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**INSTITUTIONAL TRAINING STRATEGY  
FOR COMBINED ARMS COMMANDERS  
- A FIRE SUPPORT PERSPECTIVE -**

BY

**LIEUTENANT COLONEL WILLIAM P. HEILMAN  
United States Army**

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INSTITUTIONAL TRAINING STRATEGY FOR COMBINED ARMS COMMANDERS  
- A FIRE SUPPORT PERSPECTIVE -

AN INDIVIDUAL STUDY PROJECT

by

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## ABSTRACT

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The current Army training strategy is not adequately preparing combined arms commanders or their staffs to execute U.S. warfighting doctrine. Synchronization of the various Battlefield Operating Systems (BOS) is a fundamental requirement of combined arms warfare. While officers are knowledgeable of Army doctrine and the processes necessary for battlefield application, they are insufficiently trained in the "actual application" of synchronization on the combined arms battlefield.

This paper uses the fire support BOS as a mechanism to address deficiencies in the current institutional portion of the Army's training strategy and offers concrete alternatives. A brief argument for more institutional involvement vice reliance on unit training is also presented. While the scope of this paper is limited to the fire support BOS, the concepts are readily transferable to other BOSs with minor changes in the recommendations offered in this study.

## PREFACE

As dawn broke over the National Training Center's central corridor, the task force commander left his headquarters to conduct the final inspection of his carefully prepared defense. His task force was defending the notorious Chod Hill-Peanut Hill-Division Hill-Iron Triangle area against an OPFOR regimental attack from the east. The defense was well planned with obstacles and artillery concentrations between Chod Hill and Division Hill. The bulk of the maneuver forces focused on a primary engagement area north of Division Hill. The commander had not traveled far when his tank fell victim to fratricide. He confiscated a company FISTV and continued to inspect the defense. To his dismay, the pivotal armor heavy team had not completed digging their tank positions. As time was critical, he removed two FISTVs from their prepared positions (directing them to a reserve position where they could not see the battlefield) and replaced them with tanks. At this point, the only remaining artillery observer was dismounted on top of Chod Hill (the final FISTV having been evacuated for maintenance two days prior). Suddenly, the OPFOR began their attack with an artillery prep and a large dismounted attack on Chod Hill. The artillery observer stationed there was killed. The entire regiment moved to force the gap between Chod Hill and the Peanut. While breaching the obstacle, the regiment remained exposed for 20 minutes between the obstacle belt and the planned artillery targets. Yet the

artillery did not fire - there were no artillery observers in position to see that area of the battlefield. Planned FASCAM was fired by the Task Force to reinforce the obstacles but there were no eyes to adjust it and the OPFOR observed and bypassed it. Finally, in desperation, the Task Force FSO fired the planned targets based on maneuver unit radio reports - the fires fell behind the regiment which was, by this time, pouring through the obstacle and overwhelming the task force. At the AAR, the Fire Support Officer was singled out and told he needed to "fix" the problems with the artillery and the task force commander openly complained about the failures of the artillery.

This actual NTC example of a well synchronized plan was "de-synched" during the preparation phase of battle. It demonstrates the fragile nature of synchronization and the consequences of failure in this vital area. During this battle, hundreds of soldiers worked continuously for two days and fought their hearts out (one tank platoon destroyed an entire OPFOR battalion at the obstacle) only to be defeated by the failure of their leadership to synchronize the battlefield. This should serve as a reminder that synchronization is not merely an academic staff process, but part of an officer's responsibility for professional expertise, and a commander's moral obligation to provide the best possible combat leadership for our soldiers.

## INTRODUCTION

Current Army training strategy does not adequately prepare combined arms commanders or their staffs to execute U.S. Army warfighting doctrine. This paper identifies training deficiencies in the vital area of battlefield synchronization and proposes realistic, achievable changes to the institutional training system.

Synchronization is one of the four basic tenets of the Army's AirLand Battle warfighting doctrine. Along with initiative, agility, and depth, it ". . . describes the Army's approach to generating and applying combat power at the operational and tactical levels." Experience indicates that neither combined arms commanders nor their staffs are prepared to meet the challenge of synchronizing the battlefield. This problem has persisted since the concept of synchronization was formally adopted in 1982. As defined in the Army's capstone doctrinal manual, FM 100-5, Operations, synchronization is:

. . . the arrangement of battlefield activities in time, space and purpose to produce maximum relative combat power at the decisive point. Synchronization is both a process and a result. Commanders synchronize activities; they thereby produce synchronized operations. . . So defined, synchronization may and usually will require explicit coordination among the various units and activities participating in any operation. By itself, however, such coordination is no guarantee of synchronization, unless the commander first visualizes the consequences to be produced and how activities must be sequenced to produce them. Synchronization thus takes place first in the mind of the commander and then in the actual planning and coordination of movements, fires, and supporting activities.<sup>2</sup>

During the years immediately following the advent of AirLand Battle doctrine:

. . . senior Army leaders continued to be concerned at the lack of progress battalion commanders had made in their ability to synchronize combat activities at the TF level. Independent studies acknowledged the significance of the synchronization problem; however, there [was] no consensus on how to solve it.<sup>3</sup>

A decade later, the challenge of synchronization remains, for the most part, unsolved. A TRADOC report as recent as September, 1992 indicates that: "Synchronization, execution, [and] time-distance estimates continue to present problems for player units [at NTC]."<sup>4</sup> The report continues, "Time/Space estimates are practically non-existent. Accordingly, synchronization in practice is difficult to achieve [and] . . . the process is followed with little understanding of the ideas embodied therein."<sup>5</sup>

Over the years, numerous studies and papers have focused on defining the problem, but their recommendations have yet to be translated into functional solutions. Representative of these works are the fall, 1988 edition of the Center for Army Lessons Learned booklet entitled "Heavy Forces;" the "National Training Center Trendline Analysis II" of 1989; an excellent white paper prepared by MAJ Sisco, MAJ Stevenson, and LTC Fish entitled "Synchronization" published in 1989; and most recently, the "Fighting with Fires" study published in April 1992 by the U.S. Army Field Artillery School. The fire support Battlefield Operating System (BOS) has been increasingly scrutinized as NTC



results fail to achieve either expectations or Desert Storm results. As one recent study reports:

Perceptions of fire support ineffectiveness appear to originate primarily from the maneuver/combined arms commander's and his staff's apparent lack of recognition and effective execution of their overarching responsibilities for integration and synchronization of the combined arms team, a deficiency that may stem from ineffective combined arms training programs in the Army's educational and professional development system.<sup>6</sup>

The scope of this paper is limited to the institutional training system with the fire support BOS serving as a mechanism to assist in identifying training deficiencies and solutions. The Army's training strategy is comprised of three components - institutional, unit, and individual training. As non-traditional roles begin to compete for already decreasing resources, company and battalion level warfighting training is being sacrificed. This places increased pressure on the institutional component to prepare officers for the demanding challenges presented by the fast pace, complex, AirLand Battlefield. Within the issue of fire support, the discussion is generally divided into three components - maneuver/combined arms responsibilities, artillery responsibilities, and NTC replication of indirect fires. This study addresses only the maneuver/combined arms component as it has the most significant impact upon the challenge of synchronization and facilitates the transfer of recommendations to other BOSs.

The paper begins with a brief review of maneuver doctrine, designed to establish doctrinal support for considering a

maneuver commander (at company and battalion level) as a combined arms commander bearing the responsibility for battlefield synchronization. TRADOC's current training strategy from Officer Advanced Course (OAC) to Command and General Staff Officer College (CGSOC) is then documented to provide a baseline from which to suggest changes. Following that, a discussion of observed training deficiencies (as related to synchronizing the fire support BOS) leads to numerous recommendations for improving the Army's institutional training system. The final recommendations are readily achievable and easily transferred to the challenge of integrating the remaining BOSs into the synchronization process.

#### REVIEW CURRENT MANEUVER DOCTRINE

Current doctrine requires both the company and battalion level maneuver commander to function as combined arms commanders. As indicated in the introduction, "... It is the greatest combat power results when weapons and other hardware... of different capabilities are employed together to complement and reinforce each other." At the company level, the commander may doctrinally have at his disposal any combination of infantry, armor, artillery, air defense, engineer, army aviation, close air support, reconnaissance, antiarmor, or possibly even signal, military police, and chemical elements.<sup>8</sup> Although not in direct command of these combat support (CS) assets, by doctrinally requiring the company commander to bring the combined affects of these systems to bear on the enemy, the

Army has undeniably (albeit not specifically) defined him as a combined arms commander.

The role of the battalion level maneuver commander as a combined arms commander is more clearly defined. Doctrine provides the battalion level commander with a similar array of CS assets and further organizes their functions into seven Battlefield Operating Systems. It then requires the commander and his staff to ". . . integrate these systems into a combined arms force tailored to the situation."

Having established the doctrinal foundation of both the company and battalion commander as combined arms commanders, synchronization (when viewed as a process) now provides them the method by which their disparate elements are to be successfully combined on the battlefield. In this case there is no ambiguity in the doctrinal intent that both the company and battalion level commander be capable of synchronizing the battlefield:

To achieve its full combat potential, the company team must synchronize its fire and maneuver with all available CS assets. CS enhances and multiplies the effects of the company team's combat power.''

Synchronization is the process of integrating the activities on the battlefield to produce the desired result. Synchronization of operations is required in order to maximize the combat power of the combined arms team. It requires a command, control, and communications system that can mass and focus the combat power of the task force at the decisive time and place. Task forces synchronize their operations by. . .''

The doctrine is explicit, company commanders as well as battalion commanders and their staffs must be proficient in

synchronizing the battlefield. This ability to synchronize the battlefield is of such importance, that the United States General Accounting Office cited it as a major factor in the decision to substitute other forces for the National Guard Roundout Brigades during Operation Desert Shield/Storm:

Replacement brigade units completed far more collective training exercises at the company, battalion, and brigade levels, thus providing proficiency in complex synchronization skills - the most difficult doctrinal and leadership task in the Army.<sup>12</sup>

But how does the Army prepare captains, majors, and lieutenant colonels to meet this extraordinary challenge? Is it strictly a function of unit training? Or should unit training reinforce individual skills developed through the institutional training process? Next, a brief look at the current institutional training approach to "... the most difficult doctrinal and leadership task in the Army."

#### INSTITUTIONAL TRAINING STRATEGY

The Army's intent for leader development is best summarized by a statement from the FY 93 TRADOC Command Training Guidance:

Develop leaders who understand the principles of leadership and can apply them in a variety of tactical situations. Our Army needs bold, agile-minded leaders developed, using hands-on, performance-oriented training which is tactically competitive.<sup>13</sup>

The current institutional training strategy traces its roots to a 1978 study entitled "A Review of Education and

Training for Officers," commonly referred to as the RETO study. In general, the RETO study recommended replacing the Officer Advance Course (OAC) with shorter, functionally focused courses. The study acknowledged that company grade education should be focused on company level command and battalion level staff positions, but intentionally did not identify the need to introduce combined arms concepts until the field grade education process.'<sup>4</sup> Instead, it postulated that upon promotion to major, an officer should begin combined arms training, since it was at that time that officers experience a "... shift of perception from a specialty point of view to an Army-wide combined arms point of view.'" The RETO study further envisioned a bi-level field grade staff training requirement:

Fundamental skills and knowledge about staff organization and procedures is needed by all majors and lieutenant colonels assigned to staff positions at battalion, brigade, and division levels; this learning to be a staff technician . . . [is quite different [from] the learning needed by selected field grade officers who will fill the key staff positions in division and corps organizations, and will be assigned to high level Army, joint, and combined staffs throughout the world.'"

To satisfy this bi-level training requirement, the study recommended a new Combined Arms and Services Staff School (CAS3), designed to train all field grade officers in general staff skills while a selected group of majors continued to develop higher level staff skills through attendance at the Combined and General Staff Officer Course (CGSOC). Finally, the study group included several recommendations attempting to

reconcile conflicts between traditional officer assignment patterns and institutional training opportunities.

After reviewing the RETO study, the Army chose to retain both the OAC and CGSOC without significant modification, but adopted CAS3 for attendance by all senior captains (instead of majors). CAS3 did, however, retain its original focus on generic staff skills as originally intended. Other changes were made to more closely align officer assignment patterns with institutional training opportunities as recommended by the RETO study. Through time, several modifications have been made to the RETO-based training system but most of the underlying philosophy continues to influence Army institutional training. A relatively recent system modification is relevant to the topic of synchronizing combined arms operations. The 1991 TRADOC Long Range Training Plan (TLRTP) established the near-term goal of emphasizing ". . . leader training in the context of battlefield synchronization and fire and maneuver." This additional "emphasis" is welcomed, but is it alone, sufficient to improve synchronization in a rapidly changing training environment?

As the Army downsizes and resources diminish, pressure to invest less in institutional training continues to mount. The RETO philosophy promotes the concept that the training system ". . . must combine self-development, unit development, and institutional development from initial selection as a potential officer through career completion." While the ratio among these components continues to fluctuate, they remain the pillars of the Army's training strategy. The scales were already

beginning to tip away from institutional training in 1991 as indicated by the TRADOC Long Range Training Plan:

Time spent by individual soldiers in the training base will decrease. Resource utilization will dictate a reduction in resident institutional training.'"

Junior Officers will arrive in their units trained on most, but not all . . . tasks.'"

Leaders will have more time with troops in practical applications and less time in resident training.'"

Most units are currently minimizing collective training at and above the battalion level, in favor of protecting the quality of platoon and company training. As previously cited by the GAO report on reserve unit readiness during Operation Desert Storm, it is precisely this training at battalion level and above which provides the experience necessary to master battlefield synchronization. As this training is reduced, reliance on institutional training to provide synchronization skills increases. Already burdened with the need to increase combined arms training, the additional stress brought on by decreasing resources presents the institutional training base with the challenge of doing much more with less - a trite but accurate assessment.

The institutions designed to meet this challenge are OAC, CAS3, and CGSOC. But what is their charter? Have they been focused on training combined arms commanders and staff officers to synchronize the company, battalion, and brigade level battlefield? Is their focus changing? The OAC has been focused " . . . on preparing captains to be fully competent to lead,

train, maintain, and fight their units."<sup>22</sup> This company level focus has manifested itself in branch specific training for captains devoid of significant combined arms and synchronization training. Only recently has this focus been expanded to allow instruction to ". . . focus on synchronizing combined arms operations at battalion level and the associated staff officer skills."<sup>23</sup>

CAS3, as originally envisioned by the RETO study, was intended to ". . . train all majors of the Active and Reserve Components for service as field grade staff officers with the Army in the field, in peace or war."<sup>24</sup> One of the primary functions of CAS3 was to "[p]repare battalion and brigade level estimates, plans, orders, analyses, directives, integrating organic and divisional combined arms and services."<sup>25</sup> This statement indicates that CAS3 was at least partially intended to train combined arms (and therefore synchronization) skills. Regardless of the original intent, the Army adopted a concept which provides ". . . training for captains in generic staff skills required primarily at division and installation level."<sup>26</sup> This focus on "generic staff skills" vice battalion level tactical skills (e.g., synchronization) continues to be reaffirmed.<sup>27</sup>

While the Army's training strategy for OAC has recently recognized the need to focus on combined arms training for battalion level officers, the CGSOC curriculum continues to emphasize ". . . the command and staff skills and knowledge required to plan and conduct the AirLand Battle at division and



higher levels . . ."<sup>28</sup> Even a recent curriculum change in CGSOC retains its emphasis ". . . on combined arms warfighting at the division and corps levels . . ."<sup>29</sup>

As recently as 1990, staff skills were trained at OAC and CAS3, but combined arms concepts were not. At that time, the intermediate (CGSOC) level of training was the first time that combined arms skills were officially recognized as part of the training strategy.<sup>30</sup> By this point in an officers education, the institutional focus had shifted to the division level and above. This seems to have supported a belief that combined arms warfare was not of significance below division level. There appears to have been no institutional intent to train combined arms concepts (to include synchronization) to battalion/brigade level staff officers. It is, therefore, evident that much more than "emphasis" in TRADOC literature is needed to fill this historical void and properly introduce combined arms concepts (synchronization) into the institutional training system at levels below division.

#### OBSERVED TRAINING DEFICIENCIES

A brief review of training deficiencies (as related to the Army's institutional training strategy and specific areas required for successful synchronization of the fire support BOS) is the final step in defining the necessity for changing the institutional training system. For the purpose of this paper, the NTC serves as the primary source of synchronization deficiencies since the Combat Training Centers (CTCs) are

recognized as ". . . the truest test of battalion and brigade operations, and the litmus test of battlefield synchronization."<sup>11</sup> Our professional literature deals far more extensively with problem identification than with recommended solutions. Therefore, in the interest of providing a more complete discussion of recommended solutions, reader knowledge of specific training deficiencies at NTC is assumed. It is sufficient to say that:

. . . serious shortcomings and deficiencies exist . . . at the interface points between fires and maneuver, including fire support and combined arms factors, that . . . reinforce an emerging perception of fire support ineffectiveness at large, particularly among maneuver commanders and their staffs.<sup>12</sup>

Not only is the process of synchronization failing to achieve its potential, but those primarily responsible for its success do not appear to recognize their responsibilities, choosing instead to lose faith in the individual BOS.

For years the fire support system at the NTC has failed to perform up to expectations. The details have been well documented in numerous "lessons learned" articles. Foremost among them is the fact that officers don't know the warfighting doctrine or the process for its actual battlefield application. A recent NTC trip report confirms this fact as "[v]irtually all of [the OCs] asserted that arriving units do not understand the doctrine."<sup>13</sup> The complex process of synchronization cannot be successful without an understanding of the fundamental doctrine and its battlefield application.

. . . when faced with the complex task of battlefield synchronization, we sometimes get consumed by the process and lose sight of the objective. This is especially evident when we do not know the doctrinal processes well enough to apply them correctly under stress.<sup>34</sup>

As long as captains fail to receive doctrinal combined arms training, institutional training cannot be properly coordinated with probable officer assignment patterns as recommended by the RETO study. The vast majority of staff officers at battalion and brigade level are captains, often awaiting their chance to command a company. These officers are graduates of OAC but most have yet to attend CAS3. Additionally, many majors serving on these staffs have not attended CGSOC. Under the current institutional training strategy, none of these officers receive adequate training in synchronization skills. Warfighting doctrine clearly expects these officers to be proficient in synchronizing the battlefield. Until institutional training provides these junior officers with skills involving the intricacies of combined arms warfare and synchronization, unit commanders will continue to be overwhelmed by their responsibility to field a trained, effective staff.

Compounding the problem is the training strategy's response to current resource challenges. The Army appears on the verge of decreasing institutional training in favor of unit training. This is happening at the same time that unit training is refocusing at the platoon/company level due to the same resource squeeze. Unfortunately, the fire support system primarily interfaces with maneuver units at brigade level and above so the

shift in training focus minimizes opportunities for combined arms/synchronization training. This fact was recently recognized by the Commanding General of the NTC:

There's been a substantial change in the last six months or so in terms of how home-station training is conducted. Most units now focus training at the company and platoon levels. The impact for Field Artillery is that the synchronization of the battlefield operating systems really starts to come together at the battalion and brigade levels. So, as a result of focusing training at the lower levels, there exist fewer opportunities to practice exactly how they're going to synchronize fires.''

Without institutional training to fill the void, how is this shift in unit training focus affecting performance at the NTC? A recent NTC trip report stated that "[t]raining trends by NTC show some decline in battalion level training proficiency."<sup>36</sup> It went on to report that "[s]ynchronization, execution, [and] time-distance estimates continue to present problems for player units."<sup>37</sup>

This decrease in battalion/brigade level unit training is accompanied by an increased dependence on simulations to provide staff training. This approach, however, does not attain the goal of adequately training commanders and staffs to synchronize the battlefield. The current family of simulations (at least those available at the unit level) does not portray the battlefield in sufficient detail or degree of realism to be of value in training synchronization. Additionally, these simulations routinely provide an unrealistic amount of information about both friendly and enemy forces which is not available on the actual battlefield. Finally, the design of the

interface between the players and the simulation often stove pipes the various BOSs, thereby failing to reinforce the combined arms concept required for synchronization. These factors combine to severely limit the usefulness of the current family of simulations in unit training of battalion/brigade commanders and staffs in battlefield synchronization.

Even without the current change in unit training focus, is it reasonable to expect units to bear the primary burden of combined arms training? A previous TRADOC Commander thinks not:

. . . officers cannot receive a first-rate military education while attending to unit responsibilities. They must act in units, for most part, on the basis of what they already know. The foundation for a comprehensive understanding of military art and science must be laid in the schoolhouse.<sup>39</sup>

This is not to suggest that there is no place for unit training. In fact, the process of synchronization ultimately comes together during unit training. What is intended, however, is that the fundamental skills must have been previously acquired in the schoolhouse. While much of this should be reinforced during unit training, the maneuver officer must clearly understand the fundamentals involved or he will simply relegate these issues to a "specialist" (in this case an artilleryman) for resolution. This attitude reinforces the "stove pipe" approach to managing BOSs and is diametrically opposed to the concept of synchronization. Our current institutional training system is clearly lacking in this regard.

In addition to weaknesses in routine staff functions, there are two general deficiencies routinely displayed by combined

arms commanders and their staffs at the NTC. Both impact negatively upon synchronization. The first is the inability to visualize the details of the battlefield. The second, the failure to establish realistic expectations for the combined arms force. The first problem manifests itself in many ways. Paradoxically, the most damaging is the creation of overly complex plans which fail to appropriately deal with the specifics of the battlefield.

Simplicity contributes directly to synchronization. Do not confuse simplicity with absence of detail. Simple plans must address the details of the operation and are rarely simple to produce, requiring intimate understanding of the enemy, thorough wargaming, careful coordination and timely warning orders.<sup>39</sup>

The second problem stems from the fact that realistic expectations require knowledge and acceptance of limitations/capabilities of the component parts of the combined arms team. Common fire support problems include the artillery movement scheme, the results of preparation fires, and the final assault on the objective. For instance, when synchronizing artillery movement with the overall scheme of maneuver, maneuver officers frequently display difficulty relating to the concept of artillery emplacement time. Next, expectations of a prep of the objective should be appropriately limited by the nature of the objective, the size of a battalion sheaf, and the volume of fire required to "destroy" a target. Finally, the artillery's ability to clear and engage targets near the objective cannot be

accomplished without maneuver boundaries or other control measures.

These are but a few examples in which commanders and their staffs have failed to demonstrate an understanding of the fire support BOS. Before the changes resulting from the RETO study, many combined arms skills were introduced during the Officer Basic Course (OBC) and actually trained in field exercises at an expanded version of OAC. At that time, however, the complexities and scope of the combined arms challenge were not yet fully appreciated. The knowledge required for successful synchronization far exceeds the routine institutional training approach involving such superficialities as organizational structure, weapons ranges, and ordinance capabilities. It is obvious that without a more detailed and fundamental understanding, plans will continue to be based upon unrealistic expectations and synchronization cannot occur.

In seeking to identify specifics upon which to focus recommended solutions, the following list of minimum essential skills is offered. This list is further separated into two groups - those general in nature, and those fire support specific. The first group includes:

- Intelligence Preparation of the Battlefield (IPB)
- Wargaming techniques
- Matrix construction and use
- Expressing the scheme of maneuver through doctrinal graphics and terms
- Rehearsal methodology

- hasty planning process
- Developing and translating commanders intent into a scheme of maneuver

These skills are critical, generic skills required to synchronize any of the BOSs. They are also routine sources of failure at the NTC.

The second group of skills are directly related to the fire support BOS, but must be mastered by combined arms commanders and staffs (not left simply to artillerymen) if synchronization is to be achieved.

- Field Artillery limitations and capabilities
- Clearance of fires
- Decide, detect, and deliver methodology (the artillery targeting process)
- Fire planning

Finally, commanders and their staffs frequently fail to realize the extent to which the fire support BOS is dependent upon other BOSs for success. For instance, the intelligence BOS must provide detailed information to the artillery for targeting. The key to this relationship is that the information required for targeting is very different from that needed to support the maneuver BOS. Similar relationships exist between the maneuver BOS and artillery positioning, the command and control BOS and fire plan execution, and the engineer BOS and artillery employment of FASCAM. Until one begins to understand these complex interrelationships, synchronization is simply a



check-the-block process - not likely to be a "result," realized on the battlefield.

#### RECOMMENDATIONS FOR IMPROVEMENT OF INSTITUTIONAL COMBINED ARMS TRAINING

The Army should adopt an institutional training strategy designed to progressively train leaders in complex combined arms and synchronization skills beginning in OAC and continuing through CGSOC. Comprehensive and well coordinated Terminal Learning Objectives (TLOs) supporting general synchronization skills in addition to BOS specific TLOs should be developed and standardized throughout the institutional training base. In addition, the artillery should include a similar set of maneuver specific TLOs to insure artillery officers become as familiar with maneuver doctrine as maneuver officers are with artillery doctrine. There are those who believe this is already being done. Unfortunately, this is further indication that far too few officers actually understand the skills required to synchronize the battlefield. What passes now for combined arms training at our institutions is inadequate - a fact which is undeniably revealed during every rotation at the NTC.

The most significant change is required at CAS3 where training warfighting skills must be incorporated into the program of instruction. Generic staff skills serve little purpose if they do not support warfighting. The Army does not have the luxury, especially in a fiscally constrained environment, to devote institutional training resources to

bureaucratic skills not immediately transferable to warfighting. CAS3 currently focuses on division level staff estimates and installation staff functions as mechanisms to teach generic staff skills such as briefing, writing, staff coordination, etc. While these generic skills are necessary, they should be taught using a mechanism more in keeping with the environment in which the students are to serve until attendance at the next level of institutional training. Most CAS3 graduates serve in tactical units or low level bureaucracies until they attend CGSOC. The generic skills taught at CAS3 support the latter, but no training is provided in support of the tactical assignment. It is entirely possible to accomplish both by changing the mechanism used to teach the generic skills. That is, replace the division/installation level scenarios with battalion/brigade level tactical scenarios while continuing to develop the same generic staff skills. For example, briefing a brigade operations order requires the same briefing skills as briefing the personnel estimate for a division operation. Division and installation specific knowledge is taught at CGSOC, a level much more in keeping with normal assignment patterns.

In order to make this important change, the small group composition must be changed as it currently mitigates against teaching tactical synchronization skills. Each small group is comprised of officers from the entire spectrum of branches. This composition routinely results in the instruction being directed at the lowest common denominator - generally the lawyer, doctor, or veterinarian. As a result of the extreme

emphasis on teamwork, many combat arms officers spend more time teaching fundamentals such as map reading to their specialty branch peers than learning new skills themselves.

The current CAS3 curriculum is basically divided into two phases - a preliminary phase focused on individual skills such as writing and knowledge of formats and a second, group phase, which is focused as described above. This second phase should be divided into two phases and the composition of the groups modified. The first of these new phases should be a tactical phase with the small groups organized into three different categories - combat arms, logisticians, and specialty branches. In this way, each group could receive instruction commensurate with their level of knowledge and professional requirements. This allows tactics to be used as the mechanism for instructing generic staff skills. Many of the specific subjects discussed later in this paper should be incorporated into the tactical portion of the curriculum. The final phase could then incorporate all branches into the small groups and would resemble the current group approach in a much abbreviated form.

In keeping with the progressive approach to synchronization training, CGSOC should develop TLOs built upon the synchronization skills incorporated into the OACs and CAS3 P01. Generic synchronization skills such as wargaming, IPB, and matrix use are similar regardless of the level of organization. If these skills are properly developed at OAC, and CAS3 is redesigned to include warfighting skills required for synchronization, then CGSOC should be able to improve

synchronization training without losing its primary focus on division and corps level.

If these recommendations are adopted, the problem of adjusting the institutional training system to match probable officer assignment patterns is automatically solved without further change. Graduates of OAC will possess synchronization skills commensurate with assignment to company command and battalion/brigade staff positions. Battalion commanders will be further rewarded for sending new staff officers to CAS3 prior to the end of their tour since they will return with relevant warfighting skills. Finally, CGSOC graduates will be prepared for staff positions ranging from battalion to corps level, and with far greater skills than result from the current system.

As institutional training time diminishes, commandants must not only determine high payoff TLOs upon which to focus, but insure students learn as much as possible in the allotted time by properly matching teaching methodology to subject matter and student population. Educational theory offers two models of learning - pedagogy and andragogy. Originally distinguished as the process of teaching children versus adults respectively, the more recent interpretation is that they represent two parallel models of learning, each based upon the relationship between the student population and the subject matter. In general terms, pedagogy indicates a student orientation on the subject (knowledge) while andragogy represents an orientation on performance (application).<sup>40</sup> The distinction between the two models is important in that each model represents a specific

teaching strategy. Pedagogy is a teacher-focused practice relying heavily upon ". . . fact-laden lectures, assigned readings, drill, quizzes, rote memorizing, and examination."<sup>1</sup> Andragogy, on the other hand, is a more participative process incorporating group discussion, simulation exercises, case studies, role playing, and similar techniques designed to emphasize the practical application of student knowledge.<sup>2</sup> The pedagogy model matches the scientific portion of warfare, while andragogy corresponds to the artistic portion. In providing guidance out to the year 2007, the current TRADOC Long Range Training Plan encourages school commandants to "[a]pply the psychology of adult learning."<sup>3</sup> This approach has long been espoused, but school faculties have not sufficiently understood or adopted specific teaching techniques required to adequately support this educational concept. The new "draft" version of the TRADOC Long Range Training Plan challenges commandants to "[m]odernize the training base. 'Break down the walls' of traditional classroom instruction."<sup>4</sup> School faculties must be adequately trained in the process of education, for the desired efficiency comes from employing the appropriate training methodology on a class-by-class basis. If faculty training time is a premium, evening instruction and similar innovative solutions must be pursued. To a great extent, a curriculum can be designed in such a manner as to guide a relatively inexperienced instructor to conduct training in the desired manner. The key is to insure students receive instruction

designed to facilitate "learning" in the most efficient manner possible.

Students must be held accountable, not through graded tests, but through individual hands-on, demonstrated proficiency. The traditional institutional training methodology often involves concept introduction followed by group-oriented practical exercise. This approach frequently results in a few students carrying the group. The individual "hands-on" approach is a result of the fact that "learning" is seldom accomplished by simply talking. Learning requires doing. The required degree of proficiency is best achieved through repetitious, hands-on training conducted within the framework of a realistic battlefield scenario which challenges the student - not a simple example contrived to allow the instructor to present a simplistic overview of a concept. Doctrine cannot be learned until it is put into actual practice. This recommendation is not intended to discourage small-group instruction. It simply stresses the need to evaluate each student as an individual - not part of the group. Tactical application of doctrine must be the goal - not academic regurgitation.

A student should not be considered trained until the published standard has been achieved. In many instances, a group AAR process could allow the "small group" to participate in determining when they have each met the standard. Those who have not, continue training until the standard is met. This could be accomplished using mandatory additional training.

Institutional training would be well served to adopt these and other training principles used in unit training to insure the subject matter has been learned - not just taught. If this approach is considered too resource intensive, then we must ask ourselves if it is worth the resources currently being invested (this includes the lives of our soldiers as well as money, time, etc.) to simply "teach" without assurances of having "learned"?

TRADOC institutions should provide students the opportunity to discuss and question a "school solution" prepared by subject matter experts. This approach is routinely resisted on the grounds that there is "no single right answer." That is an abdication of academic responsibility. The student should be given enough credit to realize that multiple solutions may exist. In the doctrinal arena, TRADOC has recently begun to respond to commanders demand for doctrinal specifics. The advent of Tactics, Techniques, and Procedures (TTP) has replaced TRADOCs traditional approach of providing only general doctrinal guidelines. This change has been of significant benefit to field commanders. Just as a commander can modify a TTP, the student can accept or reject a "school solution."

The remainder of this section offers recommendations for the inclusion of synchronization related subjects in institutional TLOs. These subjects correspond to the list of deficiencies included on pages 17 and 18 of this paper and should be taught at each level beginning with OAC. In most of these cases, precious training time can be saved by combining recommended drills using concepts similar to multi-echelon

training. In addition to institutional training emphasis, many of these subjects require improvements in doctrine (e.g., rehearsal methodology, matrix construction, commanders intent, hasty planning process and clearance of fires) which are beyond the scope of this paper. Again, the subjects include both generic and fire support specific skills necessary to the synchronization process.

Students should be taught that the IPB process is simply a structured approach to accurately visualizing the battlefield. The ultimate aim of learning this process should be to develop an intuitive feel for the battlefield - a technique to be mastered by any officer hoping to become a successful warfighter. It is absolutely not the sole domain of intelligence officers. As a result of current instructional techniques, many junior officers view IPB as a set of rigidly adhered to steps, each of which results in a specific product. Unfortunately, the products often become the point of focus in lieu of the actual goal of the process. The formal process itself is an excellent start point for organizing thoughts, but each officer should strive to free himself of the bonds of the formal process and through repetitious training, replace them with instinct - a key ingredient to agility. Lacking the ability to accurately visualize the battlefield, an officer has little chance of success against either a well trained enemy or one employing overwhelming force. Knowledge of tactics, techniques, and procedures is useless without an understanding of the environment in which they are to be employed. Time must,



therefore, be made available for instruction in this critical area. With little modification, most tactics courses can include a detailed IPB portion. As the curriculum progresses, less emphasis should be placed on the formal process and students should be expected to provide extemporaneous IPB briefings. To achieve this lofty goal, the process must be drilled into each student at every opportunity. A simple introduction to the specific procedures with the idea that the S-2 will attend to the details is not enough.

Wargaming is an art which, like the IPB process, must become second nature to a warrior. The key is to visualize the battlefield in sufficient detail to meet the needs of the wargaming effort without becoming so immersed in details that time constraints render the process useless. This requires extensive knowledge of both friendly and enemy forces as well as the terrain prior to beginning the process. A recommended training approach begins with a scenario presented in class just prior to beginning the exercise, forcing students to "think on their feet." As soon as the students have had sufficient time to familiarize themselves with the scenario, the first student begins to orally wargame the situation. At a convenient point, the instructor stops him and the group critiques his effort. Following this AAR, the next student continues the situation where the first left off and the process continues until the scenario has been completed. Each student should eventually be able to conduct this oral wargaming to the satisfaction of the

instructor. If grades or exams are required, this could be incorporated into an oral examination procedure.

Matrix construction and interpretation should be taught as a separate skill, not taken for granted as is the current situation. Matrix use, as an abbreviated form of communication, has reached epidemic proportion. Yet surprisingly, very few officers can effectively communicate their intentions using this medium. Difficulties lie primarily in determining headings to be arrayed on the axis and degree of detail to be included in the boxes. It is not uncommon to see each staff element using a matrix constructed with a different set of events arrayed across the horizontal axis. This is a certain guarantee that the battle will not be synchronized in execution since each BOS is essentially phasing the battle differently. Selecting the appropriate events to display across the horizontal axis of a matrix is an art which is currently unappreciated within our training system.

The art of translating a plan into commonly understood graphics is one of the most difficult yet important staff skills. Like matrix use, this skill should be taught and practiced as a separate skill. It is invalid to assume that once officers know the definitions and associated symbology of standard graphics, they can combine them to properly portray the commander's intent/scheme of maneuver. The old parlor game where a story is retold several times with the final version compared to the original provides an effective technique for training this skill. Simply give a student a written

commander's intent and scheme of maneuver which he must translate into a graphical overlay. The overlay is then shown to the remaining members of his team (3-4 students) who independently write their version of the corresponding scheme of maneuver. The individual versions are then compared to each other and the original. Finally, an AAR critiques the process and armed with lessons learned, another student starts the process again. This continues until in the judgment of the instructor and the group, the student's products would result in the same battlefield actions as intended by the original scheme of maneuver. Use of standard terms should be similarly incorporated into this instruction and strictly adhered to during all forms of instruction throughout the institutional training experience.

Rehearsal techniques, to include preparation and conduct of various types of rehearsals, should be taught using a roll playing technique. Students begin by watching an example, either live or on video tape, of a "school solution" rehearsal. A specific scenario, perhaps previously used to instruct in wargaming, matrix construction, etc., is given to a small group to rehearse. Certain students play the roll of the staff, others the commanders, fire support officers, etc. The roles of participants from subordinate units may be played by students from another small group. A primary objective of this session is to insure that the rehearsal doesn't become an opportunity to rewrite the plan. To this end, a student should be selected ahead of time to play the part of a participant with new and

better ideas. This is intended to force those conducting the rehearsal to make tough decisions as to the benefit of the new idea versus time required to change and implement. The rehearsal is video taped and used in the AAR. Maneuver, logistics, and fire support rehearsals should all be conducted using this participative method. Additionally, this technique can be used to demonstrate the synchronization challenges involved in the execution phase of battle. This aspect of synchronization is important since a poor plan well executed is preferable to a great plan poorly executed. Also, it can reinforce the idea that a good plan published on time (thereby allowing adequate time for subordinate planning and preparation) is better than a great plan published late.

Students need to experience the actual conduct of hasty planning. Army warfighting doctrine emphasizes "getting inside the enemy's decision cycle" in order to gain or retain battlefield initiative. This often refers to the ability to cycle through the decision-planning-preparation-execution process faster than the enemy. Experience at the CTCs continues to highlight the importance of the preparation phase and time required for its accomplishment. The overall time from decision to execution must decrease while the time required for realistic preparation is increasing. Caught in this conflict, units find that the planning process must be abbreviated (in terms of time, not detail or quality). This accelerated process ideally involves abbreviated staff procedures, extensive use of fragmentary orders, and standardized battle drills. Yet the

formal planning process continues to be taught in our institutions with the inadequate caveat that the situation may dictate an abbreviated process. As with all other subjects, soldiers don't execute unless they have been trained. This should be done as a group in order to reinforce the simultaneous planning relationships and complex interactions which exist on a staff, but positions should be rotated to insure students become proficient with all aspects of the hasty planning process. Besides filling an actual skill requirement existing in units today, the process of realistically decreasing planning time while demanding quality plans may result in simple, mission-oriented orders. This additional aspect should be stressed during training.

Officers must be able to articulate as well as translate commander's intent. A commander cannot provide a well reasoned intent without first possessing an intuitive feel for the battlefield and mastery of the details required to synchronize the various BOSs. This intuitive feeling can only be obtained by immersing the student in battlefield details through continuous, repetitive drill involving realistic scenarios. Additionally, the concept of commander's intent demands officers trained to understand the intent as the commander does, and translate it into a scheme of maneuver. This can be drilled by presenting a student with a specific scenario. He must articulate his commander's intent to his small group. Each student independently develops a scheme of maneuver. Selected students then present their solutions to the group who in turn,

evaluates the solutions as compared to the commander's intent. The clarity of the intent is also evaluated.

Artillery capabilities/limitations and requirements must be understood if maneuver officers are to develop realistic expectations of the fire support BOS. This goes far beyond the traditional study of ranges and organizations to include all characteristics which impact upon the battlefield (i.e., communications, logistic, etc.). The most frequently neglected topic is artillery movement and positioning requirements. The true size of an artillery battalion, and therefore the nature of the terrain management challenge is seldom confronted. In addition, the concept of "emplacement time" is foreign to most maneuver officers but is of paramount importance to timelining artillery movement schemes. A video film showing an artillery battery emplace and prepare for action (in real time) should be used to demonstrate the nature of emplacement time. Finally, capabilities/limitations training must not be based on published ARTEP standards as they do not measure times for realistic battlefield functions. ARTEPs by design, divide these functions into discrete pieces for the purpose of detailed evaluation of units. For example, NTC experience reinforces the fact that emplacement time as relevant to a battlefield scenario is longer than the sum of ARTEP time standards of the individual functions comprising emplacement.

Maneuver officers should know the technical methodology for clearance of fires. Most maneuver officers do not currently recognize they have the responsibility for clearance of fires,

or how to exercise it. While this concept is addressed at maneuver OACs, it is not done in such a manner as to provide students a firm understanding of the intricacies and potential conflicts involved with clearance of fires. Again, this is the result of over-simplification of battlefield doctrine in the classroom. Tough, challenging scenarios must be used to insure officers fully understand the challenges of the battlefield. The doctrine governing clearance of fires is under serious review. The opposing concepts of passive (silence is consent) and positive control are being discussed as requirements for increased responsiveness clash with need to minimize fratricide. However, this debate is ultimately settled, the maneuver commander will retain the responsibility for this function. Serious conflict often arises among a commander's intent, the scheme of maneuver, and the fire support plan. The disconnect is frequently discovered during execution (further highlighting the failure of rehearsals) when failure to clear fires results in fratricide or the inability to provide artillery support as planned. This significant challenge must be resolved during the planning phase where compromises between maneuver and fires may be required to maximize the synergistic affect of the combined arms team. In other words, this is a perfect example of the need to synchronize the BOSs.

The artillery has long used the "Decide, Detect, Deliver (D3)" methodology to organize and prioritize assets. To better understand the needs of the fire support BOS, maneuver officers should become familiar with this concept. For example, the

intelligence needs of the artillery to support the "detect" phase are far different from those needed for developing the scheme of maneuver. Such subjects as target priorities, acquisition means, and locations of delivery means must be integrated into the overall plan. This should not be done by an artilleryman in isolation. But without active maneuver participation, the artillery will execute a "stove-pipe" process as best as possible based upon commander's intent. The fire support BOS cannot be synchronized by maneuver staffs if they don't understand the methodology being employed by the fire support system.

Fire planning is perhaps the least understood of the arts comprising warfighting. During Operation Desert Storm, two captains at the NTC developed a fire planning class in support of National Guard Training. This class captures the essence of the fire planning challenge using actual NTC battles to demonstrate first, the inadequacy of fire planning, and then the enormity of the challenge. An example is provided where the IPB process properly identifies a Target Area of Interest (TAI) which is correctly developed into a maneuver engagement area. The fire supporters then plan targets and develop appropriate trigger lines within the engagement area. During execution all works as planned. The enemy enters the engagement area, the fires are triggered on time and rounds land in the engagement area while the enemy is still within the engagement area. On the radio, all sounds perfect. The end result is, however, that poor engagement area/fire plan construction coupled with failure



to provide an observer to adjust the fires, results in the fires missing the enemy. This class is absolutely mandatory for anyone espousing to become a modern warfighter. If not already a part of the program of instruction, this class should be incorporated into OACs. It not only addresses a critical problem, but provides an excellent model by addressing doctrinal concepts using realistic battlefield detail and a challenging scenario. Maneuver officers should practice the art of fire planning for they should know better than artillerymen exactly where and when fires are needed. The act of actually placing the "tic mark" on the map is grossly ignored by most commanders and staffs - artillery as well as maneuver.

These recommendations are not intended to be all inclusive but are intended to stimulate thought on how the institutional training base can be modified in terms of training strategy, methodology, and subject matter, in an effort to better support our current warfighting doctrine.

#### SUMMARY

Current Army training strategy does not adequately prepare combined arms commanders or their staffs to execute U.S. warfighting doctrine. Warfighting doctrine requires both company and battalion level maneuver/combined arms commanders and their staffs to synchronize those BOSs whose support is available to their force. TRADOC's institutional training strategy is not designed to train combined arms concepts (to include synchronization) to company grade officers serving as

battalion/brigade level staff officers. In other words, we do not train as we say we will fight. While this appears to be changing (at least in rhetoric), the current lack of training is resulting in defeat at the CTCs. A recent independent study of the fire support BOS concluded:

Observations at the CTCs support earlier findings that maneuver/combined arms commanders and their staffs lack the focus, knowledge and skills necessary to consistently and effectively integrate and synchronize the combined arms team . . . [and] appeared to lack the combined arms focus necessary to visualize the total battlefield and react to the changing dynamics of combined arms battles.<sup>45</sup>

A Senior Officer Review Group agreed with the study observing that ". . . the Army's current education system does not grow combined arms officers . . . [The] institutional training needs more focus on development of combined arms integration and synchronization skills essential to warfighting."<sup>46</sup> The current NTC Commander addressed this issue with respect to the fire support BOS:

The issue at the NTC is . . . fire support - the full integration of maneuver with fires. We must impress upon maneuver commanders that it's their responsibility to make those two pieces work in consonance . . . The Armor School and the Infantry School need to work on developing combined arms commanders . . . we need to work it at CAS3 where we integrate captains into staffs and start teaching them synchronization. Then we need to work it at CGSC.<sup>47</sup>

The following changes to the institutional training system provide a sound foundation for developing a program of instruction in support of Army warfighting doctrine:

- Develop a progressive combined arms training strategy beginning in OAC. Standardize the TLOs throughout the institutional training base.
- Incorporate training of warfighting staff skills at CAS3.
- Match teaching methodology to the subject matter and student population.
- Hold individual students accountable through hands-on, demonstrated proficiency.
- Adopt the AAR process for use in evaluating student abilities. Additional training should be mandatory for students not meeting published standards.
- Provide "school solutions" for consideration and discussion among the students.
- Include, at a minimum, the following generic topics in the program of instruction:
  - Intelligence Preparation of the Battlefield
  - Wargaming Technique
  - Use and construction of a matrix
  - Expressing the scheme of maneuver using standard terms and graphics
  - Rehearsal techniques
  - Hasty planning process
  - Developing and translating commander's intent into a scheme of maneuver.
- When focusing the program of instruction on a specific BOS, include topics similar to the following fire support examples:
  - Artillery capabilities and limitations.
  - Clearance of fires
  - Decide, detect, and deliver methodology
  - Fire planning

As the United States attempts to shape the New World Order, the challenges facing the Army are going to become more complex than ever before.

To lead the Army through intellectual change, TRADOC will refocus the way the Army thinks about war: a fundamental change from plan based to doctrine based warfighting; an Army of versatile, agile leaders limited on the battlefield only by their intuition and flexibility.<sup>48</sup>

Such characteristics can only be possessed by leaders capable of synchronizing combined arms forces. Without the necessary changes to the institutional training system, we can only dream of such battlefield capabilities and our lofty goals for the future become folly.

#### POST SCRIPT

The thoughts and ideas presented in this paper were, for the most part, originally mine. References were included not as a source of new concepts, but solely for the purpose of providing credibility to my own ideas. I include this seemingly self-serving statement to make what I consider the most important point of this paper. Let me explain.

I originally chose to write this paper because, as an artillery battalion commander, I experienced the frustrations resulting from continuous inability to synchronize the fire support BOS at NTC. Through time, and with the support of fellow commanders, I developed several ideas concerning the source of our failures. The specific topic of institutional training provided the broadest, and therefore perhaps the most

influential, of the specific areas I felt contributed to the problem. As I conducted research for this paper, I was surprised to discover that virtually all the ideas and concepts I had been developing as a battalion commander had already found their way, in one form or another, into the formal literature of our profession. An example of the similarities between my concepts and those already recognized by the "system" is seen in the following quotation from the Draft, TRADOC Long Range Training Plan dated September, 1992:

Instruction at branch schools, Combined Arms and Services Staff School, CGSC and the pre-command course will emphasize how to:

- Fight and provide support.
- Synchronize the effort.
- Understand the commander's intent.
- Use control measures.
- Use military intelligence in preparing the battlefield.
- Use AARs for lessons learned to revise training strategy."

Compare this list with the one I developed on pages 17 and 18 of this paper. They are amazingly similar. At first I was somewhat disheartened. All that I had supposedly learned from three NTC rotations, the many months of preparation and hours of independent study - and I had nothing new to give to my profession!

After some initial reflection on the matter, I decided it was an indication of the strength of our system that concepts being independently developed in the field were somehow being incorporated into our professional literature. The more research I conducted, the more I discovered my ideas in a wide

range of sources. From published interviews with senior commanders to goals and objectives established for our training institutions, the need for "fixing" the synchronization problem as well as many of the methods to achieve this objective appeared to be common knowledge within the training community. This was great news! Even though I had not personally contributed, the ideas in which I so strongly believed were influencing the training system.

But was progress actually being made - a solution on the horizon? Why had I not become aware of positive changes resulting from these ideas? Apparently, little progress was being made. The list provided at the beginning of this post script is, with the exception of the last bullet, identical to one published five years earlier in TRADOC Pam 350-4, dated 21 September, 1987. And while institutions espouse training methodologies in line with the andragogical method of education, actual classroom experience falls far short of achieving this goal.<sup>90</sup> Finally, I could find no evidence of an institutional training strategy intended to support combined arms training and BOS synchronization. Unfortunately, it seemed that much of what was being said or written about this challenge was falling prey to the same forces that, at a far higher level, once threatened the "jointness" of our Armed Forces.

The entire concept of combined arms warfare recognizes that through synchronization, the whole can be stronger than the sum of its parts. But this concept requires that in training as well as on the battlefield, each component subserviate itself to

the good of the whole. This does not appear to be currently happening with regard to the Army's training system.

At the joint level, Congress ultimately had to intervene to resolve differences between services which, in hindsight, proved more competitive and less substantive. The competition hindering the synchronization of our training system exists well below the level of oversight provided by Congress. We must, therefore, solve the problem ourselves. Failing the wisdom to do so . . .

## ENDNOTES

<sup>1</sup> U.S. Department of the Army, FM 100-5, Operations, (Washington, DC: U.S. Department of the Army, 5 May 1986), 14.

<sup>2</sup> Ibid., 17.

<sup>3</sup> Clyde L. Long, MAJ, "Synchronization of Combat Power at the Task Force Level: Defining a Planning Methodology" (MMAS diss., Fort Leavenworth, KS, 1989), 3.

<sup>4</sup> Frederick M. Franks, Jr., GEN, "NTC Trip Report, 8-10 September 1992," (Memorandum for TRADOC Staff, Fort Monroe, VA, 15 September 1992), 1.

<sup>5</sup> Gregory Fontenot, COL, "Observer Controller Feedback," (Memorandum for Commanding General, TRADOC, Fort Monroe, VA, 14 September 1992), 1.

<sup>6</sup> U.S. Army Field Artillery School, Fighting With Fires, 24 September 1992, C-3.

<sup>7</sup> U.S. Department of the Army, FM 100-5, 25.

<sup>8</sup> U.S. Department of the Army, FM 71-1, Tank and Mechanized Infantry Company Team, (Washington, DC: U.S. Department of the Army, 22 November 1988), 1-5 thru 1-6, 1-9, 6-1.

<sup>9</sup> U.S. Department of the Army, FM 71-2, The Tank and Mechanized Infantry Battalion Task Force, (Washington, DC: U.S. Department of the Army, 27 September 1988), 1-10.

<sup>10</sup> FM 71-1, 6-1.

<sup>11</sup> FM 71-2, 1-6.

<sup>12</sup> Richard Davis, Army Training - Replacement Brigades Were More Proficient Than Guard Roundout Brigades, (Washington, DC: United States General Accounting Office, November 1992), 2, GAO/NSIAD-93-4.

<sup>13</sup> Frederick M. Franks, Jr., "FY 93 TRADOC Command Training Guidance" (Fort Monroe, VA: U.S. Army Training and Doctrine Command, 17 August 1992), 1.

<sup>14</sup> A Review of Education and Training for Officers, Volume 1 - An Overview (Washington, DC: U.S. Department of the Army, 30 June 1978), III-8 thru III-14.

<sup>15</sup> Ibid., V-10.



<sup>16</sup> Ibid., III-13.

<sup>17</sup> TRADOC Long Range Training Plan - Planning For Army Training (Fort Monroe, VA: U.S. Army Training and Doctrine Command, 30 April 1991), 2-15.

<sup>18</sup> A Review of Education and Training for Officers, Volume 1 - An Overview, IV-2.

<sup>19</sup> TRADOC Long Range Training Plan - Planning For Army Training, 1-2.

<sup>20</sup> Ibid.

<sup>21</sup> Ibid., 2-5.

<sup>22</sup> U.S. Army Training and Doctrine Command, TRADOC Pam 350-4, Army Training 1997 (Fort Monroe, VA: U.S. Army Training and Doctrine Command, 21 September 1987), 2-13.

<sup>23</sup> TRADOC Long Range Training Plan - Planning For Army Training, 2-14.

<sup>24</sup> A Review of Education and Training for Officers, Volume 2 - Career Progression (Washington, DC: U.S. Department of the Army, 30 June 1978), E-3-2.

<sup>25</sup> Ibid.

<sup>26</sup> TRADOC Pam 350-4, Army Training 1997, 2-14.

<sup>27</sup> TRADOC Long Range Training Plan - Planning For Army Training, 2-14.

<sup>28</sup> TRADOC Pam 350-4, Army Training 1997, 2-14.

<sup>29</sup> John E. Miller, BG, "Training and Educating Leaders for the Future - The New CGSOC Curriculum," Military Review, (Fort Leavenworth, KS: U.S. Army Command and General Staff School, January 1991), 12.

<sup>30</sup> Office of the Chairman of the Joint Chiefs of Staff, Military Education Policy Document, CM 344-902 (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, 1 May 1990), II-11.

<sup>31</sup> TRADOC Long Range Training Plan (Draft) (Fort Monroe, VA: U.S. Army Training and Doctrine Command, September 1992), 14.

<sup>32</sup> U.S. Army Field Artillery School, Fighting With Fires, C-3.

<sup>33</sup> Fontenot.

<sup>34</sup> Gordon R. Sullivan, GEN, "Improving Synchronization," Military Review, September 1992, 4.

<sup>35</sup> William G. Carter III, BG, "Synchronizing Combat Power at the NTC," interview by LTC Jerry C. Hill, Field Artillery, (October 1992): 5.

<sup>36</sup> Frederick M. Franks, Jr., GEN, "NTC Trip Report, 8-10 September 1992," 2.

<sup>37</sup> Ibid., 1.

<sup>38</sup> William R. Richardson, GEN, "Kermit Roosevelt Lecture: Officer Training and Education," Military Review, October 1984, 28.

<sup>39</sup> Sullivan, 7.

<sup>40</sup> Malcolm S. Knowles, The Modern Practice of Adult Education - From Pedagogy to Andragogy (New York: Cambridge, The Adult Education Company, 1980), 43-45.

<sup>41</sup> Ibid., 40.

<sup>42</sup> Ibid., 50.

<sup>43</sup> TRADOC Long Range Training Plan - Planning For Army Training, 1-9.

<sup>44</sup> TRADOC Long Range Training Plan (Draft), 17.

<sup>45</sup> U.S. Army Field Artillery School, Fighting With Fires, C-8.

<sup>46</sup> Ibid., C-9.

<sup>47</sup> William G. Carter III, BG, 6-7.

<sup>48</sup> TRADOC Long Range Training Plan (Draft), 12.

<sup>49</sup> Ibid., 17.

<sup>50</sup> Scott A. Snook, MAJ, "Unrealized Potential - A Critical Analysis of the Command and General Staff Officer Course (CGSOC)" (MMAS diss., Fort Leavenworth, KS, 1 May 1992), 41.

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