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Tactical Command and Control Process

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Fort Leavenworth Field Unit
Manpower and Personnel Research Division

U.S. Army Research Institute for the Behavioral and Social Sciences

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13. ABSTRACT (Maximum 200 words) The U.S. Army Command and General Staff College requested that ARI participate in the development of new descriptions of the command and control (C2) process for tactical commanders and staffs. The request was based on information from research on training of group decision making and development of C2 decision aids. These results, along with naturalistic observation of command and staff performance during command post exercises, were used to develop a modified process description. One major principle on which the description is based focuses on the fact that command and control is done to accomplish missions and not to select a best course of action. Other C2 activities are raised in importance in the new description, including situation understanding, battle forecasting, wargaming, synchronization, deception planning, contingency planning, and rehearsals. Practical themes (like commander involvement, allocation and management of planning time, and active error checking) are stressed to facilitate the application of the process.				
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Research Product 92-06

Tactical Command and Control Process

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FOREWORD

This report supports the idea that command and control (C2) processes make a difference and that, no matter how subtle the difference may be, it can have a great impact on what C2 combat developments are sought, how C2 is trained, and what results are obtained. Procedures for C2 are not cut and dried. Many will argue that differences in C2 processes are minimal, not that important, and serve only as a backdrop to the collective capabilities of intelligent, motivated staff officers. They will point out that we "shouldn't fix what isn't broken" and that there is no reason to consider changes in C2 processes that have been used in the U.S. Army for decades.

In recent years the members of the research team at the Fort Leavenworth Field Unit have tried to understand C2. They have observed it, modeled it, measured it, researched individual and group dimensions, advised how to teach it, and built and evaluated decision aids for it. They realize that there are few constants in how C2 tasks are performed and, in many cases, what tasks are performed or what steps make up specific tasks. C2 process inconsistency has gone relatively unnoticed in the past because units have sought to win at maneuver tactics in command post exercises (CPX), rather than focusing on CPX to refine and practice C2 procedures. With the advent of the National Training Center--especially the Battle Command Training Program--units were "graded" on all aspects of performance, including C2. Discrepancies in the C2 process and the procedures used in the field then emerged in doctrine and training materials.

This report was written because the authors for FM 101-5 from the Command and General Staff College (CGSC) requested the U.S. Army Institute for the Behavioral and Social Sciences (ARI) to provide the chapter on the C2 process. This chapter represents a concentrated effort during April 1990, when it was also provided to CGSC. The work was done as technical advisory service under the ARI Research Task entitled "Enhanced Command Staff Performance in Combat Operations."



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The authors would like to acknowledge the willingness of Alfred "Skip" Tichenor, June Hust, and William Daugherty, all formerly of the Center for Army Tactics, to receive new ideas and offer encouragement and the opportunity to blend the expression of those ideas into this description of the C2 process. This report was edited by June Hust.

TACTICAL COMMAND AND CONTROL PROCESS

EXECUTIVE SUMMARY

Requirement:

The purpose of this report is to document work done on the command and control process for the Center for Army Tactics (CTAC) at the Command and General Staff College in April 1990.

Procedure:

From laboratory, classroom, and field data collection and analysis of existing decision-making research, the authors concluded that C2 procedures were not practiced as prescribed in doctrine. It was further concluded that doctrine on C2 procedures was written for a limited audience--first-time students of C2--and did not represent procedures for field use by a trained staff. From this position, we offered insights to CTAC for an alternate description. CTAC felt that the recommended changes had merit and asked us to draft a complete chapter on the command and control process for their revisions to FM 101-5, Command and Control for Commanders and Staff.

In drafting the chapter, we drew on a broad base of study and research on decision making and the command estimate. Research at the time included the following: task analysis of the estimate of the situation; study of the historical development of the estimate of the situation; experimentation on course of action analysis; development of a course of action analysis workbook; experimentation on group problem solving for the Combined Arms Services Staff School (CAS3); curriculum review and critique of the Tactical Commander's Development Course (TCDC); TCDC feedback study; pattern recognition study and development of the Battlemaster concept; participation in the development of the Army Command and Control Evaluation System (ACCES) in conjunction with Battle Command Training Program's (BCTP) warfighter exercises (WFX); involvement in human performance aspects of the standardized command post (SCP) program; and concept development for three planning aids--Tactical Planning Workstation, Course of Action Assessment Tool (COAAT), and Operations Planning Tools (OPT).

Findings:

The principles on which the C2 process description is based include the following:

- There is no single sequence of steps universally appropriate for C2; C2 activities are highly interactive.
- A simple model should be used as the core of the process description. A model of plan-direct-monitor was chosen, which eliminated the former step of "coordination" as distinct.
- Situation assessment is a fundamental activity based on understanding and forecasting.
- Selecting a course of action is only one of many C2 activities. As such, more emphasis should be placed on situation assessment and forecasting, wargaming, synchronization, deception planning, contingency planning, and rehearsals.
- The amount of effort must be allocated appropriately to leave time for planning; decisions on basic concepts must be made early.
- The commander is involved in focusing the staff.
- The staff must act as a team and synchronize its own activities.
- Multiple courses of action are developed only if there are sufficient reasons to do so.
- Brief-backs and rehearsals are required for adequate communication in directing.
- Monitoring involves comparing actual outcomes against expectations.
- Synchronization, contingency planning, and deception planning are explicitly covered as parts of the C2 process.
- The chief of staff is responsible for information management and avoiding information overload.
- The staff must remain objective and unbiased.
- Avoiding errors is a key to success; active error checking practices are required.

- Wargaming requires its own description as the means of visualizing, forecasting, and assessing feasibility.
- Time must be actively managed.
- To accelerate the process, everything that is required needs to be included.

Utilization of Findings:

The chapter was included in a May 1990 coordinating draft of FM 101-5, Command and Control for Commanders and Staffs. Because of other events that occurred at that time, FM 101-5 has undergone further revisions by CGSC and continues to be refined. Many of the concepts in this report correspond to material emerging in the current draft. An updated FM 101-5 is scheduled for distribution to the field in the summer of 1994.

The compilation of an alternate perspective on the C2 process has led to focusing human performance research on command and staff performance measurement, group decision making, battlefield forecasting, situation assessment, rapid tactical decision making and expertise, and decision aiding requirements. Continued research will allow us to recommend additional improvements to C2 processes.

The material from this chapter was used to develop methods of maintaining C2 effectiveness under stress for Operation Desert Shield. These C2 "lessons learned" were published in a newsletter for all Operation Desert Shield maneuver commanders ("Winning in the Desert II: Tactics, Techniques, and Procedures for Maneuver Commanders," Center for Army Lessons Learned [CALL], Special Edition No. 90-8, Sep 90).

TACTICAL COMMAND AND CONTROL PROCESS

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TACTICAL COMMAND AND CONTROL PROCESS

Command and Control Activities and Products

Battlefield command and control is a constant balancing act. The need for detailed planning must be balanced against the need for quick and decisive action. The command and control process assists the commander and his staff to achieve this balance as they apply their expertise, judgment, and creativity with a unity of purpose. This chapter first describes the major activities required of the command and control process and then addresses important aspects of the process in more detail.

Figure 1 depicts a general model of the command and control process. The major activities of the process are monitoring, planning, and directing. Monitoring serves two purposes: to control the execution of an implemented plan and to develop new understandings for future planning. Planning is needed to address orders and plans received from higher headquarters or deduced from monitoring. Directing involves giving orders and guidance to subordinates. Other actions, including coordinating, communicating, and decision making, occur repeatedly regardless of the specific activity of the command and control process being performed.

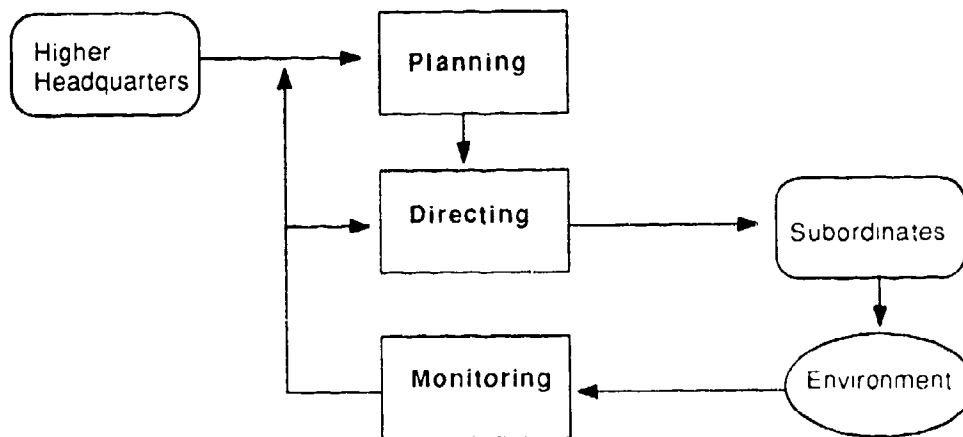


Figure 1. The command and control process.

The command and control process cannot be reduced to a simple sequence of steps because of the overlap between monitoring, planning, and directing and because these activities must keep up with the rapid pace of AirLand Battle. The process must be flexible enough to adjust to situational demands and time constraints. The following sections describe the major activities and products of the command and control process.

Planning

Planning is a continuous activity conducted to prepare for assigned or assumed tasks. It makes future operations easier by setting the stage for subsequent, rapid, and coordinated action by the staff and by other elements of the command.

Many factors make wartime planning a complex, highly uncertain, and risk-filled activity. Planners must deal with large amounts of tactical data, often with unclear implications. Planning must be conducted while executing current operations, and several missions may need to be planned simultaneously. The employment of the various battlefield operating systems is planned by different staff elements, who must cooperate to produce an integrated and mutually supporting plan for the overall operation.

Planning is not simply a decision making process. Deciding on the course of action is only part of the required effort. Assessing (understanding), developing (generating), wargaming (testing), synchronizing (scheduling), contingency planning (preparing for likely occurrences), and deception planning (affecting surprise) are all vital to successful planning. Planning should be tailored to situational constraints so that sufficient time and attention can be given to detailed plans, preparation, and rehearsals.

There is no fixed sequence of steps which is appropriate for all situations and all command groups. However, the early stages of planning can be viewed as an attempt to understand the battlefield situation and make broad considerations for possible operations. Promising options of action may be examined in detail before reaching a decision on the basic outline of the plan. In later stages of planning, the major decisions have been made and the concept of the operation has taken shape. At this point, planning centers around the detailed implementation necessary for preparation of the final plan or order.

Actual planning situations can differ greatly. Sometimes early planning proceeds to detailed planning stages. In other cases, considerable analysis and time may be required early on before the commander and staff reach a decision. When the basic elements of the concept of operation are decided early, much detailed planning remains to be accomplished. When the decision is made later, much of the detailed planning will already have been done.

Planning is best approached through a good understanding of the actions and products of the planning activities, and by tailoring a flexible procedure to produce those products. The order of discussion of actions and their products that follows may imply a general sequencing of events in planning for tactical

operations, but the actions overlap considerably. For example, synchronization planning, deception planning, and contingency planning may all occur at the same time in the progression from basic concepts to detailed implementation plans.

Situation Assessment

Good command and control requires accurate, timely, and sufficient information, as well as an understanding of what that information means for current and future operations. The command and principal staff continually assimilate new information from their staff and higher, lower, and adjacent commands. Accurate situation assessment requires the involvement of all staff elements and all subordinate commands all of the time. Staff members must keep the commander and other staff sections informed of the status of their operations, as well as the impact of their operations on other functional areas and on operations as a whole.

For the staff member, situation assessment consists of--

- Gathering information about what is happening in their functional area.
- Interpreting what this information means for current operations of the command and for forecasting future events.
- Presenting the interpretations in a timely and clear manner to all staff elements and commands affected by them.

Forecasting what the future battlefield situation will look like is essential if the command is to seize and maintain the initiative. Forecasting involves visualizing the timing, activity, and disposition requirements of the battlefield operating systems. The commander, either personally or through his primary planner, must lead the forecasting effort through established procedures and requests for information from his staff and subordinate commands. The goal of a staff officer is then to present all vital information to the commander and principal staff without overwhelming them with details. The commander and staff can then use these forecasts to determine potential opportunities and problems within the conduct of the mission and the intent of the higher commander. Forecasting also aids the estimation of what the next mission is likely to be, and promotes orderly and thorough planning. It is easier to modify an existing plan based upon reasonable forecasts than it is to hurriedly respond to unforeseen events.

Accurate forecasting is not easy, but this should not deter

the staff. Every staff element must project ahead in their functional area in support of the overall forecasting of the command. Forecasts must be updated as they are affected by current events on the battlefield, by forecasts from other staff elements, or by new command guidance or missions.

Information and intelligence from various sources must be compiled and concisely summarized. Decision graphics help integrate information from various sources into easily comprehended displays that permit decision makers to understand the situation rapidly. Graphic templates resulting from the Intelligence Preparation of the Battlefield (IPB) process are examples of information integration. When the commander wants to understand more deeply, staff members must be ready with more detailed information.

Situation assessment products include situation maps, status boards, individual messages, staff reports, and formal and informal briefings. The standard contents of these outputs are typically driven by unit standing operating procedures (SOP). An SOP, however, is general in nature and cannot account for every situation. The staff must consider the mission and the situation and determine if information not covered by the SOP is important in each individual instance. The staff must remember that the final and primary product of situation awareness is the knowledge imparted to the commander and other key planners.

The most accurate and crucial situation analysis is of no value if it is not imparted to or understood by those who must use it to command and control. It is the staff's responsibility to ensure that the commander and other staff receive critical information in a timely and clear fashion. The proficient staff officer will recognize when to continue monitoring and withhold information that has not yet reached some critical level of importance. The commander and chief of staff must encourage this ability to discern critical information through management and training.

The commander who is kept up-to-date on the battlefield situation without being overloaded is in the best position to make sound decisions. The staff which shares information has the broad base of knowledge needed to develop integrated and sensible plans.

Mission

The mission is assigned by higher headquarters or is developed or deduced by the commander. It is a clear, concise statement of the task to be accomplished by the command, and its purpose.

Mission Analysis

The commander and staff use mission analysis to gain a better understanding of the mission. Mission analysis requires the deliberate identification of goals, limitations, and opportunities. The goals of the mission should be clearly defined and understood by all the staff working on the development of the plan. The intent of commanders two levels up must be understood so that the right problem can be addressed. Determining limitations by identifying what actions are possible and permissible often requires further information gathering and analysis. And the staff should always be alert to opportunities that the situation may afford.

Mission analysis follows one of these events--

- Receipt of an order.
- Receipt of a warning order.
- Receipt of a plan.
- Deduction of a mission.
- Recognition of an opportunity.
- Identification of a problem.

The first three events are a result of action at a higher headquarters. The last three are based on action within the command. Plans and warning orders may come with little verbal clarification or warning. When execution orders are received, they should include a rehearsal with the higher commander and adjacent unit commanders present. If the rehearsal is not possible, execution orders should still be delivered face-to-face with accompanying clarification.

Upon receipt, the commander begins to analyze the mission. He can directly query superiors to clarify his understanding of the intent, limitations, resources, and tasks involved. Even if the mission was not presented face-to-face, an attempt should be made to clarify any uncertainties and to brief back the mission by contact with higher headquarters. If the mission is deduced within the command, much of the mission analysis will already have been accomplished during its deduction.

During mission analysis, the commander and staff must clarify --

- Goals of the mission and how success will be defined for the phases of the operation.

- Enemy capabilities and vulnerabilities in light of the mission.
- Their own troop capabilities and vulnerabilities in light of the mission.
- Terrain and weather limitations and opportunities.
- Time available (for planning, preparation, and mission execution).

Initial Commanders Guidance/Intent

The commander's initial guidance/intent should focus the staff and include the criteria for successful mission accomplishment. These criteria then guide concept development, wargaming, synchronization, detailed planning, communication of intent, and monitoring. The commander issues his initial guidance to clarify goals, express his interpretation of limitations, and prompt the staff to look for specific opportunities. He must clearly state his vision of how he sees the situation unfolding, and be sure that everyone understands it. The commander's final intent will become a vital part of the concept of operation statement, which the commander will write as part of the operations plan or order.

Also, the commander determines the degree of acceptable risk. There are at least two kinds of risk: the risk of unacceptable losses and the risk of not accomplishing the mission. There will always be some risk. The commander must clearly specify the degree of acceptable risk in his guidance and the concept.

Concept of the Operation

The concept of the operation is a statement of the commander's visualization of the execution of an operation from start to completion - how the selected course of action is to be accomplished. It furnishes subordinates with the commander's intent so that mission accomplishment is possible in the time available and in the absence of additional communications or further instructions.

Situation assessment, along with mission analysis, dictates the nature of the concept of the operation. The concept of the operation defines what to do. Deciding what to do can require extensive effort or very little effort, depending on the mission, the experience of the commander and staff, and many other factors. The concept of the operation emerges from the consideration of one or more courses of action.

A course of action includes:

- What (the type of action).
- When (the time the action will begin or be completed).
- Where (the location of the action).
- How (a broad indication of the maneuver elements, the form of maneuver, or the formation to be employed; other elements may be included as required to distinguish among courses of action).
- Why (the purpose of the operation).

Some elements of a course of action may be generated early during the mission analysis, based on the facts and uncertainties of the situation. A course of action is rarely fixed during further planning, but instead is continual⁷ updated and improved through consideration of additional factors and options. A course of action is developed through an interactive process of generating notions of how to address goals and subgoals, testing those notions, and incorporating the capabilities of the battlefield operating systems. As courses of action are developed, they are mentally tested for feasibility against previously identified criteria for mission success.

The most critical situational factors play a major role in shaping the possible courses of action. Key questions that guide the development of a course of action include--

- What is the primary goal of the mission?
- What is the enemy doing?
- What are their future intentions?
- How can they hurt us most?
- How can we reduce the enemy's options while keeping ours open?
- How can we best surprise the enemy?
- How can we best defeat the enemy?
- How much time do we have to accomplish the mission?
- How much time do we have to plan and prepare the mission?

After initial consideration to potential courses of action,

there are different avenues of subsequent planning open to the commander. If the mission is simple and straightforward, the commander may restrict further planning to his stated concept. When the mission is very complex, major uncertainties exist, or resources for execution are limited, the commander may defer his decision on a concept until further analysis is performed. In these cases, the commander's guidance should be as specific as possible for focusing the further analysis. The commander and chief of staff must then carefully manage the extent of the further analysis to ensure that enough time remains for final planning and preparation.

Regardless to whether or not the commander makes a decision at this point, he should provide specific guidance to the staff about further planning. Multiple courses of action should only be generated by the staff if there is command guidance to do so.

The traditional estimate process addresses the preparation of multiple courses of action (given enough time), analyzing each independently, comparing the results, and only then selecting an option. But today's battlefield will rarely provide enough time to fully develop multiple courses of action. Planning and preparation time can easily be wasted by spending too much time on 'throw-away' options, at the risk of acting too late and losing the initiative.

When is one course of action enough? Each tactical situation is unique. In some cases, the number of feasible options is limited, or a single "best" option may be apparent to the experienced decision maker. In other cases, several distinct options may be feasible, but in the commander's judgment they are so close in value that it is not worth the time and effort required to determine which is "best". In any case, time constraints may make the analysis of several options impractical. In these instances, it is best to quickly arrive at a preferred course of action. This gives maximum time to the staff and to subordinate commands for the planning, coordination, and rehearsal that is essential for the accomplishment of any course of action.

Planning will always involve consideration of more than one thing to do, but the level of detailed analysis and comparison of the various options will differ depending on the commander's guidance concerning multiple courses of action and the time available. New options or variations will arise as the concept and course of action are developed. Trade-off decisions between various options will have to be made to resolve resource and goal conflicts.

When time is not a major factor, the commander may want the staff to analyze multiple courses of action in greater detail. The value of considering multiple options includes:

- Expanding consideration of the range of possibilities for accomplishing the mission (avoiding tunnel vision, avoiding unimaginative tactical approaches).
- Considering courses of action under varying sets of assumptions (for example, the threat may come from the north instead of the south). This leads to anticipated contingency plans for various situations.
- Extending consideration to risky, but potentially effective courses of action.

Making judgments and trade-offs can be considered the art of tactical planning. Important decisions must be made about when to end consideration of alternatives and proceed with planning for execution. Often, there is no single best option. If, after some analysis, it is not clear which course of action should be chosen, then the difference in value among the options is probably not great enough to warrant additional comparisons. The commander makes a decision and planning continues.

As a preferred course of action emerges and is elaborated in more detail, it evolves into a scheme of maneuver and eventually a concept of the operation. Concepts of operation may differ along several dimensions--

- Maneuver.
- Fires.
- Sustainment requirements.
- Designation of the main effort.
- Supporting objectives.
- Use of reserves.
- Command and control methods.
- Task organization.
- Intended results from deception operations.

In its final form the concept of operation is contained in the operations plan or order. The concept statement should provide enough detail so that subordinate commanders can determine how they should fight the battle.

Warning Order

After a mission is received or deduced and the basic tactical concept shaped, a warning order should be disseminated to subordinates indicating the concept of the operation as determined thus far. The intent of a warning order is to provide subordinate units with preliminary notice of an action or order to follow, and to give them advanced time for planning and preparation. A warning order can be issued at any time during the process, and is usually sent to all subordinate units, affected adjacent units, and, when the mission was deduced rather than assigned, to the higher headquarters.

A warning order should follow the general outline of an order and consist of--

- Possible changes in task organizations.
- Situation.
- Probable mission.
- Principal concepts in the operation, if known.
- When and where the order will be given.

Wargaming

Wargaming is the visualization of an operation. It stimulates thought about a proposed operation and generates insight into the operation's expected outcomes. It is done as a series of actions, reactions, and counteractions. Wargaming relies on tactical judgment and experience, and focuses the attention of the staff on each phase of the operation. For balance, a military intelligence officer can represent the adversary and project how the enemy will act and react.

Wargaming is not limited to a specific step during the planning process. During the initial stages of concept development, wargaming is used to generate and quickly evaluate possible courses of action. After a course of action is designated, wargaming is used by staff members to develop specific parts of the plan in detail. The wargame should include a conscious effort to identify how well the criteria for mission success are being met. As problems and opportunities are identified by wargaming, the concept or plan should be improved. A detailed wargaming process is the primary means of achieving a fully synchronized plan, complete with contingency and deception plans.

Detailed wargaming should result in:

- Identification and analysis of strengths and weaknesses of the operation.
- Refinements or modifications to the operation.
- Assignment of subordinate unit tasks.
- Determination of potential for mission success based on estimation of success criteria (for example, the duration of each critical event and the entire battle, ground gained or lost, the relative amount of enemy force defeated, or the number and types of units defeated.)
- Identification of the requirement for other combat capabilities.
- Identification of nuclear or chemical effects.
- Identification of the requirements for combat support.
- Requirements or opportunities for deception and surprise.
- Identification of additional decision points, branches, and sequels.
- Identification of command and control means.

A "script" of what is expected to occur should be produced from detailed wargaming. (Wargaming techniques are discussed in more detail on page 22.) The script might range in detail from a simple operation overlay to a full blown synchronization matrix, depending on the time available for wargaming. The decision points should be clearly highlighted on the overlay or matrix.

Synchronization

Synchronization is the planning for concentration of combat power at a specific place and time chosen by the commander. Synchronization involves the coordination of--

- Battlefield operating systems.
- Supporting and main efforts.
- Echelons.
- Rear, close and deep battles.

The purpose of synchronizing maneuver, firepower, and related battlefield functions is to concentrate an explosive force against the enemy.

Synchronization does not happen by accident, nor does it automatically arise from a well-conceived concept of operations. It is an ideal which can only be approached through detailed planning, scheduling, and coordination by the staff. The cooperative missions of all the battlefield operating systems must be deliberately coordinated in time, purpose, location, and effect, and in relation to the expected actions and locations of the enemy.

Synchronization is performed concurrently with the development of the concept of operation (in general terms) and with wargaming during the further development of the plan. This phase of planning, which follows the elaboration and acceptance of the concept of the operation and which precedes the issuance of the order, is critical in determining whether the synchronization envisioned by the commander ultimately can be achieved during the operation. In time-critical situations, it is imperative that the commander bring his staff to this planning phase as rapidly as possible. In many situations, the commander must make difficult choices, restricting the range of considered options, the depth of analysis, and the amount of staff assistance. He instead relies more heavily on his own judgment and intuition to rapidly reach a decision on the concept of operation, and so affords his staff enough time to produce a synchronized plan or order.

Synchronization by the staff is achieved through the deliberate arrangement and scheduling of battlefield activities. A battlefield activity is any task, event, procedure, or group of procedures for which a duration can be specified. The staff must specifically identify all critical battlefield activities (critical events), estimate time and distance factors, and understand the mutually supporting relationships among them. Repeated modifications may be necessary to develop the combination which achieves the desired result in time and space.

To the greatest extent possible, quantitative estimates of specific time and distance factors should be made. The heart of the synchronization process lies in the ability to accurately reduce the activities to specific time factors. A continuing tradeoff must be made between producing time estimates quickly and producing accurate estimates. The ability to perform this function is a significant skill required of a staff officer, who must apply his technical knowledge of battlefield operating systems to his understanding and judgment of the current situation.

The synchronization matrix (see Figure 2) is a tool used for developing a plan and testing how well it is synchronized. A graphical matrix is constructed with a time line displayed horizontally. Time may be expressed in actual time or based on an H-hour. Battlefield activities of the various operating systems as well as enemy activities are written out below the time line. This procedure verifies that resources are available to accomplish the activities. Scanning the matrix vertically shows events that will be occurring simultaneously. The matrix is a tool which can record the wargaming results, use of action and aid in the development of the plan, order, and annexes. It should never be used as a substitute format for the plan or order.

A complete and detailed synchronization matrix may be possible only when planning time constraints are not stringent. When time is short, the matrix may be reduced to consideration of only the most critical activities. The matrix itself may be omitted in severely time-constrained situations. However, estimates on time, space, resource, and effects should not be omitted.

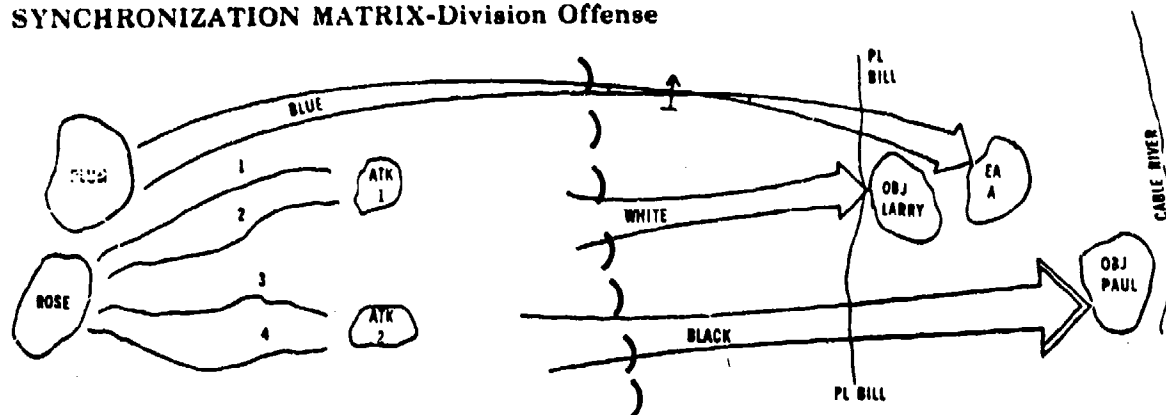
The synchronization process must be understood by all staff officers and subordinate commanders. Synchronization can be facilitated when the commander and staff all plan, organize, and execute with the knowledge that each battlefield action involves time-distance relationships affecting other actions.

Deception Planning

The purpose of deception is to mislead the enemy, reinforce any inaccurate views the enemy may already have about the friendly commander's intent and induce the enemy to do something counter to their own interests. Deception planning must be closely integrated with the development of the concept if the deception plan is to be compatible with the main concept. Careful attention must be given to deception planning during--not after--the development of the concept of operation. In fact, one criteria for deciding on an overall concept should be the capability to incorporate deception. The deception plan must be carefully crafted, well synchronized, and integrated into the final concept to be effective at misleading. Techniques to use in deception include--

- Dummy positions.
- Concealment (such as the use of reverse slopes).
- Enticements (such as deceptive gaps in a defense).

SYNCHRONIZATION MATRIX-Division Offense



Time	-14 hr	-12 hr	-10 hr	-8 hr	-6 hr	-4 hr	-2 hr	H-5 hr	H hour	+6 hr	+10 hr	+12 hr	+14 hr	+22 hr
Enemy Action			threat monitors movements continue def prep					counter btry		fights from 1st belt psn	defend in 2d belt RAG dir fire		res moves to atk/block main atk	
Decision Points											(1) launch deep atk			(2) cont atk
M A N E U V E R	Deep											avn bde atk res vic EA A		
	Security	recon routes secure fwd areas			sqdn moves 3d on rts 3 & 4	(refuel)			car sqdn moves		prep to screen rt flank		screen rt flank	
	Close		bdes move rts 1 & 2, (refuel) 3 & 4			lead bdes move to LD/LC			cross LD/LC		secure Obj LARRY bde penetrate 2d belt pass res		atk Obj PAUL	secure Obj PAUL
	Reserve			bde moves 2d on rts (refuel) 3 & 4			bde moves				continue atk to Obj PAUL			continue atk or def
	Rear	avn bde Level III response								risk in rear area avn bde prep deep atk				
Air defense	wpns HOLD		wpns TIGHT	protect rts & refuel areas		Protect move to LD/LC	protect lead bde	wpns FREE						spt def
Fire support		move to fwd fire psn			coord w/support arty		fire prep	provide DS/GS spt			atk RAG Fire SEAD		spt atk on Obj PAUL	
IEW				latest threat LOC			find RAG & threat res	confirm loc threat res		confirm move of threat res				loc threat beyond Obj PAUL
Engineer				maint rts			spt to lead bde mob on axis			maint on MSR				prep def or atk
Sustainment		Refuel & maint units move		refuel & fix in atk pos			refuel & maint units to MSB			resupply bde on Obj LARRY				resupply Obj PAUL
C2		coord cross LD/LC main, AA Rose		TAC CP with lead bde				main plans cont atk		main prep to move				main CP moves

Figure 2. Synchronization matrix.

- Feints (contact with the enemy to draw them away from an area).
- Demonstrations (show of force with no contact).
- Ruses (exposing false information to the collection means of the enemy).

Contingency Planning

Contingency planning is the forethought put into possibilities of action, reaction, and counterreaction outside the outlines of the primary concept. Planners plan with the full knowledge that many possible actions and outcomes can result from tactics and that the main line of planning assumptions may not occur. Contingency planning recognizes these other possible events and results in advanced planning for future implementation.

Throughout planning, if resulting actions are thought out in detail, the uncertainties will become evident. Additional plans may be needed to cover those contingencies that are most likely and require the most change to the basic plan. Other likely contingencies that require only minor deviations from the base plan can be handled as "on order" and "be prepared" missions, assigned to specific subordinates within the basic order. The earlier that the command plans for contingencies and considers branches and sequels, the faster they can react and the more resilient the primary plan will be.

Since planning time is limited, those branches and sequels for which contingencies will be developed need to be carefully selected. Some considerations for selection include --

- When the alternative enemy actions are likely.
- When preparation for the contingency is critical.
- When planning for the contingency will not be overly time consuming.
- When the contingency cannot be easily covered in the basic order.

Operations Plan--Operations Order

Recording the content of the plan should begin as soon as the basic scheme of maneuver is determined. As the details of the plan evolve, they are added to (or change) the respective sections of the plan or order already documented. The content of

the plan or order is filled in as planning is completed. Plans and orders are prepared in a five-paragraph format.

Plans and orders may be either written or oral. If the command has published and uses standing operating procedures (SOP) to streamline daily or recurring activities, the preparation of plans and orders may be carried out very quickly. In some cases only a fragmentary order (FRAGO) is required to supplement a previous order. The staff may incorporate approved branches and sequels into the order or plan as part of the body or as annexes. Missions should be assigned so as to leave freedom of action and responsibility for carrying out the mission to the subordinate commander (mission type orders), within the framework of the commander's concept and intent. Limitations to this freedom should only be those determined by the commander to be necessary to ensure a coordinated, synchronized effort.

Operations orders and plans must--

- Clearly state the commander's concept of the operation, as well as support the intent of higher commanders.
- Focus on retaining or regaining the initiative.
- Be very visual, making maximum use of overlays.
- Be concise.
- Include combat support and combat service support information.

Plans or orders must be approved. This is no more than a formality if the staff has prepared the plans or orders based on the commander's decision and concept of the operation.

Directing

Clear directions guide the execution of plans and are critical for command and control. The commander decides on a particular action and then directs its execution. When possible, the commander personally issues his orders to his subordinate commanders. When this is not practical, the staff relays the commander's directives to the subordinate and other units involved. Follow-up is a critical part of directing. It ensures that the order was understood and that the recipient can and does carry it out.

Plans and orders are issued through the most secure and timely means available. Ideally, subordinate commanders are brought together to receive the plan or order personally from the commander, with each staff member briefing his portion of the

plan or order, or being available to answer questions. Subordinate commanders then brief back the higher commander to be sure they understand the mission. This will initiate the subordinate commanders' mission analysis. Often in tactical situations, the subordinate commanders will receive FRAGO's over the radio or through another communications means.

Rehearsals are essential to the coordination of a plan. The commander gathers all key personnel and leads the rehearsal to

- Promote mutual understandings about what actions are required during the operation.
- Be sure that coordination has been accomplished.
- Indicate where further coordination is needed.
- Synchronize actions.

For subordinate commanders, the rehearsal provides an opportunity to understand the commander's intent firsthand. The interaction during rehearsals between a commander and his subordinates allows a time for face-to-face brief backs to the commander, thus assuring him that his intent was communicated.

Directing involves issuing orders and plans, and providing clarification, and guidance. Commanders must be careful not to over-direct. Although direction must be specific enough to ensure mission accomplishment, it must not limit the initiative of subordinate commanders to determine how to accomplish the mission.

During the training of new staff officers or commanders, the senior commander should emphasize hands-on directing. This helps subordinates and staff understand what the commander wants. As command and staff cohesion increases, the commander will not need to be as directive. Real decentralized execution will then be possible.

Monitoring

Monitoring is the process of discerning what is happening and what it means. For an ongoing mission, monitoring is needed to compare what subordinates are actually doing against the intent and expectations of plans as visualized and recorded on the operations overlay or synchronization matrix. The comparison may suggest that corrective action (directing or controlling) is required at once, or that the mission is being executed suitably but will require a change in the future.

One difficult aspect of monitoring is deciding when a deviation warrants corrective action through modified guidance,

new plans, or new missions. The commander must have a clear vision of what success will look like in a particular situation and how much deviation can be tolerated. The commander must clearly outline acceptable tolerance limits, so the staff and subordinate commanders can quickly and reliably monitor the operation and provide vital feedback.

When the plan cannot be accomplished, the commander must then determine if there is enough time to develop a new scheme of maneuver, or if the decision or action can be delayed to allow more time for preparation. The best guidance for dealing with the unexpected is to deal explicitly with the uncertainties, to identify priority information requirements (PIR) to resolve those uncertainties, and to rely on advance preparation of contingency concepts and plans.

To increase the speed of monitoring and later directing and planning, the commander and staff must establish feedback and reporting mechanisms. These must operate continuously. The commander's and staff's need-to-know must be weighed against the subordinate unit's ability to report as requested and still carry out their mission. Reporting on an exception basis for significant changes is an appropriate policy.

Staff visits to subordinate units can be a useful aspect of monitoring. Direct interaction with subordinate commanders and staffs can be used to gather specific information, observe the execution of orders, and provide advice and assistance. Direct contact can help foster and maintain good understandings among and within commands.

Monitoring of the current situation can be used to predict what is likely to happen, so future opportunities, problems, and missions can be anticipated and proper plans developed for action when the time is right. By closely monitoring execution, the commander retains overall control of the situation.

Practical Considerations in the C2 Process

On the rapid-paced battlefield, there is rarely enough time or resources to follow a systematic approach for an optimal solution. In fact, there is no optimal solution in tactics, since there is always an opponent gaming to win. The best approach is to take a workable concept, plan it thoroughly, and execute it accurately. The following guidance provides practical considerations for performing in time and on target.

Commander Involvement

The commander is the ultimate decision maker within the

command. He must not only decide what to do, but also decide when a decision is necessary. He must be deeply involved in critical phases of the process. He cannot afford to spend too little or too much time in any one activity of the command and control process. He must balance his effort according to the requirements of the situation. A commander's decision making ability depends upon several factors--

- His expertise in "seeing the battle."
- Knowledge of battlefield operations.
- A sense of the time, force, and effects involved in various battlefield actions.
- A clear understanding of his commander's intent two levels higher.
- An up-to-date assessment of the situation.
- Knowledge of the strengths and weaknesses of his subordinates.
- Knowledge of his own strengths and weaknesses and the willingness to go to others for information and recommendations when necessary.
- The confidence to act decisively on the best information available under any circumstances.

The commander must keep the staff focused on the end goal by advancing and maintaining a clear concept.

Staff Support and Coordination

The staff's job is to support the commander. Staffs must operate on a team basis. Trade-offs may have to be made regarding the breadth of staff involvement and the amount of time required. Staff members should be familiar with other staff members' responsibilities so they can provide support, readily coordinate across functional boundaries, and apply their effort to the most critical activity at a given time. Staff elements wargame their part of the operation, taking note of interfaces with other functional areas. Good coordination at these points of interface is essential for synchronization. Special consideration must be given to coordination with adjacent units and other headquarters, since the enemy may prefer to target major unit boundaries. Staffs must also plan for long-term goals that will help achieve continued success (future or contingency planning, logistics support, reconstitution, and so forth). And staff members must realize that the commander cannot always

obtain their advice or recommendations because of the demands on his time.

Information Management

A common thread in the command and control process is the use of information. The chief of staff must be ruthless in enforcing information management procedures, if staffs are to become proficient in managing information. Staff members must--

- Make every effort to be concise and avoid information overload.
- Key on resolving battlefield uncertainties that have the greatest potential impact on current or future operations.
- Be capable of translating large amounts of data into meaningful information, and be able to recall the source data when the commander requires focused information.
- Share immediately any information identified that might affect another staff member's area.

Remain Objective

Because the C2 process relies so heavily on qualitative judgments, staff members need to remain as objective as possible. Staff members must--

- Avoid selective filtering of information to support one's own view or the prevailing view of the staff. Take time to check the advantages of less-favored actions and the disadvantages of favored actions.
- Not over-simplify situation assessments or status projections by ignoring uncertain information. Instead, attempt to reduce uncertainty by information gathering and overcome uncertainty with flexible plans.
- Consider unusual ways that a planned action may go wrong. A common pitfall is to think of what is familiar and how something will work when anticipating the future, rather than how it might go wrong.

Error Checking

Staff work usually involves many people simultaneously

working different aspects of a common, complex problem. They function interdependently, often with shared resources. In such situations some errors are virtually inevitable, but the overall effectiveness of the group depends heavily on the number and magnitude of the errors made. One of the major factors contributing to success is the avoidance of errors, both in the planning and execution phases. Factors of fatigue, overwork, and fear can greatly increase the rate of mistakes.

Staff members can avoid mistakes by learning to recognize when they are losing concentration and when their behavior is becoming automatic. They should pause occasionally to reflect on the larger picture of what they are doing and why they are doing it. Sleep discipline should be maintained. Most people greatly underestimate the loss of ability that accompanies lack of sleep, particularly for tasks that require creative thought.

When making estimates or calculations, the staff should make a rough guess at the start, or at least try to bracket the answer quickly with a minimum and maximum estimate. If the calculated answer and the initial guess do not agree, then the staff should address which was wrong and why.

A staff member should have someone else check critical work or ideas for errors and oversights. An overriding rule of error checking should be "check, double check, and re-check." When doing so, the staff member should not bias the error checker's thinking by presenting conclusions. The facts alone should be presented to get the checker's opinion.

When coordinating or communicating information, the staff must try to determine whether or not they are understood. They should not hesitate to present facts and conclusions that seem very obvious. If there is some suspicion of a miscommunication, it must be resolved. When information is received, the staff should try to understand the rationale underlying it. If necessary, the staff can ask for the reasons why certain conclusions are made.

Staff members should avoid becoming so specialized that they cannot spot errors and inconsistencies from other functional staff areas. If they have some idea of reasonable events, time, distance, resources, and other planning factors, they can then spot major errors in other areas.

Formal wargaming with groups, back briefs, and rehearsals can go a long way to reduce errors. Historically, however, mistakes and miscommunications have played decisive roles in many, if not most, encounters and will undoubtedly continue to do so.

Wargaming Techniques

Because tactical operations are complex, wargaming must focus on anticipated critical events that occur in the flow of operations. Critical events are essential actions which the commander wishes to analyze. Possible critical events include--

- Departure from the assembly area.
- Passage of lines.
- Movement to the line of departure.
- Breach of main obstacle belt.
- Penetration of defensive positions.
- Reaction to counterattack forces.
- River crossing.
- Seizure of key terrain.
- Seizure of objective.
- Destruction, capture, or bypass of enemy force.
- Fixing of enemy in position.
- Synchronization with supporting forces.
- Use of reserves.
- Deep operations.
- Destruction of first echelon forces.
- Destruction of follow-on forces.
- Commitment of counterattack forces.
- Deception activities.
- Rear operations.

There are three important methods of dividing the battle area to focus attention on critical events: belt, avenue-in-depth, and box.

The belt technique divides the battlefield into areas (belts) running the width of the zone (offense) or sector (defense). This technique allows analysis of the subcomponent

battle sequentially. As a minimum, the belts should include--

- Initial contact along the line of departure (LD), the line of contact (LC), or in the covering force area.
- Initial penetration or initial contact along the FEBA.
- Passage of the reserve or commitment of a counterattack.

The belt technique is preferred when--

- Synchronization across the area of operation is important.
- The terrain is divided into well-defined cross compartments.
- The operation is phased in relation to maneuver area.
- The enemy is in clearly defined belts or echelons.

Figure 4-3 illustrates a belt wargaming technique.

The avenue-in-depth technique focuses on one avenue at a time, starting with the main effort. This technique allows sequential analysis of the critical events along an avenue of approach. The avenue-in-depth technique is preferred in--

- Offensive operations when one avenue clearly dominates, and synchronization across avenues is not a critical factor.
- Defensive operations when there is canalizing terrain.

Figure 4-4 illustrates an avenue-in-depth technique.

The box technique isolates attention on a small area and focuses on one or a small group of critical events. The commander makes the assumption that the friendly units can handle most of the situations on the battlefield. Attention is concentrated on the most essential tasks. The box technique is preferred when--

- Time is very limited, as in a hasty attack.
- Mission success depends greatly on a few critical events.

Figure 4-5 illustrates a box wargaming technique.

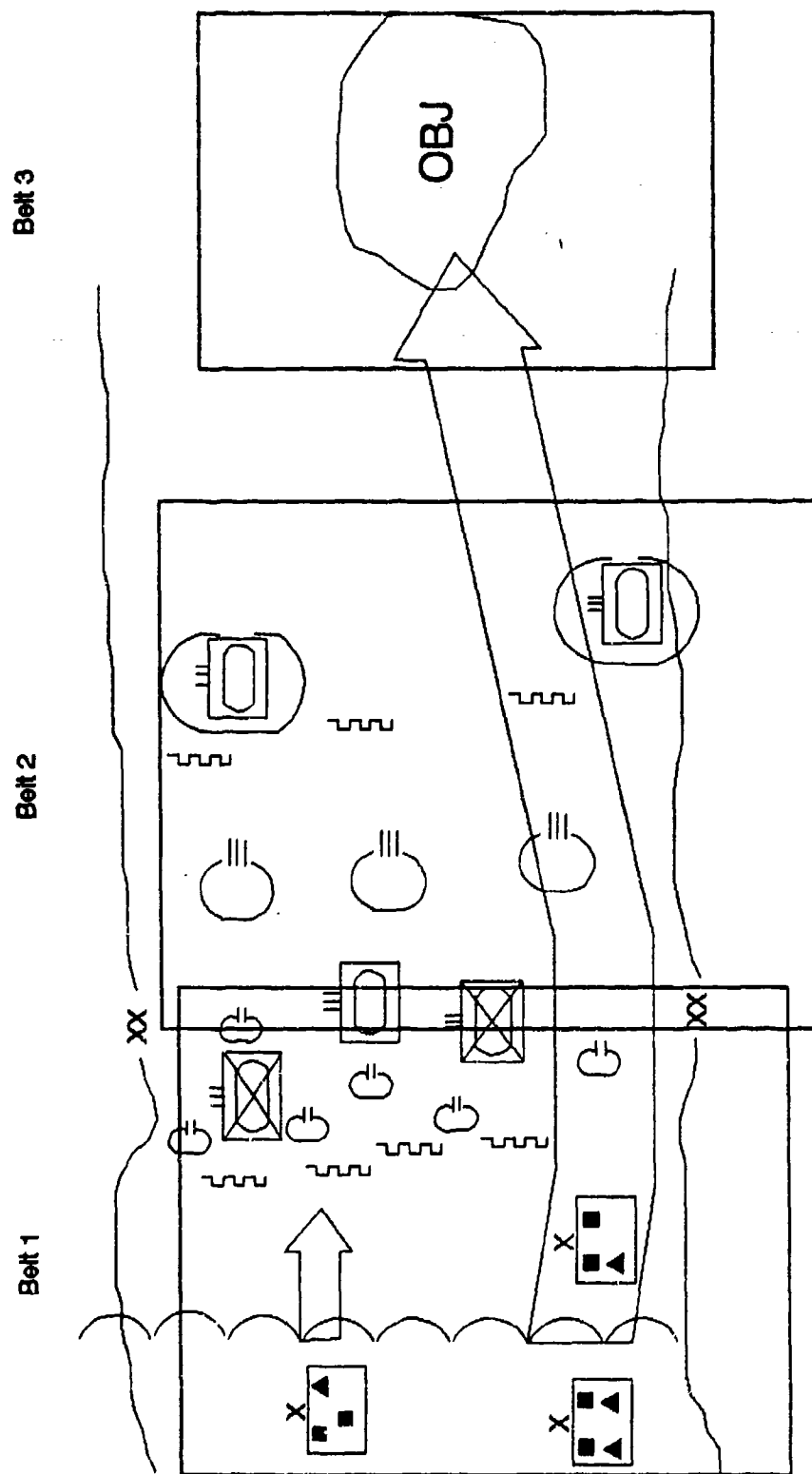


Figure 3. Belt wargaming technique.

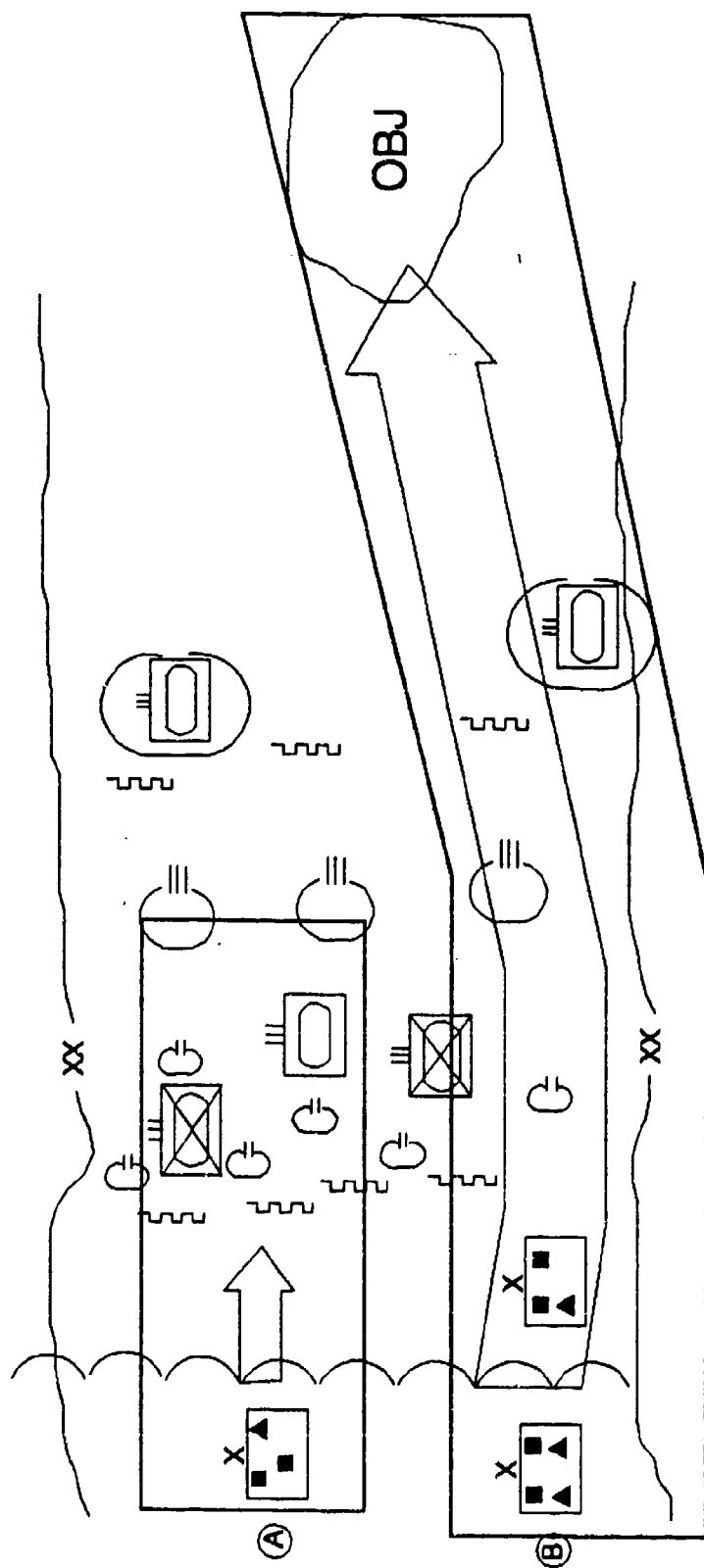


Figure 4. Avenue-in-depth wargaming technique.

Use of Time

Planning time is always a critical factor in the command and control process. At the same time that the mission is being analyzed, the chief of staff or executive officer conducts a planning time analysis, and prepares a time line for the actions that must be performed during the command and control process. The time line assists the commander and staff in making the best use of the time available, and helps ensure that enough time is allotted for critical actions such as issuing warning orders, wargaming, and rehearsing.

Many factors must be considered when allocating time for the activities of the command and control process. The most obvious is the amount of time available. Time available will depend on the level of the headquarters involved and the urgency of the mission. A second time consideration is the time required for planning and preparation activities. Two factors, discussed below, impact on the time needed.

One factor impacting on the time needed is the commander's and staff's level of understanding of the situation. This can range from the newly assigned commander and/or staff member with virtually no understanding of an ongoing situation, and thus, a greater need for time, to the commander and staff that are not only dealing ably with the current operation, but also thoroughly knowledgeable about projected operations. This fully experienced staff generally needs less time for the command and control process. Other factors affecting time are the echelon of the staff, whether the staff maintains a proactive or reactive posture, the nature of the available information, the level of certainty the staff holds about enemy intent and capabilities, staff cohesion and cooperation, and the number of missions the staff is dealing with simultaneously.

A second factor impacting on the time needed is the nature of the assigned mission. More time is needed to plan an entirely new operation than to plan changes to an ongoing mission. More time is needed when the mission will take place in a new area of operation. And more time is needed when the mission is a sequel or branch that was not considered, or if it was considered, was not planned in detail. Major resource implications may also increase the time needed by the commander and staff for coordination and synchronization. In contrast, less time may be needed if an existing contingency plan can be used in whole or in part for the new mission.

Once a planning time analysis is done, the staff must monitor and manage the use of time to conform to the allocations. Staff activities should focus on the desired end goal of the activity within the constraint of the time available. To help manage time, the responsible staff member should periodically

reflect on whether time is being used to the best advantage, and adjust activities as needed. Checklists, SOPs, and high levels of proficiency encourage effective time use.

Staff members should --

- Notice task time requirements and prioritize and allocate accordingly.
- Develop and follow standing operating procedures.
- Limit and control interruptions.
- Be aware of what other staff elements are doing and avoid duplication.
- Make successively refined estimates to check on the feasibility of actions and the need to continue.

Standard time lines for planning actions may be appropriate when building staff skills, but during wartime repetitious timing (always starting an operation at dawn) can provide predictable signals to the enemy. Varying the time when operations start and the associated time available for planning can help upset the rhythm of the enemy's response cycles.

Maintaining a proactive posture by consistently looking ahead and thoroughly considering branches and sequels will help to secure enough planning and preparation time.

Accelerated Process

In very time-sensitive situations, the commander must accelerate the planning process. When the process is conducted as parallel activities across echelons, time savings are possible. Issuing warning orders early aids parallel planning. A headquarters must tell subordinates as much as it knows as soon as possible. Other ways to accelerate the process include --

- Frequent updates.
- Focusing on critical information.
- Remaining alert to what might happen.

Even the most proactive organizations will have to develop orders under severe time constraints. High levels of expertise and battlefield awareness are most needed during these times. The commander and principal staff must quickly decide upon a feasible course of action, using existing information on mission, enemy, own troops, terrain and weather, and time available (METT-

T). The emphasis is upon rapid selection of a course of action that may not be optimal, but will meet the minimum mission requirements. The more time that is spent searching for the optimum course of action, the less time there will be to do detailed planning, coordination, and rehearsal.

Under extreme time constraints, the commander has to issue immediate verbal execution orders to subordinates. The staff must then continue to work out the details and coordinate with subordinate units as time permits. This type of situation is full of risk. The goal of good command and control is to avoid these situations, and correct any problems that may have caused them to occur.

Summary

The commander and staff need to share an understanding of command and control activities, why they are important, and what results from each. Tactical command and control is made up of three major activities: **planning, directing, and monitoring**. Figure 6 presents a summary of the activities. The activities should not be prescribed as a fixed sequence of procedures. Nor do the products have clear and definite end states. There are an endless number of ways in which the activities may be linked. Specific sequences will be determined by situational factors, including the strategies of the commander, whether hostilities are pending or in progress, the level of command, the capabilities of the threat, results from one activity determining what activity needs to be done next, and so on. The amount of effort required to perform various command and control activities and the thoroughness of resulting products are highly dependent on situational factors. Mission goals, time available, uncertainty, and experience determine what needs to be done and how it can be done.

Situation assessment must be done pro-actively and should include forecasts of the future.

Deriving an effective **concept of the operation** is much more than selecting the best option; it involves creating, refining, **wargaming**, and **synchronizing** the concept until it is adequately shaped into an **operation plan or order**.

Deception planning must be integrated into the concept, not added later as an after-thought.

Because no mission ever goes exactly as planned, **contingency planning** is a measure of insurance, to anticipate and prepare for alternative future events.

Rehearsals and brief-backs are essential in **directing** to ensure understandings about execution of plans.

Monitoring must be done as the deliberate comparison of forecasted outcomes to on-going events and subsequent adjustments in **direction** to achieve the desired effects.

Since command and control processes cannot be prescribed as a set sequence of activities, **time management**, **error-checking**, and command and staff **coordination** need to be vigorously practiced to match the activities to the goals and the situation.

It is not possible to exercise effective command and control by learning and repeating a predetermined sequence of activities. Command and control is a dynamic enterprise with high stakes. To

gain the proper leverage on the battlefield, command and control activities must be understood thoroughly and performed with ingenuity and insight.

ACTIVITIES	RESULTS	WHEN PERFORMED
PLANNING	Coordinated actions for execution.	Continuous (proactive not reactive).
Situation Assessment	Understanding of the current situation. Forecasts of future situations.	Continuous.
Mission Analysis	Understanding of the mission's goals, limitations, and opportunities. METT-T.	Upon receipt of mission. (Likely to be already done for deduced missions.)
Initial Commander's Guidance/Intent	Commander's goals, criteria for successful mission accomplishment. Vision of how situation will unfold. Acceptable risks.	Early as possible after mission receipt or identification of opportunities.
Concept of the Operation	Concept of maneuver, fire, reserves, etc. What, when, where, how, and why.	Some elements are generated during mission analysis, continues to be refined through OPOD and monitoring.
Warning Order	Subordinates alerted to probable missions.	When general concepts of the operation are determined.
Wargaming	Mission feasibility. Refinements to operation. Identification of decision points, branches, and sequels.	Throughout to check the feasibility of concepts, assess projected actions, etc.
Synchronization	Arrangement and scheduling of battlefield activities. Plan for concentrating combat power in time and space.	Begins with development of the concept of operation and continues until battle activities are scheduled. Reoccurs during execution.
Deception Planning	Concepts to mislead enemy integrated into plans.	During concept development and refinement.
Contingency Planning	Identification and consideration of actions-reactions outside bounds of primary concept.	During and after concept development for branches and sequels which (a) identify likely alt. enemy actions, (b) are not covered in basic order, and (c) failure to prepare would be disastrous.
Operations Plan-Operations Order	Concept detailed and documented.	Begins when basic scheme of maneuver is determined. Completed so it can be distributed in time for own and subordinate's preparation within the higher command's schedules.
DIRECTING	Rehearsed operations. Guidance, orders and plans.	Throughout, as needed.
MONITORING	Identification of deviations in actual performance from intent. Decisions to change on-going actions or establish new future actions.	Throughout, continuous.

Figure 6. Summary of tactical command and control activities.