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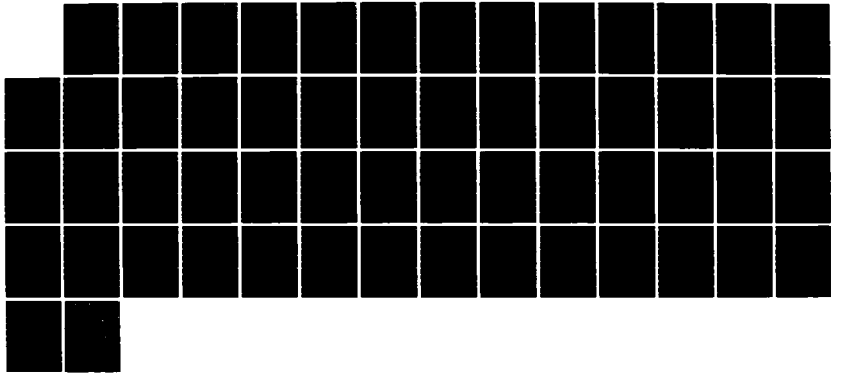

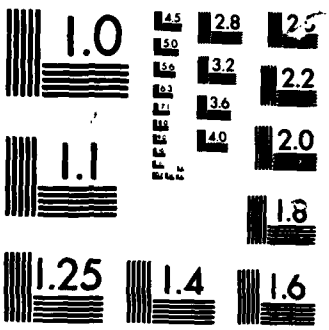

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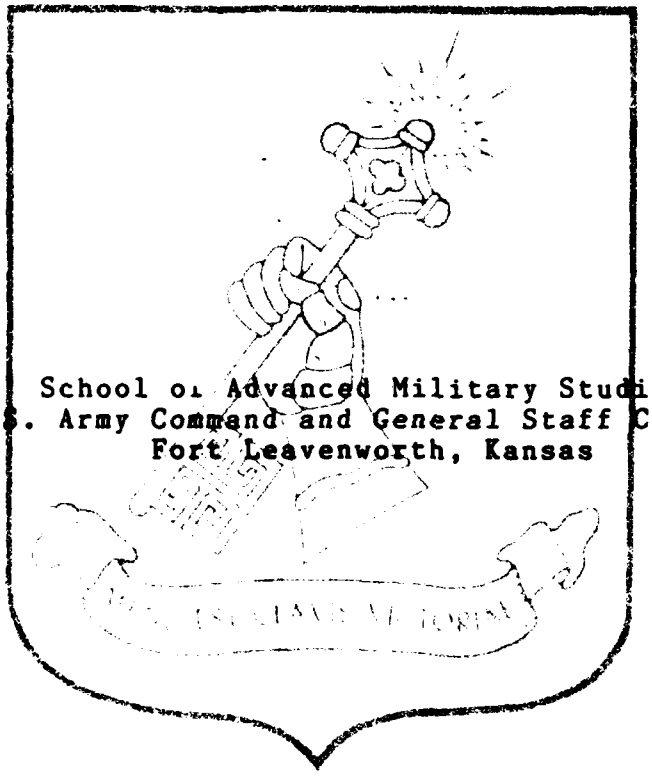
THE LIAISON OFFICER - THE AIRLAND BATTLE COMMANDER'S DIRECTED TELESCOPE

by

Major Henry Stanton Tuttle
Armor



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This monograph asks the question, "How can the command and control system best support the AirLand Battle commander, i.e., what mix of technology and people is appropriate?"

By tracing the historical evidence of liaison and liaison officers, and some of the current and proposed technological command and control aids, the study presents examples of how a commander has been successfully supported by his command and control system, and what some of the problems have been with both human and technological command and control aids.

This monograph proposes a solution to the continuing problem facing commanders - how to have a clear picture of the battlefield and simultaneously transmit his intent to his subordinates. Liaison officers equipped with high technology equipment can serve the commander as a directed telescope system on the AirLand Battlefield.

This monograph concludes that the best commanders have been the ones who made the command and control system work for them, and did not become slaves to the system. The study also concludes that its proposed solution - liaison officers equipped with high technology equipment - can improve the command and control system. By doing so, the commander can make i

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ABSTRACT

THE LIAISON OFFICER - THE AIRLAND BATTLE COMMANDER'S DIRECTED TELESCOPE, by Major Henry Stanton Tuttle, USA, 54 pages.

This monograph asks the question, "How can the command and control system best support the AirLand Battle commander, i.e., what mix of technology and people is appropriate?"

By tracing the historical evidence of liaison and liaison officers, and some of the current and proposed technological command and control aids, the study presents examples of how a commander has been successfully supported by his command and control system, and what some of the problems have been with both human and technological command and control aids.

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TABLE OF CONTENTS

INTRODUCTION

Clausewitz states that war is an act of force, during which two living masses interact in a contest of wills. The victor is the one who is able to impose his will on the enemy, bringing about peace on the terms of the victor. The United States Army, as an instrument of the United States, is charged with the mission of enacting many of the policies of the United States Government. As the Army trains and carries out its mission, it must contend with another phenomenon defined by Clausewitz: friction. Simply put, friction is the application of the adage, "If anything can go wrong, it will." In an attempt to overcome the effects of friction while executing its mission, the Army has developed systems designed to assist its commanders in command and control of their units.

The command and control system of the Army has changed over the years as the Army has attempted to meet the increasing complexities and dynamics of the battlefield. As this system has changed, so too have the terms "command," "control," and "command and control." These terms have been often used and sometimes abused, which has led to some misunderstanding of the meaning of the terms.

Command is defined as:

> A process by which the will and intent of the commander is infused among subordinates. This process is directive; its premise is reliable subordinate behavior.[1]

Control is defined as:

> A process by which subordinate behavior inconsistent with the will and intent of the commander is identified and corrected. This process is regulatory; its premise is unreliable subordinate behavior.[2]

It is important to note that this unreliable behavior is normally due to the situation, and not due to willful disobedience.

...

Command and control is, "The exercise of command, the means of planning and directing campaigns and battles."[3] It is a system designed to support the commander's decision-making process. It "synchronizes and coordinates combat power on the battlefield and provides the direction to fight."[4] The ultimate purpose of command and control is "to implement the commander's will in the pursuit of the unit's objective."[5] Absent from these definitions is any reference to communications; yet, many automatically equate "command and control" with "communications."

Throughout the course of history, commanders have sought optimum command and control. Optimum command and control would satisfy the eternal desire of all commanders to be both omniscient and omnipresent. As battlefields grow

larger and more complex, these qualities become more difficult to attain. Nonetheless, commanders constantly seek more certainty as they pursue their objectives. This search for certainty is even more important today on the AirLand Battlefield.

AirLand Battle doctrine requires the commander to defeat enemy forces across the entire spectrum of conflict. To do this, the commander must plan, direct, and act more quickly than the enemy. The command and control system is supposed to help the commander by being flexible, succinct yet comprehensive, and timely. Often this is not the case. Command and control systems are notorious for being rigid, unwieldy, and slow. As a result, paralysis and lethargy often set in, and neither command nor control is accomplished. AirLand Battle doctrine seeks to overcome some of the inherent command and control shortcomings by emphasizing the commander's intent.

Commander's intent is a concept wherein the commander issues a mission-type order which specifies what must be done, and why it must be done, without specifying how it must be done.[6] Knowledge of the commander's intent allows subordinates great operational flexibility in carrying out the mission. Flexible command and control facilitates understanding of changed or modified commander's intent and subsequent success on the AirLand Battlefield.

As commanders seek to approach omnipresence and omniscience in their quest for certainty, several means and methods are employed. Reports, from higher, lower, and adjacent units are used, as is the physical presence of the commander at the decisive point. Communications links are established, in order to send and receive information between and among units. Historically, liaison officers, acting as representatives of their commanders, were used to act as "directed telescopes" to cut through the "system" to either ask or answer their commanders' questions. However, these methods are not entirely foolproof.

Each of these means and methods has problems. Reports can become filtered, garbled, or "sugar-coated"[7] in transmission, which lessens their worth. The physical presence of the commander at the decisive point is important, but the decisive point is often difficult to predict, may change quickly, and the area of operations may be vast. Also, there could be more than one decisive point. Communications links can break down, become jammed or otherwise interrupted. Commanders can also become tied to their communications. Finally, liaison officers can be misused and abused by their commanders, and can be seen as spies of the commander by subordinates. The AirLand Battle commander faces a very difficult problem.

The problem is this: How can the command and control system best support the AirLand Battle commander, i.e., what mix of technology and people is appropriate? The Army is working diligently to solve the command and control problems facing the commander on the AirLand Battlefield. The hardware approach presents many technological solutions to the problems of AirLand Battle command and control. This monograph will examine some of these systems. However, as the Army leans toward hardware, the human element is often neglected or relegated to a lesser status. History offers many instances which indicate that successful commanders have overcome command and control problems with human directed telescopes. This monograph will examine some of these lessons as well.

This monograph identifies a critical gap in the AirLand Battle commander's supporting command and control capability and presents proposals which can help close the gap, giving the commander what he needs: flexible, responsive command and control. The hypothesis is: In spite of the modern technological aids available, the AirLand Battle Commander requires a human directed telescope to facilitate his command and control.

When discussing liaison, this monograph focuses on vertical liaison rather than horizontal liaison. Vertical liaison is a relationship between a higher headquarters and

its subordinate units. Horizontal liaison is a relationship between adjacent units, regardless of command relationships. Additionally, this monograph focuses on the tactical level, i.e., from corps through brigade.

The assumptions for this monograph are that the Army's current command and staff structure will not change significantly in the near future (5-10 years), and that the 1990/1991 objective command and control automated support systems will be fielded on time.

BACKGROUND

A "directed telescope" is used to cut through established channels and directly gather information. A "directed telescope" is defined as someone a commander:

> Can direct, at will, at any part of the enemy forces, the terrain, or his own army in order to bring information that is not only less structured than that passed on by normal channels but also tailored to meet his momentary (and specific) needs.[8]

It is designed to supplement the regular reporting system. The regular reporting system:

> Should tell the commander which questions to ask, and the directed telescope should enable him to answer those questions.[9]

It is important to emphasize that a directed telescope is normally focused on a distant object, to provide a general view, and is not used as a microscope. A microscope is used to peer in more detail at the inner workings of close-in objects. The microscope is more analogous to the activities of an inspector general.

As the historical perspective will demonstrate, a more or less formal system of vertical liaison, the directed telescope, has been used from the time of Napoleon up through the Arab-Israeli Wars in order to facilitate command and control.

Yet the United States Army presently has no authorization for any personnel to perform directed telescope duties. The closest doctrinal discussions concern the much-maligned liaison officer.

Liaison is defined as:

> The contact maintained among separate military organizations to ensure mutual understanding and unity of purpose and action, cooperation and understanding between commanders and staffs of headquarters of units working together, and tactical unity and mutual support by adjacent units.[10]

This definition implies the traditional connotation of horizontal liaison, but allows ample room for vertical liaison as well.

A liaison officer is defined as a "representative of the commander."[11] He represents his commander "at other headquarters."[12] This definition also infers horizontal liaison, yet allows for vertical liaison as well.

As a representative of the commander, the liaison officer "further(s) harmonious cooperation between his own headquarters and the one to which he is sent."[13] Once again, this is a horizontal connotation, but could facilitate vertical liaison officers.

In today's Army force structure, the authorized liaison officer spaces are:

Heavy Corps:	1 - LTC, 3 - MAJ, 3 - SSG [14]
Airborne Corps:	1 - LTC, 6 - MAJ [15]
Heavy Division:	2 - CPT, 2 - SSG [16]
Light Division:	3 - CPT, 3 - SSG [17]
Airborne/Air Assault Division:	0 [18]

All of these spaces are doctrinally allocated to the corps or division main command post respectively.

There are several implications to the doctrinal focus of liaison and liaison officers. The Army puts on institutional blinders, in that it fails to maximize the potential value of liaison officers. It doesn't think of liaison officers as a priority resource. Many liaison officers are not selected, trained, or briefed as FM 101-5 says they should be.[19] Commanders do not use their liaison officers as directed telescopes, when perhaps they should.

Additionally, there is a horizontal, rather than a vertical emphasis on liaison and liaison officers. This is especially true in the joint and combined arenas such as the Unified Commands and NATO. Vertical liaison is seen as a commander-to-commander relationship. This perception is noble, but frankly doesn't withstand rigorous analysis in

view of the command and control requirements of AirLand Battle, with nonlinear, dynamic battles raging concurrently across a wide frontage.

The authorized liaison officer allocation also has several implications. There are not enough spaces in corps and division headquarters to do all the required or desired liaison officer functions.

The situation is especially difficult in airborne and air assault units. For example, the G-3 relies primarily on technology, i.e., voice radio or multichannel, to maintain the current friendly situation and unit status, as required by both common sense and doctrine.[20] During airborne or air assault operations perhaps the most critical requirement upon landing is to determine friendly dispositions. However, the G-3 has no doctrinal means other than radios to do this.

Observations from simulation exercises conducted at the School of Advanced Military Studies, Fort Leavenworth, indicate that even when unit commanders and G-3s are face-to-face, communication of vital information can be difficult. In the heat of battle, should communications fail, other personnel will have to be taken from their primary duties to obtain this and other critical information.

HISTORICAL REVIEW

The use of liaison officers began as early as the first military staff, which most agree belonged to Alexander the Great. The role of liaison officers as observers and advisors continued to evolve as war changed; however, their role remained essentially the same until the time of Napoleon.

As armies grew, the span of control became too large for one individual. The commander's intent began to take on more significance. Napoleon used aides-de-camp and liaison officers as directed telescopes to see the battlefield as well as convey his intent.[21] They acted not only as messengers, but often as political representatives of the emperor. They were carefully selected, and had a great deal of combat experience as well as understanding of the emperor's intent. Other commanders of the time, most notably Wellington, also used aides as directed telescopes.

During the American Civil War, both sides used aides as directed telescopes. Union leaders generally used their aides in the Napoleonic role. Confederate leaders, with a few exceptions, such as Longstreet and Forrest, generally used their aides as messengers. Frustrated over the lack of tactical information, Lee called for the establishment of a

group of officers with duties similar to those of a directed telescope.

Trust between the commander and his directed telescopes was the foremost quality. Grant and his aides were very close. This closeness and trust enabled the aides to convey Grant's intent even when the situation changed from their initial briefings with him. Because of previous training and experience among the various staffs, Grant was more likely to command; Lee was more likely to control.[22]

Von Moltke began the formalized use of directed telescopes prior to and during the Franco-Prussian War. Members of his General Staff we.e permanently assigned to observe and report on subordinate units. As the battlefield increased in size, these directed telescopes used the latest technology, the telegraph, to report on the situation in their sectors.[23]

During World War I, technology and larger armies forced a greater decentralization of tactical command and control. The French initially did away with their liaison officers since they thought the telegraph and telephone would alleviate the need for a directed telescope.[24] The French commanders found that technology failed, often at crucial times. They reinstituted a system of liaison officers to facilitate command and control. The French system of

liaison officers became the model for the United States Army during the war.

The British experienced similar problems, with commanders almost literally tied to their telephones and telegraphs. During operations, the command and control system often drove the tactical plan. This contributed significantly to the disaster at the Battle of the Somme in 1916, where more than 21,000 died and more than 40,000 were wounded, captured, or missing on the first day of the battle.[25]

The United States Army organized groups of young officers as combat observers, equipped with carrier pigeons. Pigeons were released daily at 0700, 0900, and 1500 hours.[26] Messages were to include a front line trace and a "status of fighting" report. The final conclusion drawn from the World War I experience was that technology had not overcome the need for human liaison to facilitate command and control.[27]

The interwar years included much thinking and writing concerning liaison. The doctrine developed between the wars was used as the baseline when World War II broke out. Although the British and French Armies developed doctrine for liaison officers as directed telescopes, it was the United States Army which developed the most comprehensive

descriptions of duties and responsibilities of liaison officers. The foundations for a directed telescope system using liaison officers was established. The early campaigns of World War II, with new tactics and technology, reinforced the need for human directed telescopes.[28]

With the onset of World War II, the increased use of radio and the introduction of mobile warfare greatly changed command and control for all armies. Better communications allowed a commander to control larger formations over greater areas. But the system didn't always work the way it was supposed to. As a result, liaison units were formed, primarily to function as directed telescopes.

The British, and later the United States, organized directed telescope units to perform vertical liaison. PHANTOM was the best known of the British units. "J" Service was another British liaison element. Its duties and responsibilities were merged into PHANTOM in 1944.[29]

PHANTOM, more formally known as the General Headquarters Liaison Regiment, was organized just prior to the German invasion of Belgium in 1940.[30] After evacuation from Dunkirk, the regiment was transferred to Greece for the 1941 campaign. PHANTOM consisted of officer patrols and radio monitoring detachments. Simultaneously, General Montgomery was organizing his "J" Service.

"J" was a radio intercept service, patterned after the German General Staff Information Service. Its mission was to monitor friendly radio nets, and report factual information up the chain of command. When Montgomery was given command of Eighth Army in North Africa, PHANTOM absorbed "J" into its organization. As Montgomery rose in stature and responsibility, PHANTOM accompanied him, expanding in size, responsibility, and stature. PHANTOM continued to provide near-real time directed telescope information to Montgomery and other commanders throughout the war. Montgomery hand-picked his liaison officers, and trained them to his very high standards. He had the utmost respect for them. They often had a thankless job, but they performed their duties in an exemplary manner.[31]

The United States Army had several different liaison units, based upon the PHANTOM organization. Army Tactical Information Services (ATIS) was the name given to the collective liaison efforts of all United States Army units. ATIS had two components, SIAM (Signals Information and Monitoring) and The Third Army Information Service.

SIAM provided two services - information reporting and radio security monitoring. Seventh Army organized the first SIAM company, and used it in Italy and France. Fifth Army also organized a SIAM company, which tied into PHANTOM during the Italian campaign.[32]

Third Army Information Service, also known as General Patton's "Household Cavalry", worked for him in Third Army's drives and thrusts across Europe. It was formed when no SIAM companies were available when Third Army was organized in France. Patton recognized the value of such a unit from his previous experience with PHANTOM in North Africa and Sicily, and utilized his 6th Cavalry Group as part cavalry, doing reconnaissance, part SIAM, monitoring friendly radio nets, and part PHANTOM, sending liaison officer patrols to report on the action.[33]

PHANTOM tied into the United States Army's Corps headquarters as early as 7 June 1944 in Northwest Europe. Soon afterward, PHANTOM became a de facto Allied organization, with officers from British, American, and Canadian Armies. By the end of the war, PHANTOM was seemingly ubiquitous.

Operationally, both the British and Americans emphasized that their PHANTOM/ATIS units did not replace the command and staff organizations that were already in place. Each PHANTOM or ATIS unit's mission was information flow, not command. Procedures were established to ascertain the facts. Only when a report was confirmed by the local command could the patrols pass it up the net as confirmed. All other reports were to be sent as unconfirmed.[34]

After the war, numerous conclusions were drawn on the wartime use of liaison organizations. The Theater General Board concluded that PHANTOM/ATIS-type directed telescope organizations were valuable to a commander and should be permanently established.[35] As routine and standard information networks were clogged, liaison units were able to bypass these clogged nets to get vital information up, down, and across the chain of command. Technology enhanced a commander's ability to communicate with his subordinates, and it allowed liaison personnel to assist the commander in his never-ending quest for certainty on the battlefield.

The post World War II era, with smaller budgets and force structures, and increased capabilities of communications systems, led to a lessening emphasis on human directed telescopes. Liaison officers had become, for the United States Army, little more than messengers, who were not necessarily carefully selected, trained, or experienced.

There has also been the transition of emphasis from vertical to horizontal liaison for the United States Army. There are two primary reasons for this transition. The first is the reliance on technology, such as the helicopter and more powerful, reliable, and smaller communications systems. The second is membership in joint and combined organizations such as NATO.

During the Vietnam conflict technology became the directed telescope. Helicopters allowed commanders of

several levels to literally hover over a battle, often interfering with a harried ground commander trying to do his job. As vertical liaison was rarely necessary, liaison became almost exclusively horizontal.

Vertical liaison between joint and combined headquarters has always been difficult. Because of parochial interests and differences in rank, a feeling of mutual uncertainty can be expected. Both World Wars I and II provide examples of this phenomenon. Marshal Petain's initial liaison efforts with General Pershing's staff were treated with great apprehension,[36] and PHANTOM patrols would often cause great indignation and ire upon their initial arrival at an American headquarters.[37] Even though relationships can and normally do improve, an uneasiness is normal.

However, not all nations have opted for technology as the major source of their directed telescope activities. The Israelis used human directed telescopes as recently as the 1967 war in the Golan Heights. The Israeli brigade commander, General Gavish, supplemented his many communications systems with members of his staff, mounted in half-tracks, following the lead elements of his most forward-deployed brigades.[38] This allowed him to let his subordinate commanders fight the battle while he remained informed of the situation via his human directed telescopes.

CURRENT AND FORTHCOMING COMMAND AND CONTROL AIDS

But what of modern technology? Can computers, radios, and other new hardware provide a directed telescope for the commander? The Army is busy conducting a great deal of research and testing to find solutions for the commander in his increasing search for fast, accurate information. Both procedural systems and hardware are being proposed, tested and fielded. All the key players, from commanders in the field to the contractors, are working diligently, but all these good intentions are still not producing a comprehensive system which is responsive to the needs of the commander. Is this because the human factor is being neglected, or is it because of a lack of a clear objective for all to aim for?

The Army Command Control System (ACCS) is the Army's command and control architecture system. It consists of several subsystems. ACCS defines requirements for the functions of training, mobilization, deployment, sustainment, and employment at echelons ranging from tactical operations to the operations of the sustaining base.[39] This discussion focuses on the tactical operations level.

SIGMA is the name given to the tactical command and control system. SIGMA consists of five functional areas:

maneuver, air defense, intelligence and electronic warfare, fire support, and combat service support. The Command and Control Subordinate Systems (CCS2) are designed to support SIGMA by providing the commander command and control of combined arms forces in combat.[40] Through automation, standardization, and procurement of off-the-shelf items in many cases, the Army seeks to have a complete system which is affordable, rugged, and usable by 1990.[41]

Although these efforts are noble, history shows that not everything always works the way it is intended. A proliferation of stand-alone battlefield computer support systems adds to the problem. An example of this phenomenon is TACFIRE. This system was widely hailed to provide the maneuver commander with "an automated tool with which to monitor the intensity of the battle and his fire support element,"[42] enabling him to "know what artillery is firing and why."[43] After several years of use, TACFIRE is not what everyone thought or hoped it would be. Problems with such things as clogged, overloaded fire mission queues cause nightmares to TACFIRE users. If the system operates like this in wartime, the results could be disastrous. Yet it will be integrated into ACCS and the fire support area of SIGMA.

In addition to the several stand-alone systems being integrated into CCS2, some new systems are being developed

with a greater emphasis on standardization and integration. The next paragraphs are a survey of a few of the new and proposed hardware and procedural systems.

The Position Locating and Reporting System/Joint Tactical Information Distribution System Hybrid (PLRS/JTIDS Hybrid (PJH)) is a system which can tell a commander where any designated unit is located. It is a composite system which merges the PLRS system with JTIDS. This facilitates the joint operational capabilities of JTIDS with PLRS.

PLRS operates by sending a burst-type, frequency-hopping digital message from a small sending device through a network of relays, if necessary, to a master control station. This is the blip seen on the control monitor by a commander. Locations of designated units can then be followed as a battle or movement proceeds.[44]

JTIDS uses similar technology to rapidly transmit data to and from a headquarters and its subordinate and adjacent units. PLRS will be able to interface with JTIDS by modifying each system to communicate with the other. PJH will be the Army standard for location, reporting, and identification technology.[45]

PLRS has proven itself very useful to commanders. It shows on a display the geographical location of any designated unit. Much time and energy can thereby be saved

since the commander can know at a glance where any of his subordinate units is located, within 15 meters.[46]

Another forthcoming system is SINCGARS (Single Channel Ground and Airborne Radio System). This system is a secure, frequency-hopping tactical radio, designed to replace the AN/VRC-12 family of tactical radios. By using an expanded frequency range and narrower channel spacing than the VRC-12, SINCGARs more than doubles the number of frequencies available for use.[47] This increase in capability, however, can be a mixed blessing. SINCGARS is to be fielded in division sets. However, until all units, active and reserve, receive this equipment, there will be severe operational limits. These limits include the number of frequencies available for SINCGARS to "talk to" VRC-12 radios. As SINCGARS has 2320 available channels to 920 for the VRC-12, these two systems can only communicate with each other on the 920 possible common channels.[48] Also, SINCGARS must be operated in the single channel mode when communicating with VRC-12 systems. This drawback negates SINCGAR's frequency-hopping advantage.[49]

Another system, one which merges computer technology and different reporting procedures is the Maneuver Control System (MCS). The hardware consists of a network of mini and micro computers: the Tactical Computer Terminal (TCT), the Tactical Computer System (TCS), and the Analyst Console.

The procedural system to support MCS is, simply put, a software package to support word processing and data base management.

The MCS has been distributed among some tactical units, mainly in Europe. The MCS can be accessed via multichannel, VHF, FM voice, or hardwiring. This feature allows almost instantaneous transmission of data between and among users. During early testing and use, MCS was primarily used as a message preparation and information distribution device.[50] This use proved to partially circumvent the backlog of message center traffic during exercises.

However, there have been some problems encountered with MCS. The word processing software is limited in that only pre-formatted reports and a free-text option, using the DD Form 173 format, are available. Also, the MCS keyboard is not the same as a regular typewriter.[51] This suggests that additional training is required for its operators. Additionally, compatibility with other systems is a problem. There are other systems fielded, by both the United States and Allied forces, which are not compatible with MCS. Much of the speed and clarity which is potentially available via MCS is wasted when a commander seeks to communicate with non-MCS users. This can have disastrous effects on the AirLand battlefield, since a unit's agility can be constrained by such a rigid system.

These high technology systems are just a small sample of the many which are programmed for fielding in the next five to ten years. What are their implications for the Army's future?

First, there is a danger of an overreliance on technology to solve what remains to be basically a people problem. The commander will be able to see where his units are, pass information and orders between and among echelons, and do all this more rapidly than ever before. But the technological aids cannot think (yet); therefore, the information is just raw or partially processed data. Computer reports and blips on a screen cannot "feel" the battle. Only people can. Commanders run the risk of being tied to the hardware, similar to the British at the Somme. Historical experience indicates that overreliance on technology may lead to a false sense of certainty, which can lead to disaster.

Also, the commander may become swamped with what is known as the "pathology of information."[52] By having so much information, a commander actually has no information, for he is deluged by the sheer mass of data. This morass of information, with conflicting reports and requests, can lead to doubt and indecision on the part of a commander who is waiting for just one more piece of information. The search for certainty has, or should have, its limits, even

though a commander will probably never have all the information he thinks he needs.

Another implication of a hardware-oriented solution to command and control is the hardware itself. In order to save money and time, the Army plans to field as many systems as possible with off the shelf procurement. Time and money will be saved, but the potential lack of ruggedness may prove to be the downfall of such equipment. Even if item-for-item replacement of less rugged systems is cheaper, it may overload an already overworked logistics system.

Another hardware oriented implication is that of enemy interdiction. Although modern technology such as frequency-hopping and burst transmissions cannot currently be intercepted and countered, experience forewarns that it is only a matter of time before our enemies will be able to do this. Even now, Soviet forces in Afghanistan are reportedly using manportable burst transmission radio equipment.[53] It is only a matter of time before high-technology radios will be monitored and interdicted.

Additionally, the risk of damage to electronic equipment by electromagnetic pulse (EMP) is constant. Hardening of systems is a solution, but many of our systems, especially those procured off the shelf, will not be

hardened to withstand EMP. This is perhaps the Achilles heel in our hardware and in our procurement policies.

Not all the implications of new technology are bad, however. The increased capability of communications systems to transmit information, when paired with a human to analyze and interpret the information, gives the AirLand Battle commander the potential for greater agility than the enemy. His predecessors of just a few years ago could only dream of this increased potential for rapid, secure, accurate command and control.

The bottom line on a hardware-oriented solution to command and control enhancement is that a commander cannot absolutely rely on his hardware to work when he needs it to. History contains many examples of communications failing at the absolute worst time, causing havoc and at times disaster.[54]

PROPOSALS FOR CHANGE

Clearly, an opportunity exists for another solution, which can bring together the best parts of the effects of both the technological advances and the historical evidence which supports the human element. I propose that human directed telescopes be used on the AirLand Battlefield, and that they be equipped sufficiently with compatible command and control equipment to carry out their duties. Further, I propose that liaison officers be employed in this role, as this is not only logical, but has historical precedent as well.

In order to implement these proposals, several changes will have to occur. First, a re-thinking of liaison, to include both the horizontal and vertical perspective, will have to take place. Further, the Army will have to find the best way to integrate the human element with technology as it plans for command and control systems of the future.

ANALYSIS OF PROPOSED CHANGES

There are several issues concerning these proposals. Each of the issues will be discussed in detail.

The first and foremost issue is the belief that directed telescope activity is a commander to commander function. This is a noble position , but it is frankly unrealistic in the 1980s. The nonlinear battlefield, with wide dispersion of units and concurrent battles, does not lend itself to constant commander to commander contact. The commander's intent is supposed to be the guideline to follow. However, as a battle transpires the situation changes from that of the planning phase. The commander's intent may also change. Directed telescopes can monitor the friendly situation and status for the higher commander, enabling both the commander in contact to fight and the higher commander to "feel" the battle. The worth of a human directed telescope as a battle monitor is proven by numerous examples from World Wars I and II. The opposite of this, overcontrol by "layers" of commanders, often interfering with the battle, was seen in Vietnam.

Used as a monitor of the situation, the directed telescope is often seen as another inspector general-type "spy" for the commander. This is a significant obstacle, and must be overcome for the directed telescope system to

work effectively. Commanders must understand that a directed telescope is in fact a telescope, providing a general view of the situation at a distance, and not a microscope, looking at the inner workings of units. During World War II, this problem was dealt with by careful selection and training of directed telescope liaison officers. Although not foolproof, this system generally worked well. Directed telescope liaison officers were trained to report only facts, and not opinions, unless specifically asked by their commander.

Establishing and maintaining a good relationship with subordinate units is an essential requirement for directed telescope liaison officers. Often initially greeted with resentment, directed telescope liaison officers more than once proved their value to a subordinate unit by having or obtaining current, reliable information, both on the friendly and enemy situations. Resupply in an extraordinarily rapid time was often another hidden benefit of having a directed telescope liaison officer in the area of operations.

Another issue is manpower. We don't have and won't get any more manpower spaces for directed telescope liaison officers. Perhaps this issue needs a closer look. Research was conducted by the Combat Studies Institute of the Command

and General Staff College in an attempt to determine whether or not a need exists for a directed telescope.[55]

The Organizational Effectiveness Center and School asked the Combat Studies Institute to conduct the research in order to assist the Center in its proposal of using Organizational Effectiveness officers as directed telescope liaison officers. Conclusions of the research indicate that a need still exists for timely, accurate information, and that a human directed telescope can still perform this function.[56] The Organizational Effectiveness Center and School was considering a proposal that an Organizational Effectiveness major and two captains be assigned to each division, to perform directed telescope duties in addition to their Organizational Effectiveness role.[57] Although this proposal was not approved or implemented, due to the disestablishment of the Organizational Effectiveness Center and School, the concept of directed telescope personnel in each division has merit.

If manning levels are increased, spaces should be allocated for directed telescope liaison officers. Until that time, other solutions to the manpower problem are required.

A possible short term solution to the lack of manpower is the J-Series divisional cavalry squadron. Organized to

be the division commander's "eyes and ears,"[58] the cavalry squadron, equipped with helicopters, motorcycles, and M3 Bradley Cavalry Fighting Vehicles, could act as a directed telescope. Air, motorcycle, or ground cavalry units (troops or platoons) could be used to expeditiously supplement or complement the division commander's command and control.[59]

However, this solution does not apply in the same way to the corps cavalry regiment. The corps regimental squadrons normally have a direct combat mission, such as a defensive sector, and would be very hard pressed to pull people out for liaison officer duties. Even if the corps regimental cavalry units were used as directed telescopes, the problem would exist at brigade level, where no cavalry forces are authorized.

Another possible solution is a variation on what is currently being done in many places. Since many of our liaison officers are chosen by taking them away from other duties, commanders do not always "care enough to send the very best." All the best people apparently must be used for something other than liaison. This only serves to exacerbate the situation whereby an untrained and inexperienced liaison officer is sent to "spy" on a subordinate unit. The variation to this solution is that the Army needs to place emphasis on training and educating

officers and non-commissioned officers in the roles and functions of directed telsecope liaison officers.

The framework to do this already exists. Officer Advanced Courses, the Combined Arms and Services Staff School, and the Command and General Staff Officers Course currently teach staff procedures and conduct training exercises to reinforce learning. An important aspect of this proposed liaison officer training and education must be emphasis on the importance of being a telescope, and not a microscope. To add the necessary training for directed telescope liaison officer duties would be relatively painless. The time spent learning the basics of directed telescope liaison officer duties would probably bear great dividends in the field during training exercises and especially in wartime. The senior Non-Commissioned Officers Education System could also support this effort in the area of non-commissioned officer training in directed telescope liaison duties.

Another concern is that the equipment is too costly to be allocated for such activities. This is a valid issue, but once again past experience shows that when equipped properly the directed telescope liaison officers were able to more than "pay for" their equipment in the amount of certainty they brought their commanders. Command and control was enhanced rapidly, time and time again, partly

due to the work of directed telescope units and personnel. A prime example is the "chop" of United States Army units to Montgomery during the Battle of the Bulge. PHANTOM was able to keep Montgomery informed when other communications systems failed.[60]

PHANTOM units had the equipment as well as the necessary personnel so they would not unduly interfere with the battle by "borrowing" radios, jeeps, and other equipment. Instead, they could keep their boss informed. The combination of high technology hardware and liaison officers appears to be the optimum solution for a timely, accurate, reliable, rugged, and redundant directed telescope system.

To summarize, the proposed solutions will not necessarily add to the force structure, require significant expenditures for equipment, or require any significant additional time away from the unit for functional training. These solutions will meet a need which is present all the time, vital in wartime, yet largely ignored in peacetime.

CONCLUSIONS

From the times of Napoleon through the Arab-Israeli Wars, great commanders made the command and control system work for them and did not become slaves to it. This is at least partially due to their recognition that command and control does not equal communications. Directed telescopes, primarily liaison officers, have been used to cut through the "system" to expedite vital information up and down the chain of command.

War is still a contest of wills. The key to effective command and control is not the technology but the people. [61] Technology, in the form of increased capabilities in communications and information processing is a significant addition, but it cannot yet take the place of human judgment. Technology is only one means to an end. It should not become the end in itself. When this situation occurs, the results are normally contrary to the commander's intent and often are disastrous.

Commanders must still be able to "feel" the battlefield. All the data and information in the world blipping up on monitors will not enable a commander to look into the eyes of his subordinates in order to get a "feel" of the individual, unit, or battle. Although a directed telescope liaison officer is not a commander, he is a human

who shares human emotions, and is not just another number crunching machine. The directed telescope liaison officer is not exclusively a player in the battle, but an observer - and more important, he knows the commander's intent, perhaps better than the unit in the area in which he is operating.

The need for certainty on the battlefield is even greater today, since we must attempt to work inside the enemy's decision cycle. Breakdowns of command and control equipment and the potential for interdiction of its use dictates that a commander must have a human interface in the command and control loop. This is the ultimate redundancy at work. The directed telescope liaison officer can serve this function since he will not be involved in the "nuts and bolts" of fighting the battle. Instead, he will be reporting the situation up the chain of command.

A mixture of high technology equipment combined with liaison officers can serve the AirLand Battle commander as a directed telescope system. By doing this, a commander can maximize both the capabilities of current and forthcoming high technology hardware systems and the human element. The outcome of battle has always been and will continue to be dependent upon a commander imposing his will on the enemy. A composite directed telescope liaison officer, equipped with the proper high technology equipment, can assist the commander in making his will both informed and clearly transmitted.

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