activity may impose restricted rates of march that are well below the top speed of an individual tank. We may face situations similar to the race between the tortoise and the hare. Combined arms planning, tested field standing operating procedures and the proper use of scouts, engineers, cavalry and military police can all help keep our task forces responsive and moving.

The key to the use of these organizations and their equipment is the recognition of their capabilities and limitations. Colonel Andrew P. O'Meara Jr. has indicated that:

The appearance of new weapons systems neither alters the validity of the principles of war nor does it upset the balance of power in battlefields unsuited to the characteristics of our newest weapons systems. Infantry . . . will continue to dominate battlefields uniquely suited to its employment. . . . Not only must we recognize terrain where new weapons systems can offer decisive advantage to well-trained crews under . . . imaginative leadership, but we must also be careful to recognize areas where they have little leverage. . . . Missions to subordinate units must be keyed to this recognition and task organizations should be tailored to allow the unit to unleash its full potential.[16]

Figure 4

M1 Battalion Mobility


Mobility Differential
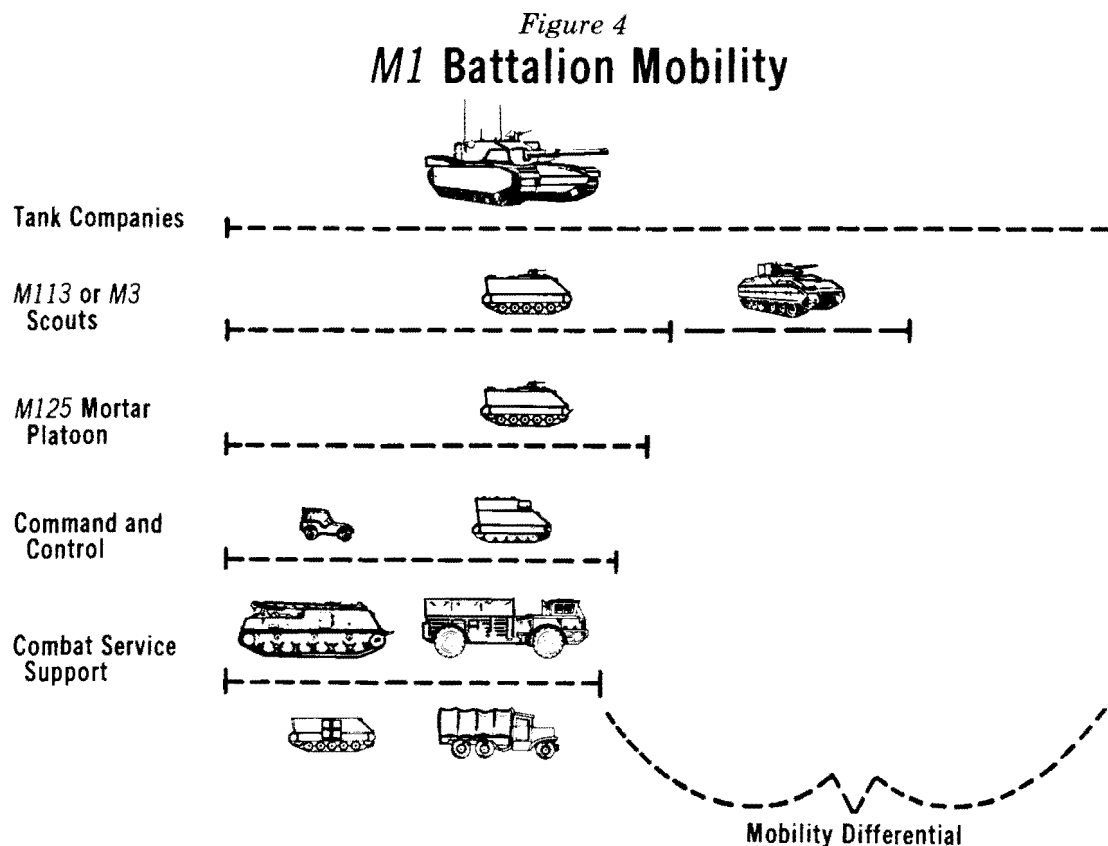
We have faced in the past, and will face in the future, the problem of mixed mobilities. Commanders who deal with this problem can look to the U.S. Army World War II commanders who combined the "different" mobilities of their infantry and armored divisions during the campaigns across France and Germany. Russell F. Weigley's excellent history, *Eisenhower's Lieutenants: The Campaign for France and Germany, 1944-1945,* has numerous examples where commanders successfully employed these seemingly different organizations.[17] Our focus should be on how to combine capabilities, not continued discussions of the problem.

In order to achieve their full potential, units must have flexible standing operating procedures and be trained to execute the mission. Again, O'Meara pointed out that:

. . . more importantly, our senior commanders must be able to operate on the wavelength of troop-leading steps tailored to the needs of each type of unit assigned to their commands. They must train themselves, their staffs, and their subordinate commanders to issue orders in a sequence that allows each type of unit to prepare and unleash its full combat power. The great challenge to our leadership in the Division '86 (or transition) organization is to fully recognize the mobility potential of all subunits and to employ elastic troop-leading steps that fully recognize the mobility potential of each type of unit. The commander who commands tank companies, air cavalry units, and light infantry units must possess great mental flexibility to unlock the full potential of each of his subordinate units.[18]

We face the problem of combining the old and new systems to achieve the operational objectives of our doctrine. This blending of mobilities and varying unit capabilities is as old as the history of war itself.
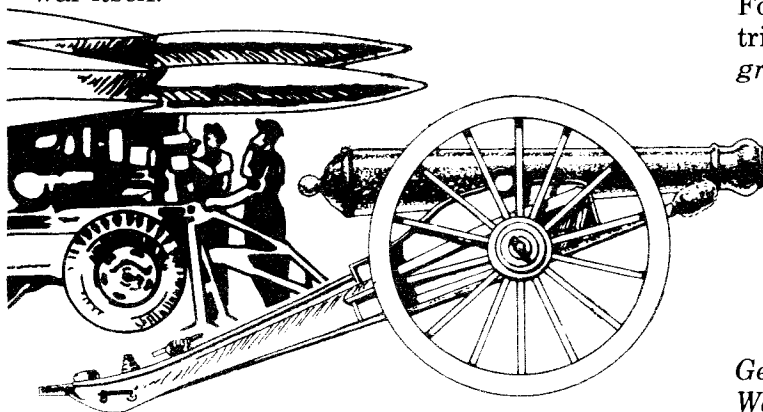
There are probably no easy solutions to the questions addressed here. J.F.C. Fuller, Heinz Guderian and George S. Patton developed doctrine based on their analysis of various formal field trials and war experiences. It is not likely that any service school or center can define the correct solution without some type of field tests.

The schools have prepared some initial draft training and doctrinal texts. The U.S. Army Command and General Staff College will continue to provide doctrine for brigade and higher level combined arms tactics and operational art. The service schools and centers will provide doctrine for the combined arms employment of their respective branches. New equipment training teams, new organization training teams and various doctrinal conferences and seminars can help.

However, the field testing of the three aspects of modernization has yet to be done. The organization capable of doing the field tests, of course, is the Army in the field. The important element, therefore, is to ensure that the experiences, after-action comments and dynamic ideas are shared. The purpose of U.S. Army, Europe/U.S. Army Forces Command/U.S. Army Training and Doctrine Command Regulation 11-11, *Army Programs,* USAREUR/FORSCOM/ TRADOC Doctrine Point of Contact Program, is to open that two-way street of communication.[19] Only through this sharing can we incorporate the appropriate lessons into the doctrine.

The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War, Leavenworth Papers, Number 4 shows us what similar efforts can do when the doctrine element is successful in feedback from the Army in the field. Before imposing Armywide doctrine, the German staff worked extensively with the Army in the field to ensure that the doctrine was correct for the expected situation.[20] It is imperative that we do the same today.

The application of the AirLand Battle doctrine will be developed through repeated dialogue between the schools and the Army in the field. We have the new doctrine. The Army in the field will have the new organizations and, in time, new equipment. Together, the Army in the field and the schools will develop the standards for applying and refining the AirLand Battle doctrine. ☐
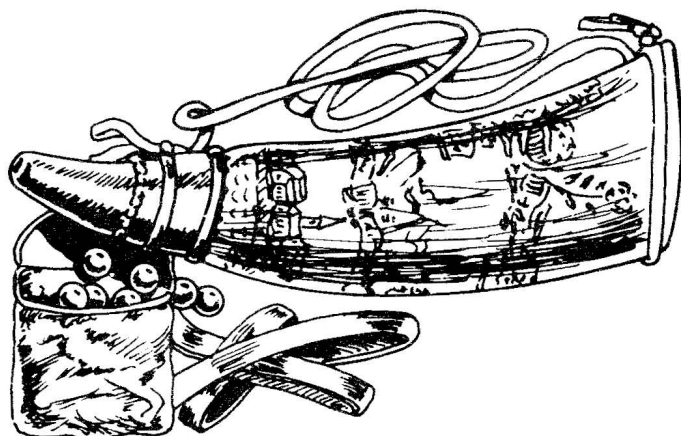
Lieutenant Colonel Lawrence M. Jackson II is with the J3 Exercise Branch, US Readiness Command, MacDill Air Force Base, Florida. He received a B.S. and an M.A. from the University of Iowa and is a graduate of the USACGSC. He has served in Vietnam and Germany with the 101st Airborne Division and the 3d and 4th Armored Divisions and has served on the doctrine team with the Department of Tactics, USACGSC.

NOTES

[1] General Donn A. Starry, "Division 86," *Resource Management,* Spring 1981, p. 10.

[2] "Division 86 Final Report," Combined Arms Combat Development Activity, Fort Leavenworth, Kan., October 1981.

[3] "Infantry Division 86 Feeder Report," Combined Arms Combat Development Activity, Fort Leavenworth, Kan., April 1982.

[4] Major John H. Cushman, "Pentomic Infantry Division in Combat" *Military Review,* January 1958, p. 29.

[5] *Ibid.,* p. 30.

[6] "Division 86 Final Report," *op. cit.,* p. 13.

[7] General Heinz Guderian *Panzer Leader,* translated by Constantine Fitzgibbon, E.P. Dutton & Co. Inc., N.Y., 1952, pp.22-24.

[8] Field Manual 100-5, *Operations* Department of the Army, Washington, D.C., 20 August 1982.

[9] Major Michael S. Lancaster, "The Armor Force in the AirLand Battle," *Armor,* January-February 1982, p. 30.

[10] "Division 86 Final Report," *op. cit.,* pp. 2-17 and 2-18.

[11] *Ibid.,* p. 2-18.

[12] *Ibid.,* pp. 2-18 and 2-19.

[13] U.S. Army Training and Doctrine Command Pamphlet 525-4, *U.S. Army Operational Concept, Heavy Division Operations, 1986,* Department of the Army, Washington, D.C., 1 December 1980, Change 1, 14 May 1982, pp. 4-5.

[14] "Division 86 Final Report," *op. cit.,* pp. 2-4, 2-6, 2-10 and 2-11.

[15] "Dialogue 82 (Transitional Mixes, M1/M113 and M2/M60)," U.S. Army Infantry School Television Tape Number 920-071-1498-B, Fort Benning, Ga., 12 February 1982, p. 23.

[16] Colonel Andrew P. O'Meara Jr., "Dimensions of Mobility, "*Armor,* January-February 1982, p. 23.

[17] Russell F. Weigley, *Eisenhower's Lieutenants: The Campaign for France and Germany, 1944-1945,* Indiana University Press, Bloomington, Ind., 1981, pp. 22-24.

[18] O'Meara, *op. cit.,* p. 24.

[19] U.S. Army Europe/U.S. Army Forces Command/U.S. Army Training and Doctrine Command Regulation 11-11, *Army Programs, USAREUR/FORSCOM/TRADOC Doctrine Point of Contact Program,* Department of the Army, Washington, D.C., 1 May 1981.

[20] Captain Timothy T. Lupfer, *The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War,* Leavenworth Papers, Number 4, Combat Studies Institute, U.S. Army Command and General Staff College, Fort Leavenworth, Kan., July 1981.

Quotes

One of the greatest necessities in America is to discover creative solitude.
—Carl Sandburg

Do what you can, with what you have, where you are. —Theodore Roosevelt

Courage is doing what you're afraid to do. There can be no courage unless you're scared. —Eddie Rickenbacker

U.S. Army Ordnance Center and School (USAOC&S) Plans Tomorrow

2000 1999 1997 1995 1993 1991 1989 1987 1985 1983

MASTER PLAN

Major Darry D. Eggleston

Captain Bruce E. Knapp

SFC Robert J. Fash

"Long range planning does not deal with future decisions but with the future of present decisions."[1]

This is the philosophy behind the ongoing goal setting at the United States Army Ordnance Center and School (USAOC&S), Aberdeen Proving Grounds, Maryland. A need for a common link between all directorates and special staff which emphasized the future direction of the organization motivated the Commanding General (CG) to direct the formation of the *Mission Council*. The Mission Council was charged to plan for the future and set clear, unambiguous, and shared goals.

At the CG's direction and after extensive research, the School's internal Organizational Effectiveness Consultant decided to use guidelines from the *Complex Systems Consultant Handbook*.[2] This became the six-phased process roadmap. The phases are: pre-work, goal setting, objective setting, action planning, master plan, and followup (Figure 1).

The phases also aided the Council's understanding of what the organization was to encounter and how the steps compliment each other (Figure 2).

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[1]Peter F. Drucker.

[2]External Operations Division, USAOC&S.

Pre-Work

One of the most important aspects of the pre-work phase is to develop a process that will work within the organization. Factors that must be addressed early include: identification of key personnel so that a good cross-sectional representation of the organization's diversified elements is achieved; where and when to conduct a series of workshops; selection of OE Consultants to serve as facilitators, recorders, and processers, for the Council; what guidance the key officials will need in the evolution of a quality plan; and what thought-provoking tools could be used to prepare the staffs for the challenge.

Guidance was based upon the Total Army Goals[3] in consonance with the Threat.[4] The Commanding General demanded that the Mission Council actively think and discuss these when steering the course for the organization.

The tool used to aid in this guidance was a modification of the Delphi Survey.[5] Tailored to incor-

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[3]See "Commandant's Comments," *OE Communique*, Vol. 6, No. 2, 1982, p. 3.

[4]The term "Threat" is used to designate any potential enemy of the United States.

[5]The Delphi Survey is a method wherein experts are given a subjective questionnaire. Asked for their perceptions and projections, these experts are guaranteed a view of all responses from all respondents. They are then allowed to modify or expand views. It is named after the Oracle of Delphi in Greek Mythology.

Figure 1
Six-Phased Process Roadmap

Figure 2
Steps In Planning The Future

Figure 3
**Quality Of Planning
Is Directly Related To The Effort**

porate a systematic view of USAOC&S, it provoked a thoughtful focus on how much emphasis was really placed upon the Total Army Goals and the Threat during day-to-day activities. The OE

Consultants distributed, collected, and analyzed the survey over a three-week period.

During this phase, it was stressed to the chain of command that the product was directly related to

the effort (Figure 3). The commitment and support of the key officials would be the driving force to keep planning viable and alive. All three OE Consultants were involved in the process during this first, foundational phase. The officials were to provide content expertise while the OE Consultants remained process oriented.

Phase II - Goals Are Set

Two days (with a third as a buffer) were scheduled for the first of two sessions. The CG established his role as the overall decision maker. The Assistant Commandant role was to approve interim recommendations by the Mission Council on its way to the final conference product. The key officials created the conference product. The OE Consultants facilitated the process of the conference.

The CG opened the conference by reinforcing the importance of deriving a plan based on the Total Army Goals and the Threat. As for the Threat, he remarked, "The Threat today surprises those who inhibited themselves from viewing what was to be." He cautioned attendees not to be inhibited but to look to the future, understand it, and prepare to meet it.

The workshop consisted of determining the purpose of USAOC&S (Figure 4), the missions that support it, and the goals for each mission.

The purpose statement was based on having three components: *customer, service, uniqueness* (Figure 5). The *customer* is the one whom the organization is doing everything for. The *service* is the thing the organization is providing. The *uniqueness* says that no other organization is doing what this organization does.

Upon completion of the purpose statement, the council focused on determining the missions of the organization. The first step was to agree upon the requirements of a "mission statement" (Figure 6). Then, a list was made of all the suggested missions and the relationships which would link each to the purpose of the organization. Finally, each agreed upon mission was rank ordered according to priority.

Rank ordering allowed quick decisions pertaining to the priority of resource allocation to any given mission. For example, if the organization's resources were cut by 80%, it would continue to do Mission 1. If more resources became available, then Mission 2 would begin to receive attention. If current funding continues as it is now, the USAOC&S will be able to complete all seven missions.

Goals were categorized as *official* and *operational*. Official goals, which had existed at USAOC&S prior to this workshop, were stated in broad, ambiguous terms to justify the actions of

Figure 4
Purpose Of USAOC&S

PURPOSE
TO PROVIDE TO THE ARMY AND OTHERS AS DIRECTED TRAINING, FORCE STRUCTURE, DOCTRINE AND MATERIEL REQUIREMENTS TO MAINTAIN AND SUPPORT WITHIN ORDNANCE RELATED AREAS.
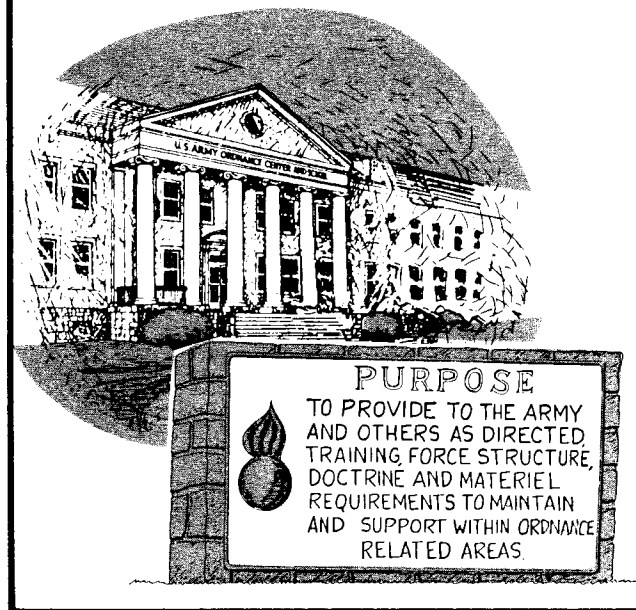
Figure 5
USAOC&S Purpose Statement

PURPOSE STATEMENT

CUSTOMER
REASON FOR BEING

SERVICE
IF 80% OF OUR RESOURCES WERE ELIMINATED, WHAT WOULD WE STILL BE DOING?

UNIQUENESS
WHY THIS ORGANIZATION EXISTS
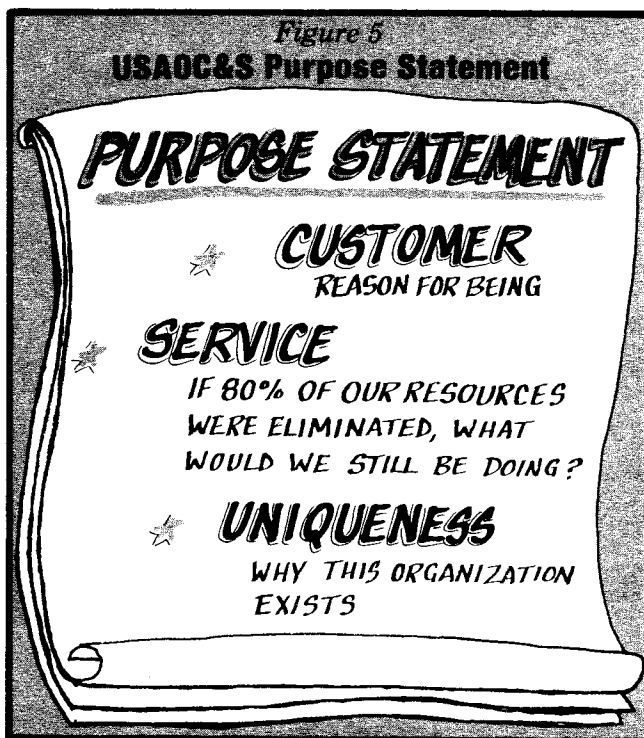
Figure 6
Requirements Of A Mission Statement

REQUIREMENTS OF A MISSION STATEMENT...

• STATES WHAT MUST BE DONE TO ACCOMPLISH THE PUROSE

• PROVIDES A FOCUS OF EFFORTS

Figure 7
Definition Of A Goal

A GOAL IS...ooo

- NON MEASURABLE
- SOMETHING WE STRIVE TO ACHIEVE
- A CRITICAL END RESULT
- A DESIRED OUTCOME
- HOW WE GET TO WHERE WE WANT TO GO

Figure 8
The Process Begins To Take A Meaningful Shape
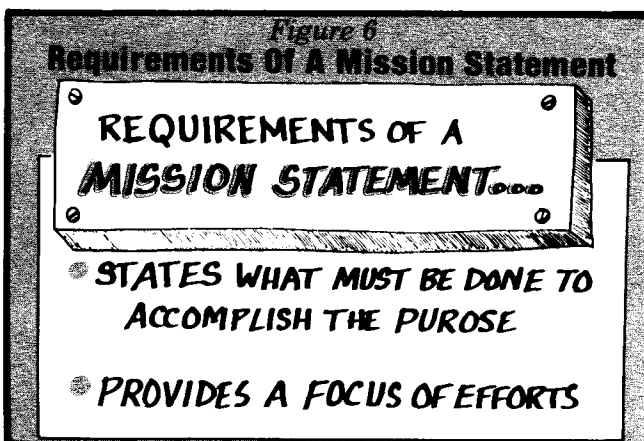
the organization. Operational goals were those goals that were actually pursued. These provided the standards for measurement of success and reflected the role of specific influences. By incorporating the goals into specific missions, both the official and the operational goals became one and the same.

After agreement on the definition of a goal (Figure 7), the Mission Council began to develop specific goals for each mission.

The OE Consultants developed the purpose, mission, and goals visually. Like building blocks, they acted as a visualization of growth. As missions were developed, they became the foundation for the purpose. Goals were then placed on the next level down but directly under the missions they were to support. Thus, as they built clarity for the organization's future, the Mission Council could see the process beginning to take a meaningful shape (Figure 8). As an additional visual tool, an arrow was constructed (Figure 9) showing that the direction was toward accomplishment of the purpose of the organization.

At the completion of the second day, the Mission Council agreed upon points of contact for each mission, including its subordinate goals. The mission point of contact (POC) was one director, with goal POCs coming from other directorates. This allowed for continuing communications between staff members throughout the process of mission accomplishment. Both POCs for the missions and for the goals were volunteers, the Assistant Commandant merely approved the Council's recommendations.

At the end of each day of the session, an evaluation was distributed to each participant to be completed and turned in prior to leaving. It was subjective. There were three questions: What went well? What did not go well? If it were
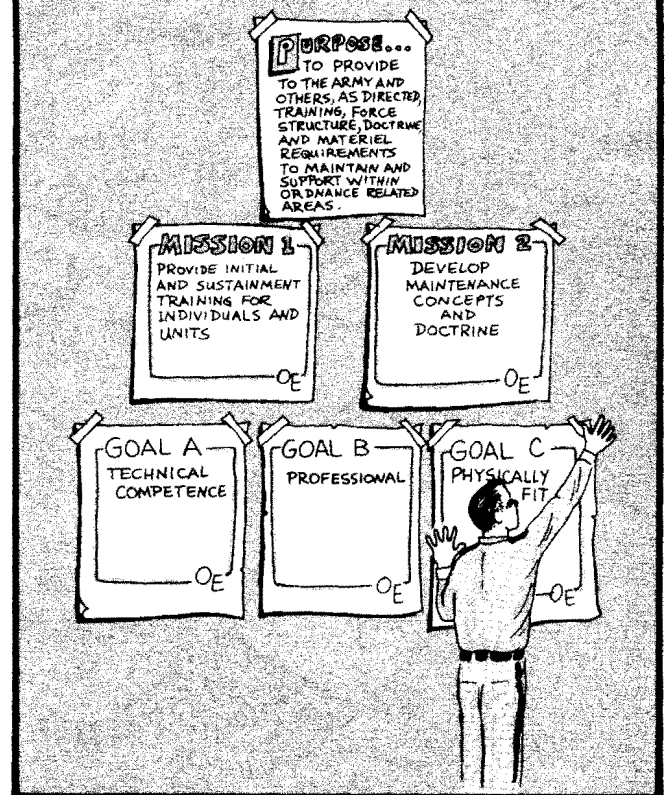
conducted again, I would change... .

After collecting the evaluations, the OE Consultants immediately read them. They used the comments as a tool in planning changes to upcoming sessions. The evaluations were then typed, consolidating all comments by question, and a complete, unabridged copy given to each attendee at the next day's meeting.

With the purpose, missions, and goals in hand, the Mission Council met to brief the Commanding General. They had agreed that each mission POC would brief the mission and its supporting goals. The OE Consultants attended to answer any questions concerning the process used to develop the purpose, missions, and goals. The Commanding General approved the Mission Council's recommendations.

Phase III - Objectives Set

After one week, the Mission Council reconvened for another two-day conference (with a third scheduled as a buffer). The initial action for this conference was feedback[6] by each member on perceptions of the meeting with the CG (discussed above). This was followed by a brief review of the product thus far. Time was then allocated for additions and modifications to the missions, goals, and other items.

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[6]Feedback is a way of telling others how their behavior is effecting you.

Figure 9
The Direction Is Toward Accomplishment Of Purpose
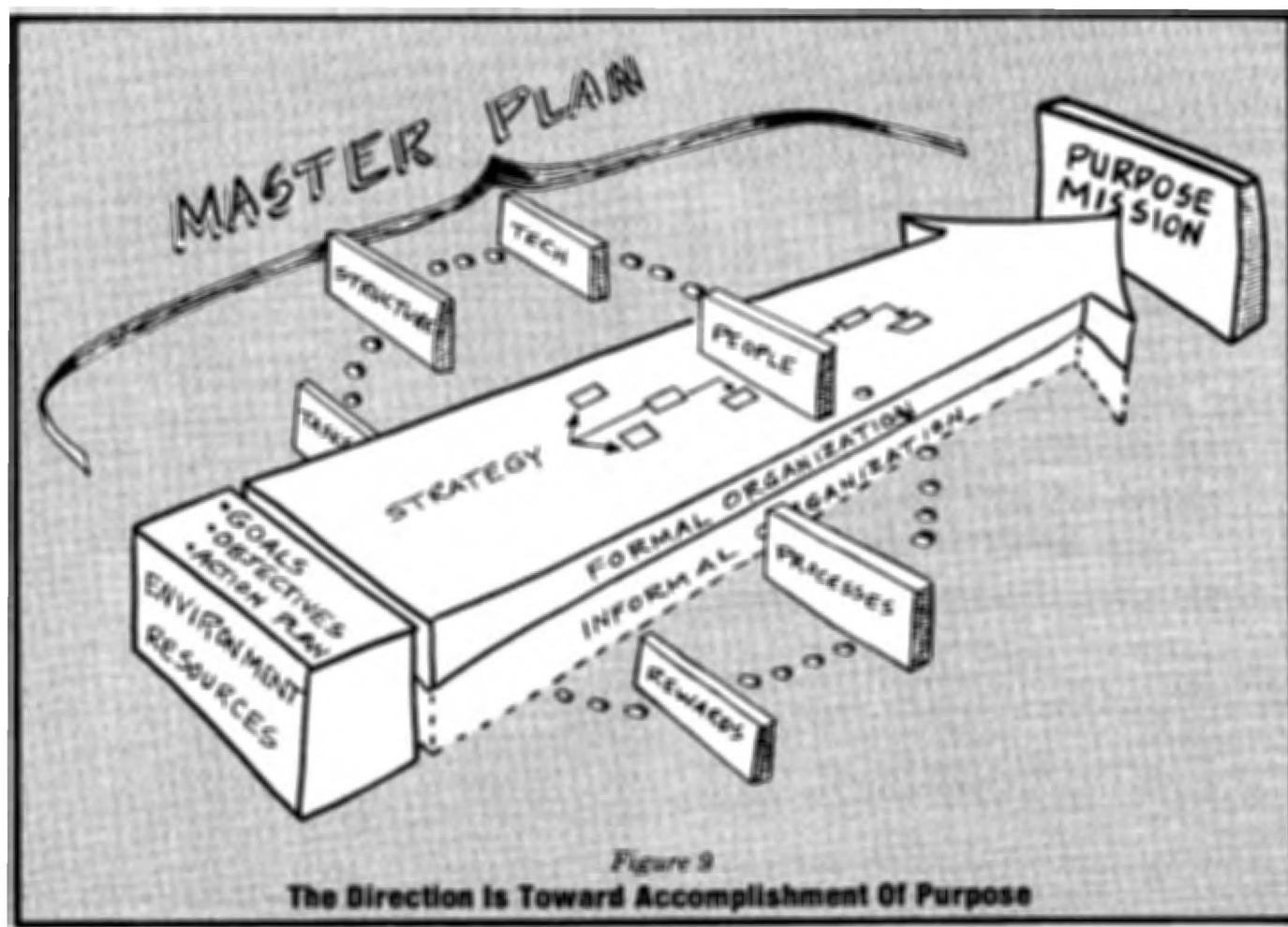
Now came the time to determine the objectives for each goal. To accomplish this, the "nominal group technique" was used. After each member wrote his recommendations for objectives on a 5″ x 8″ card, the members took turns listing one objective. Objectives were only listed if a prior member had not stated it previously. Turns continued to be taken until all members had stated all the objectives recorded on their cards.

Once all objectives were listed, duplications were eliminated by consensual agreement of the members. Then consolidations were accomplished. Finally, the approved list was rank ordered.

The product (the seven missions, 26 goals, and 54 objectives) was then briefed to the Commanding General by the Mission POCs. The OE Consultants briefed on the upcoming action planning phase. The CG approved the process.

Phase IV - Action Planning

With the goals shared among the 13 key officials, the basis for action plans was also shared. To aid in its management, a matrix was designed indicating the goals on the left and the Mission Council members across the top. This matrix, after review and final input by the members, indicated what agencies needed to be involved in any given goal's plan. The matrix also provided a snapshot of how much involvement would be required for a given group of goals to be planned.

The entire action planning process was initiated with a "strawman" action planning of one goal. The actions of this initial group of members would develop the process and format for later groups to follow.

A coding system was developed by alternating numbers and letters for the mission down to the subtask level. For example, the code 1A1A1 was assigned to the first mission (1); 1st goal of that mission (A); 1st objective of that goal (1); 1st task of that first objective (A); and 1st subtask of that task (1).

Goal POCs were given the prerogative to appoint action officers to chair action planning meetings. This individual became known as the Agent POC. Representatives from other directorates were called Agents. This system permitted junior officers to become part of the process.

While the strawman agents were determining formats, the OE Consultants, through observations and research, determined a process for other agent groups to follow. The results of the

strawman were presented to the Mission Council for approval.

It became very apparent that large volumes of time and effort would be required for any one given plan; therefore, subsequent planning was done in three increments. Each increment involved a cross-section of selected goals that the Council determined could be planned together while still allowing for as little daily functional interference as possible. The matrix aided by identifying applicable agencies.

Even with the requirements for time and effort, all agreed that it was an improvement over not knowing what purpose the organization was serving.

Each increment began with a lecturette by the OE Consultants. The class consisted of only the Goal POCs or the representatives. The agenda was a review of the strawman product and a discussion of the process guidelines to be used. The basis of the process involved meeting management; how to determine tasks and subtasks; and the format required for each.

Each plan was given a suspense date. Process problems were to be addressed to the OE Consultants. Content problems were to be given to the Goal POC and to the Mission Council.

Upon completion of action plans, Goal POCs distributed copies to the Council. The Council then reviewed the completed plans and provided feedback to the Goal POCs. Any format problems were addressed to the OE Consultants.

Phase V - Master Plan

The compilation of all completed action plans is the *USAOC&S Master Plan*. Due to the number of plans (a minimum of one per 26 goals) and the volume of paper that each plan consists of (from 5-25 pages), it was quickly realized that the plan had taken on new magnitude. When coupled with the fact that the Plan is continually being modified through updating, it becomes a most dynamic document to manage. Therefore, an effective information system needed to exist to make it useful and productive. This phase addressed the implementation, monitoring, and final qualification of the action plans.

The USAOC&S Mission Council recognized the extent of the product and its possible impact upon lower levels of the organization. Thus, management by exception became the basis for a management information system (MIS). Only those actions that were not being met are extracted and reviewed by top management. The consolidation of information from agents, Goal POCs, and Mission POCs is by a group of internal program analysts within the Directorate of Resources Management. Eventual automation of the Master Plan is intended.

Automation would allow rapid updates and a more efficient management information system. The coding system once again allows for rapid retrieval of informtion at any level.

But the culmination of all efforts to date meant that for the very first time, the United States Army Ordnance Center and School had a Master Plan for tomorrow.

Phase VI - Followup

The last phase is to effectively review and update the product. Without an effective followup, all previous efforts and concerns could prove to be futile. As a dynamic, living process, the product requires both command attention and emphasis.

This phase, which consists of daily updates, quarterly reviews, and an annual validation by the Mission Council, provides the opportunity for top management to actively steer the direction of the organization. This steering is founded upon input from the bottom of the organzation straight through to the top. The actions taken by top management provide feedforward down and throughout the organization. Essentially, the Mission Council became a "think tank" for the Commanding General.

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Is "Slowing The Train" The Real Question?

Major Robert M. Strickland

Many Army commanders are asking the question, "How can we slow the train for our company commanders and allow them more time to instruct their unit, maintain their equipment and take care of their soldiers?" However, because for every problem that is solved, two more appear, I believe the real question should be, "Where is the train going and how can I control it?"

A company commander could retort, "That's the Old Man's problem. All I have to do is follow orders. It's not my responsibility to guide this train, just to hang on." The basic flaw with this approach is that in the absence of the commander or with a lack of orders, the train either spins its wheels or just stops when it faces a change in mission or an unforseen problem.

In today's complicated Army no commander can be everywhere at once; he has to depend on all members of his unit in order to accomplish the mission.

The method I propose is based on an old and proven army training theory: Ready, Aim, Fire. Each new soldier is taught the proper firing positions, how to sight-in on the target and how to discharge the weapon. When he fires his weapon, he watches to see if the target falls. If it does not he adjusts his aim and fires again. These basic principles always remain the same even though the targets change constantly.

Ready

This theory may also help us gain control of our "train." The first step, "Ready," means being aware of the values of the unit, for example, integrity, professional advancement, and the like, and establishing leadership practices.

Most commanders are not consciously aware of these values when making each decision, but they are important because they must be passed on to each member of the unit. Values, like slogans, need to be explained to be fully understood.

Leadership practices are those observable actions that demonstrate a value. In other words, they tell the soldiers what their commander's values are. "Actions speak louder than words."

Moreover, because values and leadership practices remain fairly constant, the soldiers are able to understand the commander's approach to any mission or problem even if he is not present.

Aim

To identify the target, or to "Aim," is the second step. A commander assesses the situation by analyzing its mission, its needs and his personal desires. He then restates the mission and defines it further by setting and arranging in proper order both short- and long-range goals. With the target identified he now aims at it by developing specific and measurable organizational objectives which will allow the unit to meet its goals and accomplish its mission. Each objective should be tied directly to a specific goal or mission, be guided by an established value, and must be communicated clearly to each member of the unit who, in turn, develops individual objectives and performance standards. This procedure is reflected in the new Officer Evaluation Report (OER).
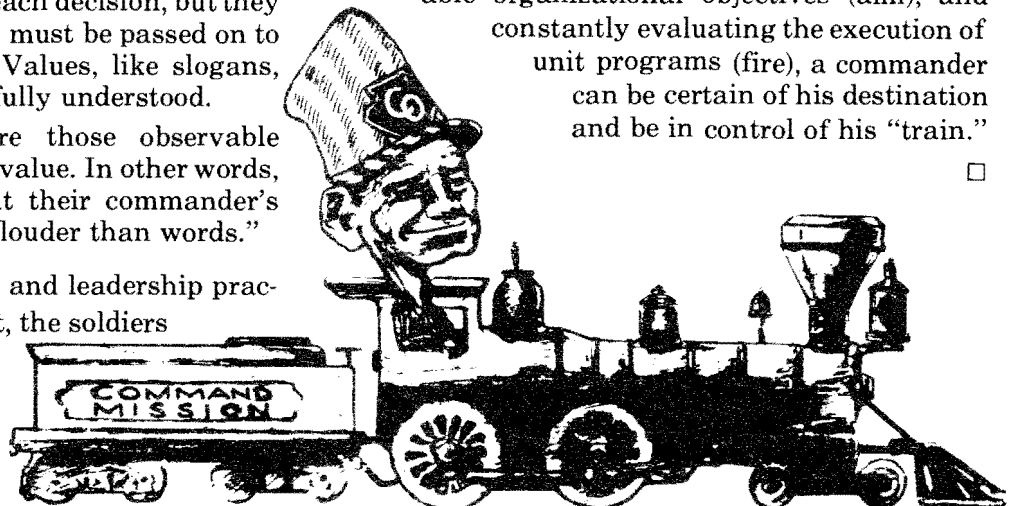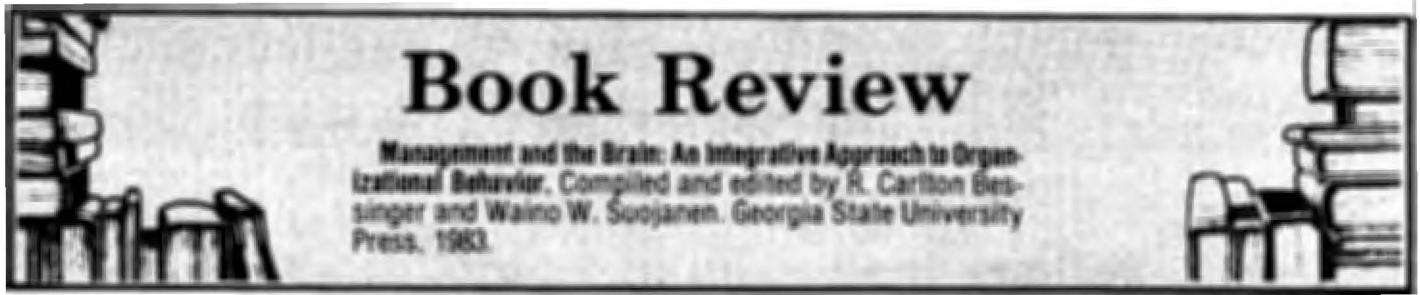
Fire

The final step, "Fire," is the execution and evaluation of programs. The commander must evaluate his programs regularly—are they hitting their target? If not, he must adjust his aim and fire again. In other words, if a program is not supporting a goal or mission it should be cut, and new plans developed.

Thus the reasons why commanders are losing control of their trains and of their sense of direction are that unit programs are not tied directly to a goal or a mission, and a program once started is seldom evaluated to see if it is on target.

This method of "Ready, Aim, Fire," has been used by many Army organizations with a great measure of success. The commander's train is not going to slow down. But by developing unit values and leadership practices (ready), assessing the situation and determining specific and measurable organizational objectives (aim), and constantly evaluating the execution of unit programs (fire), a commander can be certain of his destination and be in control of his "train."

□

Book Review

Management and the Brain: An Integrative Approach to Organizational Behavior. Compiled and edited by R. Carlton Bessinger and Waino W. Suojanen. Georgia State University Press. 1983.

Reviewed by **Major Craig E. Geis.**

Management and the Brain, a collection of published and unpublished articles, lectures, and papers covering the period 1970-1982, is an attempt to explain, in four parts, the workings of the brain and its relationship to effective management.

Part I, The Role of Ethology in Organization, explains that the behavioral approach of looking at an organization has changed to an ethological one, for while the former approach had focused on the causation of problems, the latter emphasizes evolution, function and survival. The survival of the organization depends on the survival of its individual members. But because the primary objective of an organization is that of having a higher probability of survival than any of its members, attention is concentrated on the species rather than on the individual. In addition, the evolutionary process insures that survival information is encoded and passed on genetically. Therefore, it is suspected that man's instinct for survival in the organization is in part a result of his genetic environment which may be traced to his pre-human hunting ancestors.

Presented in **Part II (The Brain and Management)** is a model of the mind of man showing the interaction of the Left New Brain (LNB), Right New Brain (RNB), and the Visceral Brain (VB). Since the 1940's management has focused on the analytical, rational qualities of the left cerebral hemisphere or Left New Brain. The author of this part, however, discusses the creative Right New Brain and the Visceral Brain because previous neurophysiological evidence had suggested that the Visceral or "Old" Brain mediated animal behavior and was primarily responsible for our basic biological processes including the "fight or flight mechanism." Recent evidence has also shown that the seat of decision in man is located in the Visceral Brain. Thus from a management perspective the LNB is routine-oriented, the RNB knowledge-oriented, and the VB crisis-oriented.

The topic of **Part III—Addictive Personal and Management Behavior—**is an explanation of the physiochemical description of behavior. For, contrary to the scientific approach that chemistry determines behavior, new evidence has revealed that, in fact, behavior determines chemistry. The discussion focuses on a group of brain-produced neurotransmitters (catecholamines), the outcome of an individual's behavior, that leads to an addiction of that chemical, and eventually to a behavior pattern that continues production of the chemical. The author proposes that addiction should not be regarded as a moral problem because the individual is powerless to exert self control over neurophysiological mechanisms, and recommends instead as a cure a program designed to re-engineer behavior.

Part IV, Creativity, Education, and Management for the Future, shows that because the general management functions of the future will be much more crisis- and knowledge-oriented than routine-oriented, we must pay greater attention to the functioning of the visceral brain. Moreover, the integrative theory presented in this section recognizes innate differences between sexes and individuals and explains that the failure of affirmative action and equal opportunity programs is a result of poor biology, not of the trial and error approach as was once thought. For concentrating on stereotypes has caused us to ignore information that the most pressing management problems may be attributed equally to *genetics and behavior* as to *environment and behavior.* Furthermore, given the current paradigm, doubt is expressed that the academic community could produce a realistic management theory, because a new approach grounded in sociobiology and neurophysiology is needed. Finally, so as to integrate the current schools of management thought, a comparative study of the educational systems of Harvard, Stanford, University of California, and MIT is analyzed.

The value of *Management and the Brain* lies in the questions it raises about the authors' conclusions, for it recalls ideas of sexual dimorphism, intelligence, and equal opportunity. The reader cannot help but question the authors' approach.

Certainly, we cannot discard the vast amount of research on the role of the brain; but to afford the biohavioral approach as much importance as the authors do is unsound, for many of the conclusions drawn are the results of an extrapolation from research on other species. Besides, a basic problem with the physiochemical description of behavior is that it ignores the roles of free will, purpose, and human dignity. Science today must recognize and explore different types and levels of the causation of human behavior.

For every hypothesis on brain research there exist others that refute the same idea. Richard Davidson and Nathan Fox at the University of Maryland offer the thesis that the left hemisphere of the brain may specialize in positive or "approach behaviors," and the right hemisphere in negative, or avoidance reactions. Should this prove true, managers may consider carefully the development of the functions of the right brain. Other research indicates that higher cerebral properties of the mind and consciousness carry and overwhelm the psychochemical details by exerting downward control over the nerve impulse traffic. Such research is in direct contravention to the authors' idea of the importance of the visceral brain. It would seem that the authors' approach to biological importance is as unreasonable as that of the extreme environmentalist. However, the point is not which theory is correct, but what approach should we take to understand behavior. □

Sources And Resources
Lynn Dixon Herrick

Feedforward

Listed below is a selection of books which have recently been added to the collection of the OECS Library. These books focus on subjects of potential interest to consultants involved in long term change of a complex nature, including systems theory, strategic planning, decision-making and project management. A complete listing of books in these categories which have been added to the collection since the publication of the OE RESOURCE BOOK (RB 26-2) is available upon request to USA OECS, ATTN: Library, Building 2824, Fort Ord, CA 93941.

Resources For Complex Change

Beer, Michael
Organization Change And Development: A Systems View. Goodyear, c1980. Systems theory and application pervade this carefully written text/handbook for strategic change. The author makes a clear case for systemic thinking as the context of consulting, rather than as an element to be included at some point along the way.

Birchall, David and Hammond, Valerie
Tomorrow's Office Today: Managing Technological Change. Wiley, c1981. The electronic office, highly touted and often misunderstood, is a very real sociotechnical innovation. This book treats it as such, addressing considerations of both human readiness and machine capability.

Braverman, Jerome D.
Management Decision Making: A Formal/Intuitive Approach. AMACOM, c1980. As its subtitle implies, this book presents a synthesis of creative problem solving techniques and quantitative analysis procedures. Mathematical calculations are kept to a minimum and the author includes brief cases to illustrate practical applications of many techniques and procedures.

Cummings, Thomas G., editor
Systems Theory For Organizational Development. Wiley, c1980. Using a collection of writings, the editor of this book attempts to translate the abstract concepts of systems theory into the practical application of Organization Development. Its emphasis is on the need to understand the open system nature of an organization as it goes through periods of change.

Kerzner, Harold
Project Management For Executives. Van Nostrand Reinhold, c1982. While thoroughly exploring the ramifications of project management as an organizational function, this book focuses on the role of the executive for whom the project is being managed. Particular attention is paid to considerations and decisions that must be made prior to the start of the project.

Lyon, Herbert L., and others
Management Science In Organizations. Goodyear, c1976. This introductory text concentrates on the application of management science models to organizational decision making. The authors attempt to provide a blend of theory and application in diverse organizational settings and a variety of problem areas. Included is a framework for evaluating decision alternatives.

McLean, Adrian, and others
Organization Development In Transition: Evidence Of An Evolving Profession. Wiley, c1982. This highly readable account of research findings highlights the discrepancies between OD theory, much of which was codified in the late 1960's, and the "reality" of OD as it is practiced. The researchers conclude that a major evolution has taken place in the shift from isolated projects of planned change to continuous programs of plannable change.

Miles, Robert H.
Macro Organizational Behavior. Scott, Foresman, c1980. The focus of this book is on identifying the design and behavior of major subsystems and entire organizations. These are viewed in terms of structures and processes at macro levels where theories and applications relating to individuals and small groups have limited relevance.

Rudick, Bernard H.
Solving Management Problems: A Systems Approach To Planning And Control. Wiley, c1979. The author considers planning to be synonymous with problem solving, and has determined that the result will often call for the design of a system for dealing with a set of interrelated problems. Several detailed case studies are included to illustrate the steps in systematic problem solving.

Shrode, William A. and Voich, Dan

Organization and Management: Basic System Concepts. Irwin, c1974. Written as a text for "managers of the future" in 1974, this book espouses a concept whose time appears to have come: management by system. Although it is short on how-to, it does provide a comprehensive theoretical rationale for the synthesis of management science, organization development and systems theory.

Stuckenbruck, Linn C., editor

The Implementation Of Project Management: The Professional's Handbook. Addison-Wesley, c1981. This book is addressed to the managers of large-scale complex projects which require careful planning and coordination. Emphasis is given to the management of interfaces between the project and other organizational elements, a function termed "systems integration."

Tichy, Noel M.

Managing Strategic Change: Technical, Political and Cultural Dynamics. Wiley, c1983. At long last Tichy has published the book which translates an expanded version of his Social Network theory into practicality. This book examines the management of strategic change from the three crucial perspectives of technical design, political allocation and cultural environment.

VanGundy, Arthur B.

Techniques Of Structured Problem Solving. Van Nostrand Reinhold, c1981. This is actually a directory of seventy individual and group techniques for dealing with all stages of problem identification and solution. Each technique is fully described, its strengths and weaknesses are identified, and suggestions are given for types of situations in which its use might be appropriate.

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OE Reference Network

Organizational Effectiveness (OE) Reference Network, a quick guide for OESOs, is a compilation of people who have expertise in a particular area related to Organizational Effectiveness and want to share it with others. We strongly encourage you to be a part of the network by sending your name, autovon number, and the area of expertise to the editor. (If you feel you are an expert resource in any of the already listed areas, also send your name and autovon number).

AREA	NAME	AUTOVON
Assessment Methodology	Dr. Johnson	929-3411
Battlefield OE Research	CPT Braun	929-7886
	CPT Oravis	929-6019
Computer Assisted Instruction	Dr. Ferrier	929-6019
Conference Management	MAJ Carmack	929-7886
Data Reduction and Feedback	Mr. Nolan	929-4574
Force Integration	CPT Oravis	929-7058
How the Army Runs	MAJ Kotula/CPT Robertson	929-3411
Organizational Design/Redesign	Dr. Roberts	929-7886
Management of Organizational Transitions	Dr. Guido/Mr. Goodfellow	929-7886
Performance Management Conference	MAJ Carmack	929-4021
Socio-Tech	Dr. Roberts	929-7886

Organizational Effectiveness Consultant Course

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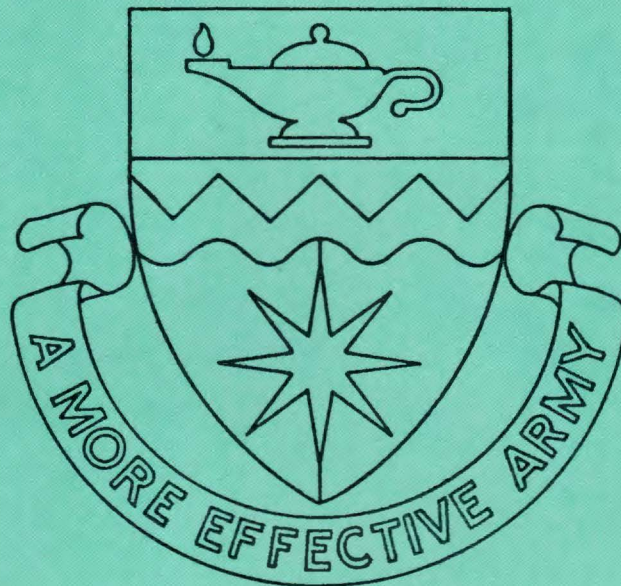**Torres-Garcia, Dennis O. SFC,** 1/68th ADA 1st Cav,
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