Insights into Optimum TTPs/SOPs for Battalion, Regimental, and Brigade Command and Control [1]

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Abstract

Insights into of the cognitive dimensions of tactical decision-making are coming at a rapid pace. Army and Marine Corps doctrinal writers address the differences the conceptual level, but not at the practical level of command posts in the field. Historically, the Services' doctrinal organizations have not written "tactics, techniques, and procedures (TTP)" or "standing operating procedures (SOP)." SOPs have always been the prerogative of the commander. Thus the Services do not have past versions of service-wide, generic TTPs/SOPs.

Using spiral development processes for the materiel development, the Services are fielding sophisticated C4ISR systems. Observers are struck by the operational potential of the C4ISR systems and the magnitude of the C4ISR training challenge. Digital operators guides (DOGs) still fall short of the comprehensiveness and granularity necessary for battle staffs to support decision-making in digital environments. The paper describes the contents of current TTPs/SOPs, proposes specific changes, and provides the rationale. The changes align with concepts identified by the "Naturalistic Decision-Making" community and with the tasks actually performed in digital command posts. The optimum TTP/SOP should be an authoritative resource commanders can use to train their staffs in the team and digital skills necessary to support decision-making during operations.

1.0 The Challenge

Military operations at battalion, regimental, and brigade levels are examined from many perspectives, and few are as challenging to capture adequately as decision-making. This effort may fall short as well, but it will not be for lack of having a conceptual framework within which to present basic issue—the absence of detailed tactics, techniques, and procedures (TTP) to support decision-making during the execution phase of operations. To make the case for the publication of detailed, generic TTPs for command post operations to be developed at the Service level, it is necessary to describe the decision-making process the TTPs are intended to support. Important supporting themes included in the description are:

Doctrine – to include tactics, techniques, and procedures
Command Posts and Operations Centers
Tactical Information
Commander-Staff Teamwork

Decision-making revolves around a flow of information that commences with a requirement to conduct military operations. At the brigade, regimental, and battalion levels, the requirement from higher headquarters (HHQ) to conduct operations initiates . . .

1 An operations order from HHQ that includes the HHQ commander's intent, concept of operations, and tasks assigned to the subordinate and supporting units, which generates . . .
2 The unit's own restated mission, commander's intent, concept of operations, tasks to subordinate and supporting units, an operations order, and . . .
3 Once the unit begins to execute the order, a torrent of situational information.

Situational information now becomes the grist of decision-making related to the current operations order and to the successive orders. The challenge, even in the brave new Network Centric world, is how to get the right information to the decision-maker in time for him or her to make effective decisions. This challenge is described in five sections: (1) the Doctrine and TTP Situation, (2) Picture the Optimum TTP, (3) Decision Models, (4) Tactical Information, and (5) a Strawman TTP Development Process.

2.0 The Doctrine & TTP Situation

In a sense, decision-making is relatively simpler at the team, squad, platoon, and company levels than at echelons commanded by colonels and generals. The small unit leader is able to monitor and assess the situation almost entirely through his own senses. He is in the middle of the action. He sees, hears, smells, feels, and even tastes the information upon which he will decide to press on with his current plan or modify it. Even though in sensory contact with his surroundings, however, he can still find himself in considerable uncertainty relative to the entire situation, and he frequently reaches a decision applying a "sixth" sense, intuition. Important to note, lacking a staff, the small unit leader builds his plan using the Troop Leading Procedures. In effect, he uses a doctrinal process to plan his scheme of maneuver and fire support plan. During execution, he uses doctrinal techniques, rehearsed many times, to take advantage of fleeting opportunities or to react to problems, e.g., calls for fires, hand and arm signals to change formation, immediate action drills, etc. Thus, he is equipped by doctrine to plan his five-paragraph order, and by doctrine to lead the unit during execution, making adjustments to his plan as necessary.

For lieutenant colonels and above, and their staffs, sensing the battle is more complex.[2] Getting an accurate picture of the battle now requires surrogates and abstractions to supplant the "senses." This is true whether the CP is equipped simply with acetate covered maps, FM tactical radios, and 3M "stickies" or with the increasingly sophisticated C4ISR technologies. Unlike the small unit leaders, colonels have help in making sense of the situation. They have a staff and equipment whose propose is to provide the relevant information necessary for decision-making, in effect, to be the surrogate for his own senses. Like the small unit leaders, the lieutenant colonels and above develop their plans and orders within a robust doctrinal framework. But unlike the small unit leaders, the lieutenant colonels and above do not have a robust, integrated doctrinal framework within which they acquire information and make decisions during the execution of their plans. More to the point, their staff members do not have a framework—either conceptual or detailed—to focus their collective efforts on providing timely relevant information to the decision-maker. They have pieces of a framework, some at a Service doctrinal level, some at a schools level, and some at a unit SOP level. But they have nothing that quite equates to small unit immediate action drills where every man in the team knows his role and the roles of the rest of the men in the element.

In retrospect, the absence of integrated conceptual and detailed doctrine (to include TTP) on decision-making during the execution phase is surprising. Both the Army and the Marine Corps have gone to impressive lengths to analyze, understand, codify, promulgate, and train to their doctrines for decision-making during the planning phase of an operation. But not decision-making during execution. For years, the efforts of commanders and staffs to become proficient

in decision-making during the execution phase have advanced largely on the strength of oral tradition and tribal lore. With the exception of unit level standing operating procedures (SOP) for command post operations (see discussion below), which have always been prepared by the unit, individuals have had few other materials to study in preparation for command post exercises (CPX) or field training exercises (FTX). Thus, when the unit finally begins the CPX, or FTX, or even the command and control experiment, individual proficiencies pick up where they left off at the end of the last exercise. Collective proficiencies start at the level of the least proficient individual—and the cycle of the old brave teaching the young brave commences again.[3] Not only is this inefficient, the ability to train to consistent standards is simply not possible. The braves carry the tasks, the conditions, and the standards around in their heads. They aren't written down, not even on the teepee walls.

The absence of integrated, conceptual and detailed doctrine for decision-making during the execution phase affects training and readiness, and it affects material development as well. Why? Because the user cannot clearly articulate his "decision support" requirement, at least not on the basis of a documented process that the material is expected to support, speed up, or possibly even supplant. The person representing the user community can only guess based on his experience what functions the material should provide.

Thus two good reasons can be identified to develop conceptual and detailed doctrine for decision-making during the execution phase. First, the doctrine is necessary for unit readiness, and individual and collective proficiency. Second, it provides a doctrinal framework within which to articulate material requirements for decision support systems.

As background, an interesting paradox is at work. Each system proposed by combat developers is designed to facilitate decision-making at a battlefield functional level. For example, the Advanced Field Artillery Tactical Data System (AFATDS)—a system common to the Army and the Marine Corps—is designed to facilitate supporting arms decision-making and fire support coordination. It is a superb system, and is designed such that in the right circumstances, it could almost be set on "automatic pilot." It still has some developmental bugs to be worked out, particularly in the effort to integrate it fully into the Army Battle Command System (ABCS), but as a stand-alone system, it is very, very capable. The hardware system is also supported by an excellent system users manual (SUMs). While most SUMs tend to be written at the operator level, the AFATDS SUM is written so the roles of the section NCO and officers vis-à-vis the system are clear. But appropriately, the SUM does not describe the integration of the system's capabilities into the overall sequence of actions in a maneuver unit or MAGTF command post. Another document is necessary for this purpose.

The paradox then, is that even when the stand-alone system is well designed for the battlefield functional area it supports, the documentation to fully integrate the system—from the operator, the section NCO, and the section officer levels—into the command post process for decision-making during current operations, must be accomplished by someone other than the material developer. Not all systems come from the developer with the roles of the NCOs and section officers as well defined as the operator level procedures. But each system is a MAJOR element within a command post's information flow, and the NCO and section officer are integral to that

process. A related reality is that the TTPs should not be "built up" from the inputs and outputs of the system. The TTPs must be "built down" from a conceptual framework for decision-making in order to describe what the section officer, NCO, and operator in the fire support coordination center (FSCC) must do to support that information flow, in addition to attending to the purely stovepipe functions of the AFATDS system.

2.1 Current Doctrine, TTP, and SOPs

Historically, individual unit command post SOPs have been the unit commander's responsibility and prerogative. The Services have developed basic doctrine for CPs—describing the organization, manning, duties of staff members, general operations of the CP (displacement, watch standing, security, etc.), and material and equipment—but not unit level commander-staff dynamics and processes. Currently, the Army is preparing a draft field manual, FM 6-0.6, *TTP for CP Operations*. The draft updates earlier references on CP matters and generally describes the "theory and nature" of CPs, but it will not include procedural details for the planning, preparation, and execution cycle. The Marine Corps' Doctrine Division currently has in the field for review the Coordinating Draft of Marine Corps Warfighting Publication 6-2, *MAGTF Command and Control*. The draft is similar to the Army publication, and includes additional chapters on Information Management and Command and Control Warfare. The Doctrine Division also has plans for a MCWP 6-21, *Tactics, Techniques and Procedures for Command Echelons*. The current outline indicates that this document is also intended to be general in nature, and not prescriptive with respect to internal techniques and procedures.[4]

At the organizational level, based on a small sample of SOPs from units in the 4th Infantry Division, unit SOPS have not changed very much in twenty years. They tend to have one chapter outlining basic procedures within the unit command post. Another chapter may describe the unit's adaptation of the Army's military decision-making process (MDMP), but limited to the planning phase of the operation, not the execution phase. As seen in Table 1,

Brigade Combat Team	Battalion Task Force	DS Artillery Battalion
Chapter 1 - Force Protection Chapter 2 - Command, Control And Communications Chapter 3 - Maneuver Chapter 5 - Fire Support Coordination Chapter 4- Intelligence And Electronic Warfare Chapter 6 - Mobility/Countermobility/Survivability Chapter 7 - Nbc Operations Chapter 8 - Air Defense Chapter 9 - Logistics Chapter 10 - Personnel Service Support Chapter 11 - Intelligence Reports Chapter 12 - Operations Reports Chapter 13 - Logistics Reports Chapter 14 - Personnel Reports Chapter 15 – Religious Support Operations Chapter 16 – Medical Operations	Preface: Commander's Combat Rules A: Command and Control B: Maneuver C: Intelligence and Security D: Combat Service Support E: Engineer Operations F: Fire Support Operations G: Air Defense Operations H: NBC Operations I: Checklists / Load Plans J: Reports	CONTENTS INDEX CARD 100 Fire Support Planning and Coordination CARD 200 Coordination of Tactical Operations CARD 300 Firing Battery CARD 400 Survey CARD 500 Combat Service Support Operations CARD 600 Communications CARD 700 Digital Troubleshooting CARD 800 NBC CARD 900 Intelligence CARD 1000 Risk Management CARD 1100 Secondary Checks CARD 1200 FDC Checks CARD 1300 Firing Incident Checklists CARD 1400 Checklists CARD 1500 Report Formats

Table 1. Chapter Headings from Unit Tactical SOPs

a list of chapter headings extracted from three unit tactical SOPs, the remaining chapters tend to have checklists related to specific tactical operations that are common to two or more subordinate or supporting units within the command.

This is not to suggest that unit tactical SOPs are not important. SOPs of this nature are useful and necessary documents, and reduce the amount of coordinating and special instructions that have to be written into operations orders. The point is that unit SOPs are not the type of written techniques and procedures envisioned in the Models and TTP paragraph (below), but currently, at least in the Army (and based on this very small sample), they are the state-of-the-art documents with respect to decision-making within tactical command posts.[5]

One other special class of publications directly related to decision-making during operations is important to the discussion. These are the reference publications published by commands responsible for professional military education or other commands with a direct interest in doctrine and training. The texts are similar to the unit SOPs in that they highlight key tactical knowledge distilled from the Services' field manuals and warfighting publications. They also gather under one cover the Services' weapons capabilities and equipment performance information, in effect, the "know how" an officer and NCO needs in order to be, in the words of the 2d Leadership Principle, ". . . technically and tactically proficient."

In the interest of brevity, this group is listed in Table 2 along with the proponent and the URL where the reader can locate them. The bottom three documents listed are evidence of the transition in C2 support tools from maps and FM radios to the digital C2 systems now being fielded and in various stages of experimentation and development.

Source	Title	URL, etc.
Battle Command Battle Lab-Leavenworth	Battle Command Handbook	Http://cacfs.army.mil Handbook
Command and General Staff College	Student Text 100-3, *Battle Book*	Http://www-cgsc.army.mil Organizations Center for Army Tactics ST 100-3 Online
MAGTF Staff Training Program	Pamphlet 5-0.3, *MAGTF Planner's Reference Manual* Pamphlet 6-5, *The Planner's Guide to C2PC*	Http://www.usmc.mil Units By location Virginia – Marine Air Ground Task Force Staff Training Program Center Publications – Pamphlets
TRADOC System Manager, FORCE XXI	Digital Operating Guide for Brigade and Battalion Staffs, ABCS, v 6.1	Not available via Http.
Warrior – T	Army Battle Command System (ABCS) Version 6.2 Smart Book	Http://www.atsc.army.mil WarMod XXI Warrior-T [Call "Contacts" for passwords]

Table 2. Reference Publications Bearing on Decision-Making

In fact, none of these documents address decision-making during the execution phase of an operation, either, but they are important sources of information for a battle staff.[6,7] Selected information from this set of documents needs to be accounted for in some way in the Optimum TTP.[8]

Finally, a word on the Services' doctrinal publications bearing most directly on decision-making during current operations. On the Army side, the Combined Arms Doctrine Directorate at the U.S. Army Command and General Staff College currently has in final draft FM 6-0, *Command and Control*. As stated in FM's preface, the manual provides common, authoritative understanding of the authority, fundamental concepts, and application of command and control of Army operations. It describes the art of command and the science of control. It introduces Mission Command as the preferred philosophy of command, defines control within command and control, and describes decision-making during execution (emphasis added). The manual is written both at a conceptual and detailed level, with the details still relatively conceptual in tone. It is an excellent document. It promises to fill a long standing gap, and it would be a key reference in developing the Optimum TTP.

The Marine Corps Doctrinal Publication series addresses decision-making entirely at a conceptual level. MCDP 1, *Warfighting* sets the broad architecture; MCDP 6, *Command and Control*, defines it further; and MCDP 1-3, *Tactics* refines elements in MCDP 6. The Coordinating Draft of MCWP 6-2, *MAGTF Command and Control*, provides additional organizational detail.

Thus far the discussion has attempted to make the case that TTP should flow from concepts, preferably doctrinal concepts. The Army is on the verge of publishing relatively detailed doctrine on decision-making during execution. The Marine Corps, as depicted on the Doctrine Division's doctrinal hierarchy diagrams, currently has no plans to provide Service level doctrine beyond the conceptual documents already in the field. The tentative conclusion is that neither Service will publish doctrinal publications in the near term that will provide sufficient detail to frame the TTP.

3.0 Picture the Optimum TTP

In effect, the Services must decide on the conceptual framework for current operations decision-making, then build the TTPs/SOPs for the staff to provide timely, relevant information to the commander while concurrently continuing to enter information into the systems and acting appropriately upon the information produced by the systems. More pointedly, what is needed is

1 an integrated commander-staff cognitive model of decision-making that encompasses mental models, information flow, assessment, and the actual decision,
2 a team process model describing the commander–staff team interactions throughout the execution phase,
3 clear definition of the commander's and staff's information requirements, and
4 detailed TTP describing the collective tasks within and among the staff sections, and the individual tasks of each person with a role in the information flow.

Figure 1 outlines the remainder of this paper and is a broad graphical outline of what the optimum TTP might contain. At the rear of the figure, the cognitive model is enclosed by a

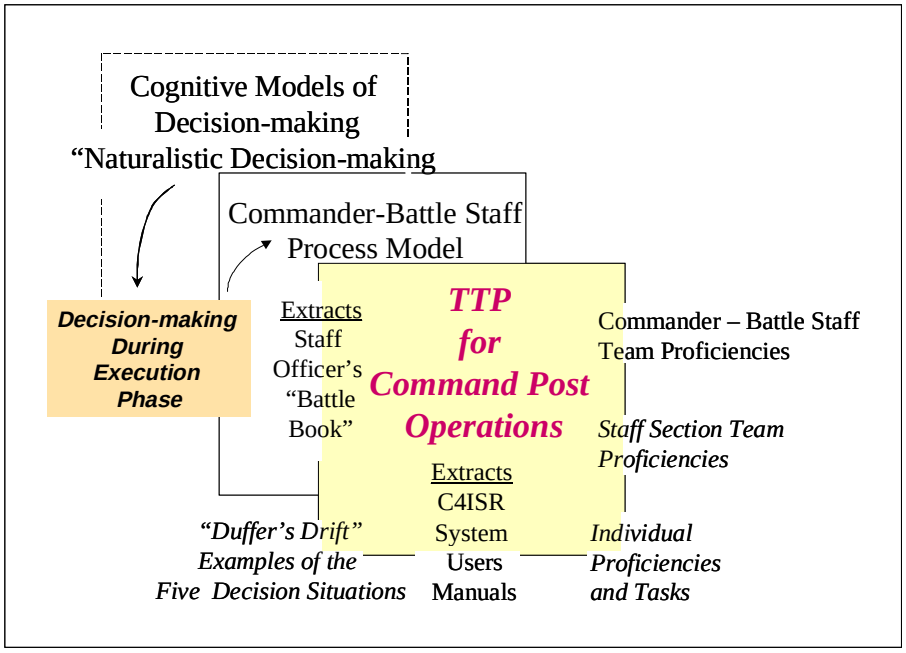

Figure 1. Picture the Optimum TTP

dashed line to emphasize that it does not have to be explicitly described in the TTP, but it must be operating quietly in the background. Coming forward, the process model must be described in order to understand the entire flow of information among the commander-staff team. The actual TTP will be comprised of elements of the five items circling the "TTP" box. More on these later.

4.0 Decision Models

The decision-making process for planning and execution decisions is highly cognitive. The process has been described extensively in the literature of psychology and increasingly in military periodicals and papers written by officer students during their attendance in professional military education. Indeed, Army and Marine Corps professional journals have featured articles by Dr. Gary Klein, one of the foremost cognitive psychologists in the United States, or about his work. Dr. Klein has written extensively on the subject of "recognition-primed decisions" and the function of expertise and intuition in decision-making. Prior to his research and espousal of recognition-primed decisions, military officers were trained to believe that all decisions, to include decisions during execution, had to be preceded by the development of two or more courses of action (COA) and a trade-off analysis to identify the best alternative. Never mind the reality that commanders in time constrained circumstances tended to size-up the situation and personally prescribe the single COA they intended to execute. Clearly, Dr. Klein's research, writings, and many presentations broke the multiple COA requirement, and have significantly influenced every other military and academic writer addressing the topic. That said, the recognition-primed decision (RPD) model is not sufficient by itself to describe the full range of factors influencing a commander's decision during current operations.

4.1 A Cognitive Model

In 1998, an Army Research Laboratory effort attempted to expand on the RPD model to account for other factors known to influence a commander's decision. These factors are implicit or referred to in the RPD descriptions but are not the point of emphasis. The factors are sufficiently important that they needed to be highlighted in a more comprehensive model of military decision-making. The ARL project director believed that a cognitive model of a military decision had to account more fully for three other factors:

1 that the decision-maker's frame of reference for the decision was significantly influenced by his military training, education, experience, together with the mental images created by the HHQ order and the unit's detailed plans bearing on the current situation,

2 that the cognitive function of situation monitoring needed to be expanded. This concerned specifically the periods when either the plan was fully on track or "nothing was happening," and then cues or triggers caused the decision-maker to begin to assess the changing situation, and make a decision. And finally,

3 that many military decisions are made under conditions of uncertainty, not recognition, and that cognitive decision strategies under these conditions needed to be explained in more detail.

The team combined a detailed literature review with field observations at a series of Army advanced warfighting experiments (AWE). The intention was to fit the models to the actual decision-making processes observed in the field, not fit the observations to the models. Table 3 lists the principal concepts, researchers, and articles representing the researchers' views that became the nucleus of the integrated cognitive model:

Researcher(s)	Article (See bibliography)	Emphasis in the Integrated Model
Beach	Image Theory: Personal and Organizational Decisions	The function of military training, education, experience in decision-making, together with the mental images created by the HHQ order and the unit's detailed plans bearing on the current situation
Rouse and Valusek	Evolutionary Design of Systems to Support Decision Making	Situation monitoring and the onset of situation assessment
Klein	A Recognition-Primed Decision (RPD) Model for Rapid Decision Making	Recognition-primed decisions
Lipshitz and Strauss	Coping with Uncertainty: A Naturalistic Decision-making Analysis	Coping with uncertainty; cognitive strategies to with which to make effective decisions under conditions of uncertainty.

Table 3. Cognitive Decision Models Bearing on Military Decision Making

The resulting model is portrayed in Figure 2, Integrated Cognitive Model of the Commander's Decision Process (Adelman, et al., 1998). [9]

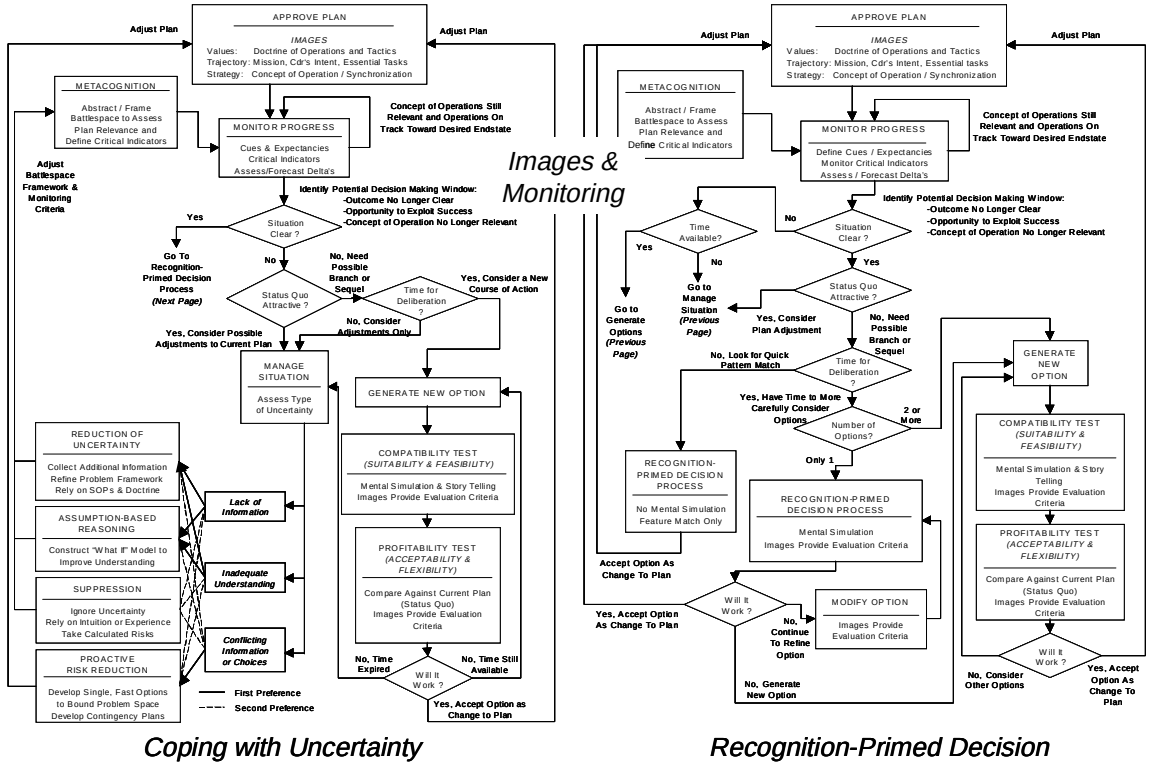

Figure 2. Integrated Cognitive Model of the Commander's Decision Process

The purpose here is not to describe the development and logic flow of the model; rather it is to provide an example of a cognitive model specifically developed to describe a military commander's decision-making process during the execution phase of an operation. As a footnote to this model, the lead author for the Draft FM 6-0, *Command and Control*, said that the model—the graphic and the detailed discussion—contributed significantly to the decision process model described in that publication.

4.2 A Commander-Staff Team Process Model

The research effort that produced the cognitive model also produced the beginning of a commander-staff team process model. This model has grown over the past three years from one diagram and a list, to four diagrams and a different list. It starts with a description of what the commander and staff actually monitor (mostly).

4.2.1 Tactical Deltas

The ARL effort produced insights not only into the cognitive process, but also into the factors that most frequently caused a ground maneuver commander to consider making a decision. As this analyst examined decision after decision, the most common elements to all of them was that the decision involved (1) a subordinate or supporting unit, or an enemy unit, or a piece of terrain—no surprise—and (2) a condition had changed with respect to the unit or terrain that was not consistent with the plan as currently set. In effect, as the situation monitoring continued in the command post, the commander or a staff member noticed that one or more units' situations had changed in a way that was not as projected in the plan, and the change had the potential to create an opportunity or cause a serious problem.[10] The differences between the plan and the current situation were termed "tactical deltas." Tactical deltas indicated an opportunity had presented itself, or that a unit would not be able to accomplish an assigned task The implications of the delta normally lead to a decision. The decision would always result in either changing one or more units' task(s) (and normally the purpose), or changing the direct support provided to one or more units, or changing a graphical control measure to provide a spatial advantage to a key unit. Small deltas between the plan and the situation that did not impair the mission normally did not cause the commander to make a decision (although, a decision to make no change is still a decision).

The changes in situations that would generate active assessment always reflected back on some element of the unit's mission. Situations varied in gravity from a unit not being able to accomplish a minor task to situations so serious as to put the HHQ commander's end state at risk. So, very simply, the commander and staff monitored the situation focusing on the units and the key terrain. They were alert specifically for changes in a unit's situation that affected its ability to accomplish assigned tasks. When they detected a delta, they assessed the situation in the context its implications for their accomplishment of their mission, and in very serious cases, its implications for their HHQ commander's mission and intentions.[11] Figure 3 is a graphic of the major elements in the monitoring and assessment of tactical deltas.

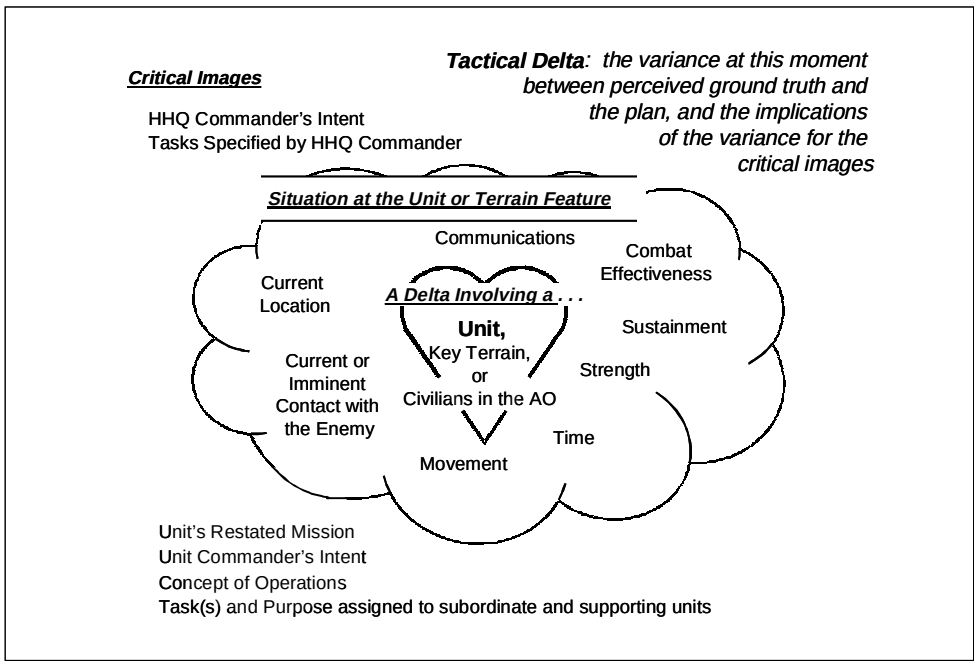

Figure 3. Tactical Deltas

Cognitively speaking, once a delta is detected, the commander or a staff member assesses it to determine the implications with respect to the critical images. The commander can make a decision entirely without input, and in time sensitive cases that was observed to happen. But it is also true that give time for discussion, the commanders also sought input from their subordinate unit commanders and their staffs.

4.2.2 Picture "A Decision"

Once the commander-staff interaction begins with respect to a given delta, a simple process unfolds, although some of the deliberations can be very complex depending upon the situation. Figure 4 is a diagram of the commander-staff process as the commander decides what to do relative to a emerging tactical delta.

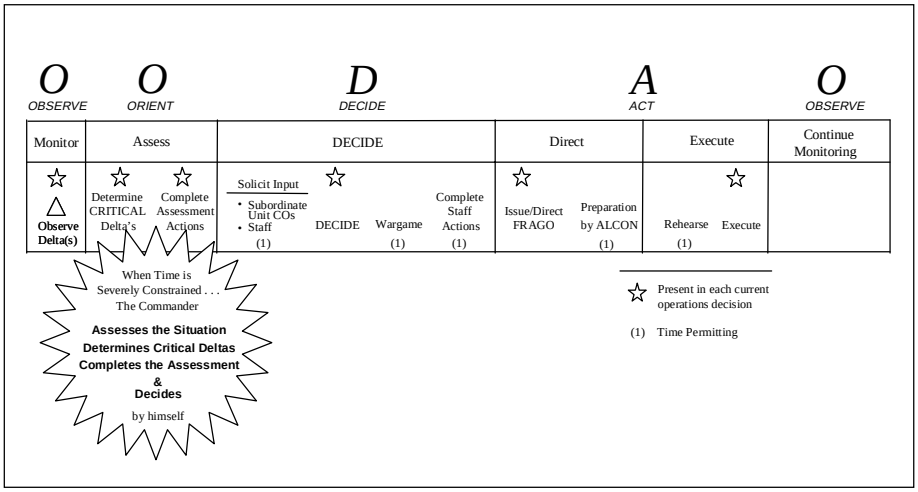

Figure 4. A Single Decision During Current Operations

It is a rare operation when the unit accomplishes its mission and achieves the HHQ commander's end state with only a single decision having been made during the execution phase. A more interesting picture emerges when a series of notional decisions are arrayed in terms of the specifics of an operations order.

4.2.3 Picture Decisions in Terms of the Plan

Figure 5 represents graphically the decisions reached during the planning process. It shows the conceptual and tasking components of the operation order (OPORD) that the unit is attempting to execute. In the conceptual portion of the order, the commander has expressed his intent and his concept of operations. In the tasking part, he assigns tasks (with purpose) to his subordinate and supporting units. The battle staff must understand the purpose of each subordinate unit task as well as the subordinate unit commanders understand them. In almost every situation, a tactical delta(s) arises while a unit is attempting to accomplish an assigned task. Thus the assessment must clearly include the implications of the situation with respect to the purpose for which the task was assigned. If one purpose is in jeopardy, other elements of the plan are in jeopardy. In Figure 5, the time is just prior to H-hour. The unit has completed its rehearsal and is poised to attack.

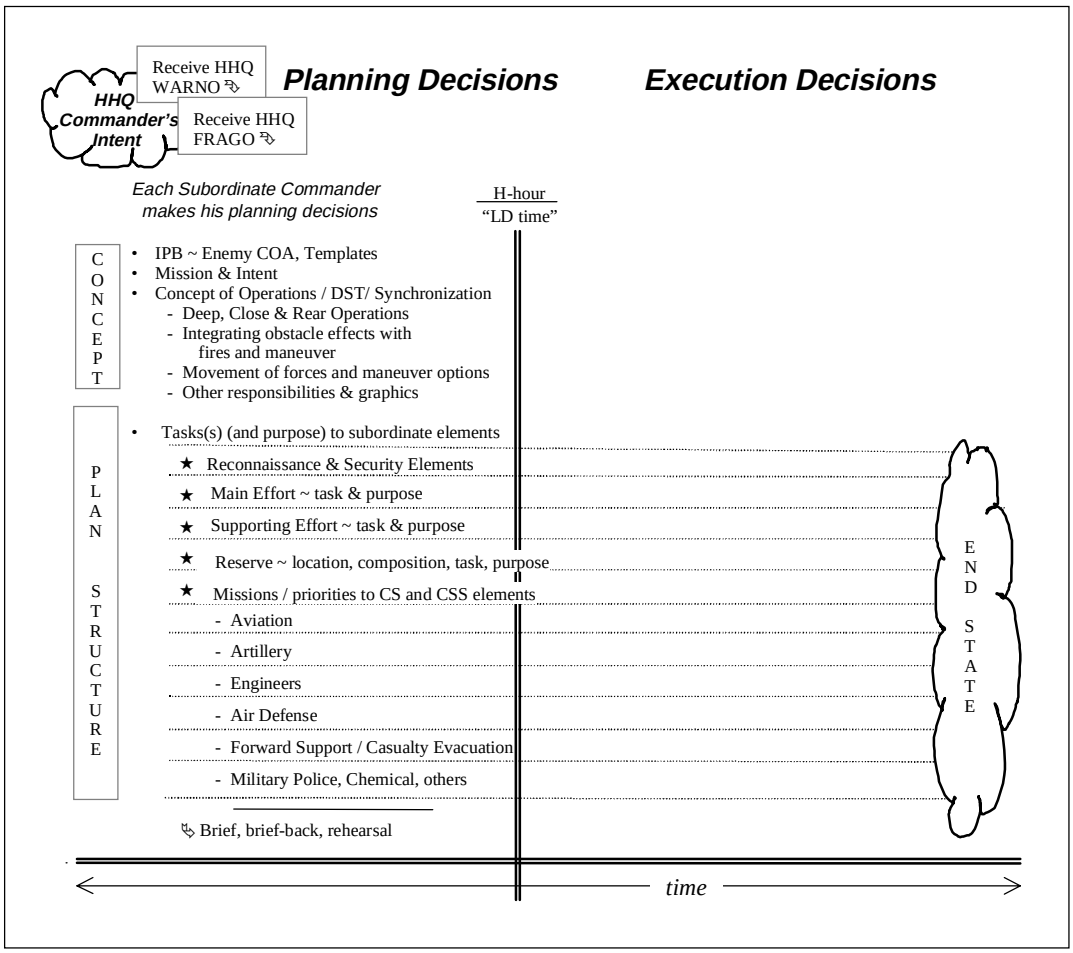

Figure 5. Planning Decisions and the Operations Order

Now complete the graphic by crossing the line of departure, executing the assigned tasks, and achieving the commander's end state. Figure 6 is a notional view of a series of decisions made during the execution phase. The small bars on the right side of the graphic represent decisions arrived at through the commander-staff group process in Figure 4. Once the command crosses the line of departure, the plan becomes fluid. The thinking adversary is also flexing his will. Variances—tactical deltas—are beginning to be received in the command post.

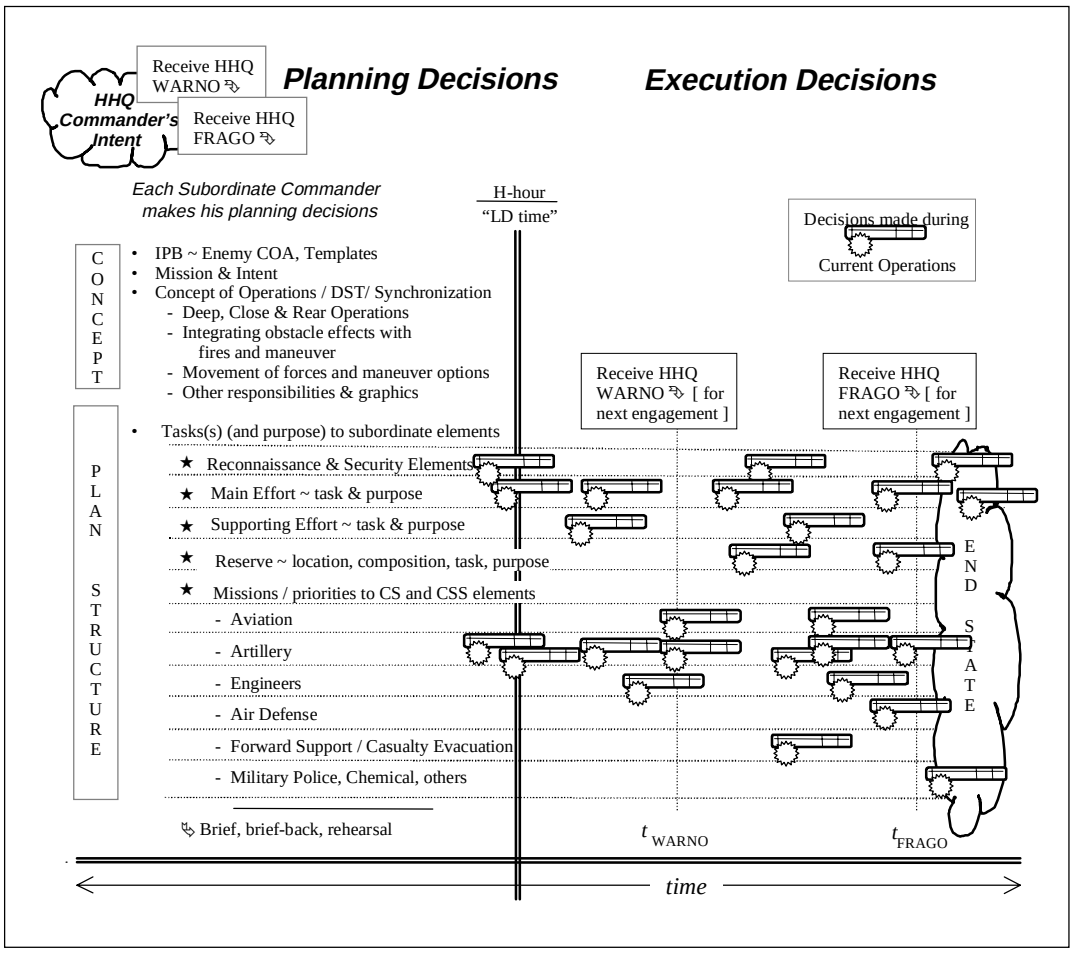

Figure 6. Decisions Made During Current Operations

During the execution phase, the battle staff monitors and assesses each variance, paying particular attention to the implications of the information with respect to the overall plan. The information is assessed for the degree to which it has the potential to affect, or is already affecting the concept of operations. Exactly what action(s), if any, are decided is a function of the situation and the expertise of the officers participating in the assessment. Their role is to understand whether the implications of the information are positive, neutral, or adverse to friendly actions currently underway, or planned, and to know what options to outline and recommend to the commander. Through discussion with the staff, the commander reaches a decision. Once the decision is made, and the fragmentary order is issued, the situation monitoring continues.

The initial series of tactical tasks in an operations order are normally reasonably well synchronized. Once the operation starts, the tactical information flowing into the command post can cover each battlefield functional area and every facet of the commander's OPORD—and therefore, each piece of tactical information that passes the data filters bears on the overall synchronization. The commander and staff attempt to understand what each piece of information means in terms of the synchronization. They will determine what must be done with respect to the particular information, how that action affects the overall synchronization, and what must be done to

maintain the synchronization that still applies. As the operation continues, the well-choreographed synchronization begins to be overcome by cascading events, and the staff continues to synchronize the following actions literally "on the fly."

The hard part is timing the movement and relocation of committed assets—the reserve, artillery batteries, ADA units, engineer platoons, forward support units, tactical bridging, etc.—to ensure they are in position to continue to support the main and supporting efforts, as necessary. This timing frequently needs to be worked out with all interested parties listening to the discussion. Teamwork and "know how" are critical. Circumstances will determine whether the discussion should take place at the situation map (digital or analog), or off-line.

In effect, the current pieces of tactical information are being assessed for implications of the actions associated with that information—and if the actions were left to continue, how they would affect the current plan. Clearly, and at frequent intervals, two or more elements of information have to be considered a whole. But whether the commander deals with single elements of tactical information or clusters of information considered as a complex whole, he tends to make his decisions serially.

These activities do not bring to mind the recognition of a series of patterns setting in motion a grand response. They bring to mind a multifunctional group of competent, proficient persons performing fast-paced, serial problem solving to keep a fluid enterprise on track toward a goal—a goal, which, in the beginning, had been determined to be feasible and acceptable.

5.0 Tactical Information

More granularity accrues to the decision models by considering the decision support environment in the command posts, particularly number of persons involved in the information flow. This section looks briefly at one command post simply to appreciate the numbers of people and systems in it. The section also considers the commanders information requirements.

5.1 A Command Post

Consider the environment in which many decisions are made, the command post. The reason is to highlight the number of persons with active roles in supporting the decision process, and to have a sense of the physical environment in which information flows and decisions are made.[12] Figure 7, on the following page, is a sketch of an Army light infantry tactical operations center (TOC) in a recent advanced warfighting experiment focused on the Army Battle Command System (ABCS).[13] The figure shows 34 + persons in the TOC, a surprising number, but perhaps not, considering the number of functional activities the battle staff performs in the space. The purpose is not to enumerate the activities, they can be discerned by examining the sketch, nor is it to highlight features of the layout. The purpose is to spark the reader's imagination—given the number of soldiers and C4ISR systems—of the torrent of information this colony is capable of producing, particularly considering the ABCS systems in the sketch are only one node in a wide area network of many nodes. Yet, parenthetically, having observed five ABCS-equipped TOCs, each for a period of a week or more, the analyst has yet to observe an occasion when the commander and key staff members have been in a condition of "information overload." This is not to say the potential does not exist, it simply has not occurred to date. The units have not won

all their engagements, but the shortcomings on these occasions were having too little information, particularly top down intelligence, not having an overload of information. In fact, the shortfalls were people not knowing how to process information that was present or was reasonably available from other nodes.[14] The absence of adequate TTPs contributed to their lack of proficiency.

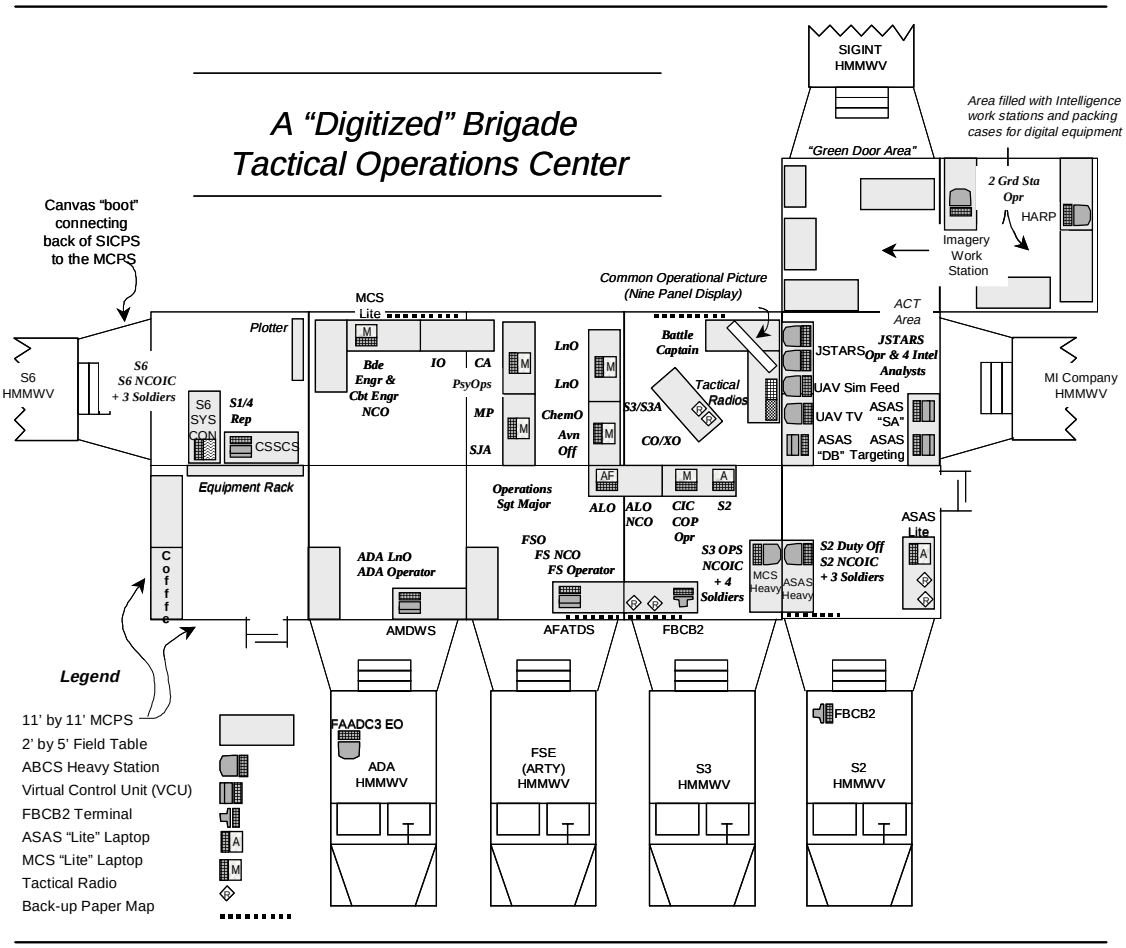

Figure 7. A Digitized Army Brigade Tactical Operations Center

The command post exists to enable the commander to command and control his units in accomplishing their assigned mission. During the execution of each mission, uncontrollable external circumstances almost always arise, necessitating a series of decisions adjusting the plan. The oxygen that enables these decisions is information. It is useful to ask again, what information? Within the CP, where does it come from? Who provides it? How is irrelevant information screened out? Who does that screening? These questions bear directly on the command post TTPs/SOPs.

5.2 Information Requirements

Generally, a discussion of information requirements centers on whether or not the Commander's Critical Information Requirements (CCIR) include everything a battalion, regimental, or brigade commander needs to know, and to be apprised of by the battle staff.[15] The answer is that it depends on a person's viewpoint. After a recently concluded AWE, and concerned that discussions of information overload never advance to addressing specifics, this analyst attempted to list the specific information that a commander needs during the execution phase. The idea was that if people cannot clearly describe the specifics of information overload, perhaps it is possible to forestall information overload by stating clear criteria for the information that should be actively processed. Given a list, such as the one below, if the flow of information is still overwhelming, then pare down this list. The list in Table 4 was purely a heuristic exercise; another analyst would compile a different list. The larger point is that if a doctrine developer can identify the information categories to a reasonable degree, this facilitates identifying each battle staff member's responsibilities to the commander for required tactical information.

1	Higher Headquarters orders as soon as they arrive (warning orders, fragmentary orders, operations orders
2	Current and predicted enemy situation in his areas of interest (AI) and area of operations (AO)
3	Critical incidents involving ROE, Fratricide, civilians or public affairs in the AO, and political-military interests appropriate to the echelon of command
4	Information received answering the higher headquarters commander's CCIR
5	Information received answering his own CCIR
6	Information related to Decision Points
7	Status of subordinate, supporting, and adjacent units relative to their progress in accomplishing assigned tasks and purpose. Within this category, the commander needs to know the progress or problems encountered in executing the Reconnaissance and Surveillance Plan; and again, the progress of each subordinate and supporting unit in the context of discussion of "tactical deltas" in par 5.1.
8	Changes in status of data and voice communications
9	Changes in status or the projected status of logistics by key classes of supply and personnel specifically as each affect the capability of the unit to accomplish the current mission, and operations now being planned. Some of this will be duplicative of the FFIR in the CCIR (see definitions in endnote 15).
10	Immediate appraisal of the emergence of other unexpected or unforeseen events, which affect the higher headquarters commander's intent or the commander's own intent, or are problems of such magnitude that only the commander can address them.

Table 4. The Commander's Information Requirements During the Execution Phase

It is also important to remember that once operations commence in a contingency area, the planning phase of the next operation runs concurrently with the execution of the current operation. For instance, the commander is now forward at a tactical CP in the midst of the current operation. Receiving the HHQ warning order for the next phase of the major operation or campaign, he calls the nucleus of his operational planning team (OPT) forward to be briefed on the IPB related to the mission, and the OPT's initial mission analysis of the order. Given this

information, he then provides them guidance on the COA development and analysis, giving the OPT the information they need to continue planning. In this case, while the commander is alert to information bearing on the current execution phase, he is also dealing with planning information for the next operational cycle.

The discussions of the command posts and the information requirements are intended to highlight the necessity for command post TTPs to link individuals within the CPs to the information they routinely work. The CP environment has always been more complex than unit level CP SOPs managed to covey. Perhaps the environment was so complex that attempting to work through the details was "too hard," and it was easier to salute the idea that the procedures within a command post were the prerogative of the commander. With the advent of the digitized C2 systems, the environment is even more complex. As mentioned earlier, it is interesting that both the Army and the Marine Corps have published very detailed doctrine for decision-making during the planning phase, but have expended little effort on execution decisions. Planning decisions have always been considered to be more analytical than execution decisions. The people that describe them as exercises in Newtonian logic have a point. At the same time, although more complicated, execution decisions are far more fathomable than to say they are essentially a "blow of the eye," the application of "intuition" to "situational awareness." The "models" discussion (and the studies upon which it is based) suggests that current operations decisions at the battalion, regiment and brigade (not at the company and below) are frequently as analytical as planning decisions, but they are generally made in time-compressed circumstances, on the basis of one course of action, and frequently the commander does so under conditions of considerable uncertainty. And, yes, the commander's tactical judgment, resulting from training, education, experience, and intuition, is very important. But the judgment needs to be fed timely, relevant information. Focused TTPs, developed on the basis of sound concepts and models, can leverage the judgment.

6.0 ~ A Strawman TTP Development Process

The doctrine developer cannot leap from the models to writing the TTP without several intermediate steps. Unless the developer appreciates the "team" nature of the activity, the TTPs are likely to resemble the individual task lists in the current SOPs. While a task analysis will be necessary later in the process, the first tier analysis is to reach a consensus on the nature of the decision making process during the execution phase. The models presented earlier are not the final answer to the model question, simply a useful start point. The second tier analysis is to identify the commander-battle staff team proficiencies necessary at the aggregate level. Driving this approach is the increasing presence of digitization and the need to ensure its capabilities are factored into the TTP starting from the top down, not from the operator up. The third tier analysis, closely related to the second, is to split out the proficiencies necessary within the functional teams (operations, fires support, intelligence, etc.). The fourth tier is the individual tasks, but it includes the "know how" a battle staff member should have in his or her active memory or cargo pocket.

6.1 2d Tier ~ Commander-Battle Staff Team Proficiencies: teamwork more productive than task work

Among the more interesting of the Army's research initiatives related to digitization and the teamwork necessary within command posts is an effort to develop a "multilevel systems model of the Army Battle Command process," and specifically, the team processes necessary to increase proficiency amid the increase in information systems (IS) and information technology (IT). The idea is simply that at the center of a C4ISR system lays a distributed human decision-making process—a process that can be supported by technology; but a process that is still governed by human interactions. How people, teams, and human organizations use and adapt to new information systems and information technology, new procedures, new organizational structures, and new environmental complexities remains at the heart of the performance issue. Emerging hypotheses on decision-making under high time stress conditions hold that the greatest increase in battle staff proficiency will occur in the area of *teamwork*, not individual task work.

6.2 Behaviorally Anchored Rating Scales

The idea has been to identify from a behavioral science perspective, the team proficiencies needed to exercise effective command and control, then develop sets of assessment scales for each team proficiency area identified. The technique used is a training adaptation of a personnel performance appraisal methodology called *behaviorally anchored rating scales (BARS)*. The technique has been used to develop training support packages for Army and Air Force aircrews in cockpit resource management and for hospital emergency room staffs. Teamwork in cockpits and emergency rooms is characterized by the need for information and time-critical decisions. In fact, ARL has completed a pilot effort to identify commander-battle staff team proficiencies.

The project focused on developing commander-staff proficiency rating scales to be used by observer controllers, and is not focused on command post TTP, *per se*. The project reached its objectives, and while the BARS that have been produced are short of the detail needed for TTP, the products indicate what could be accomplished with a very rigorous application of the classic BARS development method.

6.3 A "Reverse Engineered" Prototype

Because the project was a prototype, the ARL project director, a very experience cognitive psychologist with 30+ years experience in military training analysis and cognitive research activities, developed an initial set of 17 "battle command" proficiencies (Leedom, 1999). He built the list based on extensive knowledge of the literature pertaining to the subject, and, of course, considerable experience. In classic BARS development, the 17 proficiencies would have been developed entirely on the basis of input from military practitioners. The military persons are absolutely critical to the process because they are the subject matter experts (SME); the psychologists in the classic BARS development process are facilitators and scale development experts only. The military SMEs and the psychologists together develop the behavioral scales. In this case, military SMEs were not available, and since the project was a prototype, the project commenced with an educated "best guess" set of performance dimensions.

With that as background, it is interesting to note that the 17 team proficiencies in Table 4, below, are written in generic, non-military language. They could apply as easily to a civilian organizational environment as a to a military unit. Dr. Leedom's paper provides behavioral descriptions of each proficiency, which make clear that the proficiencies are intended as a military application. That said, a military reader may conclude on first reading that a number of the performance dimensions, even if they were written in military language, may not be right. That's okay. The point here is only to layout a proven technique for developing the top-level team proficiencies, then developing the collective proficiencies within each staff and liaison team section.

Performance Area	Behavioral Proficiency	
Establish Team–Organizational Structure & Process	1	Clarify Expected Roles and Contributions of Individuals-Teams
	2	Establish Clear Strategy for Knowledge Management
	3	Establish Effective Information Exchange Practices
	4	Establish Supportive Behaviors and Error Monitoring
	5	Align Decision Authority With Decision-Making Capacity
Manage Decision and Production Strategies	6	Employ Proper Mix of Decision Strategies for Each Situation
	7	Effectively Manage the Collaborative Debate Process
	8	Sequence and Communicate Decisions and Assumptions
	9	Employ Proper Mix of Production Strategies for Each Situation
Manage External Situation Awareness Process	10	Balance Push-Pull of Information Flow to Decision-Makers
	11	Maintain Attentional Scanning Across Multiple Decision Threads
	12	Verify Key Information Inputs and Employ Proper Risk Management
	13	Manage Battlespace Images and Their Cognitive Shaping Influence
	14	Anticipate and Prepare for the Emergence of Complexity
Monitor & Adjust Team–Organizational Process	15	Manage Task Priority, Task Sequencing, and Information Cost
	16	Manage Process Error Associated With Staff Rotation and Handover
	17	Practice Continual Self-Critique and Organizational Learning

Table 4. Prototype List of Commander-Staff Team Proficiencies

The proficiencies are actually fairly broad, and encompass several sub-proficiencies. The project team's challenge was to decompose the 17 proficiencies into the sub-proficiencies, then develop three behavioral descriptions of each sub-proficiency ranging from highly effective behavior, to basically effective behavior, to ineffective behavior.

Again, in the classic BARS development process, the initial step presumes the organization has little or no documentation of job tasks. This is certainly not the case in the CP environment. A great deal is known about the organization and task structure of individuals in the CP. But if it were not, the process begins with the organization's SMEs providing a large number of behaviors they have observed among persons performing job-related tasks. The SMEs literally write each behavior on a 3x5 card. The second step is for the SMEs to cluster the behaviors into stacks related to the major tasks that comprise the total job. These stacks are referred to as performance dimensions, although in Table 4, they are listed under "Behavioral Proficiency." For example, performance dimensions for a staff officer would include "planning skills" and "coordinating skills." Some of the described behaviors in the stack will achieve highly effective results; some will achieve only acceptable results, and some will produce unsatisfactory results. The military SMEs, not the psychologists, assess the effectiveness of each behavior in the

performance dimension. The third step is to array all the behaviors in each stack in order from most effective in achieving the result, to least effective. In some BARS projects, numerical scales are assigned to the range of behaviors.[16] The result is a set of scales for each major dimension of the overall job, and each set of scales identifies behaviors that a trainer, for instance, is likely to see when observing people performing the task.

Thus a trainer could observe the staff performing the particular activity, identify the staff's behaviors on the list of behaviors (the BARS), and subsequently be able to counsel the staff on their performance in getting the job done. The staff being counseled would normally agree that the behaviors identified by the trainer were in fact an accurate description of manner in which they were conducting themselves when observed, thus validating the observations. The next step would be improving the staff's proficiencies so they could move to the next level of effectiveness.

In fact the project team quickly confirmed that each of the basic 17 team proficiency dimensions contained easily identifiable sub-proficiencies. This is not surprising given the complexity of the entire commander–battle staff–command post environment. Table 5 shows two proficiency dimensions from Table 4, each with several sub-proficiencies.

3 - Establish Effective Information Exchange Practices	**8 - Sequence and communicate decisions and assumptions**
Use doctrinal terms and standard formats Transfer clear, timely, complete information Verify information receive and validate its implications for the on-going plan (when appropriate) Acknowledge receipt Verify acknowledgement	One third, two thirds rule and planning timelines Timely warning orders and interim planning products Use of Liaison Officers

Table 5. Examples of Proficiency Dimensions and Sub-Proficiency Dimensions

6.4 Calibrating the Effort

As the reader will sense from the following example of a prototype set of BARS, the detailed, scaled behavioral descriptions are one level of effort further than necessary to develop effective TTPs. But the basic BARS development process, particularly the involvement of the military SMEs to identify the full range of team proficiencies and sub-proficiencies, represented in small part in Table 5, is a very sound method. Supplemented with a robust literature review, and tailored to recognize the expertise of the participants, the classical BARS development approach would accelerate an effort to develop sound team level TTP. That said, the following table provides an example of the team behaviors for one sub-proficiency in Table 5.

Observational Focus One Third, Two Thirds Rule & Planning Timelines. Does the battle staff complete planning and issue the operations order within the one-third, two-thirds guideline? Does the battle staff develop an internal planning timeline very soon after receipt of mission and adhere to it? Does the battle staff subsequently coordinate timelines with it's higher headquarters, and issue an expanded planning-briefing-rehearsal timeline to it's subordinate units?
Exceeds standards (Rating 7): Battle staff performance of sequencing and communicating decisions and assumptions enhances team effectiveness (Few if any errors). The commander and staff are well-disciplined to execute their planning requirements within the 1/3 – 2/3's allocation of time. The staff first determines the amount of time in the 1/3 allocation, then determines 1/4 of the time, and allocates the 1/4 to the MDMP planning tasks. Once planning is underway, the XO or S3 coordinates with HHQ to determine the times for the brief back to HHQ and the HHQ's rehearsal. The S3, with the CO's approval, issues the unit's own briefing and rehearsal times to the subordinate units.
Meets standards (Rating 4): Battle staff performance of sequencing and communicating decisions and assumptions contributes to team effectiveness (Recoverable errors). The commander and staff normally executes their planning requirements within the 1/3 – 2/3's allocation of time. The staff first determines the amount of time in the 1/3 allocation, and further allocates it to the planning tasks. The staff tends to wait for the higher headquarters to announce its briefing and rehearsal schedule. The S3, with the CO's approval, issues the unit's own briefing and rehearsal times to the subordinate units.
Below standards (Rating 1): Battle staff performance of sequencing and communicating decisions and assumptions jeopardizes team effectiveness (Unrecoverable errors). The battle staff invariably overruns the allocated time, taking up to 1/2 the time available. The staff simply has difficulty completing all the steps within the time intervals they initially determined. The unit tends to wait for the higher headquarters to announce the briefing and rehearsal schedule, and as a result, frequently does not begin to coordinate this schedule until they have completed their operations order. This causes other subordinate units to have to cancel key activities.

Table 6. Example of Prototype BARS for One Sub-Proficiency

The BARS developed to this level would be useful in a training situation, but are clearly more than is needed to establish the most appropriate set of sub-proficiencies. The object is to identify only the range of commander-battle staff team sub-proficiencies, not levels of behaviors within each. The BARS development process, particularly the involvement of the military SMEs, would identify the full range of team proficiency dimensions, and the third tier staff and liaison section proficiencies as well. For example, the technical report for the prototype BARS, the project team identified 59 sub-proficiencies (and provided three levels of behavioral descriptions for each). The number this analyst expects a team of officers and NCOs to produce without making excessive distinctions within stand alone tasks could be as many as 100. The BARS technique can include more than one group of military SMEs, and arguably it should. The effort to identify the effective team level behaviors should be as inclusive as possible.

It is feasible for a project team comprised of military SMEs to identify TTP simply on the basis of a literature review, small group discussions, and interviews. The output of the effort is likely to be oriented more to individual and section tasks, than to commander-staff level team proficiencies. But this approach is far preferable to no TTP at all.

Any approach to developing TTPs that will describe the flow of the right information within the command post to the commander for decision-making is an acceptable approach. It is even more acceptable if it is sufficiently descriptive that persons performing duties in a command post can read the document before an exercise to improve their personal proficiency.

7.0 Summary

This short paper covered a relatively broad stretch, relying on the reader's curiosity to look a second time at the detail in the tables and figures to fill in detail I have passed over. Time and space did not permit explanations of the usefulness of the integrated cognitive model, for example, but the implications of simply understanding the range of strategies in which decision-makers tacitly deal with uncertainty are significant. Some of the coping mechanisms would not occur to a person naturally, but being aware of them adds insight and future stratagems to the reader's store of tactical judgment. The process model is useful as well. It should cause the reader ask exactly what the range of staff drills should be to deal with the most frequent of the tactical deltas across each of the battlefield functional areas. Figure 6, showing the series of decisions made during the execution phase, suggests the staff has a vital role in ensuring at the end of each fragmentary order that the remaining shards of the original order and the urgent new tasks are all synchronized toward key tasks, and still contributing to the original intent if that is still feasible. The list of commander's information requirements is a simple strawman, but it provides a framework for commanders and their staffs to continue their discussions of critical information, or start if they have not done so already.

The behaviorally anchored rating scale methodology of identifying what people and teams do is a solid technique for getting a group of military officers and NCOs talking about what need to be done in a command post. Other techniques will reach the same objective, but this is an interesting one that has been tried recently on commander-battle staff team proficiencies.

Finally, I have attempted to make the case for doctrine focused on decision-making during the execution phase. The doctrine needs to include a cognitive description of the process, a commander-battle staff team description, and it needs to reach down to the TTP for teamwork in the increasingly digitized command posts in the land warfare Services. Information technology has the potential to support the cognitive processes, or frustrate them because of bad design. Either way, the TTP are so complicated it is unreasonable to expect battalion, regimental, and brigade commanders to work them out at the unit level. Detailed, generic TTP for digitized command post operations are DOTMPL/DOTES/MCP responsibilities.

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[1] The TTP addressed in this paper are oriented toward Army and Marine Corps battalions and regiments, and to Army brigades which, like Marine regiments, are normally commanded by a colonel and are comprised of three battalions.

[2] The lieutenant colonel and colonel level decision situations maybe the most challenging. This is because the battalion and regiment/brigade echelons are the first two where the commander is out of personal sensory distance of the battle, but has very short time windows within which to access the situation and make a decision. This means the quality of the information they receive from their own units and from Higher headquarters must be very good and very timely. The window is so short that the intelligence systems at the higher headquarters are hard pressed to provide fused, analyzed intelligence to the "colonel" commands in time for the commanders to use it effectively. Recent AWEs indicate they are be almost entirely reliant on JSTARS, UAV, and the combat information acquired by their own small units and sensors.

[3] In some cases in the "high tech" command posts, due to the older braves being not nearly so computer savvy as the young braves, the roles have been slight reversed. Fortunately, in increasing numbers of cases, the senior NCOs have recognized the necessity to become computer literate, and the old brave model is reasserting itself.

[4] Of interest, the Marine Air Ground Task Force Staff Training Program (MSTP) Center's home page features a series of training materials used by the MSTP staff during their training events with Marine units and student groups. A slide in the lesson materials for the "Execution" class says that (1) commanders use SOPs to standardize routine or recurring actions not needing their personal involvement, (2) SOPs include specifics on the organization, functions, and responsibilities of a particular commander's staff, (3) organization for combat that differs from day-to-day operations should be clearly defined by the command's SOP, and (4) benefits of SOPs are (a) simplified, brief combat orders, (b) enhanced understanding & teamwork among commanders and staff, (c) established synchronized staff drills, and (d) established abbreviated or accelerated decision-making techniques. (c) and (d) are interesting, but at the moment, the author has no examples of Marine Corps unit SOPs to comment on the manner in which the units have described the synchronization drills and the abbreviated decision-making techniques.

5 Certain unit SOPs which were not available during the period this paper was in draft may have detailed descriptions of decision making procedures during the execution phase of an operation. This analyst would expect that Ranger Battalion SOPs and Marine Expeditionary Unit SOPs might contain such descriptions. Also, I did not have the opportunity to request any Marine Corps RLT or BLT level command post SOPs.

[6] The efforts and products of two organizations need to be highlighted. The Marine Corps' MSTP staff has produced a series of "MSTP Pamphlets" addressing a score of command and control topics at a more detailed level than is currently found in the Marine Corps doctrinal publications. In addition, the MSTP staff makes available on their home page the training aids for many of the classes they conduct for MAGTF staffs and other groups, such as classes in the Marine Corps University. The entire set of materials is a valuable resource for persons interested in the human dimension of command and control. Similarly, TRADOC task organized a small group of officers, NCOs and civilians to provide direct support to the FORCE XXI training development effort. Called "Warrior T," the group has published a series high quality training materials designed to assist the training efforts of the 4th Infantry Division, the Army's "First Digitized Division (FDD)," at Fort Hood, TX.

[7] Neither FM 101-5-1 nor MCRP 5-12a (nor 12c) contains a definition of the term "battle staff." The term comes up sufficiently frequently that a working definition is useful. DRC has used the following in project reports to ARL: "The battle staff is the combination of coordinating and special staff officers and NCOs in a command post or operations center with the functional (e.g., intelligence, operations) and battlefield functional area expertise (FSC, ALO, Combat Engineer) necessary to monitor and assess operations; to provide decision support to the commander during the execution phase of the operation; to provide effective coordination among higher, adjacent, supporting, and subordinate commands; and to provide continuous future operations planning. Normally comprised of the command's senior coordinating and special staff officers, and the other staff officers and NCOs on the current watch in the command post. With respect to sleep cycles, the senior staff members are battle staff members on a 24-hour basis, and are recalled from rest as needed."

[8] The Optimum TTP is an open definition at this point. The TTP could be adequately described in one, two, or more nested documents depending upon the comprehensiveness of the development process.

[9] Persons interested in an electronic copy of the paper, contact the author at JimM@drc.com.

[10] The operational events the team observed were all built around conventional operations, and involved no civilians on the battlefield. But clearly, if civilians had been present, the monitoring would have included changes in civilian situations that affected the unit's ability to accomplish its mission.

[11] The term "assessment" as used here is slightly different from usages noted in the Army's draft FM 6-0 and the Marine Corps' MSTP pamphlets (which are slightly different from each other). The writer acknowledges that assessment of the situation is an on-going process. Here it is meant specifically as the cognitive activity a person directs at a specific situation in order to determine the seriousness of the situation and what should be done to correct it or minimize it.

[12] In fact, commanders make many decisions when they are forward on the battlefield, connected to the operations center by FM voice radio or data communication, or both, or not connected at all.

[13] The unit commander determines the layout of his own TOC. The analyst has seen six different brigade TOC configurations during the on-going ABCS experimentation, and while each was laid out differently, obviously, the functions being performed by the battle staffs were all essentially the same.

[14] The fact is, nobody present—not the participants, the observer-controllers, the analysts—really knew how to process and correctly filter all the information present or not present because it had not been requested. The TTP had not been worked out, and still have not been worked out.

[15] CCIR: the information required by the commander that directly affects his decisions and dictates the successful execution of operational or tactical operations. CCIR normally result in the generation of three types of information requirements: priority intelligence requirements (PIR), essential elements of friendly information (EEFI), and friendly force information requirements (FFIR). In the interest of brevity, definitions of PIR, EEFI, and FFIR are available in MCWP 5-12 series and FM 101-5-1, as well as several of the MSTP pamphlets available at the MSTP home page.

[16] The psychologist's role is to act as a facilitator and social scientist. With respect to the latter, particularly when the BARS are to be used as performance appraisal instruments, the psychologist ensures proper attention is paid to reliability and validity in both the clustering step and the scaling step.