



①

The Operational Staff: Keeping Pace With Change?

A Monograph
by
Major Drew N. Early
Ordnance



DTIC
ELECTE
SEP 07 1994
S G D

63px

94-29032



School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas

Second Term AY 93-94

Approved for Public Release; Distribution is Unlimited

DTIC QUALITY INSPECTED 3

94 9 06 126

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

[illegible]

ABSTRACT

The Operational Staff: Keeping Pace With Change?
by MAJ Drew N. Early, USA, 59 pages.

This monograph examines the US Army operational level staff. Although the staff's importance to operational success is recognized, it remains the product of evolutionary development. Rather than adapting in a proactive manner, changes in staff structure and organization merely respond to previous conditions and problems.

The monograph first provides a background of staff development. The history of the staff is analyzed, assessing the relationship between changes in the conditions of warfare and the need for appropriate staff representation. Establishing this relationship provides insight into requirements for today's staff.

A doctrinal analysis examines the present role and functions of the operational level staff. This analysis is made, considering the significant mission changes that are associated with full-dimensional operations in a force projection environment. The assessment uses lessons learned from recent experiences. Recommendations for improving problem areas are combined with doctrinal insights that suggest modifications to current staff structure and functions. These modifications will bring US Army command and control processes in line with warfighting doctrine.

Accession For	
NTIS	CRA&I ☒
DTIC	TAB ☐
Unannounced ☐	
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

TABLE OF CONTENTS

I. Introduction	1
II. Historical Overview	3
III. Analysis of the Current Staff	24
IV. Recommendations	37
V. Conclusion	39
VI. Endnotes	
VII. Bibliography	

Introduction

Much thought and study is given to understanding the roles that technology, tactics, and new organizations play in warfare. Significant by its absence, though, is any large body of work that deals with the military staff. This absence is even more perplexing given the large amount of resources that the modern staff both consumes and controls, and the critical role that it plays in military operations.

This monograph analyzes the staff at the operational level of war. This study assesses the current US Army staff structure's ability to support the conduct of full-dimensional operations in a force projection environment. (Note: full-dimensional operations are defined as those operations encompassing "the application of all capabilities available to a commander to accomplish his mission decisively and at least cost across the full range of possible operations.") This assessment is done with a view toward improving the current staff. The traditional view of the staff needs to change in order to keep pace with new US strategy and doctrine.

The monograph shows that the process of changing the staff has been evolutionary in nature, just as is the institution of the staff, itself. The staff has

evolved in function and structure, responding to changes in the conduct of military operations at the operational level.

Herein lies the true value of this monograph. Taking a proactive approach to determine what the staff's role and organization should look like, rather than accepting the current institution, as is, seems to be of value. This becomes even more relevant in an era of constrained resources, where maximum utility needs to be extracted from every asset. The resources involving current command and control (C2) systems, of which the staff plays a significant role, are substantial. It follows, then, that military professionals should demand the best possible usage of all elements associated with C2² and design a C2 structure that is in consonance with warfighting doctrine.

Naturally, recommendations for changing the existing staff structure are made in the context of what will be needed in the future, rather than what has been of value in the past. It does not necessarily follow that today's staff structure is the best, or that it cannot be improved in order to be more effective in future operations.³

This monograph specifically focuses on the role of the staff in support of the conduct of war at the

operational level. Special emphasis is placed on the significant changes that are associated with full-dimensional operations. At the same time, an underlying theme is adhered to in this monograph. The staff exists for only one purpose--to serve and support the commander.'

An overview of the historical development of the institution of the staff is provided, along with a detailed analysis of those changes made in the staff by commanders as they strove to adjust to changes in the conduct of war, itself. A doctrinal assessment of the current staff analyzes the effectiveness of this organization to facilitate full-dimensional operations. This assessment provides some clues to necessary changes in staff structure and manning. The conclusion summarizes the research results and presents recommended modifications to basic staff structure and resourcing.

Historical Overview

"Attach importance to the creation of a brain trust, which knows how to train staff officers as thinkers. They should not be used as copy clerks or orderlies. This is the only way in which a commander can pool the wisdom of his staff."

Sun Tzu⁵

As alluded to in Sun Tzu's Art of War, warlords

and high commanders of ancient China had some type of staff advisors.⁶ The Chinese experience of Sun Tzu's time is contemporary with that of the Assyrians (roughly 600 B.C.).⁷ However, even earlier indications of a type of rudimentary staff organization date back to ancient Egypt and the reign of Thothmes I as Pharaoh. This is documented by references to a staff that Thothmes made.⁸ This would then place initial indications of a form of staff at around 1600 B.C..⁹

The historical foundations of the staff date back to ancient times, reflecting the basic purpose of the staff. The staff simply exists to provide the commander with an element of control.¹⁰ The staff itself is one of the most basic of methods for exercising control, as ancient commanders were quick to realize.¹¹

Although staffs existed among these civilizations, they were still primitive. Documented Egyptian, Greek, and Persian staffing efforts were all rudimentary.¹² The basic purpose of the staff remained constant throughout this period. It still adhered to its prime function of "... supporting the footsteps of the commander."¹³ For this reason, the staff would not undergo any drastic revision until the nature of warfare itself began to significantly change.

The era of Gustavus Adolphus first heralded this change. Characteristics of a shift towards a more complex form of war included mobile artillery and an emerging use of combined arms tactics. Staff officers increasingly shouldered the associated administrative complexities of more modern armies.¹⁴ This allowed the commander the freedom to concentrate on operational details, which became increasingly complicated.

Land warfare strategy revolved around the concentration and application of force as a function of sheer mass. Yet the emergence of various combinations of arms and formations began to impact on success in the battlefield.¹⁵ Sheer mass could only provide for success from the perspective of force concentration. The skillful application of combined arms, however, could provide for efficiencies in force that could approach the same effects as mass, at a given point. In either case, the numerical span of control required for mass or the evolving complexity associated with diverse formations of different arms necessitated a more complex and hierarchial control structure.¹⁶

France developed a real capability in this regard. An intellectually gifted soldier, de Bourcet, formally produced some of the first military staffing concepts, as well as establishing a formal educational program for training staff officers.¹⁷ For its time, this

emerging French system of C2 surpassed all other forms in Europe.¹⁸

During this period, the basic purpose of the staff would remain relatively unchanged--extending the leader's span of control through the assistance and efforts of others.¹⁹ Span of control had become a real issue. As the first fruits of the Industrial Revolution and nationalism combined to produce a previously unimagined potential for mass armies, forces were capable of sustaining operations over greater periods of time and depth. Increased complexities in the nature of military operations created C2 difficulties in the effective use of these larger formations.²⁰

Napoleon devised a staff structure that was able to control and manage the flow of information to him.²¹ At the same time, he extended the breadth of the battlefield. This was a function of an increased French Army capability to generate larger formations due to the levee en masse and nationalistic fervor. This extension of the battlefield, in turn, exacerbated span of control problems. Napoleon solved this problem by decentralizing operations via subordinate commanders and de Bourcet's invention of the division.²² Then, the staff would serve as a chief means of control in coordinating the activities of these subordinate

organizations.

As a head of state, Napoleon also had duties of a non-military nature to perform. Again, he turned to the concept of a staff to assist him. He placed the responsibility for those administrative tasks associated with state duties on another, parallel staff agency under Daru's supervision.²³ Daru would serve as Napoleon's principal civil administrator throughout his reign.

Other nations had also perceived that some form of staff expertise played a role in successful military organizations. By 1798, the American experience resulted in a recommendation by George Washington. He proposed a functional orientation to US staffs, including positions for a Quartermaster, Inspector General, Adjutant, Paymaster, and Surgeon.²⁴ Further modifications followed. In 1813, Congressional legislation mandated an Apothecary General and established a Topographical Department within the War Department.²⁵

Prussia, too, believed that the mechanism of the staff had utility. Grappling with the mystery of Napoleonic success, Scharnhorst and his reformers recognized the need to extend the commander's control capability on the battlefield. This, coupled with the increasing demands on military administration as

formations became ever more diverse and numerous, resulted in a growth of the staff from regimental to corps and Army levels.²⁶

Three significant areas marked further changes in the condition of warfare during the mid-1800s. These were improved highway and rail systems, progress in mapmaking techniques and procedures, and increases in firepower accuracy, range, and ease of reloading.²⁷

Improved transportation networks extended the relative effectiveness of forces by increasing speed and mobility. Coupled with improvements in mapmaking, this allowed for staff planning and execution across much larger areas, thus extending the width and depth of the battlefield.

The improvements in firepower were most notable among the infantry. Previous tactics that supported massed fires from smoothbore weapons rapidly gave way to the new, extended threat of the rifleman. The close formations of the Napoleonic way of war would slowly begin to open up and disperse. This further extended the immediate dimensions of the close battlefield.

All these changes had an associated effect on staffing during the American Civil War. Initial attempts at C2 were frustrated by the size of the mass formations. Commanders did not know how to employ the individual piece parts of their component arms to best

effect, nor did they have an appropriate staff organization to assist them.²⁸ Much of the development of Civil War staffs was made on a case-by-case basis.

Some Union leaders exhibited an appreciation of the extended battlefield. The necessity of functional staff experts (particularly in transportation and logistics) was apparent to the more gifted generals. Accordingly, they individually made the modifications to gain necessary staff expertise in these areas, allowing the commanders to accommodate the changes in the conditions of warfare. This allowed commanders to maintain their focus on the issue at hand--winning the war.

With his own background as a past president of a railroad²⁹, McClellan understood the significance of rail on military operations. He clearly delineated staffing responsibilities for rail operations, placing it under the purview of the Quartermaster Department.³⁰ He also appreciated the logistical difficulties associated with the movement and sustainment of mass forces. After the Union logistical disaster of the Peninsular Campaign, McClellan quickly took steps to establish staffing responsibilities for logistics within the Army of the Potomac.³¹

Sherman, too, appreciated the extended battlefield

and the necessary staffing required to control forces throughout its extended dimensions. He grasped the changes wrought by the advent of rail and incorporated its capabilities into his operational scheme, taking a railhead with him into the field at all times.³² The adequate sustainment of massed forces on the move necessitated a close coordination between Sherman and his chief logistical planner, L. C. Easton. Sherman learned to include Easton in all aspects of operational planning.³³

Civil War staffs of Union Corps began to take on an appreciable size, but this size would vary from one commander to the next. As an example, McClelland's XIII Corps headquarters during the Vicksburg campaign reported 402 present for duty³⁴ while others during the same campaign were smaller.

The growth of Civil War staffs did have some negative effects. Even a gifted military administrator like Sherman who had seen the efficiencies of the Prussian system during an 1858 European staff ride would comment disparagingly on the bulkiness of some individual staffs. Due to the ad hoc nature of corps staffs, they were both far less elaborate (and efficient) than their Napoleonic counterparts.³⁵ In Sherman's view, a small staff "...implies activity and concentrations of purpose"³⁶ as opposed to the bulky

retinues with which some political commanders surrounded themselves.

Changes in the conditions of warfare were not limited to the American experience. Many nations felt the effects of the Industrial Revolution, with new technological innovations affecting and enhancing military capabilities. These effects included overall improvements in socio-economic standards, medical advances, modern farming techniques, and improved food preservation techniques.³⁷ All these effects continued to contribute to a capability for a nation state to have larger, healthier populations, hence more of a potential to generate and maintain mass armies. With the more frequent circumstance of mass formations, came an ever increasing need for augmentation to the commander's existing C2 capabilities. This resulted in more and more reliance on, and expansion of the staff.

Typically, nations kept with the Napoleonic line and staff model for achieving C2. A divergence in approach to staff techniques began to develop in the mid-1800s. The French would maintain their Napoleonic traditions with their staff model, and would supplement this existing staff with a proliferation of additional staff officers specializing in one specific functional area.³⁸

Meanwhile, Scandinavian and Prussian armies

approached C2 differently. They established functional responsibilities within the mechanism of their existing staff model, and would increase the responsibilities of the appropriate staff agency, as necessary, rather than appoint a new functional specialist to the staff."

Both schools of thought recognized that the staff played a key role in C2.

The efficiency of the Prussian approach proved itself. Some examiners of this phenomenon felt that the key to later German successes was their General Staff concept. In the mechanism of the General Staff, they were able to institutionalize military excellence⁴⁰ or military genius, itself.⁴¹ This capacity for institutionalized genius became particularly important since the battlefield had expanded beyond the practical limits of a single commander.

The Germans appeared to be able to reconcile the disparate requirements of satisfying administrative necessities while not attenuating the commander's control.⁴² In the conduct of operational art, then, the track record of the Prussians made them an attractive model for other staffs. Many factors led to Germanic successes against the Austrians, Danish and French in the mid to late 1800s. This included their rigorous approach to the mechanism of the staff.⁴³ In

the US, some perceptive thinkers would turn toward an examination of the Prussian approach in the aftermath of the American Civil War."

Other nations, too, saw the need for an effective staff structure. Russia sought to achieve Prussian military prowess by copying its staff structure. General Dragomirov was a Czarist military observer to the Prussians during their campaign in 1866. He quickly grasped the significance that the railroad had played in altering the conditions of warfare and established a railway department within the Russian Main Staff that he based on the Prussian model." Later, in 1895, Yuan would do the same by establishing various staff systems for China's New Army."

All these efforts demonstrated that a technological component had weighed heavily in modifying the nature of war at both the tactical and operational level. Battlefields had become more extended, especially due to the numerically larger armies that industrial societies could generate, sustain, and reconstitute, all as a result of the gains of the Industrial Revolution. The increase in numerical strength of armies was directly responsible for a corresponding increase in the need for a staff." Operations could potentially cover much more area. The lesson taken from this was that war in a

technological age had to be guided by experts."⁴

The Boer War and the Spanish American War reinforced this point. In particular, inexperienced staff work directly caused many problems during the Spanish American War. Reformers received renewed impetus in their activities to reshape the US military", to include its staff elements. These reforms would ultimately take place under the aegis of Elihu Root.

Likewise, British staffing inadequacies were glaringly apparent at the start of the 1899 Boer War, with no contingency plans available and even such elemental items as maps being in short supply."⁵ This would spark reform efforts such as those as proposed by Aston in the UK, who both recognized and placed emphasis on the use of staff officers as control mechanisms to preclude future occurrences of the Boer War's errors."⁶

Technology continued to play an ever increasing role on the nature of war. With the zenith of the Industrial Revolution, the capability for mass armies and firepower would overwhelm existing C2 architectures. The battlefields continued to expand along with an associated increase in span of control for the commander, whose technological capability to exert this control was limited to wire communication. Headquarters and staffs became static in order to take

advantage of the only adequate means of communication of the time." Allied staffs in particular began to increase in size in part due to ever increasing specialization of staff officers, (even lending to the origins of the term "special staff officer"), and in part due to the static nature of higher headquarters.

Still, the staffing accomplishments of the First World War for the US Army are noteworthy. The French C2 structure had impressed Pershing. This experience established the foundation of the current staff structure with its familiar designations of G-1 through G-5. (The G-1 section is responsible for administrative functions, the G-2 section is responsible for intelligence and security matters, the G-3 section is concerned with operations and the overall coordination of planning, the G-4 section is responsible for logistics, and the G-5 section handles civil-military relations). The origins of these sections are founded in an American Expeditionary Force General Order dated 16 February, 1918, which followed the French model for C2."

A proliferation of special staff officers also occurred--the result of an increasing technologically complex battlefield. Still, the Army could take justifiable pride in its accomplishments in terms of innovative, adaptive, and effective C2 arrangements for

this period, in comparison to the past." This is especially noteworthy when one considers that this same staff mechanism has served the Army, even through today.

Staff interest in the post Great War era mainly involved the Soviets, as they struggled to develop control mechanisms to support their efforts to establish Soviet society throughout the former Imperial Russia. Many Soviets exhibited a healthy interest in the staff's role in C2. Tukachevsky believed that the staff played its most important role in ensuring cooperative efforts between different types of troops." B. M. Shaposhnikov examined staff structure closely, ultimately determining that the staff was necessary both for the preparation as well as the actual conduct of war." Shaposhnikov's writings on operational and strategic level staffs maintained their relevance even into modern Soviet military thought."

Soviet fascination with the German staff approach transcended imitative flattery. The German General Staff had an implicit capability for a high degree of centralization, if desired. This accorded well with desires of the Soviet political structure to be able to exercise and maintain control."

The advent of ever more sophisticated and varied technologies in this period saw a continued expansion

of special staff officers. As armies became increasingly technical in nature, their bureaucratic structures grew accordingly." The age of the specialist was approaching. The only logical approach toward more specialization seemed to be a concurrent growth in the use of specialized staff officers.

It is important to note that technology interested the commander not for the sake of technology alone, instead, what that technology could do for him. Technology was manifesting its effects on the battlefield, affecting the precepts of concentration of force, employment of combined arms and the maintenance of command and unity of effort.⁴⁰ These precepts were what the US Army was anxious to incorporate, not technology for its own sake.⁴¹

Increasing technological complexity produced organizational changes as armies wrestled with combined arms tactics and new methods of employment in differing environments. These changes, in turn, increased the complexity of war, necessitating even further the need for professionals, both line and staff.⁴² The staff assumed a greater role in the planning and management of this complexity.⁴³

The World War II experience illustrated the need for a staff that could assist in the functions associated with control. Armies fought in an ever more

complex and distributed environment." The need for a responsive staff organization increased, a staff that was capable of operating within this new environment.

The responsiveness and efficiency provided by a workable staff structure first came into direct contrast with the Germanic generalist approach and the US functional/special staff officer approach in North Africa. The increased potential for accelerated tempo was used effectively by Rommel against the unfortunate US II Corps commander, Fredenhall. Fredenhall was recognized as an excellent peacetime general, but he did not grasp the changes in the tempo of war afforded by airplanes and motorized ground vehicles."

This success was in no small measure due to the responsive nature of the higher level German staffs. Traditionally, a small cell of generalists were involved continually in all actions of the organization, gaining an extensive knowledge and overview of the organization." The operations chief doubled as the chief of staff and formally trained general staff officers were concentrated in a small cell (Section 1-Operations) with two subordinate offices (Section 1b-Supply and Section 1c-Intelligence) under this cell."

The German Army and its staffs continued to pursue "...a single minded concentration on the operational

aspects of war". It maintained its narrow focus and generalist approach to staffing matters from its Prussian origins.

The German Army's operational focus in the Second World War revolved around the Army group. For the German Army, an Army group resembled a corps in that it was an operational headquarters." Its associated staff retained the chief Germanic characteristic of intense focus. In fact, German Army staffs at all levels were tactical and operational mechanisms above all else. They retained their focus by concentrating on a primary function--providing direction in combat while devoting the absolute minimum effort necessary for all other tasks.⁷⁰ They accomplished this by their intentional emphasis on comparatively smaller staffs, staffed with generalists who had functional training that allowed for coordinated staff planning and action among a smaller number of action officers.

Due to numerous modifications made in actual staff organizational structure by each individual commander, comparative measurements of the actual size of operational staffs are difficult to make. Still, German staffs typically comprised only 7% of the total strength of their units, while American staffs would comprise 11.2% of the total strength.⁷¹

Effective Allied operational staffs ended up

emulating this approach in an ad hoc fashion, with the most successful Allied operational commanders developing and maintaining a small cell of trusted agents around them that functioned in a very similar fashion to the German system. Montgomery's 21st Army Group Tactical Army Command Post consisted mainly of signal (including cryptographic), liaison staff (higher/lower and adjacent), a self-defense force, and in Montgomery's own words, "a very small operations staff."⁷²

Patton's staff presented an interesting case. His Table of Organization and Equipment for the Third Army Staff called for 244 officers and 800 enlisted members. In actual operations across France, however, it had 801 officers alone, and with its supporting ancillary units (signal, air defense, cavalry, MP), it totaled between 3,500 and 4,500 personnel.⁷³ However, Patton's actual battle staff was very small. His small cell of trusted agents and advisors met informally every morning at 0800 and included the Chief of Staff, the G-2 and the assistant G-2, the G-3, the G-4, the Chief of Staff of the XIX Tactical Air Command, and Patton himself.⁷⁴

After the Second World War, the emergence of the nuclear battlefield contributed to an operational and strategic view even more extended and non-linear. Distinctions between the front and rear became

increasingly blurred.⁷⁵ Nuclear warfare was the predominant concern of the period.

Soviet writers continued to emphasize the need for strict centralization of control⁷⁶, particularly due to nuclear issues and the desire of the political element to be involved in military matters. This aspect of centralized control assumed ever-increasing importance⁷⁷, mainly due to the potential dangers associated with nuclear conflict. Now, an extended nuclear battleground potentially threatened entire societies, due to its ability to target and destroy previously safe target areas.

Soviet operational staff design changes exhibited a nuclear focus. These changes included an emphasis on civil defense⁷⁸ and a robust traffic control capability.⁷⁹ These adjustments were all functions of the concerns associated with nuclear warfare. At the same time, the integration of automated support to troop leading procedures further reinforced the Soviet precept of centralized control.⁸⁰

The actual effects of the explosive increase in technology associated with the post World War II era were not to simplify the commander's role, but to make it all the more complex. One of the results of this was that technology appeared to be adding to the actual size of staffs, not reducing them as had been thought

possible."¹ Much of this phenomenon can be explained by the US proclivity merely to increase the staff by an additional special staff officer whenever the advent of a new technological application required it, rather than readdressing the actual function of the staff mechanism.

To concentrate the resident combat power in modern forces across the extended battlefield required even more elaborate headquarters and elaborate staffing procedures."² There has always been a tendency for staff organizations to grow."³ Growth stemmed, in large part, due to the outgrowth of technological specialization as well as a continued division of the increasing administrative and managerial tasks."⁴ This greater workload was associated with a more diverse, deployed force concerned with military preparedness and occupation duties.

An increase in the size of operational staffs in this modern era was not limited to Western armies, nor solely tied to technological complexity. By their very nature, military staffs continue to grow."⁵ Even a relatively unsophisticated force from a technological perspective such as the People's Liberation Army of China would experience the burdens of an overmanned staff organization."⁶

The historical analysis demonstrates that a

linkage exists between changes in the conditions of warfare and the staff. As the battlefield has become more complex and distributed, commanders have continually turned to the institution of the staff to assist them in meeting increased requirements for control. Although each nation state's experience has varied, the growth of the staff has followed one of two approaches. Both approaches proved effective for their users.

The first approach is typified by the traditional Napoleonic line and staff model which was formally used by the French, British, and US forces. The battlefield grew in complexity, usually as a function of additional technological growth. Then the staff also grew, in order to provide specialized functional expertise in that new technology.

The other approach is best represented by the German generalist staff method, with its underlying philosophy of a small cell of trained generalists who concentrated on tactical and operational matters, diverting the absolute minimum of attention required to handle other tasks.

ANALYSIS OF CURRENT STAFF STRUCTURE

"New weapons of warfare call for the total and radical reorganization of methods of warfare, and he who falls asleep during this process of re-organization may never wake up"
Tukhachevsky¹⁷

Unfortunately, there is a permanence to the likelihood of war. Political realities dictate that warfare continues to be an avenue for resolving conflict.¹⁸ An accompanying, ongoing need for an efficient armed force is then also envisioned. C2 plays a key role toward satisfying requirements for efficiency in armed forces.

Today's commander makes use of many types of specialized assistance¹⁹ in assisting him in the conduct of command, to include the staff. The institution of the staff remains one of the commander's most basic of methods for exercising control.²⁰

At any level, the staff functions as the brain of the military organism, providing both a control function as well as a mechanism for feedback. At the operational level, the control function associated with staff operations becomes especially important. At this level, observers encounter the intellectual struggle of opposing minds, as well as forces.²¹ With this

emergence of an intellectual approach to war on the part of operational level commanders, the support of their staff becomes crucial.

C2 functions take place at all echelons of the chain of command. Consequently, it is one of the most attractive areas for potential payoffs and improvements." The increased uncertainties facing today's military mark C2 as a key area for study and review. In this manner, adjustments to the existing staff structure and makeup are the focus for the remainder of this paper.

First, an examination of the mechanism of the staff itself seems in order. The current vehicle for exercising control at the operational level of war remains the traditional line and staff model with its hierarchial approach. The staff portion of this arrangement has retained its Napoleonic nature even though many examples exist where, in actuality, commanders gathered a small cell of trusted advisors and agents around themselves in order to expedite C2 functions.

While the processes associated with C2 have remained relatively unchanged within US Army practice from the G-Staff structure of Pershing's era, the face of warfare itself has changed." Attributes of this change include ever-greater potential for confusion and

increased requirements for C2 due to extended battlefields, massive lethality, high mobility, greater weapons ranges, extended lines of communications for US forces, and short notice or no notice deployments."

This shift in the face of war also envisions a continued movement toward low-intensity conflict, characterized by irregular forces. Though irregular in nature, these forces are increasingly armed with very lethal weapons, and possess a different understanding of how war is conducted."

Superimposed over this entire situation is the ongoing march of technology. The continuity of change is reinforced with the prospects for increasingly sophisticated technologies on the battlefield." These include the incorporation of cruise missiles, robotic mines, the advent of space, and a new generation of information technologies."

In an attempt to maintain an element of control within this environment, the US employs a traditional approach to staffing. This places an emphasis on individual staff responsibilities and processes. This approach allows for the development of very detailed products in excruciating detail" but may now be less than attractive. Still, there is a continued need for a C2 capability, one now capable of rapid adaptation to a variety of diverse requirements in a responsive

manner.

The point of this is that the existing C2 process and the systems that support that process are not creatures of any modern way of war. Instead, they are the natural manifestation" of past efforts at achieving control. This has evolved into a case of function following established form, rather than form following function.

It seems relevant to select a staff mechanism that is most viable to future expectations of need. The present commanding general of TRADOC, GEN Franks has cautioned against any tendency to:

"... be captured by our current command post fixations, large tactical staffs; nor our current programs to essentially make more efficient a worn-out C2 engine."¹⁰⁰

Today's model for an operational/corps equivalent staff encumbers potential rapid information transfer and processing in favor of a detailed approach that ultimately build consensus among the staff. Consider the current doctrinal extended line and staff hierarchy that supports five separate coordinating staff offices, twenty nine individual special staff offices, and five personal staff offices.¹⁰¹ The potential for key staff elements missing key information or participation in action is directly tied to that relevant staff

section's relative proximity to the action in question.

The actual effects of this hierarchy approach a level of ridiculousness in terms of size. This is especially true if the individual staff offices are manned at traditional staffing levels. Even a relatively austere and light Army Corps such as the XVIII Airborne Corps took three days to establish its Main Command Post at a recent Battle Command Training Program exercise at Fort Bragg, North Carolina. This one headquarters element alone contained over 300 troops.¹⁰³

Still, the utility of the present day staff remains in its ability to process information and ideas. Accompanying society's movement into the Information Age is an increasing awareness of the military's movement into the capabilities offered by information warfare. This reflects the growing awareness of a military that is increasingly intellectually based in its conduct of war.¹⁰³ The existence of an effective staff that can truly function as an army's brain becomes increasingly important as staffs continue to act as a reinforcement for and extension of the commander's will.¹⁰⁴

The actual conduct of military operations today is combined in nature, within an organization's battlespace. Within this domain, the various

battlefield operating systems support and interact with each other. The structure of the C2 process should reflect the strategy and the actual employment of fighting organizations in the field.¹⁰⁵ In actuality, a commander's system for C2 is actually of web of interrelated subsystems¹⁰⁶ extending from the center of the organization's battle space and radiating outward. However, the vehicle given to exercise control for today's operational commander has remained a C2 system consisting of the staff that is little changed in form¹⁰⁷, with its lineage clearly identifiable in both its World War I origins and its functional orientation dating back to the time of Napoleon.

The Napoleonic model worked well in a deliberative approach that deliberately created a functionalist, discrete view of war.¹⁰⁸ Yet the capabilities afforded by modern C2 systems can break down artificial hierarchial barriers, providing a qualitatively new dimension to the battlefield.¹⁰⁹ Instead, the US approach continues to maintain a ponderous staff organization. This approach systematically provides a collective measure of insurance against individual incompetence of the part of any single member by using a very deliberate, consensus building approach. (The intentions behind this collective insurance against

individual incompetence date back to Western observations of the value of the Prussian General staff system.¹¹⁰ This system guarded against well-intentioned, but militarily naive, leaders who had been placed in positions of responsibility as a consequence of politics or birthright.)

A staff structure that reflects today's interrelationships and is small and agile seems to be of value. The generalist approach of a small cell of trained staff officers in close proximity to the commander would merely serve to doctrinally validate a successful way of doing business. The rapid decision cycle required for operations in today's increasingly diverse environment looks for a type of structure that can rapidly process and manage information throughout the commander's battlespace involving the relevant players.

The envisioned environment for future US military operations is murky at best, but does contain some notable characteristics. The most striking point is that the need for effective C2 will be more pronounced than ever.¹¹¹ This naturally follows in an environment of uncertainty. The only real certainty that can be anticipated is that change itself will continue to be constant.¹¹² This phenomenon of wrestling with change is not new. It has existed in

all societies at all times.¹¹³

Within this diverse environment of operations, a deployment and mobilization capability that can quickly develop the appropriate force package and deploy it has become increasingly important. Tentative generalizations include envisioning a continuous tempo of operations, using lines of communication to concentrate and strike at a distant foe. The need for an army to be able to conduct power projection operations, project a credible deterrent capability, and effectively participate in operations other than war has grown.¹¹⁴

The mission requirements associated with an army force projection capability are largely associated with force development/generation and subsequent deployment of force packages. These two areas have become particularly important in determining the success or failure for any future operation to include those of a peacekeeping or peace enforcement nature.¹¹⁵

Within the focus of supporting the generation and deployment of forces, the impact of logistics has taken on greater meaning. Logistics plays a key role in the performance of these functions. Since logistics plays such a key role in full-dimensional operations, a doctrinal analysis of the staff's ability to facilitate logistics is in order.

The imperatives that characterize logistics are include Anticipation, Integration, Continuity, Responsiveness and Versatility, and Improvisation.¹¹⁶ They reflect the increasing role of logistics, as a combat function, in the planning and execution of future operations, and are particularly important in a force projection environment. Within this framework of analysis the role and functioning of the content of individual staff offices is examined.

The successes of the US Army's most recent experiences are notable. The Army studies its experiences in an effort to learn from the past. The US Army process for the organized collection of observations and significant experiences resides within the Center for Army Lessons Learned (CALL). For this study, CALL observations were assessed and supplemented by a range of observations, including other official government reports and individual observations. At the operational level, these observations as a whole indicate deficiencies in the areas of staff transportation expertise, an increased need for liaison officers to support joint, combined and coalition activities, expertise in information management (including associated artificial intelligence efforts), increased space awareness, a capability for contracting, and the conduct of continuous operations.

Within the realm of transportation expertise, current staffing at Army Corps level for the Corps transportation office only supports two positions.¹¹⁷ Such austere manning does not readily support the characteristic of continuity in the execution of round-the clock operations. Severe penalties are associated with improper staff planning for transportation considerations, such as the grounding of vessels at loading berths in the harbor of Savannah, Georgia. In this case, forces deployed with combat loaded vehicles while planning for the vehicles considered them unloaded¹¹⁸. Peacetime Unit Automated Equipment Lists were outdated, and did not reflect the upload of ammunition or other combat supplies on the vehicles.¹¹⁹

Increasing the existing manning levels for transportation planners at higher tactical and operational levels would help in promoting an awareness of the criticality of transportation planning and would also support the concept of continuity, with transportation planners available at any time to support continuous operations.

The next area in need of staffing adjustments is in a robust liaison capability. This is a recurrent theme throughout the research process. An essential element of operational command is a system of liaison

officers.¹²⁰ Patton and his staff recognized that a liaison capability is vital in combat.¹²¹ The need for liaison officers has become more prevalent with the increased emphasis on combined and coalition warfare.

Since the advent of the Second World War, the US has a demonstrated record of success in coping with the often disparate mixes of forces to be found in a coalition environment.¹²² The forecast for future coalition participation in any operation, with the exception of very limited minor contingencies, is assured.¹²³ The probability is very high, then, that any future conflict involving US forces, will be coalition warfare.¹²⁴

Army doctrine recognizes the advantages accrued by the use of liaison officers and the benefits that they offer. Through personal contact, liaison officers facilitate the promotion of cooperation, coordination, and exchange of essential information.¹²⁵

As a caveat, merely paying lip service to the idea of a liaison capability is not useful. At the operational staff level, liaison needs are for officers who possess vast experience within their parent service,¹²⁶ so they can better understand the needs and requirements of their own organizations while promoting liaison with combined or coalition partners. Again, the utility of a form of generalist staff

officer surfaces.

The modern command and control structure must increasingly rely on the efficient exchange of information and more importantly ideas.¹²⁷ Modern technological capabilities to transfer ever increasing amounts of data without concurrently addressing how that data stream is manipulated, or even initiated in the first place, can overwhelm our existing pipelines and nodes for information. The addition of ever more data may, in fact, make a commander's quest for control more complicated since extraneous information only adds to the inherent chaos of war.¹²⁸

A revolution in modern information processing technologies made possible by the synergism between communications and automated data processing equipment has occurred.¹²⁹ Industry and education has recognized this trend. The potential of artificial intelligence and information management offers capabilities for automation adaptability, self-maturing or learning through experience, and of a distributed nature across the battlefield.¹³⁰

Still, within the environs of the military staff, computer and business skills are only fine as long as they are used to complement, not replace, the ability to fight.¹³¹ Now is the time to truly discipline the information system and use officers skilled in

techniques such as those made possible by the emerging field of information engineering. This will make it possible to determine and process only the really important data needs that have previously been so elusive to managers.¹³²

The realm of high technology has also extended into a greater awareness of space and its impact on military operations. Commanders have begun to recognize the potential, as a force multiplier, of space systems that support the operational commander and his formations.¹³³

The most visible changes in C2 in the twenty first century will be procedural in nature¹³⁴ and will continue to shrink the battlefield. At the same time, certain functions will extend in depth into the battlefield, particularly as the Army moves away from a forward presence basing mode and into a force projection mode. The significance of an on-site contracting capability to assist the operational level commander is greater than ever before. The Desert Shield experience was noteworthy in demonstrating the effectiveness of contracting officers operating to purchase and ensure the provisioning of goods and services to arriving forces as.¹³⁵

Finally, the sustained tempo of military operations will place more emphasis on the continuous

nature of operations. Command posts will operate twenty four hours a day--before, during, and after combat operations.¹³⁶ This emphasis on continuous operations implies a measure of robustness and agility to the staff that has not been supported with requisite resourcing.

Extending the concept of split-based operations to other than logistical functions has come increasingly to the forefront. Modern telecommunications, large capacity data transmissions and satellite technology provide the technological capability to extend split-based operations to other battlefield functions.¹³⁷ The positive effects of split-basing include reducing the serried ranks of techno-specialists existing within current staff structures.¹³⁸ This is possible since the specialists can perform their relevant duties at locations other than in the operational battlefield. This would assist in the reduction of traditional manning levels associated with Communication Zone or Theater housekeeping chores and activities.¹³⁹

RECOMMENDATIONS

"A reorganization would be no more painful than backing into a buzz saw, but I believe that it is long overdue."
Secretary of Defense Robert Lovett¹⁴⁰

A basic change in the context of how the US Army considers C2 is necessary. The manner in which C2 processes support the battlefield needs to be directly related to the fundamentals of battlefield design. This approach is better than simply passively accepting an anachronistic, hierarchial approach to the mechanism of the staff. In supporting Army operations, a studied approach of the functioning of the mechanism of the staff structure itself needs to be foremost in the minds of modern force designers. Blind acceptance of the utility of the traditional line and staff model is in direct conflict with the doctrinal ideas of battlespace and integrated systems that we expect commanders to employ on the battlefield.

It is within this context that the role of the staff's structure needs to be considered. Acceptance of the concepts proposed in this paper lend themselves to a dramatic revision of the mechanism of actual staff processes. Acceptance of the basic construct of the integrated generalist staff approach would offer fresh insights into the design of basic C2 system and processes.

Regardless of the acceptance of this approach, certain modifications to the content of the operational staff appear to be in order. These include a need to increase the depth of transportation staffs, an

increasing need for more liaison officers, increased staffing of officers capable of exploiting high-technology capabilities associated with information engineering and space, contracting officers, and overall requirements for increased robustness in staff manning levels to support continuous operations.

These incremental staff adjustments can be made along with a fresh approach in the need for functional expertise. An extension of the concept of split-basing logistics can be made to other disciplines. Technology feeds can provide an avenue for specialized functional expertise on an as required basis, while not incumbering a modern command post with the physical presence of these specialists. This approach supports the generalist philosophy for operational staffs, while allowing for appropriate staff expertise to be made available to the commander, when required.

CONCLUSION

Commanders look to the staff to assist them in the processes associated with control. The ambiguities associated with current and emerging operational environments mark the institution of the staff as increasingly important.

History demonstrates that there is a linkage

between changes in battlefield conditions and changes to the staff. Commanders grapple with battlefield change and adjust the staff to support their needs for C2.

As the Army continues to wrestle with change, it is prudent to review the various mechanisms that are provided to the commander to assist him with the processes associated with C2. A review of doctrine, lessons learned, and emerging needs suggests that adjustments to staff structure and content would be of value.

Issues of timeliness and responsiveness suggest that the line and staff approach to C2 needs is at discord with the doctrinal approach that the Army takes to warfighting. In actuality, small cell of generalists accompany the commander and act as an extension of his will, assisting him in control. Specific requirements for functional expertise are currently satisfied with ponderous staffs taken to the field, but technology makes that approach no longer necessary.

A recognition of the battlespace concept and the use of a small cell of generalists surrounding the commander, supplemented on an as required basis by split-based functional staff elements would go a long way toward reducing staff size, increasing

responsiveness, and would align C2 processes with
doctrinal approaches to warfighting.

1. U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1993), 1-4.

2. Thomas Coakley, Command and Control for War and Peace (Washington, D.C.: National Defense University, January 1992), xvii.

3. John Kester, "Designing a US Defense General Staff," in Strategic Review volume IX, number 3 (Washington, D.C.: US Strategic Institute, Summer 1981), 45.

4. Walter Wojdakowski, "A Staff Philosophy," Military Review 68, number 11 (November 1988): 45.

5. Sun Tzu, The Art of War: The Modern Chinese Interpretation, ed. Tao Hanzhang and trans. Yuan Shibing (New York: Sterling Publishing, 1990), 60.

6. Chen-Ya Tien, Chinese Military Theory: Ancient and Modern (Oakville, Ontario: Mosaic Press, 1992), 108.

7. J. D. Hittle, The Military Staff (Westport, Conn.: Greenwood Press, 1975), 16. Hittle's work is regarded as seminal in the area of the military staff. Only Dallas Irvine's efforts come close to giving the staff the rigorous academic investigation that Hittle was able to accomplish. Yet, their combined labors are contained within one book and two journal articles. Dr. Roger Spiller has commented on the overall paucity of work surrounding the staff. This is particularly curious, given the amount of resources in terms of materiel and personnel that the staff consumes, and the associated capabilities that it has offered to commanders throughout time.

8. Hittle, 15.

9. Ibid., 14.

10. U.S. Army, Command and General Staff College (CGSC), "Command and Control for Commanders and Staff," Final Draft, (FT Leavenworth, KS: Command and General Staff College, August 1993), iii. CGSC functions as the Department of the Army's proponent for command and control issues; yet some measure of the actual relative importance that this subject merits can be easily judged. The responsibilities for command and control issues are merely adjuncts to other duties distributed among several action officers within the Concepts and Doctrine Division.

11. C. Kenneth Allard, Command, Control, and the Common Defense (New Haven, Conn.: Yale University Press, 1990), 28.

12. Allard, 30.

13. Ian Hamilton, The Soul and Body of an Army (London: Gregg Revivals, 1991), 28. This reprint is both well-written and easily read and serves as an excellent distillation of the wisdom and experience of a senior British officer from the turn of the century. Although some of the dated phrasings and word choices in the work make it difficult to understand from a contemporary perspective, there is true value in this little book for all military professionals.

14. Theodore Ropp, War in the Modern World (New York: Collier Books, 1962), 155.

15. Allard, 244.

16. Allard, 244.

17. Dallas D. Irvine, "The Origins of Capital Staffs," The Journal of Modern History, volume X, number 2 (June 1938): 106. Relatively short, this remarkable article is a common sight on the bibliography of any work involving the staff.

18. Dallas D. Irvine, "The French and Prussian Staff Systems Before 1870," Journal of the American Military History Foundation, volume II, number 4 (Winter 1938), 196.

19. Allard, 28.

20. Walter Goerlitz, History of the German General Staff (New York: Praeger, 1967), vi.

21. J. M. F. C. Hall, "The Role and Position of the Commander on Today's Battlefield," The British Army and the Operational Level of War ed. J. J. G. Mackenzie and Brian Reid (London, Tri-Service Press, 1989), 31.

22. Robert S. Quimby, The Background of Napoleonic Warfare (New York: AMS Press, 1979), 176.

23. Clarence Taylor, "US Army Staffs--Are they Broken?" (SAMS Monograph, US Army Command and General Staff College, AY 1991-1992), 8.

24. Allard, 31.

25. Allard, 33.

26. Allard, 53.

27. Irvine, "Origin," 171-2.

28. Robert Epstein, "The Creation and Evolution of the Army Corps in the American Civil War," Journal of Military History (FT Leavenworth, KS: SAMS Reprint), 34.

29. Edward Hagerman, The American Civil War and the Origins of Modern Warfare (Bloomington: Indiana University Press, 1988), 35.

30. Ibid., 51.

31. Ibid., 51.

32. Ibid., 280.

33. Ibid., 282.

34. Mark S. Hurley, "Union Logistics in the Vicksburg Campaign" (MMAS Thesis, US Army Command and General Staff College, 1992), 35.

35. Epstein, "The Creation and Evolution of the Army Corps in the American Civil War," 40.

36. William T. Sherman in Words on War, ed. Jay M. Shafritz (New York: Prentice-Hall, 1990), 377.

37. Howard L. Ware, "Command Presence: Where Should The Operational Commander Be Located On The Modern Battlefield?" (SAMS Monograph, US Army Command and General Staff College, 2nd Term, Academic Year 1988-1989), 2.

38. Reginald Hargreaves, "The Brass," US Naval Institute Proceedings volume 100, number 4 (June 1974), 65. Hargreaves' article is the only contemporary work to be found in any serious academic publication concerning the origin and purpose of the military staff. It is intriguing that the military community seems to take this entire subject area for granted.

39. Hargreaves, 65. This marks the historical beginnings of the specialist versus generalist approach to staff work.

40. Trevor N. Dupuy, A Genius For War, the German Army and the General Staff (Englewood Cliffs, NJ: Prentice-Hall, 1977), 302. While Goerlitz's work remains the acknowledged standard reference, Dupuy, van Creveld, and LTC Peter Schifferle have all formally examined the German General Staff. LTC Schifferle's thesis on the subject cogently captures the German staff phenomenon with less than one-fourth the printed effort of Goerlitz.

41. Dr. Robert Epstein, lecture delivered at the School of Advanced Military Studies, 31 March 1994, notes by author, FT Leavenworth, KS.

42. Allard, 56.

43. Dupuy, 306.

44. Allard, 54.

45. Goerlitz, 98.

46. Tien, 108.

47. B. von Schellendorf, Duties of the General Staff (London: C. Kegan Paul, 1877), 1-2.

48. John Gooch, The Plans of War (New York: John Wiley, 1974), 2.

49. James F. Dunnigan and Raymond M. Macedonia, Getting It Right (New York: William Morrow, 1993), 26.

50. Gooch, 20.

51. G. G. Aston, Staff Duties and Other Subjects (London: Hugh Rees, 1913), 2-3.

52. Hall, 40.

53. Hittle, 211.

54. Allard, 85.

55. Philip A. Bayer, The Evolution of the Soviet General Staff (New York: Garland Publishing, 1987), 108.

56. B. M. Shaposhnikov, "The Brain of the Army" in USSR Report: Military Affairs--Shaposhnikov Analyzes World War I General Staffs (Washington, D.C.: Foreign Broadcast Information Service, 4 May 1984), 30. This fascinating work is the product of a military writer and theoretician of some repute, attempting to determine why Imperial Germany experienced the successes that it did in WWI in spite of an overall inferiority in terms of men, material, and position. Shaposhnikov not only made a penetrating analysis of the German General Staff system, he also made a substantial effort in establishing that Germany enjoyed significant advantages from its core of military theory. His work serves as an excellent refresher of Clausewitz.

57. V. G. Kulikov, "The Brain of the Army" in Selected Soviet Military Writings 1970-1975 (Washington, D.C.: Government Printing Office, undated), 188.

58. Bayer, 19.

59. Martin van Creveld, Fighting Power (Westport, CT: Greenwood Press, 1982), 169.

60. Allard, 56.

61. Roger A. Spiller, interview by author, notes, FT Leavenworth, KS, 23 August 1993.

62. Clayton R. Newell, The Framework of Operational Warfare (New York: Routledge, 1991), 15.

63. Bayer, 3.

64. Epstein lecture, author's notes.

65. Dunnigan and Macedonia, 43.

66. von Schellendorf, 159-160.

67. van Creveld, Fighting Power, 48.

68. Ibid, 164.

69. Ibid., 49.

70. Ibid., 47.

71. Ibid., 53.

72. Ware, 17.

73. Brenton Wallace, Patton and His Third Army (Nashville, TN: The Battery Press, 1981), 16.

74. Ware, 14.

75. William Bolt and David Jablonsky, "Tactics and the Operational Level of War" in The Operational Art of War Across the Spectrum of Conflict (Carlisle Barracks, PA: Strategic Studies Institute, 1 February 1987), 51.

76. Harriet and William Scott, The Soviet Control Structure (New York: Crane, Russak and Co., 1983), 53.

77. V. Y. Savkin, The Basic Principles of Operational Art and Tactics (Washington, D.C.: Government Printing Office, 1972), 275.

78. Scott, 97.
79. John Hemsley, Soviet Troop Control (New York: Pergamon, 1982), 182.
80. Stephen Cimbala, Soviet Command, Control, and Communications (Washington, D.C.: AFCEA International Press, 1987), xii.
81. Clayton R. Newell, The Framework of Operational Warfare (New York: Routledge, 1991), 134.
82. William DuPuy, "Concepts of Operation: The Heart of Command, the Tool of Doctrine" in Control Of Joint Forces, ed. Clarence McKnight (Fairfax, VA: AFCEA International Press, 1989), 11.
83. Robert Felch, "Optimizing the Staff," Military Review volume 51, number 6 (June 1971), 4.
84. Felch, 4.
85. Thomas Bowen, "How to Lower Staff Pyramids," Army volume, 23, number 9 (September 1973), 40.
86. Tien, 266.
87. Mikhail Tukhachevsky, as cited by L. D. Holder in "Training for the Operational Level," Parameters volume 16, number 1 (Spring 1986), 13.
88. Julian Lider, On the Nature of War (Aldershot, England: Avebury, 1987), 332.
89. Rocco Carzo and John Yanouzas, Formal Organization: A Systems Approach (Homewood, IL: Dorsey Press, 1967), 332.
90. Allard, 28.
91. Edward Luttwak, Strategy: The Logic of War and Peace (Cambridge, MA: Belknap Press, 1987), 91.
92. Jack Burkett, "Command and Control White Paper," initial draft (Leavenworth, KS, BDM Federal), 1. LTC (Ret.) Burkett's expertise in the area of Army command and control is well known throughout both the Army and contractor circles. He is one of the few military professionals that have made a disciplined study of the field of command and control and should be considered as a key asset for anyone conducting research in this area.
94. Dean Anderson, "Modernizing Army Command and Control," Military Review volume 70, number 7 (July 1990), 3.

94. Dunnigan and Macedonia, 131.

96. Martin van Creveld, The Transformation of War (New York: The Free Press, 1991), 129. Many of these irregular forces do not possess the same interests as a nation state. For them, warfare is not necessarily a means to an end, but an end in and of itself. Being in an "army" or its armed gang equivalent provides them with more of a measure of relative security and comfort than by not participating in conflict.

96. Stuart Johnson and Alexander Levis, Science of Command and Control, Part II Coping With Uncertainty (Fairfax, VA: AFCEA International Press, 1989), vi.

97. Ibid., 278.

98. Ibid., 121.

99. Robert T. Herres, "Equipment, Personnel and Procedures-Foundations for Future Command and Control Architecture," in Principles of Command and Control ed. Jon L. Boyes and Stephen J. Andriole (Washington, D.C.: AFCEA International Press, 1987), 419.

100. Frederick Franks, Jr. in FT Leavenworth Lamp volume 24, number 9 (4 March 1994), 1.

101. FM 101-5 final draft, iv-x.

102. Colonel Brown and Master Sergeant Delgado, XVIII Corps Main briefing to SAMS attendees at 82nd ABN DIV BCTP, author's notes, FT Bragg, NC, 8 March 1994.

103. Toffler, 71.

104. Robert Felch, "Optimizing the Staff," Military Review volume 51, number 6 (June 1971), 5.

105. John L. Byron, Reorganization of US Armed Forces (Washington, D.C.: National Defense University Press, 1983), 1.

106. John Cushman, "AirLand Battle Mastery and Command and Control Systems for the Multinational Field Commander," in Tactical Command, Control, and Communications for the Ground Forces ed. James Rockwell (Washington, D.C.: AFCEA International Press, 1986), 8.

107. Daniel Bolger, "Command or Control," Military Review volume 70, number 7 (July 1990), 70.

108. Anthony Zinni, Jack Ellertson, and Bob Allardice, "Scrapping the Napoleonic Staff Model," Military Review volume 72, number 7 (July 1992), 86.

109. Allard, 5.
110. Russell Weigley, The American Way of War (Bloomington, IL: Indiana University Press, 1977), 200.
111. Thomas Coakley, Command and Control for War and Peace (Washington, D.C.: National Defense University Press, January 1992), xi.
112. Robert Scales, Certain Victory. The US Army in the Gulf War (FT Leavenworth, KS: Command and General Staff College Press, 1994), 360.
113. Tien, 67.
114. "Army has Three Major Missions," AUSA News Special Supplement (January 1994), 3A.
115. Jeffery Kohler, "Peace Enforcement: Mission, Strategy, and Doctrine" (SAMS Monograph, Command and General Staff College, Academic Year 1992-1993), 1.
116. U.S. Army, FM 100-5, Operations (Washington, D.C.: Department of the Army, June 1993), 12-3
117. Curt Hoover, "Strategic Deployment and Force Projection," CALL Newsletter, Initial Draft (FT Leavenworth, KS,: Center for Army Lessons Learned, 20 April 1993), 86.
118. "Getting to the Desert," CALL Newsletter number 90-11 (December 1990), 7.
119. CALL Newsletter number 90-11, 7.
120. Hall, 43.
121. Wallace, 19.
122. John H. Cushman, Command and Control of Theater Forces: Issues in Mideast Coalition Command (Cambridge, MA: Program on Information Resources Policy, February 1991), 7.
123. David Jablonsky, "Strategy and the Operational Level of War," in The Operational Art of War Across the Spectrum of Conflict (Carlisle Barracks, PA: Strategic Studies Institute, 1 February 1987), 18.
124. Cushman, Command and Control of Theater Forces: Issues in Mideast Coalition Command, 1.
125. FM 101-5 (final draft), 2-10.

126. Thomas Cardwell, Command Structure for Theater Warfare: The Quest for Unity of Command (Maxwell AFB, AL: Air University Press, 1984), 78.

127. Newell, 135.

128. Ibid., 130.

129. Gerald Prather, "Organizing for the Future," in Issues in Command, Control, Communications, and Intelligence Program Management, Jon Boyes, ed. (Washington, D.C.: AFCEA International Press, 1985), 88.

130. Martin Wolfe, "Requirements and Applicability of Expert Systems and other Artificial Intelligence Technologies for Military Systems," in High Technology Initiatives in Command, Control, Communications and Intelligence Stephen Andriole, ed. (Washington, D.C.: AFCEA International Press, 1986), 218-220.

131. Barthy Ann Byrd, "The Changing of the Guard: Six Generals Examine the US Army Since World War Two," (PhD Dissertation, University of New Mexico at Albuquerque, July 1989), 222.

132. Clarence McKnight, "Quick Reaction Requirements," in Tactical Command, Control, and Communications for the Ground Forces, James Rockwell, ed. (Washington, D.C.: AFCEA International Press, 1986), 25.

133. Thomas Hayward, "Technology Push: Opportunities in Space," in High Technology Initiatives in Command, Control, Communications, and Intelligence, Stephen Andriole, ed. (Washington, D.C.: AFCEA International Press, 1986), 335.

134. Donald C. Latham, "21st Century Battle Management: Penetrating the 'Fog of War'," in Principles of Command and Control, Jon Boyes and Stephen Andriole, ed. (Washington, D.C.: AFCEA International Press, 1987), 408.

135. Scales, 63.

136. FM 101-5 (final draft), 5-7.

137. Jerry Rutherford and Daniel Sulka, "Making FM 100-5 Logistics a Reality," in Military Review volume 74, number 2 (February 1994), 13.

138. A.F. Whitehead, "Success on the Battlefield," in The British Army and the Operational Level of War, J. Mackenzie and Brian Holden, ed. (London: Tri-Service Press, 1989), 155.

139. Scales, 377.

140. Robert A. Lovett as cited in John L. Byron's
Reorganization of US Armed Forces (Washington, D.C.: National
Defense University Press, 1983), 18.

BIBLIOGRAPHY

Books

- Allard, C. Kenneth. Command, Control, and the Common Defense. New Haven: Yale University Press, 1990.
- Andriole, Stephen J., ed. High Technology Initiatives in Command, Control, Communications, and Intelligence. Washington, D.C.: AFCEA International Press, 1986.
- Aston, G. G. Staff Duties and Other Subjects. London: Hugh Rees, 1913.
- Bayer, Philip A. The Evolution of the Soviet General Staff, 1917-1941. New York: Garland Publishing, 1987.
- Bellamy, Chris. The Future of Land Warfare. New York: Saint Martin's Press, 1987.
- Boyes, Jon L. Issues in C3I Program Management. Washington, D.C.: AFCEA International Press, 1985.
- Boyes, Jon L. and Andriole, Stephen J., ed. Principles of Command and Control. Washington, D.C.: AFCEA International Press, 1987.
- Cimbala, Stephen, ed. Soviet C3. Washington, D.C.: AFCEA International Press, 1987.
- Cordesman, Anthony and Wagner, Abraham. The Lessons of Modern War, Volume I. Boulder, CO: Westview Press, 1991.
- Cordesman, Anthony and Wagner, Abraham. The Lessons of Modern War, Volume II. Boulder, CO: Westview Press, 1991.
- Cordesman, Anthony and Wagner, Abraham. The Lessons of Modern War, Volume III. Boulder, CO: Westview Press, 1991.
- Cushman, John H., Sr. Command and Control of Theater Forces: Issues in Mideast Coalition Command. Cambridge, MA: Program on Information Resources Policy, 1991.
- Dunnigan, James and Macedonia, Raymond. Getting It Right. New York: William Morrow, 1993.

- Dupuy, Trevor. A Genius for War: The German Army and General Staff 1807-1945. Englewood Cliffs, NJ: Prentice-Hall, 1977.
- Dupuy, Trevor N., Curt Johnson and David Bongard. The Harper Encyclopedia of Military Biography. New York: Harper Collins, 1992.
- Gabriel, Richard. Operation Peace for Galilee. New York: Hill and Wang, 1984.
- Goerlitz, Walter. History of the German General Staff, 1637-1945. Translated by Brian Battershaw, New York: Frederick Praeger, 1967.
- Gooch, John. The Plans of War. New York: John Wiley, 1974.
- Hagerman, Edward. The American Civil War and the Origins of Modern Warfare. Bloomington: Indiana University Press, 1988.
- Hamilton, Ian. The Soul and Body of an Army. Aldershot, England: Gregg Revivals, 1991.
- Hemsley, John. Soviet Troop Control. New York: Pergamon Press, 1982.
- Hittle, James D. The Military Staff: Its History and Development. Westport, CT: Greenwood Press, 1961.
- Johnson, Stuart E. and Levis, Alexander H, editors. Science of Command and Control: Coping with Uncertainty. Washington, D.C.: AFCEA International Press, 1988.
- Johnson, Stuart E. and Levis, Alexander H, editors. Science of Command and Control: Part II--Coping with Complexity. Fairfax, VA: AFCEA Press, 1989.
- Kitson, Frank. Warfare As A Whole. Boston: Faber, 1987.
- Lider, Julian. On the Nature of War. Aldershot, England: Avebury, 1987.
- Luttwak, Edward. Strategy: The Logic of War and Peace. Cambridge, MA: Belknap Press, 1987.
- Mackenzie, J. and Reid, Brian Holden. The British Army and the Operational Level of War. London: Tri-Service Press, 1989.

- Matthews, Lloyd and Brown, Dale, ed. The Challenge of Military Leadership. Washington, D.C.: Pergamon-Brassey's, 1989.
- McKnight, Clarence, ed. Control of Joint Forces. Fairfax, VA: AFCEA International Press, 1989.
- Menning, Bruce W. Bullets Before Bayonets. Bloomington: Indiana University Press, 1992.
- Millett, Allan and Murray, Williamson, ed. Military Effectiveness, Volume 1. Boston: Unwin Hyman, 1988.
- Millett, Allan and Murray, Williamson, ed. Military Effectiveness, Volume 2. Boston: Unwin Hyman, 1988.
- Millett, Allan and Murray, Williamson, ed. Military Effectiveness, Volume 3. Boston: Unwin Hyman, 1988.
- Newell, Clayton. The Framework of Operational Warfare. New York: Routledge, 1991.
- Quimby, Robert S. The Background of Napoleonic Warfare: the Theory of Military Tactics in the Eighteenth Century. New York: AMS Press, 1968.
- Rockwell, James M., editor. Tactical C3 for the Ground Forces. Washington, D.C.: AFCEA International Press, 1986.
- Ropp, Theodore. War in the Modern World. New York: Macmillan, 1962.
- Rosen, Stephen. Winning the Next War. Ithaca, NY: Cornell University Press 1991.
- Scott, Harriet and William. The Soviet Control Structure. New York: Crane, Russak and Co., 1983.
- Shafritz, Jay. Words on War. New York: Prentice-Hall, 1990.
- Spaulding, Oliver L. The United States Army in War and Peace. New York: G. P. Putnam's Sons, 1937.
- Tao, Hanzhung. Yuan Shibing, trans. Sun Tzu's Art of war: The Modern Chinese Interpretation. New York: Sterling Publishing, 1990.

- Tien, Chen-Ya. Chinese Military Theory. Oakville, Ontario: Mosaic Press, 1992.
- Toffler, Alvin and Heidi. War and Anti-War. New York: Little, Brown and Co., 1993.
- Van Creveld, Martin L. Fighting Power. Westport, CT: Greenwood Press, 1982.
- Van Creveld, Martin L. The Transformation of War. New York: The Free Press, 1991.
- von Schellendorf, B. Hare, W.A., trans. The Duties of the General Staff. London: C. Kegan Paul, 1877.
- Wallace, Brenton. Patton and His Third Army. Nashville, TN: The Battery Press, 1981.
- Weigley, Russell F. History of the United States Army. New York: Macmillan Publishing Company, 1967.
- Wool, H. The Military Specialist. Baltimore: Johns Hopkins Press, 1968.

Government Documents

- Byron, John L. Reorganization of US Armed Forces. Washington, D.C.: National Defense University Press, 1983.
- Cardwell, Thomas. Command Structure for Theater Warfare: The Quest for Unity of Command. Maxwell, AFB, AL: Air University Press, 1984.
- Coakley, Thomas. Command and Control for War and Peace. Washington, D.C.: National Defense University Press, 1992.
- Griffin, Gary B. The Directed Telescope: A Traditional Element of Effective Command. Fort Leavenworth KS: Combat Studies Institute, 1991.
- Heller, Charles. 21st Century Force: A Federal Army and a Militia. Carlisle Barracks, PA: Strategic Studies Institute, 1993.
- Jablonsky, David. "Strategy and the Operational Level of War" in The Operational Art of Warfare Across the Spectrum of Conflict. Carlisle Barracks, PA: Strategic Studies Institute, 1993.

- Kulikov, V.G. "The Brain of the Army" in Selected Soviet Military Writings, 1970-1975, A Soviet View. Washington, D.C.: Government Printing Office, undated.
- Savkin, V. Y. The Basic Principles of Operational Art and Tactics. Washington, D.C.: Government Printing Office, 1972.
- Scales, Robert. Certain Victory: The US Army in the Gulf War. FT Leavenworth, KS: Command and General Staff College Press, 1994.
- Shaposhnikov, B.M. "The Brain of the Army" in Memoirs. Military Scientific Works. Foreign Broadcast Information Service, 4 May 1984.
- Upton, Emory. The Military Policy of the United States. Washington, D.C.: U.S. Government Printing Office, 1907.
- US Army. Field Manual 100-5 Operations. Washington D.C.: Headquarters, Department of the Army, June 1993.
- US Army. Field Manual 101-5 Staff Organizations and Operations. Washington D.C.: Headquarters, Department of the Army, 25 May 1984.
- US Army. Field Manual 101-5 Command and Control for Commanders and Staff (Draft). Washington D.C.: Headquarters, Department of the Army, July 1993.
- US Army. CALL Bulletin. FT Leavenworth KS, (July 1986): No. 1-86.
- US Army. CALL Bulletin. FT Leavenworth KS, (November 1986): No. 2-86.
- US Army. CALL Bulletin. FT Leavenworth KS, (April 1987): No. 1-87.
- US Army. CALL Bulletin. FT Leavenworth KS, (May 1990): No. 90-4.
- US Army. CALL Bulletin. FT Leavenworth KS, (October 1990): No. 90-9.
- US Army. CALL Newsletter. FT Leavenworth KS, (December 1990): No. 90-11.

US Army. CALL Newsletter. FT Leavenworth KS,
(December 1992): No. 92-6.

US Army. CALL Newsletter (Initial Draft). FT
Leavenworth KS, (20 April 1993): No. 93-x.

Young, Thomas-Durell. Emerging German National Command
and Operational Control Structures. Carlisle
Barracks, PA: Strategic Studies Institute, 1992.

Periodicals and Articles

Anderson, Dean. "Modernizing Army Command and
Control." Military Review, (July 1990): Vol. 70,
No. 7.

"Army Has 3 Major Missions." AUSA News, (February
1994): Vol. 16, No. 3.

Bolger, M. "Command or Control." Military Review,
(July 1990): Vol. 70, No. 7.

Bowen, Thomas. "How to Lower Staff Pyramids." Army,
(September 1973): Vol. 23, No. 9.

Burkett, Jack. "Command and Control is the Key to
Winning." Military Review, (July 1990): Vol. 70,
No. 7.

Felch, Robert. "Optimizing the Staff." Military
Review, (June 1971): Vol. 51, No. 6.

Franks, Frederick. untitled, FT Leavenworth Lamp, (4
March 1994): Vol. 24, No. 9.

Franks, Frederick and Carver, Alan T. "Building a NATO
Corps." Military Review, (July 1991): Vol. 71,
No. 7.

Hargreaves, Reginald. "The Brass." US Naval Institute
Proceedings, (June 1974): Vol. 100, No. 4.

Irvine, Dallas D. "The French and Prussian Staff
Systems Before 1870." Journal of the American
Military History Foundation, (Winter 1938): Vol.
2, No. 4.

Irvine, Dallas D. "The Origin of Capital Staffs."
Journal of Modern History, (June 1938): Vol.
10, No. 2.

Rutherford, Jerry and Sulka, Daniel. "Making FM 10-5 Logistics A Reality." Military Review, (February 1994): Vol. 74, No. 2.

Sullivan, Gordon. "Ulysses S. Grant and America's Power Projection Army." Military Review, (January 194): Vol. 74, No. 1.

Wojdakowski, Walter. "Staff Philosophy." Military Review, (November 1988): Vol. 68.

Zinni, Anthony A. and Ellertson, Jack W. "Scrapping the Napoleonic Staff Model." Military Review, (July 1992): Vol. 72, No. 7.

Unpublished Papers

Bailey, Glenn. "Military Technology and Military Organizational Structure." MA Thesis, Department of Sociology. University of Texas at El Paso, May 1974.

Byrd, Barthy Ann. "The Changing of the Guard." PhD Dissertation. University of New Mexico. Albuquerque, NM, July 1989.

Burkett, Jack. "Command and Control White Paper (Initial Draft)." BDM Federal. FT Leavenworth KS, 22 March 1993.

Hurley, Mark S. "Union Logistics in the Vicksburg Campaign." MMAS Thesis, Command and General Staff College. Ft Leavenworth, KS, 1992.

Kohler, Jeffrey. "Peace Enforcement: Mission, Strategy, and Doctrine." School of Advanced Military Studies. Monograph, US Army Command and General Staff College, Academic Year 1992-1993.

Miewald, Robert D. "The Stability of Military Managerial Doctrine: The United States Army, 1866-1941." Department of Political Science. Thesis, University of Colorado, 1966.

Schifferle, Peter J. "The Prussian and American General Staffs: An Analysis of Cross-Cultural Imitation, Innovation and Adaptation." Department of History. Thesis, University of North Carolina, 1981.

Schillare, Q.W. "Force Generation in an Immature Contingency Theater." School of Advanced Military Studies. Monograph, US Army Command and General Staff College, Second Term, Academic Year 1989-1990.

Taylor, Clarence E. "US Army Staffs: Are They Broken?" School of Advanced Military Studies. Monograph, US Army Command and General Staff College, First Term, Academic Year 1991-1992.

Tucker, Christopher. "US Army Command and Control at the Operational Level." School of Advanced Military Studies. Monograph, US Army Command and General Staff College, Academic Year 1991-1992.

Ware, Howard. "Command Presence: Where Should the Operational Commander Be Located on the Modern Battlefield?" School of Advanced Military Studies. Monograph, US Army Command and General Staff College, Second Term, Academic Year 1988-1989.

Wildenberg, John T. "Command and Control Architecture of the Future." Army War College. Carlisle Barracks PA, March 1987.