ARMY ORGANIZATIONAL EFFECTIVENESS JOURNAL

MANAGEMENT SCIENCE

SYSTEMS SCIENCE

BEHAVIORAL SCIENCE

The Systems Integration Publication of the U.S. Army

CoyBrown

High Performing Staff . . .

—Page 7

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 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 organizational 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:

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Contents

Editorial Page

Editor's Comments

The *Army OE Journal* is continuously looking for articles that will help commanders, staffs, and OESOs address issues that are inherent in large, complex systems. Some suggestions for topics are:

- 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.

- High-level Organizational issues.

- Organizational issues unique to C^3I.

- Organizational issues unique to the Infantry Division Light or Division 86.

- Force Integration issues.

The *Army Organizational Effectiveness Journal* depends on your input.

Letter to the Editor

Dear Editor:

I enjoyed reading two articles in your recent issue (Vol. 7, No. 3-4, 1983).

Stress: A Management Challenge For The Joint Headquarters by Major Richardson is an excellent article with some good insight into problems of serving in a joint headquarters. I personally don't like the term "Stress" in the title and I didn't care for the graphics which showed the individual holding his head.

Working in a Joint Headquarters is an important and an interesting experience. Much of the insight and comments in the article on working in such a headquarters are excellent; however, I think the use of the word "stress" puts it in too much of a negative perspective. The point should be how to prepare yourself for the job so that you do it better and enjoy it more. If you think of it in these terms, I think the "stress" will really be of minor importance.

The other short article I enjoyed was *Is Slowing The Train The Real Question?* by Major Strickland. His short comments are right on the money.

The train really isn't going to slow down. In fact, most of our good people don't want it to because they understand the challenge of what has to be done. What we of course need are clearly defined objectives and a path

laid out on how to get them. Detractors and time wasters must be identified. Likewise planning, short-range, mid-range, and long-term must be accelerated.

For example, I have found that the simple preparation of an individual year-long calendar by each individual commander or supervisor in a short-tour area can produce significantly greater results. Many things that come as "surprises" really aren't when you plan properly. All levels of commanders/supervisors must strive to get ahead of the power curve.

A related item is controlling your time. For too long we have automatically accepted the fact that higher headquarters (whatever that term means) control too much of a subordinate's time. It is my belief that most commanders can easily control 85% of their time (either their own activities or those planned in advance and directed by appropriate higher headquarters).

Granted, the remaining 15% of changes can be critical and play havoc with your schedule. But, again, what I have found is the individual who has firm control of the 85% will find that he can reduce that uncontrolled 15% even more. By explaining his position with facts rather than emotion or generalizations, he will succeed in convincing his boss to join him in attacking the last minute 15%.

At any rate, the train won't slow down. For example, unexpected events like Grenada are what we plan for. Without putting one foot on the island, I am sure that some commanders and some units really did a superb job. Unfortunately (maybe fortunately), there are some who have probably come to the end of their tenure as commanders, because they are still saying we moved too fast ... "If only I would have had more time I could have done a good job," etc.

This is 1984. The real joy of being a commander is preparing your unit to carry out its mission in a timely manner. You and your troops are on a fast moving train. It is our job to make it a good experience.

ELMER D. PENDLETON, JR.
Major General, USA
Chief, Joint U.S. Military Mission For Aid To Turkey

Do not let what you cannot do interfere with what you can do. —**John Wooden**

Commandant's Comments

Colonel William W. Witt

Practitioners in the organizational development field have long known the special reward that comes from working directly with other people. At the interpersonal level, interfacing one-to-one or one-to-small-group, you get immediate and positive feedback which tends to stimulate an *emotional high* that can quite naturally become addictive. We all thrive on this positive feedback; it is a unique indicator that sparks our professional drive and motivates us toward new achievements and continued success.

As our curriculum is expanded at OECS—merging behavioral, management and systems sciences—you will continue to sample your new work environments in search of feedback that signals success. Although it is human nature to resist giving up what has worked well and brought gratification in the past, systems integration work does not nullify the opportunity to continue working successfully with people. On the contrary, effective communication with other people is the single most critical requirement for successful systems integration. But the nature of feedback will change; it will seldom be immediate nor will it always be positive. The more multidisciplinary and deeply rooted the OE skills become, the greater the requirement to plumb the levels of the system to gain an accurate perception of the needs of your organization and its people. With a realistic awareness of your own resources and strategies, with your cumulative knowledge of the related sciences, you will provide an impetus for behavioral change not only within individuals but within the organization as a whole, as a system.

From a systems viewpoint, a military organization is a system of related components, displaying a collective behavior that acts a certain way in peacetime to prepare it for a time of war. Such a state of readiness does not describe a static mechanism burdened by predictable problems awaiting pat solutions. Rather, it characterizes a dynamic, evolving system of interactions that conjures up an image not unlike its human counterpart found constantly in a state of *becoming*. This dynamic profile pervades the military, be it at the garrison, in the field, or on the battlefield, where different norms and behaviors are found in each environment. Regardless of the specific Army environment you are assigned to, however, you will be dealing with people using their technical specialist abilities to operate functional systems. You must speak the language of specialists while maintaining an objectivity reserved for systems perspective. You will encounter at all levels the customary structures superimposed upon the organization in the form of organizational charts, budgets, resources, procedures and technologies, all of these overlapping in a pattern of complexity. Yet, you will discover a deeper notion of organizational complexity emerging as a natural state of the system itself, arising from conflicts in purpose as the organization pursues its goals and objectives. In a system perspective, such conflicts are viewed as a condition intrinsic to the system, requiring skillful management. Systems integration enables the organization to adjust its behavior and correct its course amid the stir of readiness without losing momentum.

Working in an Army environment earmarked for change, you will develop a perception of the organization as a system, a perception that is uniquely yours. Emerging from your personality and character, it will reflect the qualities you brought to OECS and the qualifications you left with. Practically speaking, your perception *is* the system, with which you must work both as methodologist and innovator. Your OE skills will help you match the methods you have learned to the system as you perceive it. But you will also have to exercise ample self-reliance as you explore new avenues of inquiry, striving to understand those elements of the system that defy traditional methodologies. Moreover, you will not be operating in a vacuum. Alongside you will be other command staff officers, to whom you must convey your perception of the organization as a system, and among whom you must gain consensus about the desired future state of the organization. Your behavioral sciences knowledge, providing a firm foundation for building rapport with people, will serve you well as you integrate your views with those of your fellow members of the command staff. This collaborative effort, consistently manifesting itself in sound recommendations that influence high-level decisionmaking, will establish a momentum of success for the team that will in turn become your own, personal reward.

With fewer than 500 OESO positions available, this limited resource must be applied at the level of highest payoff to the Army. The systems level of expertise will demand much of you as you share diverse ways of thinking and deal with many patterns of behavior that define the character of your organization and its people. Working at this level, however, may not hold the promise of immediate, personalized feedback so readily available by working strictly in the behavioral sciences at the personal-development level of the system. Positive feedback may be scant, for example, from system components whose less-than-optimal performance would be necessary to allow the larger system to achieve its goals. Furthermore, as change gradually diffuses thoughout the system and various components adapt to it randomly, response to your efforts will be staggered and often intangible. Viewing the organization through the lens of systems perspective, however, will sharpen your ability to discern the more subtle feedback mechanisms spawned from systems work. As scientific disciplines are blended, as individual and organizational behaviors are harmonized, as components of the system are integrated, your gratification will derive from knowing that these unprecedented achievements have impacted the entire Army system, long-term. Pioneers on the frontier of systems integration, successful OESOs will be professionally dedicated experts crucial to the mission of an Army being refashioned by change. □

Remarks By
General John A. Wickham, Jr.
Chief of Staff, U.S. Army

**Command And General Staff College Graduation
Fort Leavenworth, Kansas
3 June 1983**

It's a privilege to be with you on your graduation. The Army is proud of all you've accomplished during the year. You have much to look forward to as you take on increased responsibilities in the fine Army we have today. And so it's appropriate that I share with you some thoughts about the nature of your responsibilities as well as mine.

Anyone who travels around the Army cannot help but be impressed with the quality soldiers joining us and with the modern equipment coming our way. New living and working facilities are going up at virtually every installation. In fact, the quonset huts in Korea in a year or so will be relegated to history. The latest equipment is arriving at every unit in the Army including the reserve components. In this decade we shall be receiving some 300 new systems including the M1 Tank, the Bradley Fighting Vehicle, the Apache Attack Helicopter and the Multiple Launch Rocket System.

Our young soldiers are the best we've ever had. Ninety percent of the new recruits are high school diploma graduates. They're educated, motivated and looking for challenges as well as solid, inspirational leadership.

Clearly you and I have increased obligations for responsible leadership, because of our quality Army and the changes underway with equipment modernization, doctrine, and organization. The American public also expects more of us than ever before. This is reflected in our oath of office which places special trust and confidence in each of us. A recent poll reported that 34 percent of the public have great confidence in military leaders and rank our profession fifth among twelve.

Of course, there are some dissenting voices about the military, just as there have been throughout our history. Some argue that strong armed forces not only are unnecessary but may endanger the peace. Others say we cannot afford a strong military because of requirements for social services and a growing deficit. All of these folks forget that the most important social service a government can provide for its people is to keep them alive and free.

Soon you will be taking up new duties. Later this month I shall take on increased responsibilities as Chief of Staff of our fine Army. For you and for me, continuity of purpose will be important. Years ago, when I was military assistant to Secretary of Defense James Schlesinger, I heard him talking to Army Chief of Staff Abrams about leadership of the Department of Defense. Secretary Schlesinger asked General "Abe" what he thought of all the new changes, initiatives, and direction underway in the department. General "Abe" paused for a moment, chewing his cigar and replied:

> "Well, Mr. Secretary, it's kind of like an aircraft carrier. You fellas up here on the bridge are giving commands of left rudder, right rudder, full ahead. The wind is blowing in your face and you're feeling full of yourself, but all that's really happening is that us poor folks in the hold are getting seasick!"

The story seems just as apropos today as it was ten years ago. There's considerable change underway in the Army as you know. Your task and mine will be to manage this change in such a way that turbulence is minimized and preparedness does not suffer. For this reason, my stewardship of the Army will require stability of programs, continuity of purpose, and strengthening of the basic values which have fostered excellence and fighting strength of our Army.

In this regard, Secretary of the Army Marsh, General Meyer, and I share similar views about the direction of the Army and basic programs, such as manning the force initiatives, the high technology test effort, increased emphasis on Army aviation, and acquisition of improved firepower including Copperhead and Hellfire. Of course, it will be necessary to fine tune programs and to adopt some changes due to unforeseen developments, as well as opportunities for innovation. Creativity needs encouragement if the Army's to grow in strength.

The way you carry out your responsibilities also will be important to strengthening the Army. You too can contribute to stability of programs, continuity of purpose, and fostering of excellence throughout the Army.

How? Let me define a few qualities or values which are important to setting examples of personal as well as professional excellence. All my life I've tried to abide by them.

First is integrity. You understand instinctively what integrity means—character, ethical behavior, fidelity, honor...the Koreans have a proverb which says that "The upper waters must be clear for the lower waters to be free of mud." If we are to inspire and lead those entrusted to our care, as well as to account for resources provided by the congress, personal integrity and ethical behavior clearly are of fundamental importance. There's a myth which has persisted in the Army that you have to be a bit unethical, a two-fisted drinker and a womanizer to be a good fighter. General Sir James Glover refuted this myth recently in the Kermit Roosevelt lecture:

> "A man of character in peace is a man of courage in war. Character is a habit, the daily choice of right and wrong. It is a moral quality which grows to maturity in peace and is not suddenly developed in war."

Second is competence. Having just finished this fine Command and Staff College you are far more competent than before. And you probably realize that excellence in the warrior's profession requires continual study. While the principles of war are just as valid today as in the past, technology and doctrine are changing rapidly. You need to keep current by open minded learning if you are to teach those around you and lead effectively on the battlefield.

Third is a sense of responsibility. Sometimes we wring our hands about such disappointments as a low state of ethical behavior, incompetence, or indiscipline around us. Yet we have no one else to blame but ourselves for these unless we exercise responsibility for improving affairs. One time I visited a field training site during my command tour with the 101st Airborne Division. Things were in a sorry state but a sergeant ran up and reported:

> "Sir, I know everything's screwed up here, but I accept responsibility for all the problems and also for fixing them."

The Army will be in good hands with soldiers like this one who have a sense of responsibility.

Fourth is a bias for action. after a particularly fierce battle in Vietnam, I overheard General Abrams say that "Because the Army's business is war, we need to develop fighters, not eggheads." Now, as a practical matter, the Army needs *both* types of individuals because scholarly study has its place. But in the warrior's profession getting things done and moving out offers better prospects for success than procrastination or delay born of interminable study. Former Chief of Staff Harold K. Johnson used to have a wooden turtle on his desk to illustrate the activist view because the turtle gets ahead only when its neck is out.

Thus, we must develop a predisposition or bias for action. Being action oriented means you prize resourcefulness, experimentation, and initiative. It also means that you are tolerant of mistakes and will foster a robust environment where your subordinates can grow by learning from their errors. With a bias for action you will be relying on people, solving problems, fixing things, rather than posturing, debating, delaying through endless study.

Fifth is selflessness. The night I was seriously wounded in Vietnam, a young soldier was killed nearby. His mother wrote me:

> "My consolation is knowing that Craig died defending his country in a most honorable way. He was very proud to be a part of fighting for freedom, for peace, that mankind would again be free from oppression. Even in my deep grief, I am proud to have had such a fine soldier son, proud of what he wanted to do and I pray that I may be worthy of him."

There's a selflessness in her words which touches the heart. In dealing with problems of the Army and leading those entrusted to us, we need to exhibit humility and selflessness if we are to inspire and bring out the best of our inner soul and God-given talents. In this regard you've seen, I'm sure, many officers who worry more about their efficiency reports than about the mission. Some of them work the angles to avoid the tougher jobs. My advice to you is to take the jobs that come your way and do them the best you know how. The OER's will take care of themselves. You and the Army will be the better off because of this commitment to duty.

Sixth is compassion or caring for people. It's been said that those who carry the lives of others in their hands must carry the grace of God in their hearts. I believe this is true for unless we take care of our soldiers and place their welfare above ours, they will see us as phony leaders and we will fail to inspire them or lead them in battle.

General Bradley wrote of compassion:

> "There are those who contend that the best strategist is the commander most dis-

tantly removed from his troops...the strategist...cannot be infected by compassion for his troops...but because war is as much a conflict of passion as it is of force, no commander can become a strategist until first he knows his men. Far from being a *handicap* to command, compassion is the *measure* of it, for unless one values the lives of his soldiers and is tormented by their ordeals, he is unfit to command.

These six values or qualities, I believe, are important for all of us in fulfilling the increased responsibilities which lie ahead. We have a fine Army but it requires quality leadership if it is to grow in strength and to fulfill its mission of being ready for war. We know from history that preparedness is the best way to assure peace.

Our Army is filled with fine young men and women as this letter from a young soldier shows:

"I have a feeling of pride when I hear that *Star Spangled Banner* being played and I've never lost a drop of blood towards its preservation, but I've got enough true feeling to know that. . .I owe to those who cannot fight anymore. They fought for me, for my father, sister, mother, and everybody else. They fought for the preservation of this great country...the least I can do is have enough guts to do the same. Knowing that we have over 200 million Americans who support us financially, morally, and spiritually is another reason that I am proud of the flag and all it symbolizes. May God almighty help our leaders to make the right decisions."

You see, this young soldier, like so many others today, not only is patriotic and committed, but has faith in the good Lord and the American people. And faith is important for all of us, including our leaders.

The American people share freedoms bought with great sacrifice by those who went before us. If we are to give these blessings intact to our children, we have no alternative but to maintain the peace of the strong and to shoulder the sacrifices which accompany this noble commitment.

Thank you. □

QUOTES

In those days, he was wiser than he is now; he used frequently to take my advice. **—Winston Churchill**

I strive for the best and I do the possible. **—Lyndon B. Johnson**

Learn as if you were to live forever; live as if you were to die tomorrow.
—John Wooden

I like criticism, but it must be my way. **—Mark Twain**

High Performing Staff
Part I: What Is It?
Major(P) Henry L. Thompson

This article on the High Performing Staff will be presented in two parts. Part I discusses the characteristics of a high performing staff and describes a generic model. Part II, to be published in a subsequent issue of the journal, will discuss developing and sustaining the high performing staff for Airland Battle. In its entirety, this article is not intended as an all-encompassing, final work. Rather, it attempts to integrate current organizational technology, Airland Battle doctrine, and leadership doctrine with an eye toward providing the commander and staff a better understanding of the *process* and *content* requisite for establishing a high performing staff.

HPS Defined

As the art of war has progressed from the individualistic combat of primitive man to the clashes of large, organized masses of men, the need for a staff has evolved. The staff viewed as the command and control element, or *nerve center,* of the unit is thereby crucial to the effectiveness of the unit. Of course, this is true of staffs at all echelons.

The battlefield of the future can be envisioned as one of intense combat, isolated units, independent action, super-leathal weapons systems, and specialized units led by the super-leaders of tomorrow. As technology continues to advance, so will the sophistication of the battlefield. The Airland battlefield of the the year 2000 may look considerably different from that of today's battlefield. Consequently, it could be postulated that victory in the

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Airland Battle of today or Army 21 will belong to the most technologically advanced contestant.

We know from history, however, that quality leadership and the human dimension of battle (courage, morale, and will to fight) often have more effect on the outcome of battles than does technology. Highly cohesive, disciplined, creative battle leadership teams made up of commanders, their staffs, and subordinate commanders will be required to produce high performing units. I call this battle leadership team the *high performing staff (HPS).*

Survival on the Airland battlefield will require the integration of many *high performing systems,* each of which has a leadership team or command and control element guiding the system to its goal. It is crucial that this command and control element be a high performing system.

How high is high, in relation to high performance? The answer is *high is relative.* That is, the performance of an infantry battalion staff, for example, is relative to other infantry battalion staffs. It is also relative to some theoretical "maximum performance" and "minimum acceptable performance" levels. To complicate matters, performance standards are also *dynamic* (Figures 1, 2).

Performance standards that were "high" in 1950, for example, would not necessarily be high by today's standards. This can be accounted for in several ways. If we consider the "knowledge explosion" that is taking place, it is easy to understand why performance standards are dynamic. Figure 2 depicts the rapidity with which knowledge is increasing. The increased knowledge and concomitant information processing capability of computer technology is providing the commander and staff with a tremendous volume of information (Figure 3). In fact, we have now entered an age that provides information at a rate that exceeds

the human capacity for information processing. And when this large volume of information is combined with the commander's rapidly expanding view of the battlefield, it results in truncated decision-making time (Figures 4, 5). Today's Army must travel faster, react more quickly, and deliver more firepower than any other Army in history. Being able to concentrate maximum firepower at the critical place and time is essential for victory. The planning and reaction time for the staff has been significantly reduced.

I do not mean to project a hopeless situation. The threshold for high performance is clearly visible because it is relative to the staff's peers. That is, it is significantly above the average performance level of the peers.
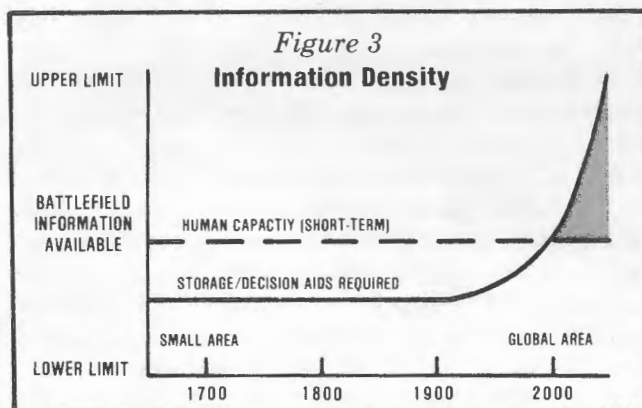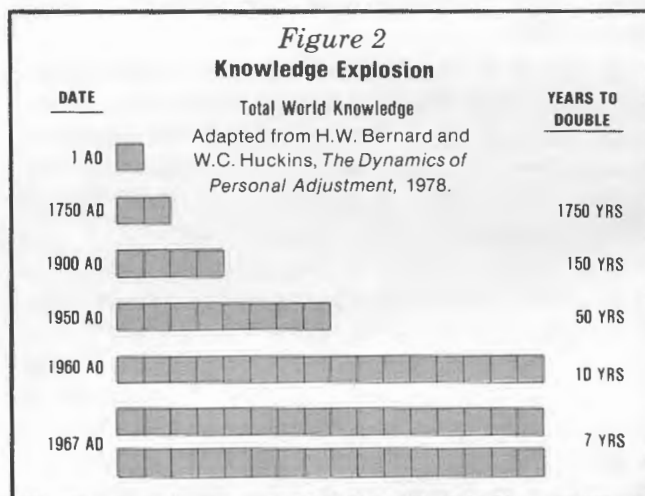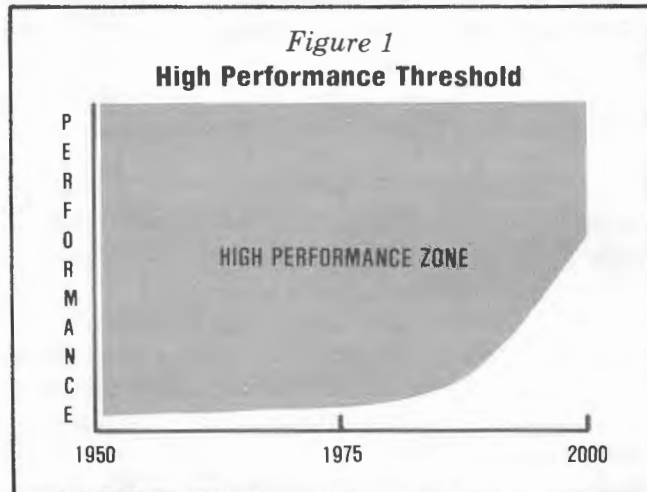
Systems

Before further discussing systems, let me explain what I mean by *system*. A system is two or more elements operating together interdependently. Thus, a staff is a system. The interdependence of staff sections creates particular problems in trying to understand the nature of staffs if the traditional analytical approach is used. The analytical approach breaks everything into parts and studies them individually. In a system such as a staff, the preformance of each staff section affects the performance of the entire staff. If one section, say the G2, fails to effectively perform its tasks, the performance of the staff as a whole suffers a decrement in performance.

From a systems perspective, it also means that the poor performance of the G2 section results in the poor performance of at least one other section in the staff, such as the G3. This implies an interrelationship that precludes formation of independent subgroups. That is, you cannot form a G2-G3 subgroup that is totally independent from the remainder of the staff. A small performance decrement in one staff section, therefore, can result in a much larger effect on the staff as a whole due to corresponding performance decrements in the other sections.

By further implication, a system such as a staff cannot be divided into independent parts to reveal

Figure 1
High Performance Threshold

Figure 2
Knowledge Explosion

Figure 3
Information Density

Figure 4
Commander's View Of The Battlefield

Figure 5 **Battle Area vs. Decision Time**
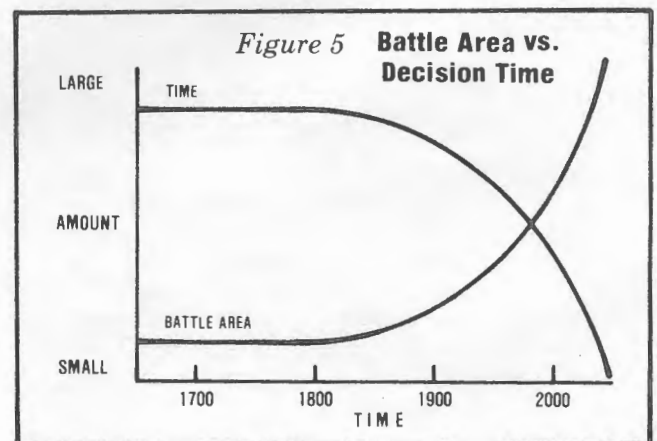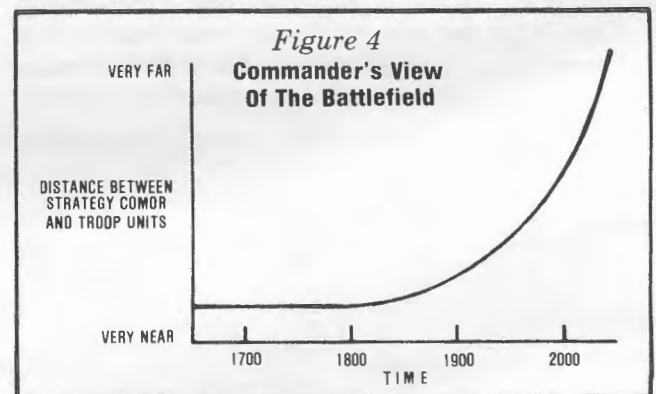
the "real" nature of the parts. The "real" nature of the parts is revealed only when they are combined. This combined energy of the parts, or system effect, has been described as *synergy*.* This is not to say that the staff sections do not have properties of their own when separated from the staff. They do, but they also lose some attributes when viewed separately.

One final point about the nature of systems. The best way to "create" a high performing system is not necessarily to select all-star elements. For example, if you were to select the best S1, S2, S3, S4, XO and battalion commander in a division and form a composite battalion staff, you would more than likely be disappointed in their performance.

An analogy may serve to illustrate the point. What happens each year when the all-star football teams are formed? Are they as good as the championship team that year? No! Why? Because when the players (elements) are removed from their system, they lose some of their properties (abilities). In time, their collective performance would improve, but it is doubtful that it would ever reach expectations. The same is true with the composite staff. A certain interaction, or "chemistry," occurs between members of a high performing system that produces a synergistic effect.

HPS Characteristics

A review of voluminous military and civilian research literature on high performing systems and individuals as applied to the staff leaves me with the most simplistic and appropriate description of a high performing staff: *a staff that consistently and expeditiously achieves superior results relative to its peers.* In peacetime, these staffs consistently and expeditiously achieve superior results on Command Post Exercises (CPX), Army Training and Evaluation Program (ARTEP), recruiting, or whatever task they are assigned. In combat, they consistently and expeditiously accomplish their mission and their units sustain minimum casualties.

All staffs have multiple goals to accomplish. These may be either major goals or subcomponents of major goals, and many of these goals must be reached simultaneously. How can any staff achieve superior results on all goals? In fact, the high performing staff achieves superior performance on all major goals and performs so near to superior on the minor goals that it is *perceived* to give a superior performance on all.

The following list of prominent HPS characteristics is compiled from the works of Peter Vaill, COL(Ret) Mike Malone, Thomas Peters and Robert Waterman, as well as from experiences of the officers at the U.S. Army Command and General

Staff College. The descriptors are grouped by those describing the staff and those describing the individual within the staff; moderate overlap is inevitable.

Staffs

Goal Clarity

All staffs have some inherent goals to accomplish. An HPS knows its short-range and long-range goals, which are well articulated and accepted by the staff. Everyone knows the staff's goals as well as individual goals. This enables each member of the staff to focus energy on the appropriate actions needed to reach these goals.

Teamwork

By knowing what the staff's goals are, members can work together as a team. Teamwork is defined here as the coordinated effort of the staff members toward the accomplishment of the goals. Each person has specific responsibilities but also observes a significant portion of the overall process so that he may use his initiative and unique attributes to lend assistance in critical areas. This shared responsibility is analogous to what happens when a person has a stroke. The stroke destroys a portion of the brain, resulting in the loss of use of certain functions, such as speech and mobility of extremities. Often, however, the stroke victim is able to recover some of the stroke-induced loss. This comes about as some of the other areas of the brain assume "additional duties" and take over some of the functions of the damaged areas. In a military setting, an example would be the operations NCO coming to the aid of the S3 Air, or the staff as a whole coming to the aid of the new Chief of Staff.

Focused Energy

HPSs have very high energy. A closer look reveals that energy is not only high, but very focused. This "focused energy" may look peculiar to outsiders because it appears to be invested in specific behaviors or activities. Thus, the level of energy is important, but the focus of the energy is just as important. Without proper focus, a high performing state cannot be reached or sustained.

Knowledge and Procedures

Where to correctly focus energy is a result of good judgment and the correct application of doctrinal knowledge and procedures. Doctrinal knowledge refers to knowing "what," "when," "who," "how," and "where" to do something. This knowledge must be available for all situations the staff is likely to encounter. Concomitantly, the correct doctrinal procedures must be used to implement the knowledge. An HPS makes consistent and expeditious use of correct doctrinal knowledge and procedures.

Creative Standardization

The HPS establishes standard operating procedures (SOPs) that delineate how to react to stress-

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*R.B. Cattell used the term synergy to describe the combined energy of individuals in a group. This energy has the capability to exceed the combined level of the individuals and produce a synergistic effect. The synergistic effect is found in high performing staffs.

ors as well as conducting routine actions. The SOPs speed up reaction time and efficiency of routine operations. These SOPs are designed so that they do not result in a degradation of creativity. An HPS constantly upgrades the SOPs to make them more effective.

Meta-Language

Another characteristic that develops in an HPS is meta-language, a staff-peculiar vernacular. It is an efficient "coded" language that the staff uses to expedite communications. An outsider observing typical conversations of an HPS will hear numerous acronyms, code words, and para-verbal messages, as well as seeing non-verbal communications (that although seeming to be understood by the outsider, won't be). These high level communication methods result in more concise and efficient communications.

Innovation

An HPS will continually experiment and look for innovative solutions to problems. Staff members maintain an atmosphere that fosters creativity. This means that the staff members have certain boundaries within which they have a *freedom to fail*—much can be learned from failure. The result of this freedom is a climate in which staff members are encouraged to experiment and be innovative, leading to higher performance.

Rehearsal

Rehearsal provides the HPS with an opportunity to test new solutions, to evaluate old operational procedures, and increase proficiency at accomplishing tasks.

Rhythm

The HPS seems to have a rhythm in terms of performance. Observers see it, staff members feel it. "Things just seem to flow." Staff battle drills and rehearsals contribute to the development of rhythm.

Core Values

Observation of an HPS quickly reveals a set of core values around which the staff functions. They are values such as *producing a quality product, ethics,* and *professionalism* that guide the staff's actions in all situations. All members adopt the core values, or they become internal stressors that degrade the staff's performance.

Reputation

Embodying quality performance, HPS members soon develop a reputation as winners. Higher level staff officers and commanders tend to become closely associated with the HPS and champion the HPS whenever they have an opportunity. The winner label produces a *halo effect* which is carried over to everything the HPS does. Conse-

quently, everything that the HPS does may be perceived as superior.

Adaptability

The characteristics mentioned above give the HPS the ability to adapt rapidly to a changing, stressful environment. This gives the HPS more control over the environment, thus reducing the effect of stressors and making it easier for the HPS to reach its goal.

Individuals

Just as the HPS is "different from the average staff," so is the HPS individual different from other individuals. While performing as a member of an HPS, the individual exhibits certain salient characteristics, described here.

HPS Core Values

To remain a member of an HPS, an individual must adopt the HPS core values. He may or may not have them when he joins the HPS, but he must adopt them quickly. An individual unable to adopt the core values will not remain a member of the HPS for very long. During the interim period, the *outsider* is an internal stressor.

Rite-Of-Passage

Once the individual has adopted the HPS core values and has proven himself capable of performing at the HPS level, his rite-of-passage is complete and he is accepted into the group. Often, however, there remains a small dysfunctional group that has not been fully accepted into the group. These individuals represent a source of internal stress.

Task Enjoyment

The individuals within the HPS enjoy their job. They look forward to going to work each day and are not 8 to 5 o'clock conscious. They feel good about what they are doing. The HPS members may be "workaholics" in the positive sense because their energy is focused and productive.

Unconscious Behavior

Some of the tasks performed by the HPS members become so routine that they actually become unconscious behaviors. This becomes evident when these individuals are questioned about the specific steps of a task. The individuals find it easier to perform the task than to articulate all of the steps in its performance. This unconcious behavior is reflexive and thus is performed much quicker than it would be otherwise.

Obsession

Members of an HPS seem to be obsessed with their job. They appear to "live, eat, sleep, breathe, and fight about" their HPS. This same phenomenon is observed in basic trainees and other individuals who are obsessed with their organization.

Social Closeness

Very often a social closeness develops among HPS members who become interested in spending time together after duty. They seem to seek out those with whom they share a common frame of reference and strong bonds of trust, respect, confidence, and understanding.

Time Measured By Activities

Members of an HPS tend to measure time by activities. For example, instead of saying "next month," they will say "after the CPX," or "That happened before the last ARTEP."

Hall Of Fame

The hall-of-fame phenomenon may develop. This consists of keeping a record of history, not by traditional means, but by events, such as what happened to a particular member of the HPS during a training event.

Preoccupation With Equipment

HPS members become preoccupied with equipment. They tend to elaborate on it, maintain it constantly, ascribe human characteristics to it, and use it in innovative ways not envisioned by the manufacturer.

Thus, it becomes apparent that the individual derives his meaning from the HPS which, in turn, derives its meaning from its members.

High-Performing-Staff Model

I developed the *generic* high-performing-staff model by integrating ideas and concepts from many sources as well as my own observations of high performing staffs. This model is very strongly linked to the current Airland Battle doctrine presented in FM 22-100, *Military Leadership*, FM 100-5, *Operations*, FM 101-5, *Staff Organization And Operations*, and FM 25-2, *How To Manage Training In Units*. Because it is generic, the model applies to all staffs, not just combat staffs.

Staff

There are nine basic components of the HPS model (Figure 6). The model begins with the individuals that make up the staff. Although the composition of the staff will vary, it will normally consist of the principle staff officers, their respective section members, and a Chief of Staff (Executive Officer at battalion and brigade levels). When referring to a *battle staff,* the unit commander and immediate subordinate commanders are included (for example, the battalion and company commanders). Also included are the key support personnel, such as the fire support officer and the engineer staff officer.

Goal

The staff has a goal that it must reach. As stated earlier, there may be multiple goals, but there is normally one overriding goal toward which the staff is striving in the immediate future. An example of such a goal is the successful completion of training at the National Training Center.

Activity Timeline

Reaching the goal is accomplished by moving along an activity timeline, a path, to the goal. The activity timeline begins when the staff receives the mission (the goal is identified) and exists until the mission is accomplished. The activities that occur—such as acquiring information, planning, and execution—require time. The amount of time varies from mission to mission, but always exists.

Figure 6
High-Performing-Staff Model
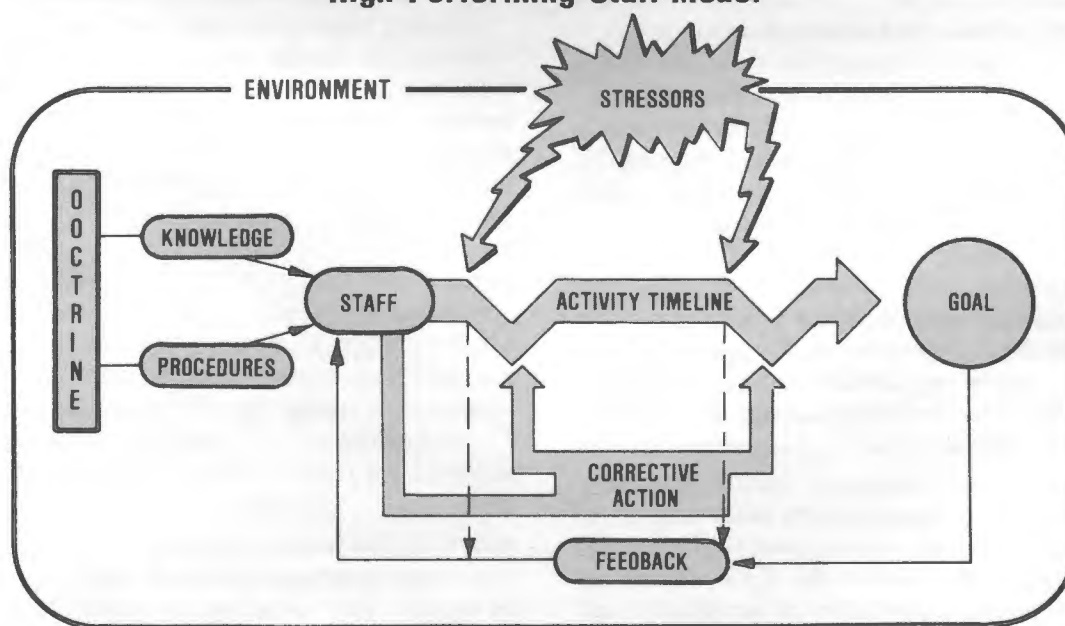
The ability to remain on the activity timeline and reach the goal is affected by the remaining components.

Doctrinal Knowledge

The total doctrinal knowledge that the staff has is embodied in the collective knowledge of all the members. It refers to knowing the "what, how, who, where and when" in tactical and non-tactical situations. The acquisition of doctrinal knowledge occurs primarily through service schools, field manuals, and the field experience.

Procedures

Just as important as doctrinal knowledge are staff procedures. Staff procedures are the actual processes and procedures that the staff uses, from the receipt of the mission through mission completion. It must be noted here that the staff's performance capability is a manifestation of the *interaction* between doctrinal knowledge and doctrinal procedures. The procedures turn knowledge into action.

Environment

All staffs operate within some type of environment. The environment may be, for example, the National Training Center, an ARTEP, garrison, or combat. Dynamic but cyclic, the environment can be thought of as affecting the difficulty of reaching the goal. That is, there are some environments, the National Training Center for one, that make concealed movement to the objective much more difficult than do other environments. Thus, an environment adds difficulty to goal attainment.

Stressors

Existing within the environment are stressors. Stressors are those events that impact on the activity timeline and try to alter the course of the activity. Examples of stressors are bad weather and an enemy attack that destroys one of the battalions in the brigade's assembly area. Stressors can also come from within the staff. For example, a commander or a principle staff officer becomes a casualty. Stressors such as these could prevent the staff from reaching its goal—if left uncorrected. Stressors can also be categorized by the environment to which they are peculiar. That is, the National Training Center has open terrain and desert, while the Jungle Warfare Training Center in Panama has jungles and rain. Of course, all environments have a commonality in some stressors, like heat and time constraints in the environments above.

The environment interacts multiplicatively with the stressors to increase the total impact of the stressors. Thus, the difficulty of reaching the goal is a variable function of the difficulty of the task, the environment in which the staff is operating, and the type and number of stressors. Ideally,

the HPS uses contingency planning to minimize or negate stressors, thereby gaining control of the environment. Control of the environment allows the HPS to operate in a *proactive* rather than *reactive* mode. This makes goal attainment much easier.

Feedback

Feedback must be continuous, from receipt of the mission to completion of the mission. It provides the necessary information to cause the staff to invoke contingency actions, if necessary, and to learn from the experience. Feedback is also valuable to an HPS after the completion of the mission. It provides an overall assessment of the operation so that the staff can "learn" from experience and be able to perform more efficiently the next time it is confronted with a similar type of environment and set of stressors. In fact, close examination of the model reveals that it is a basic learning paradigm. The staff attempts a task, receives feedback, stores this information in institutional memory, takes corrective action, and performs the task again. Through repetition, the staff learns and performance improves. The HPS learns very rapidly compared to a low-performing staff.

Corrective Action

Corrective action is used to return the staff to the correct position on the activity timeline. An HPS plans corrective (contingency) actions in advance. When possible, the HPS conducts *staff battle drills* (contingency action practice) to increase proficiency at taking corrective actions. Because stressors tend to impact on the activity timeline at an almost continuous rate, corrective action is almost continuous. On the Airland battlefield, the corrective actions may be communicated as "frag orders".

High-Performing-Staff Competencies

Military history is replete with examples of high performing staffs, such as General George S. Patton's 3rd Army Staff. These staffs all played certain command and control *competencies* that significantly affected the outcome of major battles—and wars! Over the years, these warrior-proven competencies have evolved into doctrine. Research by the Human Resources Research Organization has confirmed seven specific staff competencies as being those that seem to discriminate between high-performing and low-performing staffs. These seven competencies manifest while the staff is using the Military Decision Making Process (Figure 7). Competency descriptions presented here combine Joseph Olmstead's and my own.

Acquiring Information

A high performing staff acquires from both *external* and *internal* sources goal-relevant information that is necessary to enable the staff to

Figure 7

Military Decisionmaking Process

reach the goal. The specific character of the information-acquiring activities may differ according to the type and mission of the staff and the particular environments in which the staff is operating. Whatever the specific nature of these activities, they involve seeking, acquiring, processing, and interpreting information. An HPS actively seeks *relevant* information from all available sources. Care must be taken, however, to avoid *information overload.* The overload condition occurs whenever the staff begins to receive more information than it can effectively process. The ability to process information is affected by the intensity, relevance and meaning of the information. It is important to note that it takes longer to process non-relevant than relevant information.

With the tremendous volume of information available to today's staff, relevance is of particular importance.

Communicating Information

Members of a high performing staff communicate relevant information to each other as well as to others at various echelons who need the information for effective performance of their duties. A significant aspect of the communication process is "discussion and interpretation," that is, those communicative acts through which the members of a staff attempt to clarify information and its meaning and to determine the implications of the information. The information is communicated in a timely, clear, and concise manner to all of those

who "need to know."

Decisionmaking

Decisionmaking refers to making decisions concerning actions to be taken based on the information acquired. It is important to remember that decisions are made by *everyone* on the staff, not just by the commander. For example, the operations sergeant may make decisions on where to locate specific equipment in the command post. The doctrinal military decisionmaking process is used in making decisions.

Contingency Actions

This refers to adjusting to or anticipating stressors that cause new developments, changed conditions or enemy reactions. Bad weather and an unexpected enemy attack are examples of environmental stressors. A battalion commander becoming a casualty is an example of an internal stressor. An HPS "learns" to control the environment and the situation to the degree possible by anticipating and responding to stressors through contingency actions. Correct anticipation of stressors (such as the enemy destroying the bridges) allows the staff to plan contingency actions (such as sending bridging equipment with the unit) to negate the stressor.

Communicating Decisions

These are activities through which decisions are communicated to individuals or units that must implement the decisions. Decisions *must* be communicated to all those concerned—subordinates, peers and superiors. In addition to the straightforward transmission of directives, orders, and instructions, this process includes "discussion and interpretation"—those communicative acts through which clarification of requirements is achieved and implications for actions are discussed. Of particular importance in this process are the activities of "linking" individuals, who relay instructions between the original decisionmaker and personnel who ultimately implement the decision. It is imperative that the commander's intent be communicated.

Execute Decisions

This refers to executing actions as a result of the decisions that have been made. This activity begins as soon as the commander receives the mission and makes the decision as to what he is going to do next. It continues until the mission has been accomplished.

Feedback

This is the essential process of monitoring progress toward a goal. It includes verifying (1) that the orders are being followed, (2) that the plan is working, and (3) the assessment of performance of various units. It is a continuous process from receipt of the mission until mission accomplishment. Feedback is absolutely necessary in order to invoke contingency actions (corrective actions) and for learning to take place.

The activities above are distinct; however, they do not necessarily occur separately. That is, several activities might occur simultaneously within different staff sections. As depicted in Figure 7, there are multiple occurrences of these activities at different stages of the military decisionmaking process. Also, these competencies may combine during their "real time" occurrence. For example, during real time it may be very difficult to separate acquiring information and communicating information when they are concomitant and interactive. In retrospect, however, the competencies can usually be separated.

It should also be noted that within the military decisionmaking process, many iterations of the standard military problem-solving steps occur: gather information, identify the problem, generate courses of action, select and implement a course of action, and evaluate. Because of the multiple occurrences of the competencies, it is necessary to *bound* the organization. That is, to accurately observe these competencies happening, it is necessary to concentrate on one specific part of a staff, those elements located at the Tactical Command Post, for example.

Given the same level of doctrinal knowledge, the staff's efficiency at these competencies discriminates between high-performing and low-performing staffs. It should be noted here that the human dimension has a profound effect upon both the knowledge and procedures of the model. Lack of sleep, for example, is a stressor that can affect the ability of the staff to apply the correct doctrine as well as to perform the procedural competencies effectively.

These competencies are not new. They are interwoven throughout our current doctrine.

Before proceeding further, I want to review the doctrinal purpose of a military staff, as outlined in Field Manual 101-5:

- Respond to the needs of the commander and subordinate units.

- Keep the commander and subordinate units informed of the situation.

- Reduce the time needed to control, integrate, and coordinate operations.

- Reduce chances for error.

- Relieve the commander of supervisory details in routine matters.

- Assist the commander in decisionmaking by providing essential information and making recommendations.

The doctrinal purpose of a staff as described above

reiterates the importance of a high performing staff for the Airland Battle and closely ties high performance with the current doctrine.

There have been many articles on high performing organizations and individuals. Characteristically, they stop after describing the attributes of the organizations or individuals. The second part of this article, however, will proceed to describe a prototypical methodology for *developing a* high performing staff and, just as important, how to *sustain* it.

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OECS Visitors, 1983

Date	Visitor	Purpose
3 Feb 83	MG Henry J. Schumacher, CDR, USA Signal Center and Fort Gordon/COMDT, USA Signal School	Orientation and Discussion of Proponency
3 Feb 83	COL Reb Ketchum, CDR, AIT Brigade, Fort Gordon	Orientation and
9 Feb 83	LTG Jack N. Merritt, Deputy CDR, TRADOC and CDR, USA Combined Arms Center and Fort Leavenworth	Orientation and Update
10 Feb 83	MG John B. Blount, Chief of Staff, TRADOC	Update
22 Feb 83	MG James N. Ellis, CG, Eng. Cen. Fort Belvoir	Update
1 Mar 83	LTG Wenner, Chief, General Army Office, FRG; COL Wittenberg, German LNO, HQ TRADOC	Briefings and Discussion
4 Mar 83	Dr. Bonnie Johnson, Institute for Communications Research, Stanford University	Briefing
21 Mar 83	LTG J.W. Becton, Jr., Deputy Commander for Training, TRADOC	Update
15 Apr 83	COL Magnus Olson, Military Attache, Swedish Embassy, Washington, D.C.	Overview Briefing
9 Jun 83	GEN William R. Richardson, CG, TRADOC	Update
16-17 Jun 83	MG Maurice O. Edmonds, DCS, Tng, TRADOC	Update Graduation Speaker
16-17 Jun 83	Dr. Dick Rusk, USC, Organizational Behavior	Discussion—OE/OD MBO
14-15 Jul 83	LTG Carl E. Vuono, Deputy Commanding General for Combined Arms, TRADOC; MAJ Ray Miller	Briefing
4 Aug 83	GS-14 Slayton and GS-13 Waller, Auditors, Internal Review Branch	Discussion
17-19 Aug 83	Dr. Eliot Jacques, contracted by ARI	Research
22 Aug 83	Ms. Amey Stone, Member, Defense Advisory Committee on Women in the Services (DACOWITS)	Discussion
26 Aug 83	BG John W. Nicholson, Deputy Director for International Negotiation, J5, Office of the Joint Chiefs of Staff	Graduation Address OECC 3-83
26-30-Aug 83	COL(Ret) Daindridge M. Malone	Discussion
27 Oct 83	Professor Dewey Johnson, Management Dept. Fresno State University (Formerly Deputy COMDT of DLI and Author of USAF Leadership Manual)	Update
14 Nov 83	MG Yosef Peled, Dir of Israel Defense Forces, Doctrine and Training Branch	Briefing/Discussion
9-10 Dec 83	LTG(Ret) Julius W. Becton, Jr., USA	Graduation Address Class 5-83
16 Dec 83	CSM Peters, USA TRADOC Command Sergeant Major	Discussion/Update

Organizational Effectiveness
And
Systems Integration

Meeting the needs of the Army of the future depends on developing a strategy that will address the integration to the Army's complex functional systems. To assist in accomplishing this process, this volume has described the pervasiveness of systems within the Army, the nature and extent of these systems, and the importance of systems and systemic thinking for Army commanders and managers. It has also provided a perspective for understanding the role of the new Organizational Effectiveness Staff Officer (OESO) in the process of systems integration.

Rationale And Need

The Army has developed an effective staff system to address organizational problems and issues and to assist commanders in responding to tactical and operational requirements. Internal to the command, they are general and special staff officers with assigned functional responsibilities. Externally, they are the Inspector General, resource managers, maintenance teams, and training teams traditionally oriented on specialized, functional areas. The widely diverse environments which the Army faces today require a high degree of specialized functions if the Army is to meet the new demands created by the complex functional systems. The competing demands required by simultaneous specialization and integration must be reconciled in order to produce combat-ready forces. Until recently, the commander had no future-oriented, dedicated staff effort to integrate the functional elements of an organization into a productive, unified whole to achieve his mission. As the various requirements of units with the Army developed exacting degrees of specialization, a narrow focus evolved within functional responsibilities. This resulted in a requirement to integrate activities and events across command functions.

Results of the recent Department of the Army Inspector General Force Modernization Inspection demonstrated that the implementation of total systems fielding was not as efficient and effective as expected. It described how the new systems and processes were not functioning as designed, and that the total force integration management concept was not meeting its predetermined standards. A rapidly changing Army, requiring the integration of new doctrine, structure, equipment and manning systems, had created unexpected problems and new opportunities that were Army-wide. These complex change issues and systems interfaces will be addressed by a staff officer who has been carefully screened and specially trained to meet this new challenge. This staff officer must be able to understand and resolve challenges of a systemic nature by identifying and analyzing problems and their implications with advanced and sophisticated skills, and provide recommendations to commanders for improved mission accomplishment. This staff officer must take a coordinated and integrated approach in addressing organizational problems, and use the problem-solving methods of many disciplines to deal effectively with the multi-dimensional nature of complex issues facing the Army.

Complexity has become the by-word to describe the Army of the 1980's and beyond. Special consideration must be given to the sophisticated hardware, the requirement for highly skilled soldiers, scarce resources, rapidly changing scenarios and missions, more information available than ever before, and high-speed communication systems to mold an effective fighting force within the context of a changing society. Of extreme importance for Army commanders and managers is the recognition that linear, cause-and-effect problem-solving process are inadequate for most issues faced today and in the foreseeable future. Organizational Effectiveness (OE) in the Army was initially developed to provide a systems-focused program designed to achieve unity of effort and to ensure higher levels of combat readiness.

Organizational Effectiveness Program
Overview And Objective

The social and cultural unrest of the 1960's and 1970's culminated in unique problems which business, industry, academia and the military had never before encountered. This upheaval forced most traditional organizations to seek answers from new sources. One such source were the professional organization development (OD) consultants who had their initial training and experi-

ence in the area of the behavioral sciences. These professionals applied the concepts of their discipline to the problems of organizations and management. They assisted managers and supervisors by focusing their attention on the human side of their organization. They provided assistance to managers by diagnosing or assessing human problem areas, interpreting the diagnosis or assessment and ultimately designing strategies to improve the effectiveness of organizations. They focused on the way persons in organizations interacted in executing their assigned tasks, and were primarily concerned with how people worked together. Initially, they neglected other technologies in accomplishing the tasks of the organization.

As this discipline was developing in the civilian sector of society, the Army initiated a series of pilot studies in various locations to address the human problems it was facing. In 1976, General Bernard Rogers addressed the Army commanders and stated that the Army must try newly developed behavioral science (concepts) as "a practical and systematic way of looking at how the Army and its organizational elements function by reflecting on the distinctly human nature of any organization ... to promote a greater understanding, involvement and commitment to unit goals with people at all levels.

With this charter and from the progress that had been made in the civilian sector through organizational development consultants, the Army adapted these concepts to meet its particular needs in the area of the behavioral sciences. Called Organizational Effectiveness (OE), the program was initially designed and developed to provide commanders with staff officers who could provide them additional support and assistance in the "people" area. OE in the Army was built on the findings of research in the behavioral sciences, lessons learned in industry and their OD consultants.

As the OE program began to mature in the Army, the emphasis shifted from the purely human perspective to one dealing with military units as organizational systems—systems comprising technology, people, chains-of-command, missions and equipment. This new perspective viewed the human element as only *one* source of organizational effectiveness, only one of several interacting variables in the process which led to organizational effectiveness and combat readiness. This new systems perspective contributed to a more complete understanding of organizations and a more thorough knowledge of the contribution of human elements in organizations. As the systems perspective became more prominent, it evolved into a discipline in its own right. This

evolutionary process resulted in graduates (from the Organizational Effectiveness Center and School) "working at levels and on issues appropriate to their experience and training. They are making systems-wide contributions and are being challenged with the most complex issues confronting the Army *(CSA Myers Sends For Cdrs - 1983)."*

Concurrent with the changes in the perspective utilized in the OE program, a dramatic change was beginning to emerge which would re-align the focus of OE activities. The evolution of systems and management science was beginning to make it possible to develop methodologies which could be applied to larger organizations having greater, more strategic results for the efforts of limited OE resources. The new focus of the current OE program is now at installation/division level and higher. As has become apparent, OE is no longer uniquely a people program; it is an executive resource to improve total Army readiness.

In discussing the objectives of the OE program, it is necessary to understand the context in which it is employed. This context is one in which Army commanders are required to cope with a tempo of change that is increasingly fast-paced and encompasses every aspect and activity of their organization. Effective management in this environment requires a greater degree of functional specialization as well as a total integration of effort, events, equipment and personnel that transcends traditional functional boundaries. As the nature of Army organizations grows more complex, this integration process becomes more critical to total force readiness. Within this context, the objective of the Organizational Effectiveness program has been established to assist commanders in achieving unity of effort while managing the challeges created by change in the Army. To do this, the following goals for OE have been established:

- The systemic integration of resources (people, equipment, money, information and time) toward the accomplishment of the organization's mission;

- The systemic integration of the activities of organizations, across command and functionally specialized boundaries, toward the accomplishment of the parent organization's mission;

- The systemic integration of the activities of assessing, planning and resourcing toward the accomplishment of future missions.

Through this integration, the program's purpose of creating a more effective Army will be met. However, to achieve this integration process, another evolutionary process has developed to meet this tremendous challenge—Systems Integration.

Organizational Effectiveness
And
Systems Integration

Systems Integration is an evolution of OE technology (now including several disciplines) to adequately meet the needs of today's Army. It is a military interpretation and application of behavioral, management and systems sciences to manage the process of complex change. Although each of the sciences has made its own significant contributions to assist us in meeting current Army needs, when combined, they offer a powerful new discipline which has not been available before.

The behavioral sciences—anthropology, social psychology, sociology and psychology—focus on the predictability of human behavior in various contexts. These scientific disciplines are providing a body of knowledge pertaining to how people behave, why they behave as they do, and the relationship between human behavior and the total environment. Because both people and the environment change, the behavioral sciences *attempt* to predict how most people are *likely* to behave in a given set of circumstances and combinations. Each discipline applies its own methodology to the prediction problem, and each provides its unique insights into such important areas as individual differences, cultural influences, motivation, group dynamics and organizational behavior. Of particular significance have been the contributions of the behavioral sciences to understanding the process of communication. Communication ties an organization together and, therefore, organizations require good communications to operate effectively. This process flows through people. An understanding of the nature of human behavior explains the evolution of the barriers to effective communication, the means to achieve a more accurate communication process in organizations, and the networks required to accomplish this. The implication for leaders is that communication produces information, and leadership is turning information into action.

Management science is a post-World War II development that came about through the application of quantitative methods to decision making. It adopts the *scientific method* as a framework for problem solving with an emphasis on objective, rather than subjective, judgment. This discipline implies testing the assumptions, processes and practices of management against concepts and theories, emphasizing an innovative approach to provide the manager with optimal decisions in the arena of problem solving, decision making, planning, organizing, directing, coordinating and integrating. The key concepts that permeate the field are:

- Emphasis on scientific methods
- Systematic approach to problem solving

- Quantification and utilization of mathematical and statistical procedures
- Concern with economic-technical rather than psychological aspects
- Utilization of electronic computers as tools
- Emphasis on systems approach
- Seeking rational decisions under varying degrees of uncertainty
- Orientation on normative rather than descriptive models.

A system may be defined as an "organized or complex whole, an assemblage or combination of things or parts forming a complex or unitary whole. It is a set of interrelated elements." This perspective provides the foundation for systems science emphasizing wholeness first, then consideration of subsystems and the interactions among them. A systems perspective enables a commander to visualize the organization in its entirety rather than focusing on discrete elements or subsystems. Therefore, the objective of systems science is to produce a view of an operation or an organization as a whole, and it will provide the context to identify the discrete elements of the system(s) that will be affected by change in the organization and the Army.

Systems Integration is the combination, interpretation and military application of behavioral, management and systems science. It is a process which assures the successful incorporation of complex change (equipment, mission, plans, structure, training, information processing) to meet the current and anticipated demands of total Army goals. Detailed analysis, planning, problem solving, priority setting, coordinating and controlling activities are all involved in integrating complex systems. They integrate the personnel and procedures required to maximize the effectiveness and efficiency of an organization, while maintaining optimal combat readiness and mission requirements.

Organizational Effectiveness/
Systems Integration Application

The applications of Organizational Effectiveness/Systems Integration have been designed to meet unique Army organizational needs. The new Organizational Effectiveness Staff Officer will work with the commander to integrate the functional systems operating in a command. Following is a partial list of applications that will be useful in addressing these needs.

AirLand Battle

The Army is currently projecting necessary Organizational Effectiveness/Systems Integration technologies into the twenty-first century. Viable integrative technologies and capabilities presently exist to assist the Army commander

through the 1990's into the era of the AirLand Battle. The OESO will operate in close coordination with the commander. In practice, he will provide expert staff advice on management issues by focusing on change, determining the implications of change, developing strategies to implement change, and presenting the commander with recommended solutions. The OESO will then assist the commander in implementing whatever changes are selected. Having the ability to "cut across" functional and command levels of authority will enable the OESO to address problems and issues directly with the commander while other members of the unit may be constrained by virtue of their specialized functions. Such access will allow the OESO to overcome the potential shortfall of decisions being made based on unchecked assumptions, and/or nonexistent information concerning the commander's units. Some representative areas are:

Battle Staff Operations. The OESO will assist the commander in the battle staff integration process by performing an assessment of battle staff procedures and an analysis of the assessment. This will ultimately identify barriers to effective staff coordination and provide detailed recommendations to improve the systems interfacing among the various battle staff elements, thus minimizing the disruptive effects of combat on the staff communication and information flow processing.

Peace-to-War Transition/Mobilization. The OESO has received specialized training to assist commanders in managing complex change required for mobilization. The OESO will integrate the unit's peace-to-war transition through his ability to analyze, define, and improve information flow within the command, internally among various functional staff members and externally between the command and other commands.

Unit Reconstitution/Reorganization. The OESO may assist the commander in reconstitution actions. He would do this by assessing unit effectiveness, determining when to reconstitute, planning, organizing, coordinating and directing the processes of unit reconstitution. He would also monitor those processes, and provide feedback to the commander to evaluate the results.

Force Integration

The Army is in a period of intense modernization and change unparalleled in its peacetime history. With the introduction of new, highly sophisticated weapons systems, new division and corps structures, new doctrine, a new manning system, and the proliferation of management information associated with these changes, commanders have an even greater need for Organizational Effectiveness/Systems Integration expertise and assistance than in the past. OESOs at MACOM and DA level will assist commanders in addressing problems associated with systemic imbalance of technology in organizational systems. By assessing and recommending the development of integration mechanisms such as rules and procedures, plans and joint command task forces and project teams, the OESO will ensure that the most appropriate "fit" between new technology, organization structure, and human resources can be maintained. The design and development of integration and information processing mechanisms can provide crucial links during intense periods of modernization. The OESO will also assist Army leaders in creating a reasonably stable environment for subordinate tactical organizations to implement new equipment, technology, organization structures and human resource subsystems. OESOs at division or installation level will focus their efforts on assisting the command in the resolution of problems associated with rapid, intense organization change. New, innovative problem-solving and long-range-planning techniques can be introduced and utilized to reduce turbulence and conflict, and to provide for smoother adaptation to changing circumstances.

Organization Design

This long-term management strategy focuses on coherently aligning organization structure and processes with key organization missions and goals. Utilization of a systems perspective is crucial to any organization design or redesign effort. The optimal division of labor or the differentiation of the organization into parts that perform different functions should be tempered by the need to achieve unity of effort and collaboration among the major functional specialists in the organization. The concept of integrated systems within an organization is becoming increasingly important as external demands such as those caused by technological innovation increase. Traditionally, new technology when introduced into organizations has a significant impact on structure. The concepts and practices of organization design, although relatively new within the field of management, stress the development of a long-term plan for how the organization will be structured. With the Army undergoing a major force integration effort to include new division and corps structures, the methods and techniques associated with organization design can be most useful to senior Army leaders. Organizational Effectiveness Staff Officers are trained to assist commanders in selecting and applying methods to manage the organization design or redesign process. Their approach will be tailored to the needs of the organization and based on information obtained by a total systems approach.

Performance Management Army And The Performance Management/ Appraisal Conference

Performance Management Army (PMA) is an example of an Army-level, long-range strategic plan. The PMA process enables Army leadership to provide vision and focus for HQDA MACOMs. The broad goals and attendant objectives are the basis for policy formulation and resouce allocation. The Army plan is the document for infusing the objectives into Army policy and resource planning guidance. DA Memorandum 5-10 provides PMA policy and delineates overall responsibilities for implementation of the process. PMA is a top-down, participating approach based on the total Army goals and results-oriented objectives developed at HQDA and linked to subordinate activities through the PPBES. The Army goals form the basis for development of HQDA, MACOM, and subordinate activity objectives which, in turn, should be linked to individual objectives and articulated in current military and civilian performance appraisal systems.

Effective at all echelons, the Performance Management/Appraisal Conference (PMC) represents one way to help Army organizations and leaders with the task of developing and linking organizational goals and individual objectives. This process completes the performance criteria in support of the OER system and Civil Service Reform Act of 1978.

The logic on which the conference is built follows the mandate that supervisors clarify their requirements of a subordinate's performance at the beginning of each rating period. To do this, it is necessary to clarify and specify the expectations of individual performance and how it is expected to contribute to the organization's mission. The Performance Management Conference was designed to assist commander, staff managers and senior executives in building clarity with their subordinates at each of these levels. The PMC is an excellent departure point for organization improvement.

Management of Change

The focus of the OESO's operations is the *process* of change. The OESO has received special training to identify and determine implications and impact of change and to manage the elements of change in various organizational interfaces and contexts. Throughout the change process, the OESO will carefully monitor the effectiveness of the information flow, thereby assuring a higher probability of successful change efforts with an optimum degree of sustained results.

The managment of change focuses on the process of transitioning from the present state of an organization to a carefully-identified desired or future state of the organization. It involves:

- A detailed analysis of the present state of an organization
- A "vision" of the future state of an organization
- Development of clear, realistic goals of what has to be done to reach the future state
- An analysis of the impact of the change on all organizational subsystems
- A specific and detailed plan to provide structure for the organization during the transition state.

The steps identified above can also be applied to the process of strategic and long-range planning, although some of the details will change. Techniques, such as Program Evaluation and Review Technique (PERT), Critical Path Method (CPM), and command conferences, can also serve as catalysts for a long-term change effort in which a commander may effectively use the services of an OESO.

Conclusion

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. □

QUOTES

Make the most of yourself, for that is all there is of you. —**Ralph Waldo Emerson**

I fear explanations explanatory of things explained. —**Abraham Lincoln**

Let us never negotiate out of fear. But let us never fear to negotiate. —**John F. Kennedy**

Organization Design:
An Information Processing View

Jay R. Galbraith

The empirical research of the last fifteen years on the structure of large organizations seems to confirm the hypothesis of Herbert Simon that human cognitive limits are a basic limiting factor in determining organization structures (Simon, 1957, pp. 196-206). This observation is derived from what is called modern contingency theory. A basic premise of this theory is that the most effective method of organizing is contingent upon some attributes of the organization's environment (Lawrence and Lorsch, 1967). While current researh is devoted to discovering what these attributes are, there is a school of thought which suggests that thedegree of uncertainty is the primary attribute. This paper takes that point of view and develops an explanation as to why that is the case. In so doing, the organization design strategies for coping with cognitive limits are articulated.

Information Processing Model

The basic proposition is that the greater the uncertainty of the task, the greater the amount of information that has to be processed between decision-makers during the execution of the task. If the task is well understood prior to performing it, much of the activity can be preplanned. If it is not understood, then during the actual task execution more knowledge is acquired which leads to changes in resource allocations, schedules, and priorities. All these changes require information processing *during* task performance. Therefore, *the greater the task uncertainty, the greater the amount of information that must be processed among decision-makers during task execution in order to achieve a given level of performance.* The basic effect of uncertainty is to limit the ability of the organization to preplan or make decisions about activities in advance of their execution. Therefore, it is hypothesized that the observed variations in organizational forms are variations in organizational forms are variations in the strategies of organizations to (1) increase their ability ot preplan, (2) increase their flexibility to adapt to their inability to preplan, or (3) to decrease the level of performance required for

continued viability. Which strategy is chosen depends on the relative costs of the strategies. The function of the framework is to identify these strategies and their costs.

Mechanistic Model

The framework is best developed by keeping in mind a hypothetical organization. Assume it is large and employs a number of specialist groups and resources in providing the output. After the task has been divided into specialist subtasks, the problem is to integrate the subtasks around the completion of the global task. This is the problem of organization design. The behaviors that occur in one subtask cannot be judged as good or bad per se. The behaviors are more effective or ineffective depending upon the behaviors of the other subtask performers. There is a design problem because the executors of the behaviors cannot communicate with all the roles with whom they are interdependent. Therefore the design problem is to create mechanisms that permit coordinated action across large numbers of interdependent roles. Each of these mechanisms, however, has a limited range over which it is effective at handling the information requirements necessary to coordinate the interdependent roles. As the amount of uncertainty increases, and, therefore, information processing increases, the organization must adopt integrating mechanisms which increase its information processing capabilities.

1. Coordination by Rules or Programs

For routine predictable tasks, March and Simon have identified the use of rules or programs to coordinate behavior between interdependent subtasks (March and Simon, 1958, Chapter 6). To the extent that job-related situations can be predicted in advance, and behaviors specified for these situations, programs allow an interdependent set of activities to be performed without the need for inter-unit communications. Each role occupant simply executes the behavior which is appropriate for the task-related situation with which he is faced.

2. Hierarchy

As the organization faces greater uncertainty, its participants face situations for which they have no rules. At this point, the hierarchy is employed on an exception basis. The recurring job situations are programmed with rules while infrequent situations are referred to that level in the hierarchy where a global perspective exists for all

affected subunits. However, the hierarchy also has a limited range. As uncertainty increases, the number of exceptions increases until the hierarchy becomes overloaded.

3. Coordination by Targets or Goals

As the uncertainty of the organization's task increases, coordination increasingly takes place by specifying outputs, goals, or targets (March and Simon, 1958, p . 145). Instead of specifying specific behaviors to be enacted, the organization undertakes processes to set goals to be achieved and the employees select the behaviors which lead to goal accomplishment. Planning reduces the amount of discretion exercised at lower levels. Like the use of rules, planning achieves integrated action and also eliminates the need for continuous communication among interdependent subunits as long as task performance stays within the planned task specifications, budget limits, and targeted completion dates. If it does not, the hierarchy is again employed on an exception basis.

The ability of an organization to coordinate interdependent tasks depends on its ability to compute meaningful subgoals to guide subunit action. When uncertainty increases because of introducing new products, entering new markets, or employing new technologies, these subgoals are incorrect. The result is more exceptions, more information processing, and an overloaded hierarchy.

Design Strategies

The ability of an organization to successfully utilize coordination by goal setting, hierarchy, and rules depends on the combination of the frequency of exceptions and the capacity of the hierarchy to handle them. As the task uncertainty increases the organization must again take organization design action. It can proceed in either of two general ways. First, it can act in two ways to reduce the amount of information that is processed. And second, the organization can act in two ways to increase its capacity to handle more informa-

tion. The two methods for reducing the need for information and the two methods for increasing processing capacity are shown schematically in Figure 1. The effect of all these actions is to reduce the number of exceptional cases referred upward into the organization through hierarchical channels. The assumption is that the critical limiting factor of an organizational form is its ability to handle the nonroutine, consequential events that cannot be anticipated and planned for in advance. The nonprogrammed events place the greatest communication load on the organization.

Creation of Slack Resources

As the number of exceptions begin to overload the hierarchy, one response is to increase the planning targets so that fewer exceptions occur. For example, completion dates can be extended until the number of exceptions that occur are within the existing information-processing capacity of the organization. This has been the practice in solving job shop scheduling problems (Pounds, 1963). Job shops quote delivery times that are long enough to keep the scheduling problem within the computational and information-processing limits of the organization. Since every job shop has the same problem, standard lead times evolve in the industry. Similarly budget targets could be raised, buffer inventories employed, etc. The greater the uncertainty, the greater the magnitude of the inventory lead time or budget needed to reduce an overload.

All of these examples have a similar effect. They represent the use of slack resources to reduce the amount of interdependence between subunits (March and Simon, 1958, Cyert and March, 1963). This keeps the required amounts of information within the capacity of the organization to process it. Information processing is reduced because an exception is less likely to occur, and reduced interdependence means that fewer factors need to be considered simultaneously when an exception does occur.
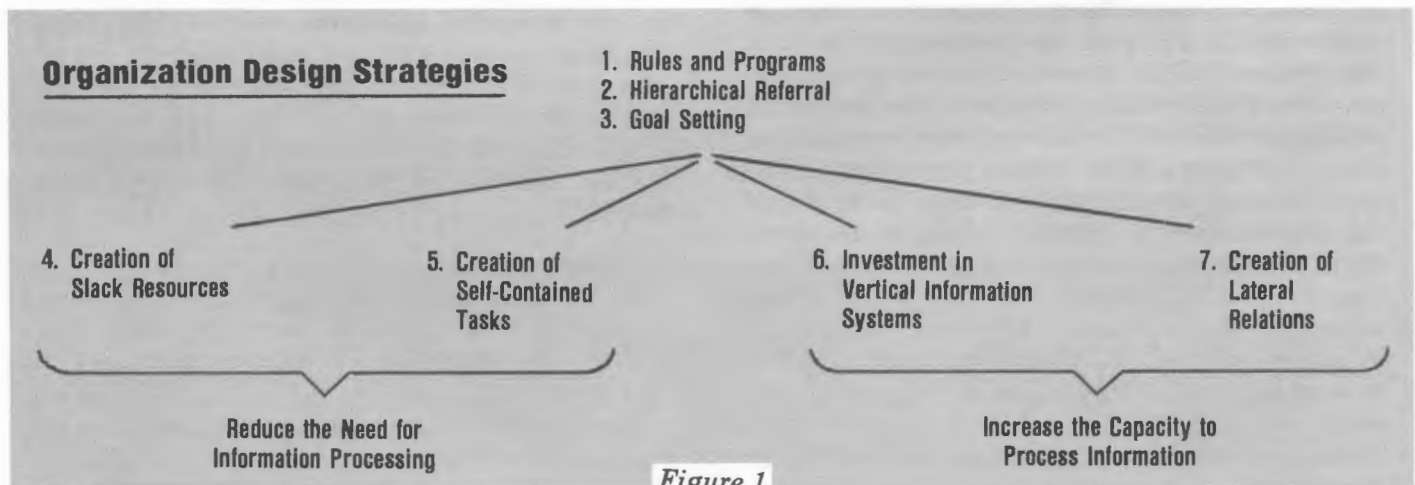

Figure 1

The strategy of using slack resources has its costs. Relaxing budget targets has the obvious cost of requiring more budget. Increasing the time to completion date has the effect of delaying the customer. Inventories require the investment of capital funds which could be used elsewhere. Reduction of design optimization reduces the performance of the article being designed. Whether slack resources are used to reduce information or not depends on the relative cost of the other alternatives.

The design choices are among which factors to change (lead time, overtime, machine utilization, etc.) to create the slack and by what amount should the factor be changed. Many operations research models are useful in choosing factors and amounts. The time-cost, trade-off problem in project networks is a good example.

Creation of Self-Contained Tasks

The second method of reducing the amount of information processed is to change the subtask groupings from resource-(input) based to output-based categories and supply each group with the resources it needs to supply the output. For example, the functional organization could be changed to product groups. Each group would have its own product engineers, process engineers, fabricating and assembly operations, and marketing activities. In other situations, groups can be created around product lines, geographical areas, projects, client groups, markets, etc., each of which would contain the input resources necessary for creation of the output.

The strategy of self-containment shifts the basis of the authority structure from one based on input, resource, skill, or occupational categories, to one based on output or geographical categories. The shift reduces the amount of information processing through several mechanisms. First, it reduces the amount of output diversity faced by a single collection of resources. For example, a professional organization with multiple skill specialties, providing service to three different client groups, must schedule the use of these specialties across three demands for their services and determine priorities when conflicts occur. But, if the organization changed to three groups, one for each client category, each with its own full complement of specialties, the scheduled conflicts across client groups disappears and there is no need to process information to determine priorities.

The second source of information reduction occurs through a reduced division of labor. The functional or resource specialized structure pools the demand for skills across all output categories. In the example above, each client generates approximately one-third of the demand for each skill. Since the division of labor is limited by the extent of the market, the division of labor must

decrease as the demand decreases. In the professional organization, each client group may have generated a need for one-third of a computer programmer. The functional organization would have hired one programmer and shared him across the groups. In the self-contained structure, there is insufficient demand in each group for a programmer—so the professionals must do their own programming. Specialization is reduced, but there is no problem of scheduling the programmer's time across the three possible uses for it.

The cost of the self-containment strategy is the loss of resource specialization. In the example, the organization foregoes the benefit of a specialist in computer programming. If there is physical equipment, there is a loss of economies of scale. The professional organization would require three machines in the self-contained form but only one large time-shared machine in the functional form. But those resources which have large economies of scale or for which specialization is necessary may remain centralized. Thus, it is the degree of self-containment that is the variable. The greater the degree of uncertainty, other things equal, the greater the degree of self-containment.

The design choices are the basis for the self-contained structure and the number of resources to be contained in the groups. No groups are completely self-contained or they would not be part of the same organization. But one product divisionalized firm may have eight of fifteen functions in the divisions while another may have twelve of fifteen in the divisions. Usually accounting, finance, and legal services are centralized and shared. Those functions which have economies of scale, require specialization, or are necessary for control, remain centralized and not part of the self-contained group.

The first two strategies reduced the amount of information by lowering performance standards and creating small autonomous groups to provide the output. Information is reduced because an exception is less likely to occur and fewer factors need to be considered when an exception does occur. The next two strategies accept the performance standards and division of labor as given, and adapt the organization so as to process the new information which is created during task performance.

Investment in Vertical Information Systems

The organization can invest in mechanisms which allow it to process information acquired during task performance without overloading the hierarchical communication channels. The investment occurs according to the following logic. After the organization has created its plan or set of targets for inventories, labor utilization, budgets, and schedules, unanticipated events occur which generate exceptions requiring adjustments to the

original plan. At some point, when the number of exceptions becomes substantial, it is preferable to generate a new plan rather than make incremental changes with each exception. The issue then is how frequently should plans be revised—yearly, quarterly, or monthly? The greater the frequency of replanning, the greater the resources—such as clerks, computer time, input-output devices, etc.—required to process information about relevant factors.

The cost of information-processing resources can be minimized if the language is formalized. Formalization of a decision-making language simply means that more information is transmitted with the same number of symbols. It is assumed that information-processing resources are consumed in proportion to the number of symbols transmitted. The accounting system is an example of a formalized language.

Providing more information, more often, may simply overload the decision-maker. Investment may be required to increase the capacity of the decision-maker by employing computers, various man-machine combinations, assistants-to, etc. The cost of this strategy is the cost of the information-processing resources consumed in transmitting and processing the data.

The design variables of this strategy are the decision frequency, the degree of formalization of language, and the type of decision mechanism which will make the choice. This strategy is usually operationalized by creating redundant information channels which transmit data from the point of origination upward in the hierarchy where the point of decision rests. If the relevant data are qualitative and ambiguous, then it may prove easier to bring the decisions down to where the information exists.

Creation of Lateral Relationships

The last strategy is to selectively employ joint decision processes which cut across lines of authority. This strategy moves the level of decision-making down in the organization to where the information exists but does so without reorganizing around self-contained groups. There are several types of lateral decision processes. Some processes are usually referred to as the informal organization. However, these informal processes do not always arise spontaneously out of the needs of the task. This is particularly true in multi-national organizations in which participants are separated by physical barriers, language differences, and cultural differences. Under these circumstances, lateral processes need to be designed. The lateral processes evolve as follows with increases in uncertainty.

1. Direct Contact. This contact can be between managers who share a problem. If a problem arises on the shop floor, the foreman can simply call the design engineer and they can jointly agree upon a solution. From an information-processing view, the joint decision prevents an upward referral and unloads the hierarchy.

2. Liaison Roles. When the volume of contacts between any two departments grows, it becomes economical to set up a specialized role to handle this communication. Liaison men are typical examples of specialized roles designed to facilitate communication between two interdependent departments and to bypass the long lines of communication involved in upward referral. Liaison roles arise at lower and middle levels of management.

3. Task Forces. Along with direct contact and liaison roles—like the integration mechanisms before them—task forces have a limited range of usefulness. They work when two managers or functions are involved. When problems arise involving seven or eight departments, the decision-making capacity of direct contacts is exceeded. Then these problems must be referred upward. For uncertain, interdependent tasks, such situations arise frequently. Task forces are a form of horizontal contact which is designed for problems of multiple departments.

The task force is made up of representatives from each of the affected departments. Some are full-time members; others may be part-time. The task force is a temporary group. It exists only as long as the problem remains. When a solution is reached each participant returns to his normal tasks.

To the extent that they are successful, task forces remove problems from higher levels of the hierarchy. The decisions are made at lower levels in the organization. In order to guarantee integration, a group problem-solving approach is taken. Each affected subunit contributes a member and, therefore, provides the information necessary to judge the impact on all units.

4. Teams. The next extension is to incorporate the group decision process into the permanent decision processes. That is, as certain decisions consistently arise, the task forces become permanent. These groups are labeled teams. There are many design issues concerned in team decision making such as at what level do they operate, who participates, etc. (See Galbraith, 1973, Chapters 6 and 7). One design decision is particularly critical. This is the choice of leadership. Sometimes a problem exists largely in one department so that the department manager is the leader. Sometimes the leadership passes from one manager to another. As a new product moves to the marketplace, the leader of the new product team is first the technical manager followed by the production and then the marketing manager. The

result is that if the team cannot reach a consensus decision and the leader decides, the goals of the leader are consistent with the goals of the organization for the decision in question. But quite often obvious leaders cannot be found. Another mechanism must be introduced.

5. Integrating Roles. The leadership issue is solved by creating a new role—an integrating role (Lawrence and Lorsch, 1967, Chapter 3). These roles carry the labels of product managers, unit managers (hopitals), materials managers, etc. After the role is created, the design problem is to create enough power in the role to influence the decision process. These roles have power even when no one reports directly to them. They have some power because they report to the general manager. But if they are selected so as to be unbiased with respect to the groups they integrate and to have technical competence, they have expert power. They collect information and equalize power differences due to preferential access to knowledge and information. The power equalization increases trust and the quality of the joint decision process. But power equalization occurs only if the integrating role is staffed with someone who can exercise expert power in the form of persuasion and informal influences rather than exert the power of rank or authority.

6. Managerial Linking Roles. As tasks become more uncertain, it is more difficult to exercise expert power. The role must get more power of the formal authority type in order to be effective at coordinating the joint decisions which occur at lower levels of the organization. This position power changes the nature of the role which for lack of a better name is labeled a managerial-linking role. It is not like the integrating role, because it possesses formal position power but is different from line managerial roles in that participants do not report to the linking manager. The power is added by the following successive changes:

a) The integrator receives approval power of budgets formulated in the departments to be integrated.

b) The planning and budgeting process starts with the integrator making his initiation in budgeting legitimate.

c) The linking manager receives the budget for the area of responsibility and buys resources from the specialist groups.

These mechanisms permit the manager to exercise influence even though no one works directly for him. The role is concerned with integration but exercises power through the formal power of the position. If this power is insufficient to integrate the subtasks and creation of self-contained groups is not feasible, there is one last step.

7. Matrix Organization. The last step is to create the dual authority relationship and the matrix organization (Galbraith, 1971). At some point in the organization, some roles have two superiors. The design issue is to select the locus of these roles. The result is a balance of power between the managerial-linking roles and the normal-line organization roles. Figure 2 depicts the pure matrix design.
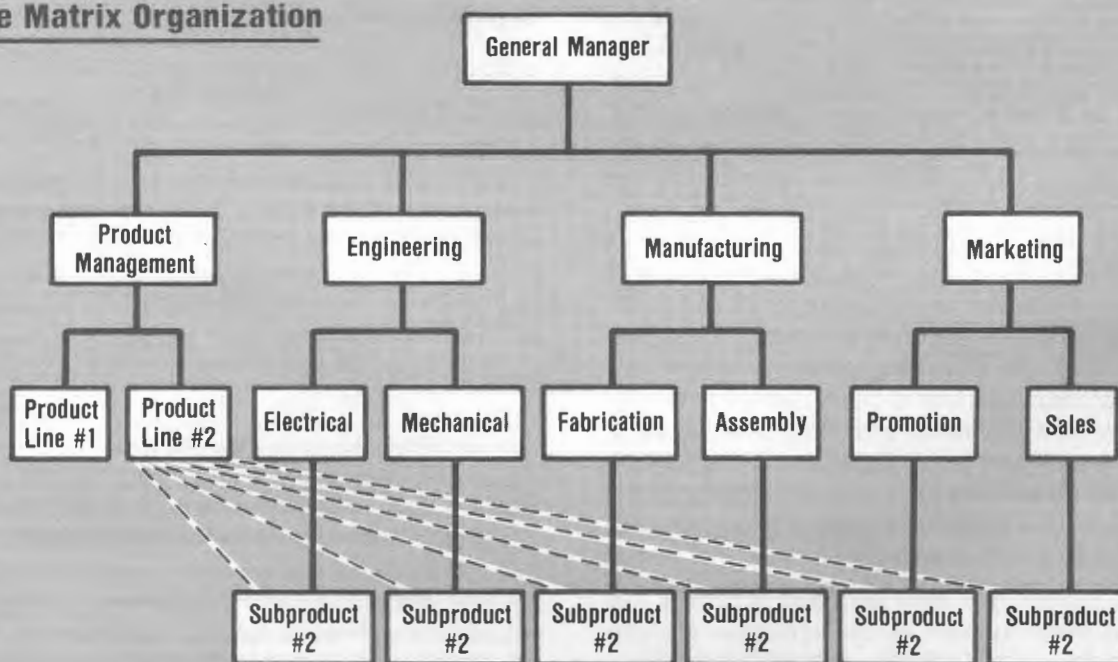

Figure 2

The work of Lawrence and Lorsch is highly consistent with the assertions concerning lateral relations (Lawrence and Lorsch, 1967, Lorsch and Lawrence, 1968). They compared the types of lateral relations undertaken by the most successful firm in three different industries. Their data are summarized in Table 1. The plastics firm has the greatest rate of new product introduction (uncertainty) and the greatest utilization of lateral processes. The container firm was also very successful but utilized only standard practices because its information-processing task is much less formidable. Thus, the greater the uncertainty, the lower the level of decision making and the integration is maintained by lateral relations.

Table 1 points out the cost of using lateral relations. The plastics firm has 22 roles. Thus, the greater the use of lateral relations, the greater the managerial intensity. This cost must be balanced against the cost of slack resources, self-contained groups, and information systems.

Choice of Strategy

Each of the four strategies has been briefly presented. The organization can follow one or some combination of several if it chooses. It will choose that strategy which has the least cost in its environmental context. (For an example, see Galbraith, 1970.) However, what may be lost in all of the explanations is that the four strategies are hypothesized to be an exhaustive set of alternatives. That is, if the organization is faced with greater uncertainty due to technological change, higher performance standards due to increased competition, or diversifies its product line to reduce dependence, the amount of information processing is increased. *The organization must adopt at least one of the four strategies when faced with greater uncertainty.* If it does not consciously choose one of the four, then the first, reduced performance standards, will happen automatically. The task information requirements and the capacity of the organization to process information are always matched. If the organization does not consciously match them, reduced performance through budget overruns, schedule overruns will occur in order to bring about equality. Thus, the organization should be planned and designed simultaneously with the planning of the strategy and resource allocations. But if the strategy involves introducing new products, entering new markets, etc., then some provision for increased information must be made. Not to decide is to decide, and it is to decide upon slack resources as the strategy to remove hierarchical overload.

There is probably a fifth strategy which is not articulated here. Instead of changing the organization in response to task uncertainty, the organization can operate on its environment to reduce uncertainty. The organization, through strategic

Table 1

	Plastics	Food	Container
% new products in last ten years	35%	20%	0%
Integrating Devices	Rules	Rules	Rules
	Hierarchy	Hierarchy	Hierarchy
	Planning	Planning	Planning
	Direct Contact	Direct Contact	Direct Contact
	Teams at 3 levels	Task forces	
	Integrating Dept.	Integrators	
% Integrators/ Managers	22%	17%	0%

(Adopted from Lawrence and Lorsch. 1967, pp. 86-138 and Lorsch and Lawrence. 1958.)

decisions, long-term contracts, coalitions, etc., can control its environment. But these maneuvers have costs also. They should be compared with costs of the four design strategies presented above.

Summary

The purpose of this paper has been to explain why task uncertainty is related to organizational form. In so doing, the cognitive limits theory of Hubert Simon was the guiding influence. As the consequences of cognitive limits were traced through the framework, various organizational design strategies were articulated. The framework provides a basis for integrating organizational interventions, such as information systems and group problem solving, which have been treated separately before.

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New Management Job: The Integrator

Paul R. Lawrence and Jay W. Lorsch

**Study findings provide clues for managers on how to achieve
a unified effort in complex R&D-intensive organizations**

Foreword

While the advances of science and technology are increasing the tempo of change in some complex business organizations, the requirments for regularity and standardization remain in others. This continuously increases the need both for greater specialization (differentiation) and for tighter coordination (integration). However, complications arise, since these two needs are essentially antagonistic, and one can usually be achieved only at the expense of the other. In this article, the authors report on a comparative study of ten organizations in three industries. Their findings point to the emergence of a new management function to help achieve high differentiation and high integration simultaneously. Paul R. Lawrence is Professor and Area Chairman of Organizational Behavior at the Harvard Business School. Jay W. Lorsch is Associate Professor of Organizational Behavior at HBS. They are the coauthors of *Organization and Environment: Managing Differentiation and Integration* (Division of Research, HBS, 1967).

W hat will be new and unique about organizational structures and management practices of business enterprises that are their industries' competitive leaders a decade from now? Because of the rapid rate of market and technological change, with the accompanying strains and stresses on existing organizational forms, managers are becoming increasingly concerned with the difficulty of reconciling the need for specialization with the need for integration of effort.

Consequently, the purpose here is to explore this problem and to suggest that one of the critical organizational innovations will be the establishment of management positions, and even formal departments, charged with the task of achieving integration. Moreover, the integrative function will be on a par with such traditional functions as production, sales, research, and others.

That may seem to be a startling statement particularly since we know of no organization which has yet established a department—even a small one—formally labeled "integration."

However, before we can evaluate our prediction, we first need to define what we mean by the term *integration*. As used in this article integration is the achievement of unity of effort among the major functional specialists in a business. The integrator's role involves handling the nonroutine, unprogrammed problems that arise among the traditional functions as each strives to do its own job. It involves resolving interdepartmental conflicts and facilitating decisions, including not only such major decisions as large capital investment, but also the thousands of smaller ones regarding product features, quality standards, output, cost targets, schedules, and so on. Our definition reads much like the customary job description of any company general manager or divisional manager who has "line" authority over all the major functional departments.

Although the need for organizational integration is not new, the traditional method of using the "shared boss" as the integrator is rapidly breaking down, and a radically new approach is becoming necessary. The increasingly dynamic nature of many organizational environments is making the integrating job so important and so complex that it cannot be handled by a single general manager, no matter how capable he may be.

Substance can be added to our definition of integration by identifying some of the diverse titles under which this activity is currently being performed. In recent years there has been a rapid proliferation of such roles as product manager, branch manager, program coordinator, project leader, business manager, planning director, systems designer, task force chairman, and so forth. The fine print in the descriptions of these various management positions almost invariably describes the core functions as that of integration, as we define it.

These new integrative assignments are joining some older ones, such as those carried on by production control people in resolving schedule conflicts between production and sales, and by budget officers in addressing interdepartmental conflicts around the allocation of capital and operating funds.

The emergence of these integrating jobs in considerable numbers now makes it practical to turn the spotlight of systematic research on them to

learn how to manage them effectively. This article largely reports on the findings from our recent study, which answer four key questions about the management of the integrating function:

1. *How should integrators be oriented and motivated?*

2. *What patterns of conflict resolution and influence should they employ?*

3. *What authority should they have, and how do they get it?*

4. *Who are the most qualified people for these positions?*

To find answers to these questions, we have identified the characteristics of both the organizations and the people who are performing the integration task more effectively than others.[1] But before turning directly to these questions, we first want to shed more light on the reasons for the present emergence of the integrative functions.

Emerging Need

When modern large-scale corporations appeared in considerable numbers in the first two decades of this century, they developed around such basic production technologies as oil-refining, iron-steel conversion, and automobile assembly. At first, engineers and other production specialists played a dominant role. Since the very productivity of these firms generated a need for a predictable and controllable distribution system, in the 1920's and 1930's marketing experts came to the fore. Channels of distribution were built up in each industry, and the entire mix of product design, promotion, advertising, pricing, and so on, was elaborated. The boundaries between industries were still relatively clear, and the markets were reasonably predictable.

However, once the efforts of the depression abated, the very success of the marketers helped provide consumers with an abundance of standard products that led to a demand for product differentiation. This demand, combined with the stimulus of the post-World War II period, force-fed the widespread emergence in the late 1940's and 1950's of research and development as a major industrial function.

Crucial Activity

Industrial R&D technology has already broken down the existing boundaries between industries. Once-stable markets and distribution channels are now in a state of flux. Product differentiation has parlayed into a welter of choices at every stage of the sequence from basic raw materials to ultimate consumer items. The industrial environment is turbulent and increasingly difficult to predict.

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[1]For a complete report of our study, see *Organization and Environment* (Division of Research, Harvard Business School, 1967).

Many complex facts about markets, production methods and costs, and scientific potentials for product and process improvement are relevant to investment decisions about these myriad product varieties.

All of these factors have combined to produce a king-size managerial headache: there are just too many crucial decisions to have them all processed and resolved through the regular line hierarchy at the top of the organization; they must be integrated in some other way.

The current importance of R&D groups in modern organizations is making the integrator's role crucial for another reason. Research has introduced into the corporation an entirely new set of people—namely, the scientists—who have their own unique way of being productive. They are specialist who work by a different clock and in a different style from hard-nosed production managers or outward-oriented sales managers. Management has learned, by and large, that these differences are necessary if each type of specialist is to do his job well. But, as these specialists diverge in their working styles, it becomes increasingly difficult to achieve the necessary integration. New roles have to be introduced to get the integration job done. Company after company is committing more and more managerial manpower, under any guise or rubric, to achieve collaboration between highly specilized people spread throughout all organizational functions and levels.

Survey Findings

To this point in the discussion, we have demonstrated that integrative roles are needed and are being developed in many companies. In fact, our study of ten organizations in three distinctly different industries—plastics, consumer foods, and containers—provides dramatic evidence of the importance of effective integration in any industry. This is because our research reveals a close correlation between the effectiveness of integration among functional departments and company growth and profits. However, separate integrating roles or departments are not the solution for all organizations. While formal integrative roles are highly important in R&D-intensive industries, such as plastics and consumer food products, in a comparatively stable industry, such as containers, integration can often be achieved through the management hierarchy.

The important point is that in the future more organizations will be operating in rapidly changing environments, and the problem for managers will be to make certain that this integrative function is effectively carried out. In order to do this, they will need to learn how to select, train, organize, supervise, and control these new integrators.

Organization Structure

Two questions arise when we think of designing the structure of the organization to facilitate the work of integrators:

1. *Is it better to establish a formal integration department, or simply to set up integrating positions independent of one another?*

2. *If individual integrating positions are set up, how should they be related to the large structure?*

In considering these issues it should first be pointed out that if an organization needs integrators at all, it is preferable to legitimize these roles by formal titles and missions rather than to leave them in an informal status. We derive the primary evidence on this point from an intensive study of an electronics company, where the limitations of using informal integrators are clearly revealed.[2] This research demonstrates that the effectiveness of the informal integrators is severely circumscribed when it comes to dealing with difficult interdepartmental relationships. Consider:

- In this organization the boundaries between the production and engineering departments were not well established, and there was intense competition and conflict between these two groups. The informal integrators were unable to achieve effective collaboration, at least in part because their roles were not clearly defined. Therefore, their integrative attempts were often seen as inappropriate infringements on the domains of other departments.

For example, an engineering supervisor, whose own inclinations and interests led him to play a coordinating role between the two departments, was frequently rebuffed by the production personnel because he was seen as intruding into their activities. Without a clearly defined role, his integration efforts were limited to exchanging information across the interface of the two departments.

These data indicate that the more intense the problem of interdepartmental collaboration is, the more need there is for the integrative roles to be formally identified so that such activities are seen as legitimate.

The question of whether to establish independent integrative roles or to create a formal department is illuminated to a considerable extent by our data. Consider:

- In the plastics industry, which has the fastest rate of technical change of the three industries we studied, the basic departments (production, sales, and research) are the most highly specialized and differentiated. Five of the six plastics companies studied, including the one

with the best integration record, have what could be called "full-scale integrating departments," although they are not formally labeled as such. (See *Exhibit 1* for suggested structural solutions to the integration problem.)

- In the consumer foods industry, which has both a medium rate of technical change and a medium degree of difference between basic departments, one of the two companies studied uses a full-scale "integrating department;" the other—with the better integration record—simply utilizes a set of scattered integration roles.

Exhibit 1

Structural Solutions To The Organizational Integration Problem
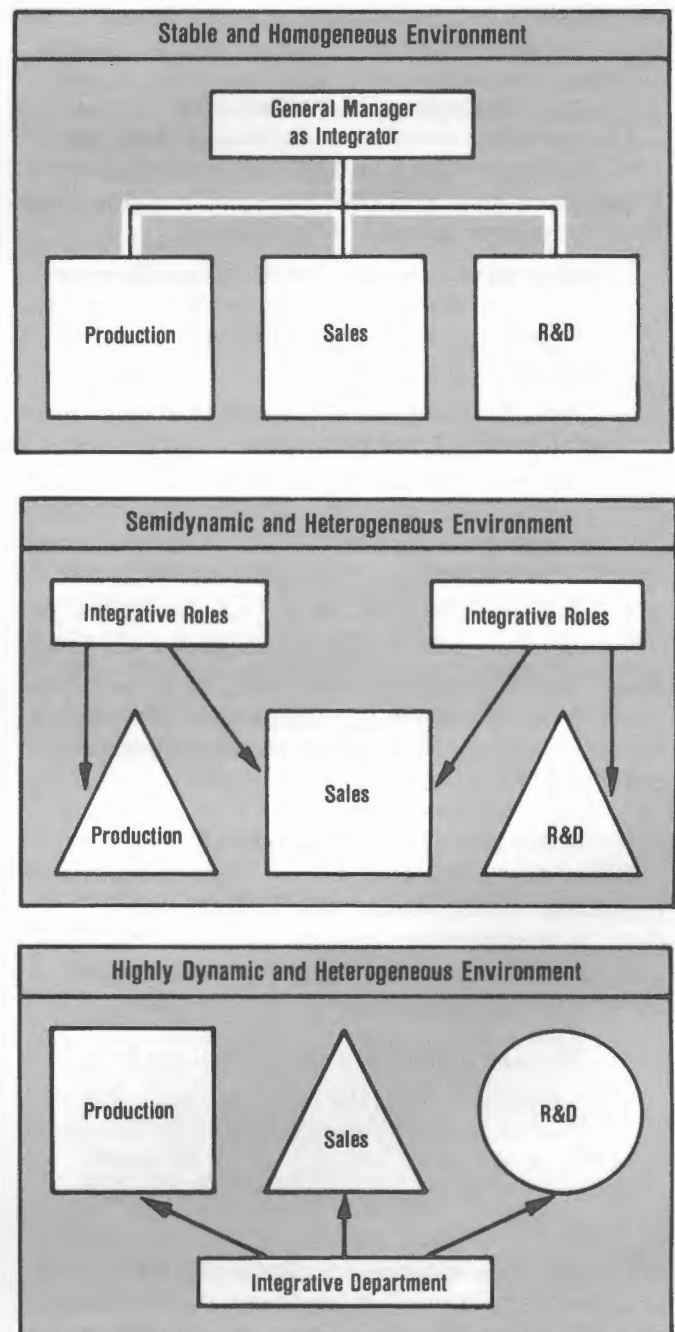
[2]Unpublished study conducted by John Seiler and Robert Katz for the Division of Research, Harvard Business School.

• The container industry has the most stable technology, and thus only slight differences are acceptable between basic departments. In this industry the company with the best integration record has no formal integrators of any kind; it relies entirely on its regular line organization to do the coordinating. By contrast, a second container company, employing a full-fledged integrating department, has experienced considerable integrating difficulties. This suggests not only that the department is redundant, but that it actually impedes the coordination process.

All of this evidence indicates that the elaborateness of the integrating function should vary both with the complexity of the problems and with the size of the gap that specialization creates between the basic departments. Moreover, management should keep in mind that it is possible to get too many integrators into the act as well as too few.

Behavior Characteristics

Our research enables us to identify four important characteristics about the behavior of effective integrators, as well as the organizational practices that contribute to their effectiveness:

1. Integrators need to be seen as contributing to important decisions on the basis of their competence and knowledge, rather than on their positional authority.

2. Integrators must have balanced orientations and behavior patterns.

3. Integrators need to feel they are being rewarded for their total product responsibility, not solely on the basis of their performance as individuals.

4. Integrators must have a capacity for resolving interdepartmental conflicts and disputes.

Since these findings offer some important prescriptions about the behavior of effective integrators, let us examine each of these characteristics more closely.

Decision Contribution

One of the major and most frequently expressed dilemmas facing managers in integrating positions is whether they are able to contribute to important decisions. An integrator interviewed in our study expressed this common concern:

> "My key frustration is that I do not have the authority over the people I must deal with. I cannot yell at the research guy. I have to try to influence him by being persuasive. My major tool is strictly my personality."

Although this integrator, like many of his colleagues, complains that he does not have formal authority over the other groups with whom he works, our measures of actual influence on decisions in the organizations studied indicate that all integrators, except for those in the less well-integrated container company, have a larger voice in interdepartmental decisions than their peers in functional departments. And their influence is essential in industries requiring highly specialized and well-integrated organizations, where the integrator must often initiate activities for managers in other departments.

Personal competence: There is another important factor related to influence that distinguishes the integrators in effective organizations from those in less effective ones. In the more effective, the integrators are influential because of their knowledge and expertise, while in less effective organizations they are influential only because of the formal authority of their positions.

In the well-integrated organizations, the functional managers described the influence of the integrators (although, again, they did not always call them integrators) in comments such as these:

> "He [the integrator] has a powerful job if he can get the people to work for him. A good man in that job has everybody's ear open to him. A good coordinator has to be thoroughly oriented to his market or to his process. Whichever area he is working in, he has to be able to make good value judgments."

> "They [the integrators] are the kingpins. They have a good feel for our [research] ability, and they know the needs of the market. They will work back and forth with us and the others."

> "They [the integrators] are on the border of research, so we work closely together. They are just a step away from the customer, so when I make a change in a material, I let them know, because they may have a customer who can use it. The good thing about our situation is that they are close enough to sales to know what they are doing and close enough to research to know what we are doing."

These and similar comments indicate that the managers in effectively integrated organizations view the integrators as persons who have knowledge of and expertise in solving organizational problems. This personal competence appears to be the foundation on which their large voice in interdepartmental decisions rests.

Positional power: In the organizations that were having difficulty in achieveing integration, the tone of the functional managers' commentaries on the influence of the integrators was quite different:

30

"We [in research] have to go by what they [the integrators] say. They have the upper hand. And if we can't get their approval, we have to shut up."

"Nobody wants to pull the wool over his [the integrator's] eyes, since he reports to the general manager. That would be disastrous ... I don't think anybody could be in that role and have many friends. You have to be too aggressive."

"He [the integrator] is supposed to know the field, and he may think our product isn't any good. This is fine if you have confidence in him, but we have had bad experiences with some of them. As the knowledge of chemistry grows, his [the integrator's] knowledge of the market must grow. I guess I would appraise the situation this way: just because they [the integrators] have had twenty years' experience doesn't mean they have twenty years of knowledge."

Comments like these suggest that the integrators in organizations having integration problems were influential only because of the formal authority given to them by the top management and because of their proximity to top management. Other responses stressed that generally the integrators in these companies were considered less knowledgeable about industry conditions. Moreover, the specialist managers frequently volunteered disparaging remarks about the integrators' abilities and knowledge.

Other factors: In planning for these integrating positions, attention must be given to placing them at levels in the organization where the incumbents will have ready access to the knowledge and information relevant to decisions. In the well-integrated organizations we studied, for example, this level was usually at the middle of the management hierarchy. Since these organizations were in dynamic, rapidly changing industries where knowledge was complex and uncertain, only those middle managers with specific problem experience had been able to master the required knowledge.

If the integrator selected has had prior work experience in two or more of the several functional departments, the specialist managers will regard him as competent because of the knowledge that his experience has provided. While persons with these ideal qualifications may be extremely scarce, it is important to recognize the necessity of finding integrators with broad knowledge to fill these crucial positions. One common failing of the less well-integrated organizations is their tendancy to assign young managers lacking sufficient experience in all facets of the business to these positions. Although this may provide a useful learning experience for the young managers, our evidence suggests that it really does not lead to effective integration.

Balanced Orientation

The second important characteristic of effective integrators is that their orientations and ways of thinking strike a good balance between the extremes of the members of the specilized departments whose efforts they are integrating. For instance, our study shows that:

- Research scientists think about long-term projects and issues and about solutions to scientific and technical problems.

- Production managers and engineers, on the other hand, are concerned with shorter term problems, especially those that relate to an efficient and timely plant operation.

- Sales personnel are also concerned with shorter term issues, but for them the important problems are those that deal with the market— that is, how to meet sales objectives, what to do about competitors' product changes, what characteristics a new product must have to meet the needs of customers, and so forth.

These differences in ways of thinking are, of course, part of what makes it difficult for these groups to collaborate effectively.

The fact that the effective integrators have balanced orientations means that they share more ways of thinking and more behavior patterns with the functional managers than those managers normally do with each other. In a sense, effective integrators speak the language of each of the specialist groups, and thus they are able to work at resolving interdepartmental conflicts. When integrators do not have balanced orientations, their ability to facilitate joint decision making between functional managers suffers. For example:

- In several of the organizations studied the integrators did not have a balanced time orientation. Typically, because they were overly concerned with immediate, short-term problems, it was difficult for them to work effectively with the more long-term-oriented scientists. Several comments from the scientists illustrate this difficulty:

"I am no coordinator, but I can see that one of our troubles is that the [integrative] people are so tied up in day-to-day matters they can't look to the future. They are still concerned with 1967 materials when they should be concerned with 1968 markets."

"We get lots of reports from them [the integrators] and we talk to them frequently. The trouble is that all they present to us [in research] are the short-term needs. These aren't the long-range things we are interested in."

"They [the integrators] only find out about problems when they learn that somebody has quit buying our material and is buying somebody else's, and this keeps you on the defense. A lot of our work is catch-up. We would like more future-oriented work from them."

Similarly, there were complaints from production and research personnel when the integrators were so preoccupied with marketing problems that they did not seem to understand technical or production issues:

"Our relations with them [integrators] are good, but not as good as with research. They are not as cost conscious as the laboratory men. They are concerned with the customer."

"He [the integrator] is under a lot of pressure to work with the salesmen on existing products. What he sould be, and often tries to act like, is a liaison person, but in reality he is not. He is too concerned with sales problems."

Our research also reveals that effective integrators tend to use an interpersonal style of behavior that falls between the two characteristic behavior orientations of specialized departments. At one extreme, sales personnel are most concerned with maintaining sound personal relationships with their colleagues in other departments. At the other extreme, production managers (and research scientists to a lesser extent) are primarily concerned with getting on with the job, even if this causes the disruption of some established relationships. Our evidence indicates that, to be effective, an integrator needs to think and act in ways which evenly balance the highly social and the highly task-oriented behavior patterns of the units he is attempting to link.

Our research further reveals that entire integrating departments are much more effective when they are intermediate in their degree of structure in relation to the specialized departments they are linking. To analyze the formalization of structure, we examined the degree to which formal rules are utilized, the average span of control, the frequency and specificity of both departmental and individual performance reviews, and the number of levels in the hierarchy.

We found, for example, that most of the formally integrated companies were in an industry where specialized departments had to develop distinctly different organizational practices to perform their respective tasks. Thus, at one extreme, the production units needed highly formalized organizational practices to perform their more routinized tasks. At the other extreme, researchers with problem-solving tasks were more effective in units that had less formalized structures. Between these extremes,

the sales personnel operated most effectively with intermediate organizational practices.

When the integrators worked within an immediate structure, they developed behavior patterns not too unlike those of the different specialists they were linking, and thus they were able to work effectively with all of them.

While our data on the need for intermediate orientations and structures are drawn from our study of integrators attempting to link research, sales, and production units, the same conclusions would seem to hold for integrators linking other functional units.

Performance Recognition

The third important characteristic of effective integrators is the basis on which they see themselves being evaluated and rewarded. For example, in organizations where the integrators were highly effective, they reported that the most important basis for their superior's evaluation was the overall performance of the products on which they were working. Where the integrators were less effective, the superior's evaluation was more on the basis of their individual performance.

This indicates that if integrators are to perform effectively in coordinating the many factors of complex decisions, they need to feel they are being evaluated and rewarded for the total results of their efforts. When they feel they are judged only on the basis of their performance as individuals, they may become so concerned with making decisions to please their supervisors or to avoid rocking the boat that they will easily overlook what is desirable from the point of view of their total product responsibility.

Conflict Resolution

The final characteristic of effective integrators is the mode of behavior they utilize to resolve interdepartmental conflict. It seems inevitable that such conflicts will arise in any complex organization from time to time. So, rather than being concerned with the essentially impossible goal of preventing conflict, we are more interested in finding ways for integrators and their colleagues to handle it. Our analysis identified three modes of behavior for resolving conflict.

Confrontation technique: The first method, *confrontation,* involves placing all relevant factors before the disputants and then discussing the basis of disagreement until some alternative is found that provides the best solution for the total organization. Confrontation often involves extended discussion. Consider this typical comment from a manager who utilizes this technique:

"Our problems get thrashed out in our committee, at our level. We work them over until everybody agrees this is the best effort we can make. We may decide this

32

isn't good enough. Then we may decide to ask for more plant, more people, or something else. We all have to be realistic and take a modification sometimes, and say this is the best we can do."

Smoothing approach: The second technique for dealing with conflict, *smoothing,* essentially emphasizes the maintenance of friendly relations and avoids conflict as a danger that could disrupt these relations. Managers using this approach are, in effect, indicating anxiety about facing the consequences of their conflicting points of view. Such action, they feel, might not only threaten their continuing friendly relations, but even their jobs. So they smooth over their differences, perhaps by using superficial banter and kidding, and thus sidestep conflict. One manager described this method as follows:

> "I said what I thought in the meeting, but it didn't bother anybody. Perhaps I should have been harsher. I could have said, 'I won't do it unless you do it my way.' If I had said this, they couldn't have backed off. I guess I didn't have the guts to push it that far because our relations are wonderful. We are friendly and happy as larks. We kid one another and go about our business. I've never run into more cooperative people. I think they think I am cooperative too, but nothing happens."

Forcing method: The final approach, *forcing,* entails the straight forward use of power in resolving conflict. The disputing parties bring to bear whatever power or influence they have to achieve a resolution favoring their own point of view. This mode of behavior often results in a "win-lose" struggle. Unfortunately, it is often the objectives of the total organization that suffer the greatest loss. One manager described how he and his colleagues sometimes force the decisions they desire:

> "We have lots of meetings that consist of only two members of our four-man team. They get together and discuss things because they think the other two members won't agree. Then, they try to force their decision on the others. Well, this obviously isn't acting as a team. It's our weak spot."

Our data indicate that there is a close relationship between the effectiveness of integration in an organization and the reliance of its members on confrontation as a way to resolve interdepartmental conflict.

While confrontation showed up as a common mode of resolving conflict in all of the ten organizations we studied, the integrators and functional managers in the six most effectively integrated organizations did significantly more confronting of conflict than their counterparts in the

four less well-integrated organizations. Similarly, the managers and integrators in the two organizations that had achieved a medium degree of integration were confronting conflict more often than the managers in the least effectively integrated organizations.

There is one other point worth considering: in the highly integrated organizations, we also found that the functional managers were using more forcing, and/or less smoothing, behavior than their counterparts in the less effective organizations. This suggests that, while confrontation of conflict must be the primary basis for resolving interdepartmental issues, it is also important to have a backup mode of some forcing behavior to ensure that the issue will at least be addressed and discussed, and not avoided.

Personality Traits

The foregoing findings offer some significant clues about the behavior of effective integrators, but they leave unanswered one important question: What type of person makes an effective integrator? It is important, as we suggested earlier, that effective integrators have a combination of broad work experience and education. But it is also important that they have certain personality traits.

Underlying Motives

To learn about these predispositions, an exploratory study was made of nearly 20 integrators in one company, half of whom were highly effective in the judgment of their superiors and half of whom were less so.[3] Specifically, we were interested in measuring their underlying motives and preferred behavioral styles.

Affiliation need: Looking first at underlying motives, we find that the only significant difference between the highly effective integrators and their less effective colleagues is in the *need for affiliation.* The effective integrators are higher in this need than their less effective associates—that is, they pay more attention to others and to their feelings; they try harder to establish friendly relationships in meetings; and they take on more assignments that offer opportunities for interaction.

Achievement need: There is no statistically significant difference between effective and less effective integrators, or between effective integrators and functional managers, in the *need for achievement* motive. However, there is a tendency for effective integrators to be slightly lower in this motive than less effective integrators. This is worth pointing out, even though the difference is not large, because it seems to run counter to the

findings of several managerial studies, which report that managers with a higher need for achievement generally tend to be more successful.[4]

Our exploratory research suggests that to be effective, integrators must have achievement needs that are near the norm of managers in general, but are not especially high. On the one hand, integrators should set high personal goals, do well in competitive situations, have an entrepreneurial view of work, and seek managerial positions of high responsibility. But, on the other hand, they should not be any higher in their need for achievement than the average manager in the organization. In fact, if integrators are too high in this motive, it may reduce their effectiveness in achieving collaboration and resolving conflict, perhaps because they will see interdepartmental conflict as a competitive rather than a collaborative challenge.

Power need: Both effective and less effective integrators are very similar in their *need for power* and are also close to the norm of managers in general. While we cannot distinguish between the two sets of integrators on this dimension, we can at least conclude that effective integrators *should* try to influence others by persuasive arguments or by taking leadership roles in group activities. In addition, they *should* aspire to managerial positions that allow exercise of power, influence and control.

Preferred Styles

In addition to measuring the integrators' motives, their preferred behavioral styles were investigated, with certain interesting results:

- Effective integrators prefer to take significantly more initiative and leadership; they are aggressive, confident, persuasive, and verbally fluent. In contrast, less effective integrators are retiring, inhibited, and silent, and they avoid situations that involve tension and decisions.

- Effective integrators seek status to a greater extent; they are ambitious, active, forceful, effective in communications, and have personal scope and breadth of interests. Less effective integrators are restricted in outlook and interests, and are uneasy and awkward in new or unfamiliar social situations.

- Effective integrators have significantly more social poise; they are more clever, enthusiastic, imaginative, spontaneous, and talkative. Less effective integrators are more deliberate, moderate, and patient.

- Effective integrators prefer more flexible ways of acting; they are adventurous, humorous, and assertive. Less effective integrators are more industrious, guarded, methodical, and rigid.

We should stress one point about these personality traits of effective integrators compared with managers in general. In other managerial studies, as indicated earlier, high need for achievement has been associated with success. Furthermore, this drive for achievement has led to the behavioral styles of initiative leadership, capacity for status, and social poise. But while effective integrators prefer these same styles, their underlying drive is only a moderately high achievement need and—most importantly—a high affiliation need. If these motives in turn lead to relatively high initiative, capacity for status, social poise, and flexibility, then the integrators can be effective in meeting the requirements and demands of their jobs.

The reader probably has already recognized the connection between these personality traits and the behavior characteristics described earlier. Since effective integrators are predisposed to take the initiative, it is not surprising that they have high influence in their organizations. Similarly, it is to be expected that these individuals who prefer to take the initiative, who have social poise, and who are relatively flexible, are effective in helping to resolve conflicts.

This description of the effective integrator's behavior and personality perhaps dispels one widespread management myth—namely, that the word "integrator" is somehow associated with a passive, unassertive role, rather than with the role of an active "leader."

Conclusion

While American industry still needs many types of organizations, as the trend continues for more and more industries to be characterized by rapid rates of technological and market change, more organizations will be like the R&D-intensive firms described here. These firms will require both high differentiation between specialist managers in functional units and tight integration among these units. Although differentiation and integration are essentially antagonistic, effective integrators can help organizations obtain both and thus contribute to economic success. This article has described the characteristics of effective integrators—how they should be rewarded, and where they should be placed in the organization. Organizations in dynamic industries that want to achieve a competitive advantage will have to give careful attention to the planning of their integrating jobs and to the selection and development of the people who fill them. □

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[4]David McClelland, *The Achieving Society* (Princeton, D. Van Nostrand, 1961), Chapters 6 and 7; "Business Drive and National Achievement," *HBR* July-August 1962, p. 99, and "Achievement Motivation Can Be Developed" (Thinking Ahead), *HBR* November-December 1965, p. 6.

Systems Approach To Force Modernization

Major Robert Siepielski

Managing the organization from a systems perspective provides a strategy that will identify and effectively address change. It may be the difference between making force modernization an ally or a foe.

The U.S. Army is being directed toward a position of increased modernization. Growing out of a reaction to preceived Soviet Force imbalances, our Army will experience the introduction of over 400 new pieces of equipment in the next 3 to 5 years. Examples of major new equipment are the MI Abrams Tank, the Bradley Infantry Fighting Vehicle replacing the armored personnel carrier, a reconnaissance/security vehicle, and the M3 Cavalry Fighting Vehicle. Besides equipment, we have a new force structure at Division, Corps, and Echelons Above Corps, a new manning system, and a new regimental affiliation concept.

This force modernization initiative does not mean that we will be seeing only new end items or operating structures. It means, more importantly, recognizing the need for the Army to introduce change into itself. The management of change—not just the introduction of equipment and TDA/TOE—should be the focus for the Army manager. But without a method to deal with change systematically, the chances for a smooth transition to a modern Army are diminished.

A System For Change

Change is normally introduced to improve effectiveness, and a series of logical steps *(Megson)* guides this desire to change:

- Define what is to be improved.
- Plan how to achieve the improvement.
- Put the plan into effect.
- Produce the improvement.

The force modernization program has done much toward accomplishing the first step, defining *what* is to be improved. The new systems and structures have been identified. To manage the other three steps effectively, managers of change must understand not only *what* is to be improved, but also how such improvements *impact* the whole organization. A **systems orientation** will allow managers to accurately identify where problems may surface within the whole organization as force modernization is implemented. This information can then be used to develop an implementation strategy that encompasses all organizational operations.

A systems orientation views an organization as interrelated parts, with a sense of blending into a whole, uniting with something else, or belonging together. Traditionally the organization has been viewed as a static structure, almost capable of being photographed. The organization has been undynamically defined by simply drawing an organizational chart to identify job structures and hierarchical levels. This concept, however, limits the understanding of the effects of change. In contrast, a systems approach allows managers to view an organization more dynamically: the coordination of many different activities of individuals, working independently yet interdependently to carry out planned activities within a specific work environment.

Organizational Elements

When change is introduced to an organization, six interrelated elements should be analyzed for organizational impact: Purpose, Structure, Rewards, Relationships, Helpful Mechanisms, and Leadership (*Weisbord*).

Of these six elements, clarity of purpose is most important. Organizational purpose is a way of defining why people are making various contributions in a coordinated way. Organizations spring into being when one person decides to unite efforts with one or more other people to better cope with their environment. **Purpose** is the outcome, product, service, or whatever an organization has formed itself to accomplish. Once that "outcome" is established and clarified, supportive goals and objectives are formulated to assure the outcome will be achieved in a specific manner.

The purpose for which most organizations exist is often lost or distorted because leaders tend to assume that all the goals and objectives are understood. Failure to relate goals and objectives to a purpose often causes an overconcentration of money, time, and energy on the "doing" of numerous activities. Force modernization efforts, in fact, might compound this activity. If you ask different leaders and managers to tell you the purpose for any new end-item or structure being introduced under the force modernization program, I think you will be surprised by the lack of consistency

among their answers, even within the same organization. Essential to the smooth functioning of an organization during the change process are, first, an understanding of what a new piece of equipment was designed to achieve for the organization and, second, clarity on what goals or objectives will allow it to be effectively received and implemented. Overconcentrating on "doing" rather than managing the outcome throws an organization off balance and puts it in a "reactive" posture.

Another element, **structure**, focuses on organizational workunits. For example, as a result of modernization changes, what new work must be done? What former tasks will be continued or stopped? How will work be apportioned? By what methods will work be accomplished? If a new system reduces manpower, what will be done with the excess personnel? When changes occur, will a threat to job security be perceived by workers? Will modernization be intentionally "delayed"?

The third dimension, **rewards**, raises other questions. What impact will modernization have on those elements that motivate people to work (grade-level requirements, compensation rules, promotions, formal and informal reward policies, etc.)? Will operators of high-technology items have as much job satisfaction as with their old jobs? Will performance be affected?

The dimension of **relationships** deals with establishing who-relates-with-whom on what issues. What process will be used by the group in setting norms or making a decision? If new equipment negates a certain work requirement, will this affect a soldier's status within the peer group? Will high technology require greater dependency on team members? Will coordination between soldiers increase or decrease? How should skills be identified and training correlated?

Helpful mechanisms deal with the formal and informal devices that facilitate organizational understanding. They are techniques, policies, training classes, and similar means of binding the organization together. Formal mechanisms might be organizational planning, or a budgeting system. Informal mechanisms might be staff meetings, memos, distribution systems, and standard operating procedures. Will modernization changes add to the planning cycle? Will budgets previously submitted have to be changed? Will new funding codes be required? Will more meetings be necessary? Will different personnel be required to attend meetings?

Finally, we consider the element of **leadership**. How will leaders monitor the operations of the system? How do they keep the other dimensions in balance? New systems with increased operating capabilities will require command and control procedures that must operate over increased geographical distance and within shorter time frames than previously considered. What will leaders do to allow maximum use of equipment capabilities? Will old leadership practices suffice?

Force Modernization Change

These systemic relationships are not solely a result of force modernization changes; they exist within every organization at all times. Organizations are always in a state of flux, constantly adapting and reacting to environmental influences as a daily course. Force modernization, however, is bringing with it a dramatic increase in change. Therefore, for survival and effective functioning, an organization must consider all of its system elements with the introduction of any single change. Overemphasizing just one element or dimension within the organization will force stress on the other elements, and potentially serious negative impacts.

Force modernization changes are designed to improve organizational effectiveness. But implementing force modernization without regard to an organization's system relationships could swamp our units with overwhelming, although well-intentioned, change. We must control the stress of change to ensure that faith and trust in our organizations will remain high at all levels.

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XVIII Airborne Corps Conference: Operation Urgent Fury

Captain Frank Helmick

The XVIII Airborne Corps and Ft. Bragg played an integral role in planning, executing, and sustaining peace-keeping forces in Grenada, West Indies. After the major portion of the operation was complete and the majority of forces were redeployed to Ft. Bragg, the Commanding General was concerned about what lessons were learned during the operation. The vehicle used to develop and articulate these ideas was a high-level staff conference. Presented here is the intricate planning and design of the conference which led to accomplishing the outcome. Each topic area discusses operational as well as logistical considerations.

Entry

In response to the Commanding General's directive, G3 XVIII Airborne Corps was tasked to conduct the Lessons Learned Conference. The planning began when the G3 action officer for the conference called the Corps OE office seeking assistance. Once the mission was accepted, a lead Organizational Effectiveness Staff Officer was appointed from the Corps OE Office to begin the planning phase.

The OESO's role would be to coordinate the staff's participation and to determine how best to accomplish the task. The OESO had several meetings with the G3 action officer to obtain guidance for planning and design of the conference. These meetings centered around the Commanding General's *outcomes,* which were "to provide a forum for key commanders and principal staff officers to share specific Lessons Learned, identify issues which still need to be resolved, and begin to recommend solutions to those issues." These outcomes were the driving force for the design of the conference.

Other factors that had an impact on the design were: coordination of times that all the general officers would be free to attend; voluminous after-action reports written by principal staff officers and provided to the G3 for consolidation; only one workday allocated for the conference; and security requirements mandating that the conference be conducted on a federal installation. With this information in mind, the G3 gave the lead OESO and OE staff complete freedom to develop a plan to launch a conference that would serve the needs of the command.

Design Planning

The OESO's planning and design strategy was to have all officers participate and have them identify systemic issues in what was an extremely complex system. The information flow at this point was limited to a written report which was at the G3 section for consolidation. Little, if any, interstaff coordination had been conducted in the preparation of these reports. This conference, then, would be the next step in the coordination and integration of the information.

A decision briefing was prepared by the OESO for the G3 and Chief of Staff, XVIII Airborne Corps approval. The briefing included a recommendation that the proposed design be approved, a letter announcing the conference for the Chief of Staff's signature, a tentative list of participants, a tentative agenda, and tentative tasks for the participants. At the conclusion of the briefing the G3 indicated he was pleased with the design (discussed in detail later) as well as proposed attendees. He concurred with the recommendation and a briefing for the Chief of Staff was prepared. The Chief of Staff approved the design, and signed the letter announcing the conference. This letter was distributed to the participants about three weeks before the conference.

The recommended list of participants included the XVIII Airborne Corps Commanding General, Deputy Commanding General, Chief of Staff, and the 82d Airborne Division Commanding General with his principal staff. An initial count indicated approximately 50 senior ranking officers and two senior NCOs (CSM XVIII Abn Corps and CSM 82d Abn Div) planned to attend.

The final design of the workshop was planned to ensure a cross-fertilization of information among specific staff principals and a sense of cooperation and information exchange among principal staff members in the Corps and the Division; in other words, sufficient interface among staff members. This strategy was considered to be the next step in raising the level of combat effectiveness in XVIII Airborne Corps. This was the Commanding General's meeting orchestrated by the G3 who was assisted

by the Corps OE Staff. The approved design consisted of four phases.

In **Phase I,** the CG made introductory remarks and a multi-media presentation was given on the XVIII Airborne Corps role in the operation. The G3 then discussed security issues, outcomes, agenda review, initial small-group assignments, and tasks to be completed.

Phase II was small-group work, allowing participants to learn from each other's experiences and exchange ideas. Heterogeneous groups of about 7 people each proved to be the most effective method to surface truly systemic issues. The CG had his own group all general officers and major subordinate commanders in XVIII Airborne Corps. The CG asked an OESO to ensure that this process flowed freely. In the morning session, each group developed a prioritized list of concerns and indicated what went well and what did not go well. Each group briefed five significant issues to the larger group. With limited time, only questions for clarification were allowed. At a luncheon for all participants, the G3 identified major systemic issues the heterogeneous groups discussed during the outbrief. This identified trends for the operation.

Phase III was action planning in small, *functional* groups. Not in the approved plan, this mid-course correction proved to be extremely successful. The G3 reviewed the conference agenda and briefed the new groups on developing an Action Plan around a systemic issue surfaced during the morning session. Systemic issues were assigned that tended to fit the function of the groups; for example, all personnel types IG, AG, G1s, SJA, and so on were given a personnel issue that had surfaced. Some systemic issues that did not fit neatly into a functional group were assigned by the G3. An outbrief, conducted by a group spokesman, included recommendations to assign specific staff sections the responsibility for followup staff action, or a more detailed review of individual issues. The groups were allowed 1½ hours to develop an action plan and 1½ hours (about 10 minutes each) for a briefing to the large group. From these Action Plan briefings, a Managerial Grid was developed, which would be presented in a decision briefing by the G3 to the Chief of Staff for approval. The Grid verifies in writing specific staff responsibilities and documents the progress of the actions.

Phase IV was closing remarks by the G3 and CG of XVIII Airborne Corps.

Two weeks before the conference, a pre-conference packet providing additional administrative information was given to each participant. Information included was agenda, initial small-group assignments, tasks #1 and #2 (with format), action planning guide (format), and menu.

Execution

The day before the conference, the lead OESO briefed the G3 on how the plan was designed to be executed. This was a "TEWT" for the G3, providing a sequence of events, typed note cards with suggested remarks, and meeting/conference room diagrams. This "rehearsal" clarified issues surrounding security, participant inprocessing (security clearance), location of break areas, projector, and other items, and administrative/process issues.

The conference was conducted as planned. The CG not only made opening and closing remarks but congratulated all who participated for the outstanding performance of their soldiers in Grenada and at Ft. Bragg. He also discussed the uniqueness of XVIII Airborne Corps, Joint Forces Doctrine, and Airborne Doctrine. These comments were well received and blended extremely well with the flow of the conference.

A significant factor contributing to the success of the conference was the flexibility on the part of the CG, G3 and the OESOs. This flexibility and thorough staff officer preparation was noticeable before, during, and after the conduct of the conference.

A critique sheet was distributed to each participant for feedback to the G3 and OESOs. This was a simple one-page critique with both open-ended and close-ended statements. Participants were asked to comment on: the most important issues, effectiveness of small-group work, time well spent, pre-packet usefulness, most important thing gained, and suggested changes.

Followup
The followup for OESOs will include:

- Tabulating critique sheet responses, and briefing the G3.
- Sending a letter to participants with Managerial Grid and specific responsibility.
- Publishing an after-action report for Chief, XVIII Airborne Corps, OE Office.
- Conducting an internal assessment of the OESOs who participated in the conference to identify areas that were successful and those needing improvement.

Recommendations
To be a successful OESO in a project of this magnitude, it was paramount to follow these heuristics:

- Know what you're doing. Numerous times on this project it was mentioned by senior officers, "You are the expert, what should I do?"
- Develop a reputation not only as a process expert, but a thorough, competent staff officer.
- Be reliable and meet deadlines. The senior officers the OESOs dealt with on this project

were extremely busy; 15 minutes at the most was allocated per briefing.

- Be Accurate. On this particular project accuracy was most important. For example, only staff principals were allowed to attend the conference. Once the word was out on the magnitude and content of the conference, everyone on Ft. Bragg requested to attend.

- Anticipate. Be a good staff officer by providing a number of courses of action, and recommend one for approval. If you only offer different courses of action without recommending any particular action, then what good have you done?

- Use initiative. If you know the Chief of Staff may want to send out a letter, prepare a draft for him. Be practical; learn what you need to know and then get on with the job.

- Maintain a low profile; don't hang around for praise or credit. Because of the senior rank of the participants and the conference content, OE involvement in this conference was primarily in the preparation and design phases rather than an active role (facilitation) during the conference.

- Take a fresh approach to design. Both the G3 and Chief of Staff never thought about conducting the conference in small, heterogeneous groups. They were expecting the traditional approach allowing each staff member 20 minutes to brief the large group on problems, then sit around and tell war stories. The small-group approach was a better way to manage the participants and get a tangible product.

Conclusion

The conference was a learning experience for the OESOs as well as participants. As OESOs, our primary job was to see that the best mechanism (conference) to accomplish the commander's outcomes was effectively implemented. The success of the content of the conference now depends on the commanders and staff. As we have learned from training at OECS, behavior is believable. Much was discussed during the conference. Only time will tell if, indeed, the sharing of information and the tasks that will be given to specific staff sections for further study will better prepare the XVIII Airborne Corps to execute a future contingency mission like Operation Urgent Fury. □

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Handheld, Programmable Calculators . . .
A New Resource For Staff Officers
Major Carl F. Witschonke

The Combined Arms and Services Staff School enhances resource management skills through the use of handheld, programmable calculators as a staff officer's tool.

Today's Army officer is faced with a multitude of complex decisions involving the allocation of time, dollars, equipment and personnel to effectively accomplish the officer's mission.

Commanders and staff officers must plan their activities and training to efficiently use the limited resources available while maintaining a high state of combat readiness. Unless every officer recognizes this role as a resource manager, our units are likely to use more resources than necessary or fail to achieve the highest possible state of readiness.

Major Carl F. Witschonke is presently on the faculty of the Combined Arms and Services Staff School (CAS³). He was commissioned in the Field Artillery from the United States Military Academy and is a graduate of the Command and General Staff College.

He received Master of Science degrees in Mathematics and Operations Research from Rensselaer Polytechnic Institute and has served as an instructor and assistant professor in the Department of Mathematics at the US Military Academy. Other assignments include command and staff positions in Vietnam and Germany.

Major Witschonke was directly involved in the development of all the calculator programs discussed in this article.

This specific role was addressed in the formulation of the curriculum for the Combined Arms and Services Staff School. Quantitative and resource management skills became an integral part of the curriculum, along with the use of a state-of-the-art handheld programmable calculator and a package of supporting programs. The objective here, then, is to point out the capabilities of the programmable calculator as a staff officer's tool and highlight the individual programs currently being used in the Combined Arms and Services Staff School.

CAS³

The Combined Arms and Services Staff School, or CAS³, is a nine week course for Army captains with seven to nine years of service. CAS³, located at Fort Leavenworth, Kansas, conducted a pilot course in the spring of 1981 and currently trains approximately 1,000 students per year. CAS³ is projected to reach full implementation in 1985 at which time it will train 4,000 students per year.

Students are organized into 12-person staff groups, each headed by a lieutenant colonel staff leader, most of whom are former battalion commanders. The CAS³ mission is to train captains to function as staff officers with the Army in the field.

One of the course goals is to develop in each student the ability to analyze and solve military problems. In support of this goal, each student receives instruction in problem-solving and quantitative skills and is issued a programmable calculator. The calculators familiarize the students with state-of-the-art technology to assist in solving military problems.

The calculators familiarize the students with state-of-the-art technology to assist in solving military problems.

Staff leaders emphasize that the calculator helps to provide the staff officer with a full, accurate summary of the relevant facts, so that the

officer can exercise well informed judgment. The calculator is not intended to be a substitute for this judgment.

The Calculator

The modern, handheld programmable calculator provides a considerable amount of computing power in a very compact, yet relatively inexpensive package. The type used at CAS[3], for example, can store up to 2,000 programmed keystrokes in addition to its more than 130 standard functions.

That is roughly equivalent to 2K bytes of random access memory. The memory can be expanded to a total of 6K bytes through the use of plug-in extended memory modules. The built-in 2K memory, however, can be efficiently programmed to hold surprisingly complex programs.

All of the current CAS[3] programs use only the built-in 2K memory. This memory is continuous; that is, it retains the program and all related data when the calculator is turned off. The memory is even retained for a short period of time without any power source to allow for changing the batteries. The calculator has full alphanumeric capability which moves it close to the realm of a handheld computer. This capability allows the calculator to display letters and words as well as numbers. The CAS[3] programs take full advantage of this alphanumeric capability.

Several peripheral devices are available which can enhance usage. A thermal printer is available which can provide a hard copy of all input and output. Each CAS[3] staff group has one of these printers available for use in the classroom.

Two input devices are available, the first of which is the magnetic card reader. The card reader loads programs or data into the calculator memory from small magnetic strips or cards. A typical program requiring three or four of the magnetic cards can be read into the calculator in about one minute. The card reader can also be used as an ouput device. The card reader can write programs or data from the calculator memory onto the magnetic cards.

The second input device is the optical wand. This device reads data or programs by optically scanning lines of bar code. A typical program requiring three or four pages of bar code can be read into the calculator in about two minutes. Although the optical wand cannot be used as an output device, it is still very useful since the bar code it reads can be reproduced on a duplicating machine, widely distributed and easily stored.

Several additional peripheral devices not currently being used in CAS[3] are available. These include a video interface, a clock or timer module and an interface loop for connecting to other systems.

Programs

The CAS[3] programs for the calculator are designed to be easy to use. They prompt for desired input values, provide operating instructions and label output values. The CAS[3] programs require the use of only a few common keys on the calculator keyboard. The calculator owner's manual provides all the information necessary to effectively operate the calculator. Further, each program has a set of user instructions that allows for its use without specific classroom instruction.

Five of the CAS[3] programs perform general mathematical functions and support the course quantitative skills lessons. Seven of the programs perform specific military functions and support exercises in the remainder of the course. However, all of the programs are presented in the course to assist in solving military application problems.

The 12 current programs are listed below:

1. Statistics
2. Decision Matrices
3. Regression Analysis
4. PERT Networks
5. Linear Programming
6. Combat Models
7. Training Cost
8. Personnel Status
9. Equipment Status
10. Ammunition Status
11. POL Status
12. Movement Planning

All of these programs were written for CAS[3] and have been used in the course for the past 12 to 18 months.

Statistics

The statistics program determines the common statistics available from most calculator programs, including the mean and standard deviation. However, unlike most library programs, the calculator retains and sorts all of the data points and determines the median and range. It then provides the frequency of data points in each cell of a user defined histogram. The program further provides the values for skewness and kurtosis, allowing the user to make a quick analysis of how the data points are distributed.

A typical program requiring three or four pages of bar code can be read into the calculator in about two minutes.

Students use the program in one course requirement to analyze the SQT scores for a brigade's infantrymen and in another requirement to assess the time required for a battalion to draw prepositioned equipment from a POMCUS site.

Decision Matrices

The decision matrix calculator program aids the user in making decisions where the possible courses of action can be organized and compared in a decision matrix. The program selects the optimal strategy for three different types of decision matrices.

The real value of the program, however, lies in its ability to check the sensitivity of the solution to the assigned weights. Generally, weights are subjectively assigned to the various decision criteria. If a solution is sensitive to the weights, the program alerts the user that further consideration of their specific values may be required to insure selecting the optimal strategy.

Although the students use decision matrices throughout the course, one of the best applications is found in comparing tactical courses of action while preparing staff estimates.

Regression Analysis

The regression analysis program is used to assist in making meaningful forecasts of future events based on historical data. The program is used in CAS[3] to find linear regression lines. The program provides the slope of the line, the y-intercept, the standard error of the estimate, the coefficient of determination and values of the dependent variable corresponding to input values of the independent variable. The program can also fit logarithmic, exponential and power curves to the data pairs.

In one course requirement, students seek the solution to the problem of the consolidated dining facility that is consistently overdrawn on rations. The students identify the problem periods each month and then use the regression program to forecast the meals required for the following months.

PERT Networks

The Program Evaluation and Review Technique (PERT) networks program can handle PERT networks of up to 51 activities. PERT provides the staff officer an efficient method for planning, scheduling and managing a wide variety of operations. The program provides the earliest expected start time, the latest allowable start time and the slack time for each activity. It also provides the project duration, the confidence intervals for the project duration and the probability of completing the project by a specified time.

Students use the PERT program to help plan the best possible use of resources restricted by time or cost limitations. In one course requirement, students use the PERT program to assist in the planning for the mobilization of a Reserve Component Brigade. Not only do the students plan the project using the PERT program, but they analyze the

network for ways to save time and resources as well.

Linear Programming

The linear programming calculator program provides the staff officer with a powerful tool for allocating scarce resources among competing activities in an optimal manner. The program uses the simplex algorithm to solve linear programming problems.

However, it is written in such a manner that the user need not have a knowledge of the simplex method. If the user can construct the appropriate mathematical model, the program will prompt for all required input and provide the necessary output.

The calculator retains and sorts all of the data points and determines the median and range.

The program checks the feasibility of a solution, determines the optimal solution and provides the shadow prices corresponding to each constraint equation which allows the user to evaluate the sensitivity of the optimal solution to the specific resource limitations. As one course requirement, students use the linear programming program to select the best mix of various types of training for a mechanized infantry battalion's long range training plan. The unit's training is constrained by training funds, the availability of training areas and the commander's guidance. The students develop an optimal training plan, then identify the constraints that if relaxed would provide for an increase in training effectiveness.

Combat Models

The combat models package contains two programs. Both models are used in CAS[3] to demonstrate the principles of simulation as they apply to combat modeling.

Combat Model 1 is a stochastic simulation of a single weapon engaging multiple targets. The model is very simple and serves only to demonstrate the use of random numbers and a random number generator to produce the various outcomes of the simulation.

Combat Model 2 is a deterministic simulation of the tank and antitank systems of the US mechanized infantry or tank battalion versus a Soviet motorized rifle or tank regiment.

The Combined Arms Combat Development Activity (CACDA) developed the original model for the HP-67 calculator. CAS[3] adapted the model, taking full advantage of the HP41-CV's increased capabilities. The model considers a large number of factors, including terrain, engagement rates, acquisition rates, rate of advance of attacking

forces and suppression of antitank systems. The model can provide significant insight into the effects of varying terrain and acquisition parameters in combat between the two forces.

Although this model was developed for use as a demonstration model, several students have used it to assist in the mental war gaming process involved in comparing alternative courses of action. They specifically use it to gain insight into the attrition of forces in different courses of action at a specific point on the battlefield.

Training Cost

The training cost calculator program determines projected costs for the training activities of a mechanized infantry battalion. The program can be used to project training costs for any battalion by replacing the programmed cost and consumption factors with factors representing that particular unit. The program estimates the cost of repair parts, the diesel fuel requirement for a selected training activity.

The projected resource requirements are based on the estimated number of vehicles to be used by type and expected miles to be traveled by these vehicles during the activity. The program maintains running totals for all activities that are entered. These totals can be displayed at any time and include the total gallons and cost of fuel, the cost of packaged Petroleum Oil & Lubricants (POL) products, the cost of repair parts needed and total cost of all activities entered.

The Linear programming calculator program provides the staff officer with a powerful tool for allocating scarce resources among competing activities in an optimal manner.

Additionally, the program is completely compatible with the Training Management Control System (TMACS) minicomputer. TMACS has been fielded down to brigade level where its major function is to aid battalion commanders in eficiently managing the resources required for their unit's training.

The training cost calculator program can serve as a direct extension of TMACS, allowing battalion staff officers to do a preliminary analysis of the unit's projected training or permitting them to quickly determine resource requirements based on a change in scheduled training. The user can enter training data into the calculator directly from the TMACS training event worksheet. The results obtained will be identical to those later obtained on the TMACS computer.

In one CAS[3] training management exercise, students operate as a battalion staff that is resourcing its long range training plan. The required resources exceed the authorized level by more than $40,000. Each staff must analyze its plan and brief the commander on recommended changes that will bring the plan within the budget constraints without reducing the quality or level of training.

They also must submit a TMACS summary printout of the revised training plan at the time of the briefing, and carefully analyze vehicle usage and the efficient use of available training areas to minimize unnecessary miles traveled. They also must examine the number of days and type of training scheduled.

Each staff has a limited amount of time on the TMACS computer and must use the calculator program to make its preliminary analysis. Staffs that efficiently use the calculator complete the requirement in a few hours, including their allotted 30 minutes on the TMACS. Others must return to the TMACS computer at the next available opportunity which is usually several hours later.

Personnel Status

The personnel status calculator program is based on the Staff Officer's Field Manual of Organizational, Technical and Logistic Data, FM 101-10-1, and uses the consumption and loss rate factors found in this manual. The program estimates the end-of-day unit strength for a particular day of combat, based on the expected losses, hospital returnees and replacements.

The program also distributes the losses by branch of service, and provides resupply requirements that are a function of unit strength, specifically, classes I, II, IV, and VIII. Finally, the program can track and report the daily hospital bed requirement for corps hospitals.

The program performs all necessary calculations and bookkeeping functions, but requires the user to enter the tables in FM 101-10-1 for the appropriate factors. Each time a table entry is required, the program directs the user to the appropriate place in the manual. This keeps the user familiar with the reference manual, but eliminates the time needed for paper and pencil calculations. CAS[3] students use the program to assist in the preparation of personnel estimates during the course preparation for combat exercise and the European exercise. They are expected to estimate the personnel status from 5 to 15 days of combat. The calculator program allows the student to be able to provide a complete and detailed estimate, yet still have sufficient time available to analyze the impact of the personnel situation on the various courses of action.

Equipment Status

The equipment status calculator program is similar to the personnel status program. It is based on FM-101-10-1 and provides the end-of-day status for selected major end items. The program provides the daily status based on estimated destroyed equipment, damaged equipment, return of repaired equipment and the replacement of equipment.

Students use this program to assist in the preparation of logistic estimates during the CAS[3] preparation for combat exercise and the European exercise.

Ammunition Status

The ammunition status program estimates the end-of-day ammunition status in terms of rounds per tube of selected weapons for up to 15 days of combat. The status is based on the weapon's basic load, required supply rate (RSR) and controlled supply rate (CSR). The program can handle three RSRs and three CSRs during the 15-day period.

The program provides the end-of-day status and the short tons of ammunition required to be resupplied for each of the designated days. If the ammunition status reaches zero on any of the 15 days, the program immediately alerts the user that a critical shortage exits. RSRs, basic loads and the weights per round can be taken from FM 101-10-1 if not otherwise known.

CAS[3] students use this program like the personnel and equipment programs to assist in the preparation of logistic estimates.

POL Status

The POL status program estimates a unit's fuel requirements for combat operations based on the consumption factors in chapter three of FM 101-10-1. The program provides the estimated requirements for gasoline, diesel and JP4 for stationary equipment, wheel vehicles, track vehicles and aircraft. The program also provides the supply, service and wastage requirements.

Vehicle estimates are based on both cross-country and open road fuel consumption factors.

CAS[3] students use this program to assist in preparing logistic estimates. They are expected to analyze the courses of action in terms of the unit's ability to transport and supply the necessary fuel. They address identified problem areas and provide recommendations in their estimates.

Movement Planning

The movement planning calculator program can plan tactical and administrative moves for up to a brigade-sized unit. The program calculates the serial length and pass time, as well as the time the last vehicle crosses the release point for each serial in the column.

It also provides complete march tables for each

MOVPLAN Example

Serial 1 (Bn) .... 0800 hours
   March Unit 1 (Co) .... 25 vehicles
   March Unit 2 (Co) .... 21 vehicles
Serial 2 (Bn) .... 0900 hours
   March Unit 1 (Co) .... 27 vehicles
   March Unit 2 (Co) .... 24 vehicles
Vehicle interval .... 50 meters
Open Road Speed .... 50 kph
Choke Point Speed .... 30 kph
March Unit Gap .... 5 minutes
Minimum Serial Gap .... 10 minutes
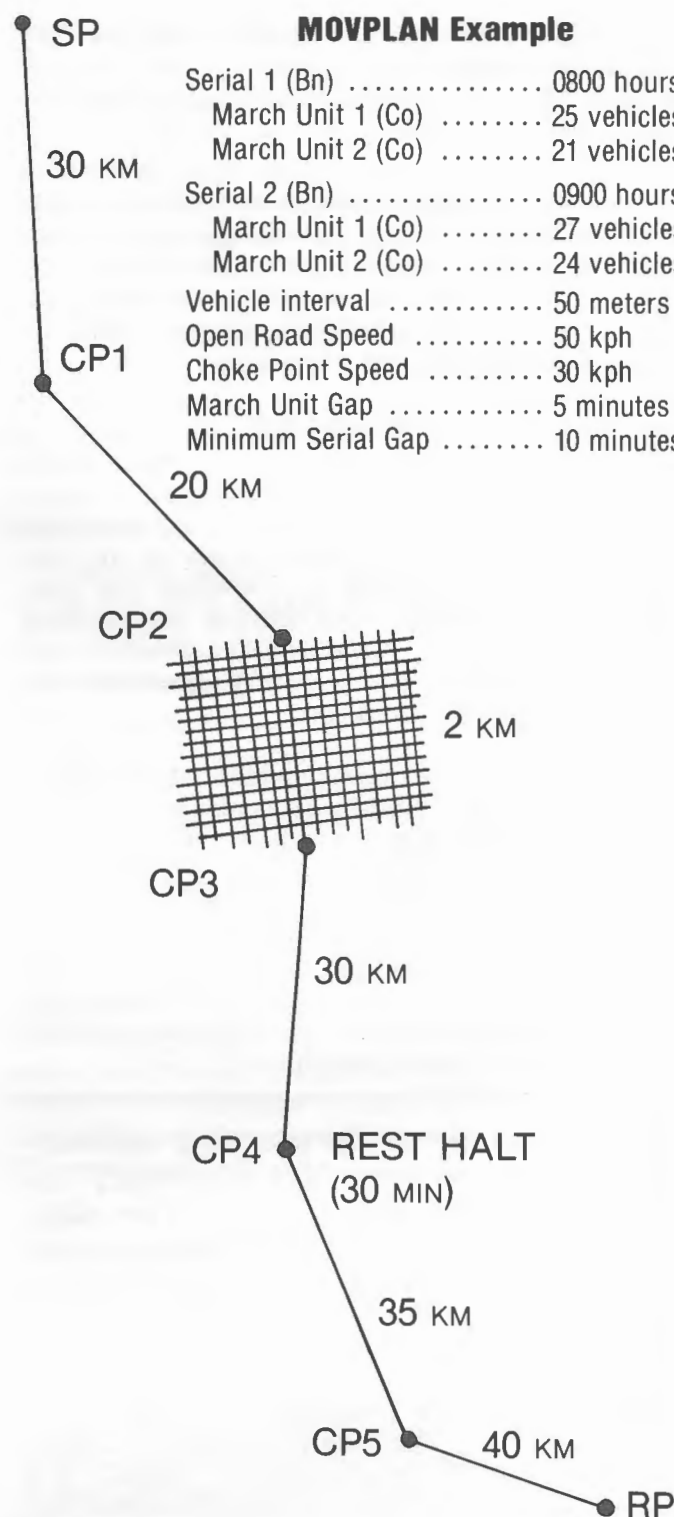
serial. The program plans moves over a single route of march which can have up to three rest halts and any number of choke point areas. A choke point is an area along the route such as a town or steep upgrade where movement speed must be reduced.

The program also allows for calculating the start times for other than the lead serial based on maintaining a minimum gap between serials. The calculated start times will be such that the gap between serials at their closest point along the route of march will be greater than or equal to the

desired minimum serial gap. Further, the program allows for the user to easily change start times or movement speeds resulting in the output of a new movement plan and march tables.


The movement planning calculator program can plan tactical and administrative moves for up to a brigade-sized unit. The program calculates the serial length and pass time...

CAS³ students are required to plan the move of a mechanized infantry brigade during their preparation for combat exercise. The move must be conducted during the hours of darkness and comply with the division's standard operating procedure for tactical road movements.

Their initial analysis using the calculator program indicates that the last battalion will not be able to clear the release point by the required time. They must then brief the commander on possible solutions to this problem. The calculator program allows them to quickly analyze the impact of changing speeds, start times or serial gaps.

Beyond CAS³

The CAS³ calculator programs represent a wide variety of the type of programs that can be developed for the HP-41CV calculator or other highly portable computing devices.

Several other agencies and schools are looking into application programs and uses for the programmable calculator. The Command and General Staff College is now introducing all of its students to this modern calculator and its capabilities.

Extensive work has been done by the U.S. Army Construction Engineering Research Laboratory (CERL) in developing a package of six combat engineering programs the calculator can do, including bridge classification, demolition and minefield programs.

Communications engineering programs have also been developed that perform specific signal-related functions. Further, an extensive commercial program library exists with available programs ranging from aviation flight planning to surveying.

CAS³ is currently translating most of its programs to the BASIC programming language for use on virtually any microcomputer. The BASIC programs will operate in essentially the same manner as the calculator programs, but will be able to handle larger problems. Any user familiar with one of the program sets will easily be able to use the other.

Further, CAS³ is looking into the development of plug-in modules for its program package. Two modules will probably be sufficient to hold all of the current programs. With these modules, the user would be able to have all 12 programs loaded at the same time, while still having the entire built-in memory of the calculator available for data storage or other programs.

While programmable calculators are generally not standard equipment in today's Army units, they can be purchased by obtaining authorization for a modification to the unit's Common Table of Allowances (CTA). Units desiring to add programmable calculators to the unit equipment listing must identify the need, recommend the basis of issue and submit a request for modification through command channels with justification as specified in AR 310-34, paragraphs 3-7.

Cost would depend on the number of calculators and desired peripheral devices. The Hewlett Packard 41CV, for example, can be purchased for about $250, while a system including the calculator, thermal printer and optical wand or card reader can be purchased for about $650.

All of the CAS³ calculator programs are currently available for distribution in bar code form at no cost to interested active, reserve and national guard units. The BASIC programs are also available for distribution on a single TMACS disk or as a package of printed program listings.

Distribution is being coordinated by the Command and Control Microcomputer User's Group [Chief, CECOM, SDSC, ATTN: DRCPM-OTDS-SDSC (C2MUG), Ft. Leavenworth, KS 66027, AUTOVON 552-7500] and the Automated Command and Training System User's Group [Commandant, CGSC, DACTS, ATTN: ATZL-SWH (ACTSUG), Ft. Leavenworth, KS 66027, AUTOVON 552-4713].

Summary

The programmable calculator and the programs developed by CAS³ demonstrate the usefulness of a highly portable computing device as a staff officer's tool. Time that might otherwise be wasted in numerical computations and "stubby pencil" drills may now be considerably shortened, allowing more time for the extremely important task of analyzing the results.

Equally important, many other calculations or accurate estimates that in the past were not done at all because of time or field limitations can now be done at virtually any time or place.

The calculator and programs assist the staff officer in dealing with a problem in a disciplined manner, in isolating areas where judgment must be applied and in providing more time for considering the intangible aspects of the problem. ☐

Designing A Training Program

Captain(P) John D. Richards
First Lieutenant Thomas S. Williams
Major Craig E. Geis

"Training is the number one business of a peacetime Army." —Collins, 1978, XIII
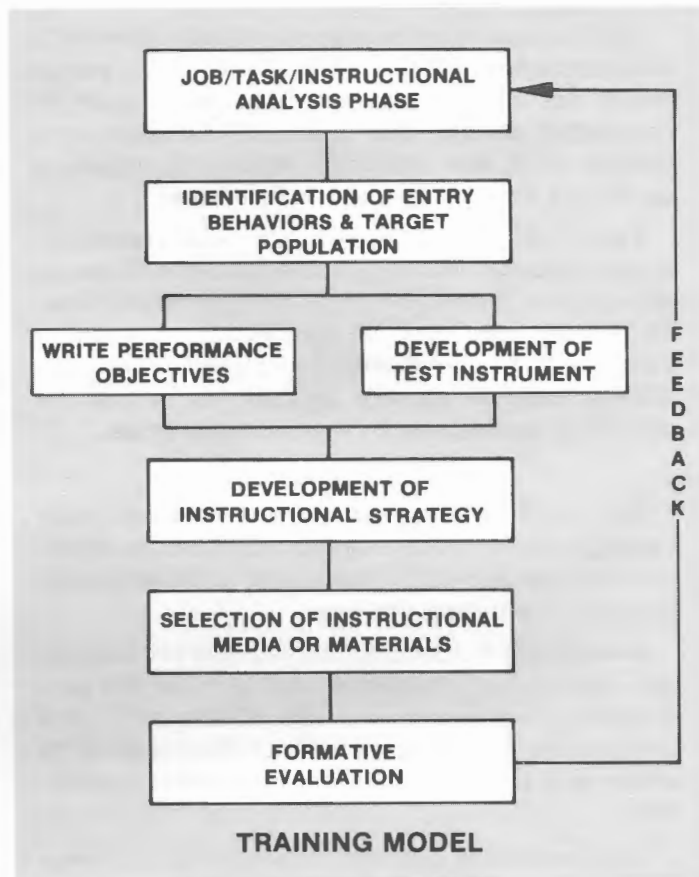
"Training is already our number one priority." —Army Training 1990 (Draft), 1982, pg. 2

The importance of training in preparation for combat is not a new concept to Army leaders. Army units are constantly engaged in training. It is critical that we understand and anticipate the requirement to train our officers, NCOs and soldiers to ensure both their individual preparedness for battle and their ability to perform their individual tasks as part of a unit. The cornerstone for success in combat will depend upon soldiers that are prepared both psychologically and professionally. This preparation is wrought from one source—training.

What exactly do we mean by training? TRADOC Pamphlet 350-30 (pg. 172), Interservice Procedures for Instructional Systems Development, puts it quite simply: "The teaching of job skills." A complete systems approach to training can also be found in TRADOC Reg 350-7 which presents a model for a systems approach to training and specifies how it relates to the Army training system. The goal of our training is to teach the soldier how to effectively perform his job. This leads to several questions:

- What do we teach?
- How do we teach?
- How do we know if the soldier actually learned?
- How can we stretch our training resources (time, money, etc.)?

The answers to these questions and others are the basis of this presentation. Gagne and Briggs provide a brief explanation of the "training" approach we will use. They effectively argue that while training (instructional) programs must be specific enough to provide for a plan of the lesson design, it must also be flexible enough to address events occurring throughout the training that often require one or more decisions on the part of the trainer (instructor). In no uncertain terms they point out that "... instruction must be planned ... designed in some systematic way ... if it is to be effective." The fundamental intent of training (instructional) programs must be directed toward the construction of a "comprehensive design," predicated upon a thorough understanding of the

TRAINING MODEL

Boxes: JOB/TASK/INSTRUCTIONAL ANALYSIS PHASE → IDENTIFICATION OF ENTRY BEHAVIORS & TARGET POPULATION → WRITE PERFORMANCE OBJECTIVES / DEVELOPMENT OF TEST INSTRUMENT → DEVELOPMENT OF INSTRUCTIONAL STRATEGY → SELECTION OF INSTRUCTIONAL MEDIA OR MATERIALS → FORMATIVE EVALUATION → FEEDBACK

component skills incident to the successful accomplishment of the performance objectives (Gagne & Briggs, 1979).

This presentation will elaborate on these thoughts and present a "systems approach" to training. Several key points must be brought out early. The first, as mentioned above, is that training must be planned. We have all had experiences where some good training occurred as a result of an unplanned event, but generally unplanned training was not good training. The second point is that each individual training session should not occur in a vacuum. That is, it should be part of a larger plan; building on previous training and also preparing the way for future training. This is something that seems to be frequently obscured in the training requirements. It seems at times easier

to generate records and reports of training accomplished than it is to give attention to the actual quality production of training.

The particular systems approach to training presented here is based on the TRADOC Instructional System Development (ISD) model and the Systematic Design of Instruction (SDI) model (actually a modified ISD presented by the contractors who developed the ISD model for TRADOC).

What do we teach? Too often the answers to this question are misguided. The trainer immediately develops a long list of items, topics, lists, etc., that the student should know at the end of the instruction. If we refer to our original definition of training, the focus is "job skills" not "job knowledge." As trainers, our interest should be on what our soldiers do not know. Therefore we must establish goals. An instructional goal is quite simply "a statement that describes what it is that students will be able to do after they have completed instruction" (Dick and Carey, 1978, pg. 14). A related consideration is the focus on the teacher's behavior. "Instructional goals describe what students will be able to do after studying the unit, not what the teachers will do during the unit" (Dick and Carey, 1978, pg. 15). The former addresses a product orientation, while the latter is more concerned with the process of training.

This is probably one of the more fundamental mistakes that we make as trainers. Too often we find ourselves planting one tree here, another there, in the proverbial forest of training requirements. We are so busy planting our quota of trees we sometimes forget that our efforts should culminate into a well planned forest. In other words, every training effort we make should contribute to an overall goal and not merely represent a chaotic meandering by the trainer looking for an area in which to plant his particular type and quota of trees.

Job/Task/Instructional Analysis

The first step is to determine what skills or behaviors are desired. This phase is called the *Analysis* phase and consists of carefully analyzing the job to determine "exactly what people do when they do their jobs, the order in which they do it, the conditions under which they must do it, and the level of skill or performance deemed adequate in the job" (TRADOC Pam 350-30, pg. 16). This has been more simply stated in other references as tasks, conditions, and standards, respectively. The entire instructional or training process and the quality of the product is a direct result of this analysis.
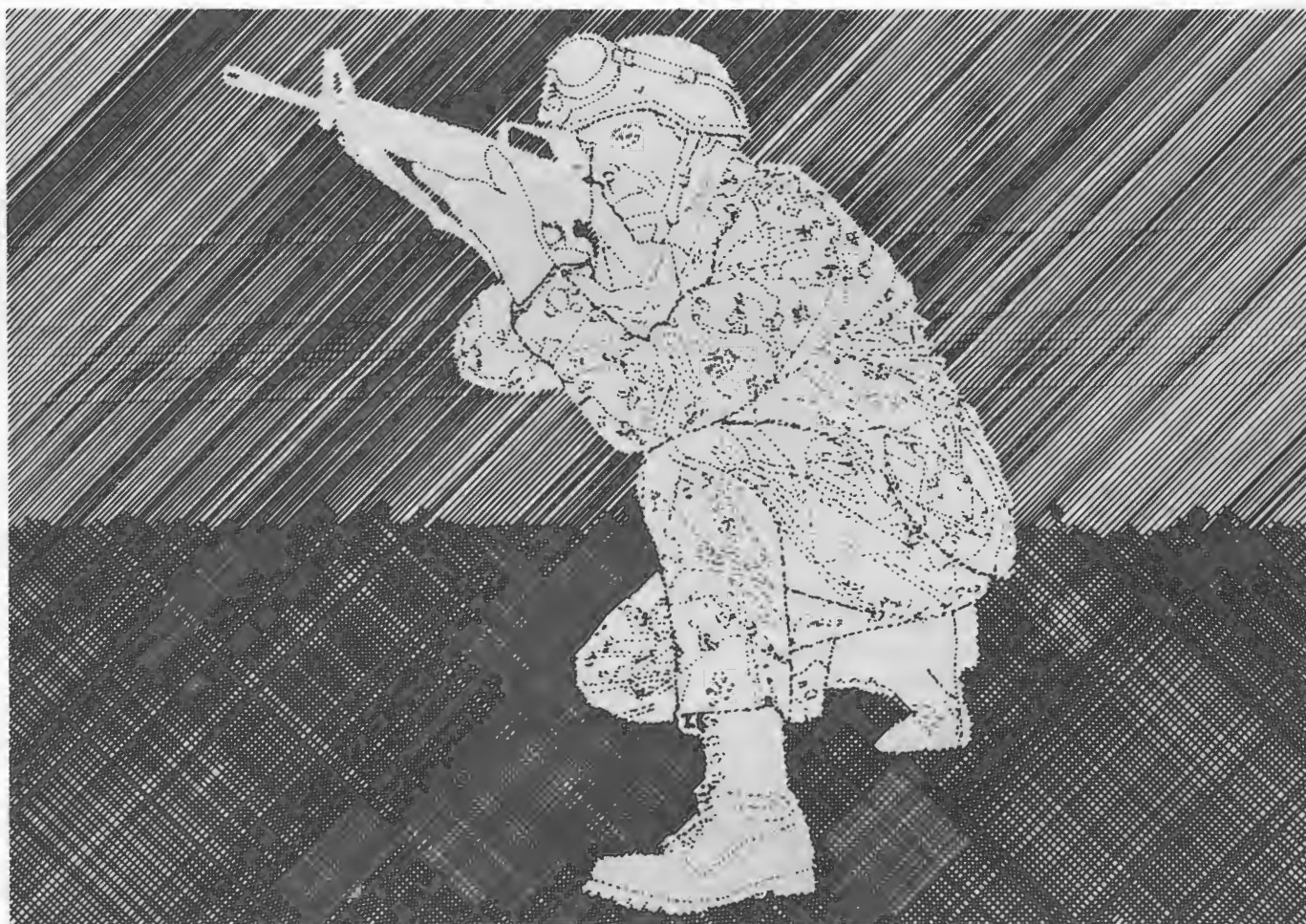
The items selected are called objectives. Objectives provide the foundation of the instructional process for three main reasons:

> *"First, when clearly defined objectives are lacking, there is no sound basis for the selection or designing of instructional materials, content, or methods.*
>
> *A second important reason for stating objectives sharply has to do with finding out whether the objective has, in fact, been accomplished.*
>
> *A third advantage of clearly defined objectives is that they provide students with the means to organize their own efforts toward accomplishment of those objectives."*
> **—Mager, 1975, pg. 5-6**

Much has been written about the proper writing or construction of objectives regarding clarity, specificity, and number (Mager, 1975; Dick and Carey, 1978; Mehrens and Lehmann, 1975; Gagne and Briggs, 1979; Briggs, 1970; Gagne, 1977). In essence, objectives are predicated upon an instructional analysis, "... a procedure that, when applied to an instructional goal, results in the identification of the relevant subordinate skills required for a student to achieve a goal" (Dick and Carey, 1978, pg. 25). That is, our requisite end-behavior usually represents the cumulative efforts of many subskills blended together. As such, these subskills are exhibited as a behavior "that, while perhaps not important in and of itself as a learning outcome, must be achieved in order to learn some higher or superordinate skill" (Dick and Carey, 1978, pg. 25). Two useful approaches exist for the ordering of the subskills; namely the procedural and hierarchical approaches.

The *procedural approach* is used when subskills must be objective to be achieved. If the subskills are completed out of sequence, the terminal objective may not be achieved in the most effective manner. An example is the firing of a howitzer which consists of three subskills: 1) selecting the round, 2) loading the tube, and 3) aiming the tube. Each subtask may be performed independent of the other two and may be learned without knowledge of the other two. However, for the howitzer to be fired correctly the three subskills must be performed in a certain order. (In this example, 2 and 3 are interchangeable in some howitzers, but certainly 1 through 3 must be performed before firing.) This approach is commonly diagramed in a linear manner as represented in this illustration.
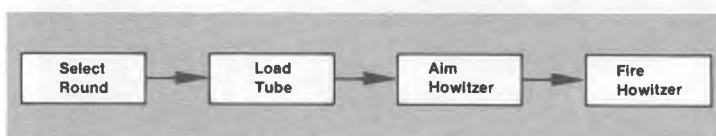
The hierarchical approach is more concerned with building on the previous or lower level skills than with the order. An example is when we aim the tube. The subskills are: 1) set the deflection, 2) set the quadrant elevation. These two subskills are necessary for the goal of aiming the howitzer. An example of the *hierarchical approach* is represented in this illustration.
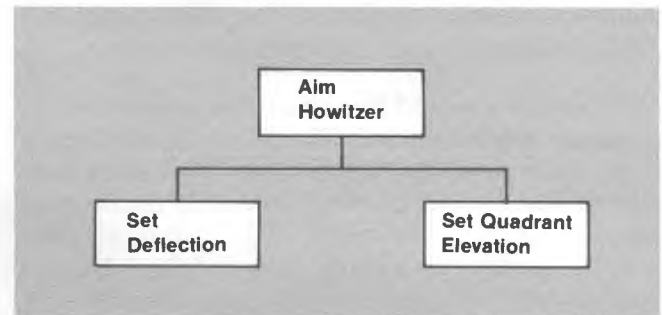
The goal of aiming the howitzer depends on accomplishing the lower two subskills. This differs from the procedural approach where the subskills had to be performed in a certain order even though they could be learned independently.

There is a third approach to subskill ordering that is a mixture of the procedural and hierarchical and is fittingly called the *combination approach.* The majority of tasks trained will probably fall into this category. An example of this approach is diagramed in this manner.
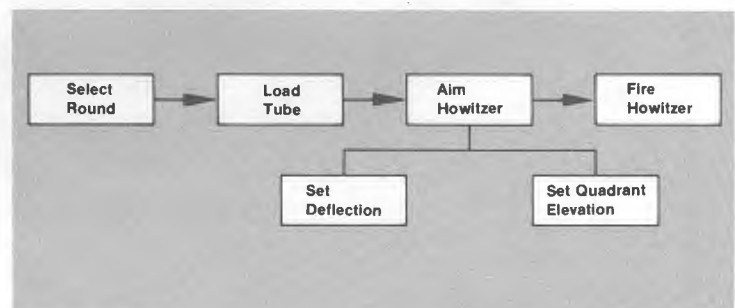
Identification of Entry Behaviors and Target Population

When all the necessary subskills are determined and diagramed appropriately, the next step is the identification of the entry behaviors and target population. The target population is that group of people at which the instruction is directed. Such characteristics as age, sex, and grade level all have an effect on the type and level of instruction. The manifestation of these target population characteristics exist as entry behaviors, defined as "...these specific skills that a student must be able to demonstrate prior to beginning an instructional activity" (Dick and Carey, 1978, pg. 50). After a careful examination of the target population and entry behavior, the trainer can begin to write performance objectives (P.O. s).

Writing Performance Objectives

Well written performance objectives have two essential characteristics: they are *well-defined* and *job-relevant*. The end result is concise statements about what behavior you hope to see ex-
~~hibited by the person(s) for whom you are de~~

texts address the actual construction and design of testing instruments (Gagne and Briggs, 1979; Kibler et al., 1974; Millman, 1974; Payne, 1974).

Development of Instructional Strategy

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...arey, 1978, pg. 108

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LAST CALL!

In the last issue (number 3-4, 1983) we began to verify and update our computerized mailing list. The response was good, but we believe there were many readers who did not mail back the card, but who wish to stay on our mailing list.

So we decided to run it by you one more time. This is your last chance to let us know if you wish to continue receiving the *Army Organizational Effectiveness Journal*.

Remember, if we don't get a card from you, your subscription may be terminated. (If you sent in a card last time, you don't need to send another one.)

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Instructional Materials

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...enced testing, which means testing that involves a comparison of the student's performance to a specified (per P.O.) standard or criterion. It is imperative that the evaluation instrument be developed in concert with the performance objective to ensure tasks, conditions, and standards are the same for both training and testing. Numerous

Writing Performance Objectives

Well written performance objectives have two essential characteristics: they are *well-defined* and *job-relevant*. The end result is concise statements about what behavior you hope to see exhibited by the person(s) for whom you are designing the training.

To achieve these characteristics, performance objectives must be written with the following three requirements in mind. First, as mentioned earlier, they must clearly specify what it is (the *behavior*) that you hope to see as an end result of your training. Secondly, to allow for a responsiveness of this newly learned behavior, the *conditions* under which the behavior should be exhibited and available for observation should be specified. Third, specify the criteria or *standard* by which you as the trainer will determine whether the behavior has been performed at an acceptable level of proficiency and in the proper situation or condition.

Herein exists an illusion of simplicity; the whole process seems deceptively easy. However, correctly thought-out performance objectives with the above characteristics and requirements considered, provides an efficient foundation for training system development. A complete guide for writing performance objectives (Geis and Richards, 1983, pg. 27-29) should be used at this critical stage. From these performance objectives you can generate the trainer's objectives, the basis for test development, and the system by which an evaluation of the training process effectiveness can be conducted.

Development of Test Instrument

After the performance objectives have been written, the trainer is ready to go on to the next step in the systems approach to training. The development of the test instrument at this stage in the cycle often appears out of place. The testing device is too often developed after the instruction, instead of in response to the performance objectives. In the construction of the test, the items should be keyed to specific objectives.

If during our task or instructional analysis you determined that certain skills were important enough to convert to objectives to be taught, it is certainly important to test whether those skills were learned. It is important also to measure whether skills or behaviors were attained using the same conditions and standards used in training. This is commonly referred as criterion-referenced testing, which means testing that involves a comparison of the student's performance to a specified (per P.O.) standard or criterion. It is imperative that the evaluation instrument be developed in concert with the performance objective to ensure tasks, conditions, and standards are the same for both training and testing. Numerous texts address the actual construction and design of testing instruments (Gagne and Briggs, 1979; Kibler et al., 1974; Millman, 1974; Payne, 1974).

Development of Instructional Strategy

The next step in the training process is the development of an *instructional strategy*. We have answered the question "What do we teach?" Our attention now focuses on "How do we teach?" In the military, the majority of our training is aimed at job skills or behavior with little emphasis on the acquisition of knowledge in an abstract sense. Consequently, the majority of our instructional effort is and should be performance oriented. That is, the student should be doing something rather than being a passive receptacle.

> *"One of the most powerful effects in the whole learning process is that to practice with feedback ... students should be provided an opportunity to practice what you want them to be able to do. Not only should they be able to practice, but they should be provided some type of feedback or information about their performance."*
> *—Dick and Carey, 1978, pg. 108*

Practicing a skill is important but useful only if students are informed about the quality of their responses. It does no good to practice an incorrect behavior; in fact, it will often make learning the correct response even more difficult later.

Selection of Instructional Media or Materials

After the instructional strategy has been selected, whether it be lecture, demonstration, or practical exercise, the instructional media or materials must be selected. These materials must support the instructional strategy and objectives to be taught, not vice versa. Such media as films should be selected because they support the instructional strategy and contain materials that support the objectives, not because they're fun, easy to use, available, etc. How many times has a class been designed around a film rather than the film selected to support the objective? Unfortunately all too often.

Formative Evaluation

The next step in the training process is to consider the question, *"How do we know if the soldier actually learned?"* As was emphasized above, if care is taken to clearly and carefully delineate the task (behavior), conditions and standards of the soldier's performance, then you have, in effect, established the evaluation system by which you answer the question "What has been learned?". Underlying this is a subtle shift in perspective from the person to whom the instruction is directed, to the instruction itself. A process known

as "Formative Evaluation" provides a systematic way

> "... to obtain data for instructors to use to increase the efficiency and effectiveness of the instructional materials. The emphasis in formative evaluation is on the collection of data in order to revise the instructional materials, to make the materials as effective as possible."
> —*Dick and Carey, 1978, pg. 159*

This formative evaluation precedes the presentation of the instruction to the target population. Basically it consists of a series of practice runs with, first, one individual, then a larger group. A representative sample of student(s) take the test to determine if the instructional materials designed or selected are effective. Attitude and interest surveys may also be given to provide additional information about the instructor. The instructional materials are revised as a result of the data collected. The specific procedures and phases of a formative evaluation can be found elsewhere (e.g., Dick and Carey, 1978, pp. 158-179).

Finally, consideration must be given to the issue of *"How can we stretch our training resources (time, money, etc.)?"* Clearly, one of the easiest

ways is to ensure that training always is conducted in the most effective and efficient manner possible. This article represents a cursory overview of a means toward that end. Current and future emphases within the Army will continue to reflect this perspective as evidenced in the plan of the Final Draft of the Army Training 1990 (8 April 1983). The 1990 training plan envisions evaluation to be an "... informal, continuous subjective ..." process "... conducted by the trainer or leader on training conducted within his/her unit ..." and designed "... to identify training weaknesses and address the reasons why various missions or tasks were not performed to standard." The feedback from these evaluations is then "... used as the basis for updating or adjusting training programs to attain or sustain the required level of training proficiency." Parenthetically, it is a fact of life that you will almost always have more training to conduct than you have resources available to support your training. Here again, the importance of good, effective evaluations cannot be over emphasized. This affords you the opportunity to prioritize your training from an "informed" position, a position that will allow you to select the training which, based upon evaluation, contributes the most to overall unit readiness.

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What Makes A Top Executive?

Two Behavioral Scientists From A Leading Think Tank Map The Pitfalls Along The Path To The Executive Suite

Morgan W. McCall Jr. and Michael M. Lombardo

Senior Executive: At one time, Jim was the leading, perhaps the only, candidate for chief executive officer. And then he ran into something he'd never faced before—an unprofitable operation. He seemed to go on a downward spiral after that, becoming more remote each day, unable to work with key subordinates.

Interviewer: Why do you think he derailed?

Senior Executive: Some of it was bad luck, because the business was going down when he inherited it. Some of it was surrounding himself with specialists, who inevitably wear the blinders of their particular field. And some of it was that he had never learned to delegate. He had no idea of how to lead by listening.

The case of Jim is by no means unusual. Many executives of formidable talent rise to very high levels, yet are denied the ultimate positions. The quick explanations for what might be called their derailment are the ever-popular Peter Principle—they rose past their level of competence—or, more darkly, they possessed some fatal flaw.

The grain of truth in these explanations masks the actual complexity of the process. So we learned from a study that we recently did here at the Center for Creative Leadership, a nonprofit research and educational institution in Greensboro, North Carolina, formed to improve the practice of management.

When we compared 21 derailed executives—successful people who were expected to go even higher in the organization but who reached a plateau late in their careers, were fired, or were forced to retire early—with 20 "arrivers"—those who made it all the way to the top—we found the two groups astonishingly alike. Every one of the 41 executives possessed remarkable strengths, and every one was flawed by one or more significant weaknesses.

Insensitivity to others was cited as a reason for derailment more often than any other flaw. But it was never the only reason. Most often, it was a combination of personal qualities and external circumstances that put an end to an executive's rise. Some of the executives found themselves in a changed situation, in which strengths that had served them well earlier in their careers became liabilities that threw them off track. Others found that weaknesses they'd had all along, once outweighed by assets, became crucial defects in a new situation requiring particular skills to resolve some particular problem.

Our goal was to find out what makes an effective executive, and our original plan was to concentrate on arrivers. But we soon realized that, paradoxically, we could learn a lot about effectiveness by taking a close look at executives who had failed to live up to their apparent potential.

We and our associate, Ann Morrison, worked with several Fortune-500 corporations to identify "savvy insiders"—people who had seen many top executives come and go and who were intimately familiar with their careers. In each corporation one of us interviewed several insiders, usually a few of the top 10 executives and a few senior "human resources professionals," people who help to decide who moves up. We asked them to tell both a success story and a story of derailment.

Fatal Flaws

Asked to say what had sealed the fate of the men (they were all men) who fell short of ultimate success, our sources named 65 factors, which we boiled down to 10 categories:

1. Insensitive to others: abrasive, intimidating, bullying style.
2. Cold, aloof, arrogant.
3. Betrayal of trust.
4. Overly ambitious: thinking of next job, playing politics.
5. Specific performance problems with the business.
6. Overmanaging: unable to delegate or build a team.
7. Unable to staff effectively.
8. Unable to adapt to boss with different style.
9. Unable to think strategically.
10. Overdependent on advocate or mentor.

Fatal Flaws: The Reasons For Derailment

Insensitivity To Others

Figures represent the number of derailed executives in the study who were said to suffer from each flaw.

Specific Performance Problems — 6

Insensitivity To Others — 8

Aloofness Arrogance — 4

Betrayal Of Trust — 4

Overmanaging (Failure To Delegate) — 4

Overly Ambitious — 6

Failure To Staff Effectively — 3

Inability To Think Strategically — 3

Inability To Adapt To New Boss — 4

Overdependence On Mentor — 4
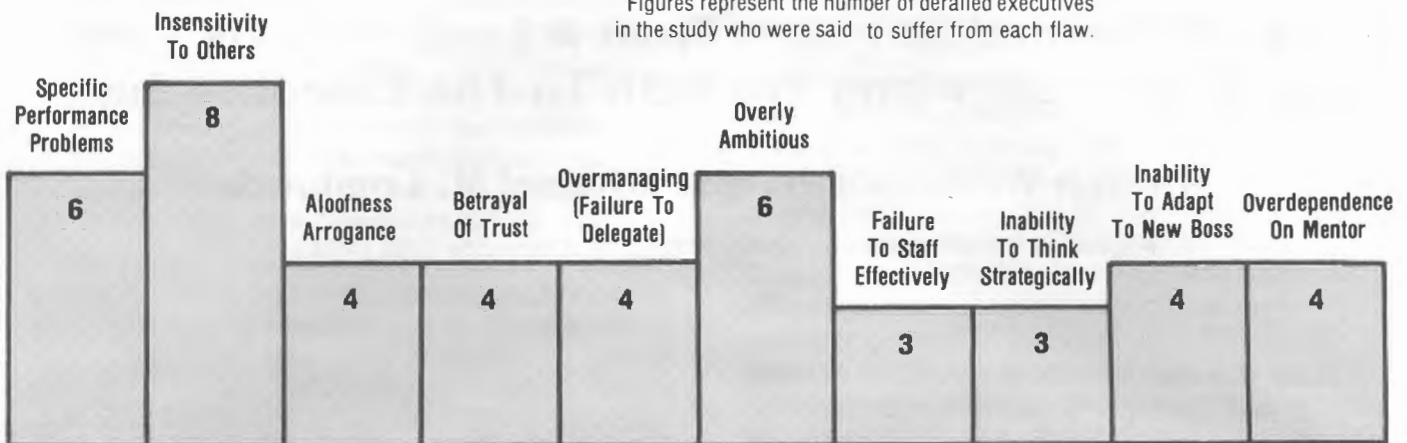
No executive had all the flaws cited; indeed, only two were found in the average derailed executive.

As we have noted, the most frequent cause for derailment was insensitivity to other people. "He wouldn't negotiate; there was no room for countervailing views. He could follow a bull through a china shop and still break the china," one senior executive said of a derailed colleague.

Under stress, some of the derailed managers became abrasive and intimidating. One walked into a subordinate's office, interrupting a meeting, and said, "I need to see you." When the subordinate tried to explain that he was occupied, his boss snarled, "I don't give a goddamn. I said I wanted to see you now."

Others were so brilliant that they became arrogant, intimidating others with their knowledge. Common remarks were: "He made others feel stupid" or "He wouldn't give you the time of day unless you were brilliant too."

In an incredibly complex and confusing job, being able to trust others absolutely is a necessity. Some executives committed what is perhaps management's only unforgivable sin: They betrayed a trust. This rarely had anything to do with honesty, which was given in almost all cases. Rather, it was a one-upping of others, or a failure to follow through on promises that wreaked havoc in terms of organizational efficiency. One executive didn't implement a decision as he had promised to do, causing conflicts between the marketing and the production divisions that reverberated downward through four levels of frustrated subordinates.

Others, like Cassius, were overly ambitious. They seemed to be always thinking of their next job, they bruised people in their haste, and they spent too much time trying to please upper management. This sometimes led to staying with a single advocate or mentor too long. When the mentor fell from favor, so did they. Even if the mentor remained in power, people questioned the executive's ability to make independent judgments. Could he stand alone? One executive had worked for the same boss for the better part of 15 years, following him from one assignment to another. Then top management changed, and the boss no longer fit in with the plans of the new regime. The executive, having no reputation of his own, was viewed as a clone of his boss and was passed over as well.

A series of performance problems sometimes emerged. Managers failed to meet profit goals, got lazy, or demonstrated that they couldn't handle certain kinds of jobs (usually new ventures or jobs requiring great powers of persuasion). More important in such cases, managers showed that they couldn't change; they failed to admit their problems, covered them up, or tried to blame them on others. One executive flouted senior management by failing to work with a man specifically sent in to fix a profit problem.

Some executives committed the one unforgivable sin: they betrayed a trust.

After a certain point in their careers, managers must cease to do the work themselves, and must become executives who see that it is done. But some of the men we studied never made this transition, never learning to delegate or to build a team beneath them. Although overmanaging is irritating at any level, it can be fatal at the executive level. When executives meddle, they are meddling not with low-level subordinates but with other executives, most of whom know much more about their particular area of expertise than their boss ever will. One external-affairs executive who knew little about government regulation tried to direct

an expert with 30 years' experience. The expert balked, and the executive lost a battle that should never have begun.

Others got along with their staff, but simply picked the wrong people. Sometimes they staffed in their own image, choosing, for instance, an engineer like themselves when a person with marketing experience would have been better suited for the task at hand. Or sometimes they simply picked people who later bombed.

Inability to think strategically—to take a broad, long-term view—was masked by attention to detail and a miring in technical problems, as some executives simply couldn't go from being doers to being planners. Another common failure appeared as a conflict of style with a new boss. One manager who couldn't change from a go-getter to a thinker/planner eventually ran afoul of a slow-paced, more reflective boss. Although the successful managers sometimes had similar problems, they didn't get into wars over them, and rarely let the issues get personal. Derailed managers exhibited a host of unproductive responses—got peevish, tried to shout the boss down, or just sulked.

Strengths can turn into weaknesses. Loyalty, for example, may come to be seen as cronyism.

In summary, we concluded that executives derail for four basic reasons, all connected to the fact that situations change as one ascends the organizational hierarchy:

1. Strengths become weaknesses. Loyalty becomes overdependence, narrowness, or cronyism. Ambition is eventually viewed as politicking and destroys an executive's support base.

2. Deficiencies eventually matter. If talented enough, a person can get by with insensitivity at lower levels, but not at higher ones, where subordinates and peers are powerful and probably brilliant also. Those who are charming but not brilliant find that the job gets too big and problems too complex to get by on interpersonal skills.

3. Success goes to their heads. After being told how good they are for so long, some executives simply lose their humility and become cold and arrogant. Once this happens, their information sources begin to dry up and people no longer wish to work with them.

4. Events conspire. A few of the derailed apparently did little wrong. They were done in politically, or by economic upheavals. Essentially, they just weren't lucky.

While conducting the interviews, we heard few stories about water-walkers. In fact, the executive who came closest to fitting that category, the one "natural leader," derailed precisely because everyone assumed that he could do absolutely anything. At higher levels of management, he became lost in detail, concentrated too much on his subordinates, and seemed to lack the intellectual ability to deal with complex issues. Still, no one helped him; it was assumed that he would succeed regardless.

In short, both the arrivers and those who derailed had plenty of warts, although these generally became apparent only late in the men's careers. The events that exposed the flaws were seldom cataclysmic. More often, the flaws themselves had a cumulative impact. As one executive put it, "Careers last such a long time. Leave a trail of mistakes and you eventually find yourself encircled by your past.

In general, the flaws of both the arrivers and the derailed executives showed up when one of five things happened to them: 1) They lost a boss who had covered, or compensated for, their weaknesses. 2) They entered a job for which they were not prepared, either because it entailed much greater responsibility or because it required the executives to perform functions that were new to them. Usually, the difficulties were compounded by the fact that the executives went to work for a new boss whose style was very different from that of his newly promoted subordinate. 3) They left behind a trail of little problems or bruised people, either because they handled them poorly or moved through so quickly that they failed to handle them at all. 4) They moved up during an organizational shake-up and weren't scrutinized until the shake-down period. 5) They entered the executive suite, where getting along with others is critical.

One or more of these events happened to most of the executives, so the event itself was telling only in that its impact began to separate the two groups. How one person dealt with his flaws under stress went a long way toward explaining why some men arrived and some jumped the tracks just short of town. A bit of dialogue from one interview underscores this point:

Senior Executive: Successful people don't like to admit that they make big mistakes, but they make whoppers nevertheless. I've never known a CEO [chief executive officer] who didn't make at least one big one and lots of little ones, but it never hurt them.

Interviewer: Why?

Senior Executive: Because they know how to handle adversity.

Even big mistakes don't hurt executives who know how to handle adversity.

Part of handling adversity lies in knowing what *not* to do. As we learned, lots of different management behavioral patterns were acceptable to others. The key was in knowing which ones colleagues and superiors would find intolerable.

As we said at the beginning, both groups were amazingly similar: incredibly bright, identified as promising early in their careers, outstanding in their track records, ambitious, willing to sacrifice—and imperfect. A closer look does reveal some differences, however, and at the levels of excellence characteristic of executives, even a small difference is more than sufficient to create winners and losers.

The Arrivers and the Derailed Compared

In the first place, derailed executives had a series of successes, but usually in similar kinds of situations. They had turned two businesses around, or managed progressively larger jobs in the same function. By contrast, the arrivers had more diversity in their successes—they had turned a business around *and* successfully moved from line to staff and back, or started a new business from scratch *and* completed a special assignment with distinction. They built plants in the wilderness and the Amazonian jungle, salvaged disastrous operations, resolved all-out wars between corporate divisions without bloodshed. One even built a town.

Derailed managers were often described as moody or volatile under pressure. One could control his temper with top management he sought to impress, but was openly jealous of peers he saw as competitors. His too-frequent angry outbursts eroded the cooperation necessary for success, as peers began to wonder whether he was trying to do them in. In contrast, the arrivers were calm, confident, and predictable. People knew how they would react and could plan their own actions accordingly.

Although neither group made many mistakes, all of the arrivers handled theirs with poise and grace. Almost uniformly, they admitted the mistake, forewarned others so they wouldn't be blindsided by it, then set about analyzing and fixing it. Also telling were two things the arrivers didn't do: They didn't blame others, and once they had handled the situation, they didn't dwell on it.

Moreover, derailed executives tended to react to failure by going on the defensive, trying to keep it under wraps while they fixed it, or, once the problem was visible, blaming it on someone else.

Although both groups were good at going after problems, arrivers were particularly single-minded. This "What's the problem?" mentality spared them three of the common flaws of the derailed: They were too busy worrying about their present job to appear overly eager for their next position; they demanded excellence from their people in problem-solving; and they developed many contacts, saving themselves from the sole-mentor syndrome. In fact, almost no successful manager reported having a single mentor.

Lastly, the arrivers, perhaps due to the diversity of their backgrounds, had the ability to get along with all types of people. They either possessed or developed the skills required to be outspoken without offending people. They were not seen as charming-but-political or direct-but-tactless, but as direct-but-diplomatic. One arriver disagreed strongly with a business strategy favored by his boss. He presented his objections candidly and gave the reasons for his concerns as well as the alternative he preferred. But when the decision went against him, he put his energy behind making the decision work. When his boss turned out to be wrong, the arriver didn't gloat about it; he let the situation speak for itself without further embarrassing his boss.

One of the senior executives we interviewed made a simple but not simplistic distinction between the two groups. Only two things, he said, differentiated the successful from the derailed: total integrity, and understanding other people.

Integrity seems to have a special meaning to executives. The word does not refer to simple honesty, but embodies a consistency and predictability built over time that says, "I will do exactly what I say I will do when I say I will do it. If I change my mind, I will tell you well in advance so you will not be harmed by my actions." Such a statement is partly a matter of ethics, but, even more, a question of vital practicality. This kind of integrity seems to be the core element in keeping a large, amorphous organization from collapsing in its own confusion.

Ability—or inability—to understand other people's perspectives was the most glaring difference between the arrivers and the derailed. Only 25 percent of the derailed were described as having a special ability with people; among arrivers, the figure was 75 percent.

Interestingly, two of the arrivers were cold and asinine when younger, but somehow completely changed their style. "I have no idea how he did it," one executive said. "It was as if he went to bed one night and woke up a different person." In general, a certain awareness of self and willingness to change characterized the arrivers. That same flexibility, of course, is also what is needed to get along with all types of people.

Two Executives: A Study in Contrasts

THE TWO CASE HISTORIES THAT FOLLOW ARE TOLD IN THE WORDS OF CORPORATE EXECUTIVES WHO KNEW THEM WELL.

ONE WHO ARRIVED

The Man
"He was an intelligent guy with a delightful twinkle in his eye. He could laugh at himself during the toughest of situations."

Notable Strengths
"He was a superb negotiator. He could somehow come out of a labor dispute or a dispute among managers with an agreement everyone could live with. I think he did this by getting all around a problem so it didn't get blown. People knew far in advance if something might go wrong."

Flaws
"He was too easy on subordinates and peers at times. Line people wondered whether he was tough enough, and sometimes, why he spent so much time worrying about people."

Career
"He was thrown into special assignments—negotiations, dealing with the press, fix-it projects. He always found a way to move things off dead center."

And Ended Up. . .
Senior Vice President

ONE WHO DERAILED

The Man
"He got results, but was awfully insensitive about it. Although he could be charming when he wanted to be, he was mostly knees and elbows."

Notable Strengths
"He was a superb engineer who came straight up the operations ladder. He had the rare capability of analyzing problems to death, then reconfiguring the pieces into something new."

Flaws
"When developing something, he gave subordinates more help than they needed, but once a system was set up, he forgot to mind the store. When things went awry, he usually acted like a bully or stonewalled it, once hiring a difficult employee and turning him over to a subordinate. 'It's your problem now,' he told him."

Career
"He rocketed upward through engineering/operations jobs. Once he got high enough, his deficiencies caught up with him. He couldn't handle either the scope of his job or the complexity of new ventures."

And Ended Up. . .
"Passed over, and it's too bad. He was a talented guy and not a bad manager, either. I suppose that his overmanaging, abrasive style never allowed his colleagues to develop and never allowed him to learn from them."

A final word—a lesson, perhaps, to be drawn from our findings. Over the years, "experts" have generated long lists of critical skills in an attempt to define the complete manager. In retrospect it seems obvious that no one, the talented executive included, can possess all of those skills. As we came to realize, executives, like the rest of us, are a patchwork of strengths *and* weaknesses. The reasons that some executives ultimately derailed and others made it all the way up the ladder confirm what we all know but have hesitated to admit: There is no one best way to succeed (or even to fail). The foolproof, step-by-step formula is not just elusive; it is, as Kierkegaard said of truth, like searching a pitch-dark room for a black cat that isn't there. □

Morgan W. McCall Jr. and **Michael M. Lombardo** are behavioral scientists and project managers at the Center for Creative Leadership in Greensboro, North Carolina. McCall, a Cornell Ph.D., has spent eight years studying leadership and management in complex organizations. Lombardo, with an Ed.D. from the University of North Carolina at Greensboro, has spent a similar period studying how organizational leaders solve problems.

OE And Combat—USAREUR

Lieutenant Colonel Alan Vitters, Master Sergeant Richard Belasto, Lieutenant Colonel David Windom, Major James Howerton, Major Phillip Schneider

> One of the important issues confronting Organizational Effectiveness today is to define its role in wartime. Described as the closest thing to combat duty in peacetime, our forces in U.S. Army Europe serve beside our NATO allies to defend Western Europe. This article shares experiences of **battle staff processing** during the USAREUR OE Network's recent involvement in the NATO CPX, WINTEX/CIMEX 83.

Many OE Staff Officers (OESOs) have served in Europe without ever having the opportunity to apply their organizational skills to tactical operations. WINTEX/CIMEX 83, however, changed that for more than 60 OESOs who evaluated the USAREUR Command and Control Information System designed for tactical units, and evaluated the effectiveness of battle staffs required to process tactical information.* Guided by MACOM directives, OESOs focused their activities on a common project throughout the theater.

Because battle staff processing was a new type of operation for most of the OESOs, a week-long workshop reinforced the value of their individual and collective experience as it applied to the work before them. Each OESO received a formal evaluation plan, calling for survey administration by observation and interview, and data collection both during and after the exercise. At the work-

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* Additional information on WINTEX/CIMEX 83 is presented in "Command And Control On The Modern Battlefield," LTC, Vitters, *Army OE Journal*, 7:3-4, 1983; the same References apply.

models enhanced the applicable skills OESOs al-shop and throughout WINTEX/CIMEX 83, knowledge of open-systems theory, the adaptive-coping cycle model, battle staff processing, and other cognitive ready possessed, namely survey feedback techniques, the four-step process, and project-related experience.

The model that proved most effective in battle staff processing was Schien's adaptive-coping model. It focuses on the interface of two processes, communication and decision-making, and portrays information as flowing through sequential and continuous stages. As process observers, the OESOs analyzed information flow as staff members *acquired information, communicated information, made decisions, communicated decisions, executed decisions, performed contingency actions,* and *followed up on mission accomplishment* (see diagram). Competencies necessary to accomplish such processing were identified by Marshal and Olmstead in the early 1970s.

Organizational Process Competence

PROCESS (BEHAVIORAL) INDICATOR
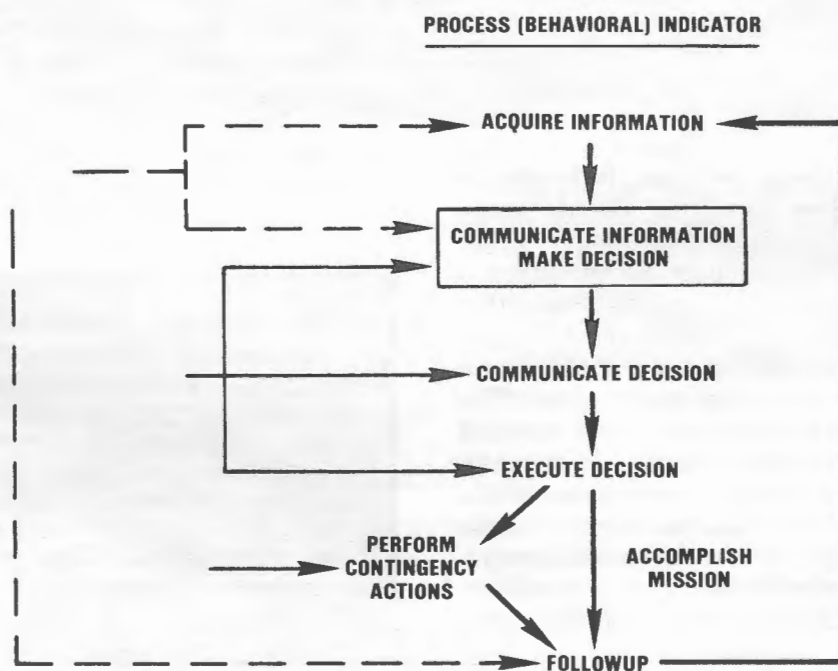
As WINTEX/CIMEX 83 unfolded, OESOs provided on-the-spot feedback to tactical units to improve unit operations and effectiveness. Especially gratifying were the immediate results achieved, such as modifying and improving command briefings, recommending revisions to SOPs that would subsequently be written and institutionalized, clarifying staff roles and relationships, and rearranging workplaces and meeting areas to facilitate communication flow. OESOs and staff alike agreed to seek continued improvements for meeting management, team building, and planning.

During WINTEX/CIMEX 83, which lasted more than ten days, OESOs learned to carefully plan and structure their activities over this longer-than-usual timeframe. As the evaluation concluded, an assessment of the OESO's role in battle staff processing revealed several interesting points:

- An **expert consulting approach** is *critical* because OESOs do not have time for advance rapport-building with staff members.

- The OESO must be as **knowledgeable as** possible **about staff areas of expertise,** such as tactical SOPs, plans and orders, and current Army doctrine. Also, it helps when communicating with staff to be able to talk their jargon.

- To maintain a **systems perspective,** an OESO must conscientiously separate oneself from the staff environment and establish a psychological distance from the people being evaluated, helped and trained.

- When providing **feedback,** the OESO must be non-evaluative *(by posing questions like, "Have you considered ...?"),* objective *(focusing on observed behavior),* and timely *(at the "teaching moment").* The OESO needs to give staff members options unseen by them due to total involvement in their work.

WINTEX/CIMEX 83 demonstrated that battle staff processing can be successfully applied at the theater level. While it is more complex than OE traditionally applied to battalion operations and it requires additional training, the return on time and manpower invested is substantial and unquestionably worthwhile. □

AUTHORS

LTC Alan Vitters was commissioned as an Infantry Lieutenant from the U.S. Military Academy in 1968. He is a graduate of the Command and General Staff College and has a Ph.D. in Human Resource Management from the University of Utah. He has served on the faculty at West Point and is currently assigned to the 1st Bn, 54th Infantry.

MSG Richard Belasto is presently assigned to HQ USAREUR as the senior Organizational Effectiveness OESO NCO in Europe. He was one of the first of four NCOs selected for the OE OESO Program and instructed the OE NCO Pilot Course. Previous Assignments include: Faculty Member, OECS; OESO, USA Infantry Center; Infantry Tactics Instructor, USA Infantry School; Air Defense Platoon Leader, 2nd Inf. Div., Korea.

LTC David Windom, is assigned to the OE Office in the Pentagon. He was the senior OE Officer in USAREUR. He was commissioned in 1962 from the U.S. Military Academy, and received his MPA in 1975 from Kansas University.

MAJ James Howerton is an OESO and program manager at HQ USAREUR. Upon graduation from OECS in 1978, he served as OESO for the 4th Inf. Div.(M) at Fort Carson, which included a behavior and managerial assessment process. MAJ Howerton holds a master's degree in Communication and Organizational Leadership from the University of Northern Colorado.

MAJ Phillip Schneider, an OESO with the HQ USAREUR OE Office, has served with a variety of combat and combat-service-support units in CONUS, Germany and Korea. His assignments have ranged from platoon to division level and include two company commands. His previous assignment was a Senior Personnel Advisor, 76th Training Div. (USAR) in New England. He completed Command and General Staff College in 1979 and has a master's degree in Public Service from Western Kentucky University.

Organizational Effectiveness Activities

HQDA
Colonel Bob Lander
AUTOVON: 225-1825

Work on Performance Management Army (PMA) continues in support of the Total Army Goals. Staff actions to develop and continue senior leadership commitment and provide direction to the program are being accomplished. Consultation to staff agencies and their directorates to develop and refine objectives and plan actions to accomplish objectives continues in the DCSOPS, DCSLOG, DCSPER and DCSRDA.

OESOs continue to be involved in actions resulting from the Force Integration initiatives. Activities include organization, purposing, action planning and conference design with the Documentation Modernization Task Force; action planning with the Equipment Distribution Assessment Office; reorganization of the DCSOPS Requirements and Force Development Directorates into one directorate; and design and facilitation of a conference on The Army Equipment Distribution Plan.

The Corporate Fitness Program for the Army Staff (ARSTAF) continues to move toward implementation. The program is under the control of the Surgeon General with assistance being provided by the DA OE Office. Funds for implementation of the program were recently approved and it is expected to start this summer.

The office is assisting in the establishment of the new Information Resource Management staff agency at DA and a MACOM combining Computer Systems Command and the Army Communications Command.

Transition meetings in various forms continue within the ARSTAF. Within the last year the office has assisted in the transition of the Chief of Staff, Army, the Vice Chief of Staff and the Director of the Army Staff as well as others down through directorate level within the agencies of the staff.

Outside the ARSTAF, support has been provided to numerous agencies of the Department of Defense, elements of other federal departments, and field elements of DoD. Strategic Planning has been done with the DoD CHAMPUS Office, the Defense Intelligence Agency, and the DoD Inspector General. Action planning has been accomplished with JCS elements, the atomic energy element of DoD, the Assistant Secretary of Defense for Health Affairs, and the Assistant Secretary of the Army for Manpower and Reserve Affairs.

TRADOC
LTC Ken Rice
AUTOVON 680-3312/3316

The TRADOC OE Office, working directly for the Office of the Chief of Staff, continues to focus on complex issues at higher organizational levels. Additionally, the office has been working closely with representatives from the DA OE Cell, CAC and OECS to redefine the role of the OESO and ensure future OESOs are suitably trained to assist top organizational leaders in resolving those tough problems that cut across functional boundaries and are aggravated by the complex changes our Army is experiencing.

Using skills taught to all of us at OECS, in addition to professional judgment and advanced systems training received at local universities, our OESOs are becoming ably equipped to conduct thorough organizational assessments designed to identify systemic problems, and to make sound recommendations for achieving unity of effort and enhancing functional integration.

Recent and ongoing projects include final review of the TRADOC Primer and development of an affiliated *How TRADOC Runs* Course, follow on actions to an assessment and subsequent analysis of TRADOC's Command Group management processes (dessigned to eliminate duplicative processes, fill voids and better integrate written and verbal communication vehicles) and assessments of several principal staff directorates and associated subordinate organizations.

Conference management has continued to be a recurring demand on the office. The TRADOC Chiefs of Staff Conference at A.P. Hill and the TRADOC Sergeants Major Conference at Ft. Knox both required in-depth staff preparation for successful execution.

We stand firm in our resolve to provide professional service to the installation and separate activity OE Offices and welcome your suggestions for improving our cohesion and information sharing.

FORSCOM

FORSCOM OE Conference—Bob Hamilton
AV 588-3537/38

Headquarters, FORSCOM OE Office will conduct an OE Conference in Atlanta, Georgia 30 April - 3 May 84. The conference will be primarily focused on improving OE in FORSCOM and will

be of a "working" nature as opposed to a professional development event.

Issues related to program management, major Army systems/programs and practical application of complex systems interventions will be highlighted.

Making PMA Work—Bob Hamilton
AV 588-3537/38

During the first two quarters of FY 84, FORSCOM OE Offices throughout the command were busy assisting their organizations in analyzing the guidance contained in the new FORSCOM Goals and Objectives (issued by the CG in August 1983). Armed with a better perspective of "what's important," the subordinate commands have, or are in the process of, developing their own organization management plans (purpose, missions, goals, objectives and action plans) which support the major direction of FORSCOM.

While the approaches used by OE Officers varied, their products appear excellent and their efforts will contribute significantly to more effective management of resources in the command.

Command Management System—
Dr. Jack Collier/AV 588-3537/38

HQ FORSCOM DCSCOMPT has an objective to develop a FORSCOM Command Management System (CMS). The complete objective is to provide an integrated Planning, Programming, Budgeting, Execution, and Evaluation System (PPBEES) which allows FORSCOM to better manage the identification of needs, the prioritization of resource distribution, the measurement of performance progress and the impact of shortfalls. This is a major change effort that is extremely complex and touches all parts of the organization. The OE Office is supporting this effort and will continue to give it high priority.

WESTCOM
Major James E. Prewitt
AUTOVON: 438-1958/2419

Currently, the WESTCOM OE Offices are actively engaged in two major operations—The WESTCOM Leadership Development Conference and Survey-Guided Development of HQ WESTCOM Staff:

WESTCOM Leadership Development Conference

The May 1984 Leadership Development Conference is planned, under the guidance of the WESTCOM Commander, to bring together key leaders of all major WESTCOM units for the purpose of discussing and developing leadership throughout the command. While the 25th Infantry Division and the MACOM OE Offices jointly developed a pre-conference survey, the 25th I.D.

OESOs deserve most of the credit. It is an instrument designed to gather information for commanders and their delegates concerning nine different dimensions of leadership development. The two OE Offices will also conduct facilitator training for selected delegates to prepare them for the group work planned into the conference design.

Survey Guided Development of the WESTCOM Staff

After more than two years of management system development,* strategy development and most recently a complete revision of the WESTCOM Goals, the Commanding General decided it was time to "fine tune" the management of the HQ staff. A 100% survey of the staff was ordered to furnish direction to this effort. Fortunately, this office has developed an excellent relationship with the Pearl Harbor Navy OE Center which graciously supplied us with use of its state-of-the-art survey technology. The Navy survey is the latest version of Likert's Survey of Organizations (Read GOQ) and allows extremely sophisticated statistical manipulations of the data, together with normative comparisons against responses of similar military organizations contained in its comprehensive data base.

The CG has received his survey feedback and has released the data to guide leadership and management development within the MACOM staff. Furthermore, staff heads have been briefed on the organization-wide trends and have been encouraged by the CG to request feedback (and planning) services for their own staff office's breakout of the survey data.

*(WESTCOM Pamphlet 5-1 - Management System Guide was published 31 Jan 84 and is available on request.)

National Guard Bureau
LTC Lee Gragg

Since the last update, the National Guard Bureau Organizational Effectiveness community has undergone considerable reorganization. On 1 January 1984, Organizational Effectiveness was moved from the Human Resources arena to a separate office under the Director, Joint Staff. Along with this move comes new office symbols, more paper, and a good deal of confusion in the Pentagon mail room.

Along with our reorganization comes an expanded focus and, we believe, a higher quality service. Over the past year the entire NGB-OE community has been working toward an increased emphasis on systems, strategic planning, force modernization and a focus on the future for the states and units that we serve. This emphasis seems to be bearing fruit, as the quality of work requests are shifting to a higher order: projects that cut across systems, such as CAPSTONE; and projects that transfer technology to state personnel like training transi-

tion specialists who can provide the service to brigade and lower level units.

NATIONAL GUARD BUREAU

LTC Gragg	Chief, Organizational Effectiveness	NGB-OE

EASTERN REGIONAL CENTER

LTC Bill Turk	Center Chief	NGB-OE-E
MAJ Darral Putman	OESO	
MAJ Mike Stark	OESO	
MAJ Ron Lattanzi	OESO	
SFC Irene Robinson	Administrative NCO	

CENTRAL REGIONAL CENTER

LTC Dennis Wampler	Center Chief	NGB-OE-C
MAJ Ted Pylant	OESO	
CPT Paul Gannon	OESO	
SFC Nancy Reutner	Administrative NCO	

WESTERN REGIONAL CENTER

LTC Dick Deaner	Center Chief	NGB-OE-W
MAJ Don Kozacek	OESO	
MAJ Terry Denson	OESO	
SFC Diane Perez	Administrative NCO	

Significant on-going activities:

IN THE EAST: The Eastern Regional Center has been heavily involved in general officer transitions, as new generals assume the position of Adjutant General or other important posts. The harsh weather has interfered some with scheduling, but all OESOs are on the road a great deal. CAPSTONE, long-range and strategic planning, and force integration are current focuses in a number of commands and states. The center OESOs are also doing "joint" operations with Readiness Group OESOs to expand the team's ability to service requests. The overall trend is toward more sophisticated operations; however, the basics have to be used with new users.

AT CENTRAL: The trend is toward those units with high priority (intensive Managed List) and those RDF/A. The emphasis is on strategic planning which is being implemented in phases—allowing for followup. The last year has shown an increase in the mixing of the traditional OE skills and the use of a systemic approach. Since the first of the calendar year, we have focused on three main areas.

1. The team is putting together an internal package for OESOs and an exportable package for user organizations regrading Force Integration. By 1 Mar 84, we will have a briefing prepared for organizations that are going to be involved in some type of Force Integration, and we will have a program set up to assist the gaining units with the changeover. The exportable package will be for those organizations that would "rather do it themselves."

2. There has been an increased demand for transition meetings at company level. Since we do not have the manpower required to respond, we have developed a program to "Train The Trainer" for those states that want to have

their own people trained to conduct transition meetings at that level. The session is a 2½-day structured workshop.

3. CAPSTONE is a continuing project for the team. In the past, only an information paper had been produced for those organizations interested and involved in CAPSTONE. The team is constructing a packet for other OESOs and a different packet for those organizations who again would "rather do it themselves."

The process of followup on previous operations is keeping us very active and leaves little time to establish new client contacts. Followup is being done in recruiting and retention, strategic planning and Quality Circles. It is most rewarding and challenging.

IN THE WEST: We've been gathering information on what it takes to be successful at the National Training Center (NTC), primarily centered around National Guard units that have attended or will attend NTC through FY85. We are also involved with a supervisor's workshop, several transitions, a TAG-level assessment, a battle staff assessment, planning the installation of our second WEIT at a state level, and doing some followup work with previous clients.
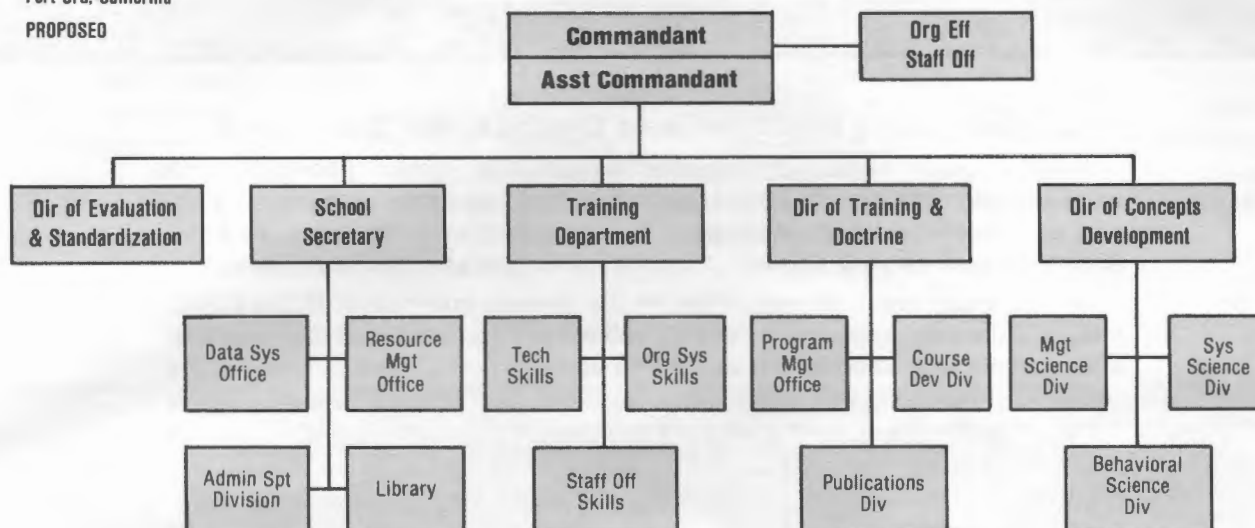
OECS
AUTOVON 929-5919/4882

The first quarter of 1984 saw several significant changes at the OE Center and School. The OECS has reorganized in accordance with TRADOC's School Model '83 structure, realignments have been made in the Training Department and in the Concepts Development Directorate to provide for specialists in the areas of behavioral, management, and systems science.

Progress in acquiring the equipment to support the computer literacy training has slowly been made. With a great deal of support from TRADOC headquarters, OECS received the first ten microcomputers in late December just in time for Class 1-84. Funding has been approved for the acquisition of 28 additional units, but purchase authority for these computers is still pending.

In December 1983, GEN Richardson, CDR, TRADOC, and BG(P) Conrad, Director of Management at DA, convened a General Officer Steering Committee (GOSC) to act as a collegial decision making body in order to tie together the various important activities underway in the reshaping of the OE Program. The members of the GOSC are LTG Vuono, DCG TRADOC, MG Forman, Chief of Staff, TRADOC, and BG(P) Conrad. At the initial GOSC meeting on 23 February, several important issues were discussed, including what is the appropriate role for the OESO to fill, and the best way to produce OESOs ready to step into this role. The highlights of the GOSC meeting have been published in letters from GEN Richardson to the field.

Figure 1
SCHOOL MODEL 83
C - Tenant Schools/Special Considerations

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                    ┌─────────────────────┐     ┌──────────────┐
                    │     Commandant      │─────│   Org Eff    │
                    ├─────────────────────┤     │  Staff Off   │
                    │   Asst Commandant   │     └──────────────┘
                    └─────────────────────┘
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Dir of Evaluation & Standardization	School Secretary	Training Department	Dir of Training & Doctrine	Dir of Concepts Development
Data Sys Office / Resource Mgt Office	Tech Skills / Org Sys Skills	Program Mgt Office / Course Dev Div	Mgt Science Div / Sys Science Div	
Admin Spt Division / Library	Staff Off Skills	Publications Div	Behavioral Science Div	

In addition, an in-depth briefing of all the outcomes of the 23 February meeting was presented to the semi-annual RAPC IPR on 24-25 March.

The GOSC applauded the initiative underway at OECS and encouraged the OE community in the field to assist and support in its continuation. The committee also stressed that the training of OESOs should particularly address the human dimension of the OE effort and continue to be based upon a curriculum which is heavy in behavioral science skills. The next meeting of the GOSC is currently scheduled for late June at OECS.

As of this writing, Class 1-84 is in its twelfth week and will be departing for FTX sites on 18 April. Members of the class will be going to Fort Gordon, GA; Fort Polk, LA; Tank-Automotive Command, Warren, MI; Rock Island Arsenal, IL; and several teams will stay at Fort Ord to work with the Infantry Division Light Program.

The new curriculum is undergoing continual review. The Director of Training and Doctrine chairs a committee to review and refine each block of instruction for Class 2-84. The first field evaluation of newly trained graduates will occur about 90 days after Class 1-84 graduates. The evaluation will give the OECS initial feedback on how well the students are trained to help their commanders deal with principal issues at the highest levels of the command.

All in all, the first months of 1984 have been a challenging time for the OECS. The school is eager to keep moving forward and make future graduates better prepared to assist the chain of command. □

QUOTES

Each honest calling, each walk of life, has its own elite, its own aristocracy based on excellence of performance. —**James Bryant Conant**

We can no longer overwhelm our problems; we must master them with imagination, understanding, and patience. —**Henry Kissinger**

For better it is to dare mighty things, to win glorious triumphs, even though checkered by failure, than to take rank with those poor spirits, who neither enjoy much nor suffer much, because they live in a gray twilight that knows not victory nor defeat. —**Theodore Roosevelt**

To err is human, but when the eraser wears out ahead of the pencil, you're overdoing it. —**J. Jenkins**

Sources & Resources
Lynn Dixon Herrick

Communicating Effectively In An Organizational Environment

In our attempts to increase the effectiveness of the organizations in which we work, each of us relies heavily on our ability to communicate. In transmitting and receiving information we influence others and are ourselves influenced, all with varying degrees of impact on organizational operations.

An eight-day block of instruction in the present curriculum of the OESO course is devoted to the multi-faceted subject of Organizational Communication. A metaphor used to introduce this block is that communication is the "glue" that holds organizations together. Like glue, the appropriate type of communication must be chosen for a specific purpose and it must be applied properly.

My intent in the following paragraphs is to review for you a portion of the extensive literature on the subject of communication. All of the references were used to some extent by curriculum developers in designing the block of instruction on Organizational Communication.

For a good introduction to communication theory, two standard texts are recommended: *Organizational Communication: The Keystone To Managerial Effectivenes,* by Wofford, Gerloff and Cummins (McGraw-Hill, c1977) and *Communication and Organizational Behavior,* by Haney (Irwin, 3rd edition, c1973). Both books are primarily theoretical in approach and both concentrate on communication as a managerial function; therefore neither book explicitly addresses communication from a Staff Officer perspective. An OESO would find them useful, however, in assessing the effectiveness of communication channels in an organization and in making recommendations for improvement to the leader/manager of that organization.

Additional communication theory is available in texts which deal with the subject more generically. The first, Berlo's *The Process Of Communication* (Holt, Rinehart and Winston, c1960), is probably the "granddaddy" of the modern trend to create models of communication. It provides a clear and direct basis for the understanding of more detailed treatment of the subject, such as that of Tubbs and Moss in *Human Communication* (Random House, 2nd edition, c1977) or Giffin and Patton in *Fundamentals Of Interpersonal Communication* (Harper & Row, 2nd edition, c1976). These two are very similar and quite comprehensive.

Now for two non-text books to supplement a theoretical understanding of communication. In *Understanding People: Models And Concepts* (University Associates, c1977), Boshear and Albrecht briefly explain several models of communication theory as well as other models that describe human dynamics. Miller, Nunnally and Wachman's *Alive And Aware: How To Improve Your Relationships Through Better Communication* (Interpersonal Communication Programs, c1975) presents an indepth exploration of one comprehensive model which takes into account both internal and external factors which impact on communication.

The books mentioned to this point have a common characteristic dealing with the subject of communication from a theoretical perspective... necessary for a full understanding of the subject, certainly, but not very practical. The proof of the communication pudding is in its application, and the most effective application requires specialized skills on the part of the communicator.

Fortunately there are a number of well-written books that deal with the practical application of communication skills. That's the good news. The bad news is that there is no single source. Maybe that's how authors sell more books. . .

Let's start with two books that have an organizational focus. The first is a brief and concise overview, in workbook format, of questioning skills, active listening skills and communication barriers: *Communicating On The Job: A Practical Guide For Supervisors* by Buening (Addison-Wesley, c1974). The second, Gordon's *Leadership Effectiveness Training* (Wyden Books, c1977), goes into greater detail on some of the same subjects. Although Gordon is best known for his advocacy of active listening, this book covers much more ground, including a heavy emphasis on conflict management strategies.

Unfortunately these two books never got the exposure of another that purports to deal with communication in an organizational setting: *The One Minute Manager,* by Blanchard and Johnson (William Morrow, c1982). Blanchard and Johnson have tried to do for feedback what Gordon did for active listening and, despite the book's considerable popularity, a concerned minority fears that their "formula management" approach may have set back organizational communication at least thirty years by inferring that a daily total of three minutes spent with each employee will insure a smoothly functioning office. Perhaps this simplistic approach will serve as a start in the right direction, but it's far from being the last word.

As you can easily see, the nature of literature on the subject of communication is almost as complex as the subject itself. A thorough investigation must include theory base, skill training and an understanding of human dynamics. As an anonymous sage has observed "We can't not communicate;" surely this is a subject that deserves our attention. □

OE Reference Network

AREA	NAME	AUTOVON
Assessment Methodology	Dr. Johnson	929-3411
Battlefield OE Research	MAJ Bridges/CPT Braun	929-7886
Computers	MAJ Kramer/CPT Mercer	929-3519
Computer Assisted Instruction	CPT Oravis	929-6019
Data Reduction and Feedback	MAJ Kramer/CPT Mercer	929-3519
Force Integration	CPT Braun	929-7886
How the Army Runs	MAJ Kotula/CPT Robertson	929-3411
OE Executive Seminar	Dr. Guido	929-7886
Organizational Design/Redesign	Dr. Roberts	929-7886
Management of Organizational Transitions	Dr. Guido/Mr. Goodfellow	929-7886
Performance Management Conference	MAJ Hatch/MAJ Curry	929-4021
Quantitative Methods	CPT Oravis	929-6014
Socio-Tech	Dr. Roberts	929-7886

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.

Lieutenant General(R) Julius W. Becton, Jr. Addresses The Graduating OESO Class 5-83

I've been a believer in OE for a long time. I was with the first Organizational Effectiveness FTX team ... I have used the OE transition model in my last four assignments (1st Cav. Div., OTEA, VII Corps, TRADOC) ... and I propose to use OE in my next job, even though *they* may not have heard about it yet!

I was a believer in OE back when it was called something else—OD, Organizational Development. But regardless of what you call it, OE has proven itself over the years and has been accepted into the military family. And those folks who understand and use the OE techniques stand a far better chance of success than the non-believers.

As you graduates leave OECS, your challenge is twofold. First, as the last group to be trained under the "old" system, you must be the bridge between that which is known about OE from yesteryear, and that which has been newly devised as the Systems Integration approach. This means becoming the town crier, proclaiming the virtues of the new approach and convincing all those graduates who preceeded you across this stage that Systems Integration is the new way to go. The second part of your challenge requires moving from "motor pool OE" to complex issues like Force Integration where you will be working on problems at higher levels.

While these challenges are significant, you have several things going for you. Your selection as an OECS student, for example, set you apart from the crowd. Somewhere along the way, you demonstrated the capacity to succeed. And the school's program has equipped you with the necessary tools to excel. Also, unlike the reception some of your predecessors received in years past, you will be going to a *receptive* command. Why? Because for the first time in OE's history, senior Army commanders are being strongly encouraged to use OE as a means of doing business.

As you arrive at your new station, you will work on integrating personnel and equipment with the doctrine on fighting. You will assist the commander in building structures to facilitate change in the various subsystems under his command. You have to help the commander build a mindset that allows sharing of information to become the central focus of Systems Integration. And as you prepare the way for a changing OE program, you will find that some commands experience the new thrust traumatically, whereas for others it will be business-as-usual.

As the Army Inspector of Training, one of my glaring failures was the inability to get commanders to share. All too often I found the "I got mine, so you get yours" mentality, along with an almost paranoid fear of letting others know about a good idea, or simply what's happening. Building a mindset for sharing information, and the command climate that accompanies it, is easier said than done. You must apply the human dimension of OE to foster the willingness to share information across boundaries. So, as OE explores new complex Army issues and you pursue a new way of thinking about the relationships between people, organizations, and things, remember General Abram's statement: "The Army is People, and People is the Army."

The question I leave you with, and one that has plagued the Army for too long, is, "What is quality when we're talking about people?" Is quality measured by your being a graduate of this school, or Leavenworth, AWC, SMA, or whatever? Or is quality measured by the notion of competency in your job? At VII Corps, our OE people had just as much access to the entire command group as any other staff officer. And what we found essential to the entire OE process is that you are, in fact, a responsible, accountable member of the team. It is your competence, not your title, that will enable you to build a reputation.

Graduates, as you embark on probably the most challenging opportunity in your career, I extend my congratulations and wish you good luck. ☐

Organizational Effectiveness Staff Officer Course

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OECS

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Organizational Effectiveness Center and School
Fort Ord, California**

A MORE EFFECTIVE ARMY