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Implementing the Battle Command Training Program

James P. Kahan, D. Robert Worley,
Suzanne M. Holroyd, Leland C. Pleger,
Cathleen Stasz

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Implementing the Battle Command Training Program

James P. Kahan, D. Robert Worley,
Suzanne M. Holroyd, Leland C. Pleger,
Cathleen Stasz

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PREFACE

This report presents the results of a RAND study examining the implementation of the U.S. Army's Battle Command Training Program (BCTP). The work was done within the Manpower, Training, and Performance Program of the Arroyo Center. The study is the first task of a project sponsored by the Combined Arms Training Activity (CATA), U.S. Army Training and Doctrine Command (TRADOC), to improve higher-echelon command and control.

The BCTP consists of three phases: a five-day Battle Seminar of workshops and decision exercises, a week-long computer-driven command post exercise (called the WarFighter Exercise) three to six months after the seminar, and a take-home Sustainment Exercise four to six months after the WarFighter.

The report presents an examination of the BCTP based on (1) the common understanding between the BCTP and its clients as to its purposes, methods, and evaluation criteria and (2) the data collection and analysis strategies required of the BCTP to provide feedback to client units and to higher-echelon doctrinal and readiness agencies. Recommendations are made to increase the BCTP's capability to improve Army training, both in terms of short-term issues of readiness of individual divisions and long-term issues of higher-echelon command and control. The BCTP has acted upon many of the recommendations in this report.

Unless otherwise stated, whenever the masculine gender is used, both men and women are included.

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SUMMARY

INTRODUCTION

The need to improve command and control functioning at corps and divisions is a recognized concern of long standing within the Army. There is doubt whether the present system of educating and training commanders and general staffs of combined arms forces prepares them to develop and execute coherent warfighting strategies.

The Army has attempted to improve command and control by several methods. One of the most recent is the Battle Command Training Program (BCTP), which is a program for division and corps commanders and primary staffs. It includes (1) a week-long Battle Seminar, in which the unit commander and staff engage in decision exercises and workshops on AirLand Battle doctrine and (2) a computer-driven WarFighter Exercise (WFX) using the unit's organic equipment. The program features extensive observation and critique in the form of After Action Reviews modeled on the National Training Center (NTC).

This report presents a study by RAND to assess the BCTP's capability to influence (1) the individual units it trains and (2) the doctrine and procedures of higher-echelon command and control. We have a top-down requirements-based orientation that concentrates on two questions:

1. Do the BCTP and the units it trains share a common understanding of the program?
2. Are BCTP procedures designed so that data may be used to provide feedback to the unit and information to the Army?

RAND observed in detail five BCTP cycles with active component corps and divisions between September 1987 and May 1989. Our approach has been that of the case study. To answer the first question, we examined the interactions between the BCTP and its clients to ascertain whether there was evidence of common understanding. To answer the second, we observed unit performance to specify how a data collection and analysis plan could capture the critical desiderata of an assessment of that performance.

We discuss in separate sections (1) the Battle Seminar, (2) the WarFighter Exercise, and (3) issues regarding the organization of the BCTP. A final section offers a brief overview of the present status of the BCTP and our recommendations for future directions.

THE BATTLE SEMINAR

The Battle Seminar phase of the BCTP brings unit (corps or division) commanders, their general staffs, and their principal subordinate unit commanders to Fort Leavenworth for five days. There are three main parts of the Battle Seminar: reading material supplied ahead of the seminar, workshop discussions, and the decision exercise.

The Reading Program

Units have indicated that only a fraction of the reading material supplied by the BCTP is actually read. We analyzed the reading lists and the unit reactions to the list (in terms of their behavior and responses to questionnaires). That analysis yielded four recommendations for the reading program:

1. *Lighten the load.* Pare the required reading list to a bare minimum.
2. *Reinforce the reading.* Improve the connection between the readings and the remainder of the BCTP cycle.
3. *Tailor the list.* The required reading should be part standard materials and part material tailored to and selected by the unit being trained.
4. *Distribute the task.* Encourage unit staff members to read on their own and report to their peers.

Workshops

Workshops were originally abstract discussions on AirLand Battle doctrine. The BCTP changed that orientation to more directly address unit concerns. The present format of workshops devotes each day of the seminar to a single *theme*:

- Day 1: *Introduction and Unit Missions* (Workshop #0 to introduce the BCTP and Workshop #1 on Unit Missions and Decisionmaking);

- Day 2: *The Threat* (Workshop #2 on The Nature of the Threat and Workshop #3 on Thinking RED);
- Day 3: *The Larger Battlefield* (Workshop #4 on Rear Operations, Workshop #5 on Higher Echelons, and Workshop #6 on Joint and Combined Warfare);
- Day 4: *Instilling a Common Image of the Battlefield* (Workshop #7 on Leadership and Senior Leadership and Workshop #8 on Building the High Performance Team);
- Day 5: *AirLand Battle and Looking Ahead* (Workshop #9 on AirLand Battle and Workshop #10 on An Introduction to the WFX).

The flavor of the change in orientation is given by the movement of the AirLand Battle workshop from first to last. Instead of an abstract discussion, this workshop now uses the concepts of agility, initiative, depth, and synchronization to frame the unit's activities during the week.

The Decision Exercise

In the decision exercise, courses of action are planned in a hypothetical mid- to high-intensity conflict. Activities include preparing and giving situation briefings, preparing and presenting courses of action, and planning and discussions by the command staff. The BCTP enters the decisions into a computerized exercise driver to obtain battle results to feed back to the unit and presents After Action Reviews (AARs) of each day's activity.

The design of the decision exercise. The decision exercise, as currently conducted, is perceived by units as realistic and valuable. However, units preferred to be given specific problems to solve (e.g., rear area threat, flank attack) rather than be presented with a general situation. In addition, we observed that unit involvement in the exercise tended to wane in the latter part of the seminar week. Three recommendations to improve the exercise design are to (1) employ "vignette" situations within a common overall scenario in order to maintain unit involvement, (2) tie the vignettes to the workshop themes in order to respond to unit desires for specific problems, and (3) employ as the common overall scenario a mission that the unit might expect to be given instead of the usual TRADOC Standard Teaching Scenario.

Computerized exercise drivers. The anticipated advantages of computer-driven exercises over manual exercises have not been

realized in the decision exercises. Both CORBAN and CBS, the two models employed, had major deficiencies and took a heavy toll in staff time. Therefore, we recommend that *no* currently available computerized exercise driver be used in the decision exercise; instead, the BCTP staff can manually construct realistic and likely outcomes.

Linking the Battle Seminar and the WarFighter Exercise. We found no data available to measure the effect of having participated in the decision exercise on performance in the WFX. There needs to be a more explicit linkage between the Battle Seminar and the WFX; one way to make this linkage is to use the results of the decision exercise to structure what the WFX will stress.

THE WARFIGHTER EXERCISE

Three to six months after the Battle Seminar, the BCTP conducts the WFX, a computer-driven command post exercise. In the WFX, the unit puts its main, tactical, rear, artillery, and support command posts in the field along with the main command posts of its subordinates; computer-generated moves are communicated through the workstations to the subordinates and thence up to the unit, and unit actions are communicated down to the subordinates and thence to the computer.

The BCTP as Exercise Provider

The view from unit headquarters. The BCTP has made a major contribution to command post exercises by providing a high-performing control team that frees units to exercise their entire command staff instead of taking exercise support "out of hide." Although some potential aspects of command and control (e.g., full communications displacement) are not exercised, on the whole, the exercise challenges the unit and its subordinates.

The view from the computer room. The BCTP has used CBS, a recently developed computer program for playing two-sided battles, as the exercise driver for each of the WFXs. On the whole, the modeling part of the exercises has been successful. Play with the CBS system buffered the players from the model. There were, especially as the BCTP gained experience, few instances of the trainee "fighting the model" instead of fighting the war.

We noted weak points in the play of the maneuver, air, engineering, and intelligence parts of the battle. We recommend that the BCTP consider augmenting the basic CBS model, adopting

improvements (especially the anticipated improvements in CBS 1.2 and 2.0) when possible and borrowing from other models when not.

The view from BCTP operations. The two elements of the BCTP operations that have responsibility for the nonautomated parts of the exercise are Exercise Control and the Operations Center (OpCtr). Exercise Control makes decisions about the progress of the war, executes "magic moves," and generally coordinates the efforts of the exercise. It encompasses the scripting cells, the Opposing Force (OPFOR), and the exercise direction. The OpCtr coordinates Exercise Control, the computer, and the data-gathering functions of the BCTP.

The location of Exercise Control varied from exercise to exercise, with important effects on the WFX. When Exercise Control was a great distance from the rest of the exercise, there were serious misunderstandings among the exercise staff. We recommend that, whenever possible, all elements of the WFX control staff be colocated.

At different times, each of several people took on the functions of a senior controller, sometimes giving conflicting instructions to different staff members, who then found themselves working at cross purposes. It is important, therefore, that the exercise direction ensure that it "speaks with one voice."

Each day, the control elements met to discuss proceedings and to plan the next day's activity. There was often time pressure that could have affected the exercise. Some of this pressure could be alleviated by better advance planning and by sticking to the advance plans.

The BCTP as Feedback Provider

The BCTP must collect data from various sources, analyze them, and feed them back to the unit. These activities require planning to design the data analysis, data collection, and the communication of feedback.

Proactive data collection and analysis. The overriding need for the BCTP is to plan its data collection proactively. The reactive approach taken to date is not fully satisfactory because the scope of a WFX is too large to collect all the data potentially available. Unless a structure is placed on data collection, the risk is that the data will not be able to reveal important patterns. A specific methodology should support data collection directed toward specific objectives.

The basic process of proactive data collection can be presented (in a simple form) as five steps:

1. Generate *objectives* to be achieved in the WFX.
2. Translate the objectives into *propositions* about unit behavior that can be tested for truth or falsity.
3. Define *measures of effectiveness*, or data that correspond to tests of the propositions.
4. Identify valid and reliable *methods of collecting data*.
5. Collect data, analyze the measures of effectiveness, confirm or reject the propositions, and make conclusions about the objectives.

Data collectors. The two sources of BCTP data are the observer/controllers (O/Cs) in the field and the computer. The O/Cs are a team of BCTP staff members who observe and record proceedings at each command post active during the WFX to provide information for the AARs. Observer/controllers also conduct local AARs at their own command posts.

The O/Cs appear to be a coherent, smoothly functioning team; our recommendations have more to do with their surroundings than with their performance. First, as part of a larger proactive data collection plan, O/Cs should have a master schedule of what they should observe. Currently, the priorities for O/C data collection are not well-specified and too often depend on spur-of-the-moment decisions. Second, data from the O/Cs should be more thoroughly analyzed. Reliability, comprehensiveness, and validity of the observations should be established so that the data can better be used, both in terms of internal BCTP quality control and external feedback to the unit.

The computer presents a greater problem for data collection than the O/Cs. A major problem with CBS is its inability to provide short-term feedback during the exercise for on-the-spot analyses. The major improvements to CBS, including a postprocessor, that would solve this problem are only recently being developed. Until these improvements are fully implemented, CBS lacks essential features of a training tool. As a result of this inadequacy, the BCTP analysis staff has been overworked, its labor has been consequently inefficient, and its people have been subjected to far more stress than is reasonable.

After Action Reviews. The AAR is the formal means of quick-response feedback from the BCTP to the trainee. "Major" AARs bring together the unit general staff and the subordinate commanders for a two-hour session led by senior BCTP staff and modeled on the NTC.

"Minor" AARs, conducted by O/Cs in the field, occur on a time-available basis.

In our view, the current procedure for major AARs concentrates too much on the details of the battle and less on developing a consensus about what occurred in order to direct future unit training. We recommend an alternative format that concentrates on telling the story of what happened in the battle from the "objective" perspective of the exercise controllers and reconciling that version with the "subjective" experience of the unit. Once that reconciliation has been effected, the AAR can turn to developing a common understanding of causality in the battlefield, which in turn will lead to a shared belief about which aspects of the unit performance need to be sustained and which need to be improved. The format recommended is as follows:

1. *Introduction.* The exercise director chooses themes for the AAR.
2. *Summary of events.* The summary of recent events ensures that the assembled staff members have a common understanding of the events that have occurred.
3. *Analysis by Battlefield Operating System (BOS).* Analysis from the O/C point of view identifies divergent perceptions.
4. *Discussion of key issues.* This discussion reconciles the diverse perceptions and suggests alternative actions to replace inappropriate performance.
5. *Items to sustain and improve.* The capstone of the AAR is a consensually developed, constructive critique of unit performance.

ORGANIZATIONAL ISSUES

The success of the BCTP is as dependent on its intramural and extramural organizational relationships as it is on the way the BCTP conducts seminars and exercises. In the main body of this report, we touch on a number of organizational issues that affect the BCTP's interactions with the units it trains and with other Army institutions.

Grade structure. We believe that the grade structure of the BCTP is inadequate to its task. This inadequacy arises because of too many levels of command at the same rank and because the BCTP, directed by a colonel, evaluates the performance of units commanded by generals. The BCTP should be commanded by a brigadier general and team leaders should be colonels with brigade command ex-

perience. AARs should be delivered by someone of rank equal to the commander of the unit observed.

The home of the BCTP. The BCTP began under the Command and General Staff College (CGSC), but was moved to the Combined Arms Training Activity (CATA) as the capstone of the Combat Training Centers (CTC). Unfortunately, the departure from the CGSC was accompanied by a loss of connection with the doctrine writers. With a general officer commander, the BCTP could become a separate entity under the aegis of the Combined Arms Center, coordinating with CATA on training systems matters and with the CGSC on doctrinal matters.

The time to come to the BCTP. The original intention of the BCTP was to key the timing of the cycle to the tenure of unit commanders. Battle Seminars would occur shortly after unit commanders took command and WFXs three to six months later. More effort, and some flexibility in scheduling, is necessary to implement this intention.

The role of senior advisers. Retired generals acting as consultants and senior controllers for the BCTP make many valuable contributions, but they can on occasion disrupt proceedings. We recommend that these individuals be brought on board the BCTP with explicit mission statements

CONCLUSION

At the end of its implementation phase, the BCTP is widely regarded within the Army as successful. It has provided an opportunity for growth in both the depth and breadth of unit training. Corps, division, and brigade commanders are coming to view the BCTP as a tool for their own self-improvement.

At present, the enthusiasm for the BCTP is based on its ability to conduct exercises for self-training. The feedback the BCTP provides is less well appreciated. There is a risk that units might develop their own ability to conduct WFXs and the perceived need for a BCTP will fade away.

The Potential of the BCTP

How can the BCTP improve the trainee's performance, and how can its effect be measured? The answers to these important questions lie in the data available to the BCTP.

Trace changes in unit training practices. Data from the WFX provide a set of information that can be used to construct well-formulated lists of unit training objectives. These lists should be compared with the unit's actual training regime before and after the BCTP cycle.

Uncover common themes. Analyzing in systematic ways the record over several BCTP cycles can produce evidence pointing to systematic strengths and weaknesses in higher echelon command and control doctrine and training. Present informal lessons can become better formal lessons once an improved data collection and recording mechanism is in place.

Develop a self-monitoring plan. The BCTP should have an explicit self-monitoring plan to maintain its own level of performance covering all phases of BCTP performance. The plan should include direct feedback from trainees as well as internal checks to examine the reliability, validity, and comprehensiveness of data collection.

In Summary

In the eyes of trainee units and in our estimation, the BCTP has provided an excellent training experience with some useful feedback to the training unit. It is still in the implementation stage in providing data for Army-wide "lessons learned." The BCTP is on the cutting edge of the art of providing computer-driven command post exercises; other trainers now turn to it for leadership. AARs and other unit feedback mechanisms are useful but could be improved in major ways. The most important critiques and recommendations made in this report are those aimed at increasing the BCTP's capability to provide proactive, thorough, and systematic data handling. The scientific approach engendered by proactive data handling will not only make the BCTP a more effective immediate training instrument, but will also assure a long-term role for the BCTP in higher-echelon command and control training and doctrine.

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We wish to acknowledge the cooperation of the entire staff of the Battle Command Training Program throughout the work reported in this report. Their helpfulness, willingness to let us observe them at work, discussions, and openness to new ideas greatly aided our task. Particular thanks are due to Colonel David Blodgett, the first director of the BCTP, Brigadier General Wesley Clark, the BCTP commander during most of the activities we observed, and senior BCTP staff members Colonel Bernard Griffard, Colonel Arlo Mildestein, Colonel (USAF) John Schmidt, and Colonel Gale Smith.

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ACRONYMS

AAR	After Action Review
ADC	Assistant Division Commander
ALO	Air Liaison Officer
AMTP	ARTEP Mission Training Plan
ARI	Army Research Institute
ARTBASS	Army Training Battle Simulation System
ARTEP	Army Training and Evaluation Program
BCTP	Battle Command Training Program
BOS	Battlefield Operating System
CAC	Combined Arms Center
CAS ³	Combined Arms and Services Staff School
CATA	Combined Arms Training Activity
CBS	Corps Battle Simulation
CG	Commanding General
CGSC	Command and General Staff College
CMTC	Combat Maneuver Training Center (Germany)
CONUS	Contiguous United States
CORBAN	Corps Battle Analyzer
CoS	Chief of Staff
COSCOM	Corps Support Command
CPX	Command Post Exercise
CTC	Combat Training Center
DISCOM	Division Support Command
DIVARTY	Division Artillery
FRAGO	Fragmentary Operations Order
FSE	Fire Support Element
G1	Assistant Chief of Staff, Personnel
G2	Assistant Chief of Staff, Intelligence
G3	Assistant Chief of Staff, Operations
G4	Assistant Chief of Staff, Logistics
INGRES	Interactive Graphics Retrieval System
JESS	Joint Exercise Support System
JTLS	Joint Theater Level Simulation
JWTC	Joint Warfare Training Center (Arkansas)
MCS	Maneuver Control System
MSE	Mobile Subscriber Equipment
MSEL	Master Schedule of Events List
NTC	National Training Center (California)
O/C	Observer/Controller
OpCtr	BCTP Operations Center

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OPFOR	Opposing Force
OPORD	Operations Order
SGi	Small Group Instruction
TACSIM	Tactical Simulation
TOC	Tactical Operations Center
TRADOC	U.S. Army Training and Doctrine Command
TSSM	Training Simulations Systems Manager
WCOF	World Class OPFOR
WFX	WarFighter Exercise
WPC	Warrior Preparation Center

I. INTRODUCTION

BACKGROUND

The need to improve command and control functioning, particularly at Echelons Above Brigade, is a recognized concern of long standing within the Army.¹ Division commanders report a need to overhaul their command and control system when they first exercise their new command. There is doubt as to whether the present system of educating and training commanders of combined arms forces is sufficient to prepare them to develop and execute coherent warfighting strategies.

The Army has attempted to improve command and control of combined arms forces by several methods, including:

- Developing the National Training Center (NTC) at Fort Irwin, California to train battalion and brigade-sized forces in field exercises against an expert Opposing Force (OPFOR),
- Developing the Combined Arms and Services Staff School (CAS²) to train command post staff officers in standard operating procedures,
- Introducing new technology to the command post such as the Maneuver Control System (MCS) and Mobile Subscriber Equipment (MSE) to improve and speed up communications and decisionmaking,
- Developing interactive computer models to improve command post exercises, and
- Initiating the Battle Command Training Program (BCTP).

The BCTP is a program begun in 1987 to train division and corps commanding generals (CGs) and their staffs. A BCTP cycle begins with reading material sent to the training audience, followed by a five-day Battle Seminar,² in which the unit commander, primary

¹Army Science Board, *Final Report of the 1985 Summer Study on Training and Training Technology Applications for AirLand Battle and Future Concepts*, Army Science Board, Washington, D.C., December 1985.

²The Battle Seminar takes place, for units based in the contiguous United States (CONUS), at Fort Leavenworth. This site, the home base of the BCTP, permits the Battle Seminar to draw on the doctrinal expertise at the Command and General Staff

staff, and subordinate commanders all engage in decision exercises and workshops on AirLand Battle doctrine. From three weeks to seven months after the Battle Seminar, the BCTP conducts a week-long, computer-driven WarFighter Exercise (WFX)³ using the unit's organic equipment. The BCTP cycle, and in particular the WFX, features extensive observation and critique in the form of After Action Reviews (AARs) modeled on the NTC.⁴

OBJECTIVES AND APPROACH

RAND studied the implementation of the BCTP with the purpose of assessing the BCTP's capability to influence both the individual units it trains and the doctrine and procedures of higher-echelon command and control. To achieve its purpose, the project aims to assist the BCTP in answering "Alexander's Questions:"⁵ What evidence or data are necessary to establish that the BCTP is meeting its goals? What evidence or data constitute an indication of failure? Given that the mission of the BCTP is to provide for each division and corps a training experience based on that unit's idiosyncratic needs, Alexander's Questions cannot be answered by a simple questionnaire or standard checklist. Instead, as we argue below, a major task for the BCTP is to construct a data collection and analysis plan that is flexible enough to capture the specific needs of each unit trained and general enough to permit analyses across units.

Our orientation is a top-down requirements-based one rather than a supply-push data reduction one. That is, we have attempted to ascertain what information the BCTP requires to fulfill its mission and then what data collection and analysis strategies will produce that information, rather than analyzing the components of unit behavior the BCTP observes in order to define a database that it may employ. This orientation led us to concentrate our observations on two questions:

College (CGSC). Because of time and budgetary considerations, some units based overseas conduct Battle Seminars at local facilities, preferably away from their headquarters.

³The WFX takes place at either the unit's own post or, for some divisions, at the home of the unit's superordinate corps.

⁴A third phase of the cycle, a Sustainment Exercise to take place four to six months after the WFX, is to be introduced in fall 1989.

⁵R. Neustadt and E. May, *Thinking in Time*, Harper and Row, New York, 1986.

1. Do the BCTP and the corps and divisions it trains have a common understanding of the purposes, methods, and evaluation standards of BCTP activities?
2. Are BCTP procedures designed so that data validly measuring unit performance may be used to provide feedback to the unit on how well it does and information to the Army on higher-echelon readiness and doctrine?

The first of these questions is based on our view of command and control (and the training of command and control) as a small group process whose essence is one of reaching a common understanding, or, as the Army often puts it, "reading off the same sheet of music."⁶ Thus, we examined the interactions between the BCTP and its clients to ascertain whether there was evidence of common understanding. The second question is based on the need to define documentable evidence of the effect of the BCTP, in keeping with the 1985 recommendations of the Army Science Board:

It is the view of the panel that the Army leadership must now endorse the need for complete evaluation of the results of training and must be committed to the use of such evaluation for the improvement of training Failure to obtain numerical information is no longer seen as an option.⁷

RAND has closely followed the development of the BCTP. The program began activities with a trial Battle Seminar using CGSC faculty in September 1987, conducted its first division cycle between November 1987 and January 1988, and conducted its first corps cycle in January 1989. We have observed most BCTP cycles with active component corps and divisions between September 1987 and May 1989 conducted in the continental United States.⁸ The primary source of data for our study is our observations of these Battle Seminars and WFXs; in addition, we analyzed responses by the

⁶See J. P. Kahan, D. R. Worley, and C. Stasz, *Understanding Commanders' Information Needs*, The RAND Corporation, R-3761-A, 1989. This report presents a model of command post decisionmaking that emphasizes the importance of the staff sharing the commander's image of the battlefield situation and makes recommendations for training to understand that image.

⁷Army Science Board (1985).

⁸As RAND's mission is to look at the BCTP, not at the units trained at the BCTP, we do not name the units we have observed. Indeed, we explicitly do not make any comment that reflects on the performance of any identifiable unit. We do, however, take this opportunity to thank the commanders and staffs of the divisions and corps we observed for their openness and cooperation.

trainees to questionnaires filled out after Battle Seminars. During our observations, we interviewed staff members of units being trained, higher headquarters and adjacent unit representatives at exercises, and most of the BCTP staff.

Our approach in the project has been that of the case study. We have looked in detail at five units completing the BCTP cycle in order to assess the common understanding of the BCTP and its client units and to identify the issues that a formal data analysis would have to address. To answer the question about understanding, our observations have been behavioral—we have attempted to ascertain the perceptions of the different actors (BCTP, unit being trained, other participants) in order to identify commonalities and divergencies in viewpoint. To answer the question about data collection, our observations have been based on systems science—we have observed unit performance in order to specify how a data collection and analysis plan could capture the critical desiderata of an assessment of that performance.

In the course of our study, we have on several occasions suggested procedural and substantive changes to the BCTP. These recommendations have been, in some instances, implemented by the BCTP, often after considerable interaction between RAND and the BCTP.

II. THE BATTLE SEMINAR

The Battle Seminar phase of the BCTP brings a corps or division (henceforth called a *unit*) to Fort Leavenworth for five days of workshop discussions and battle planning. There are three main parts of the Battle Seminar: a package of reading material supplied ahead of the seminar, a series of workshop discussions on doctrinal topics, and a decision exercise. In a typical seminar day, the unit will begin at 0730 with a 90-minute workshop and then spend the remainder of the morning in the decision exercise. Following a lunch/physical training break, the BCTP provides an AAR of the morning's decision exercise, followed by a second 90-minute workshop. From 1600 to 1800 is the "Commander's Time," which can be used to keep the seminar going if it has gotten behind schedule, to add special workshops, for closed unit meetings, or for recreation.

The overarching purpose of the Battle Seminar is to "provide division and corps commanders an opportunity to focus on application of AirLand Battle doctrine and the command and staff actions that form the basis of a combat ready war fighting team."¹ The BCTP aims to achieve this purpose by:

- Providing a refresher and update on doctrinal thinking,
- Exercising planning and decisionmaking processes, and
- Facilitating unit team-building.

Because the Battle Seminar is modeled for small group dynamics, participation is limited to the unit's principal decisionmakers. This group (which we call the *primary participants*) comprises:

- The CG of the unit,
- The assistant commander(s),²
- The Chief of Staff (CoS),
- The Assistant Chiefs of Staff for Personnel (G1), Intelligence (G2), Operations (G3), and Logistics (G4),

¹Battle Command Training Program, *BCTP External Operating Procedures*, Combined Arms Training Activity, Fort Leavenworth, Kansas, 22 December 1988, p. 8.

²Corps have a single Deputy Commanding General (DCG), whereas most divisions have two Assistant Division Commanders (ADC)—one for maneuver (ADC-M) and one for support (ADC-S).

- The unit fire support commander,³
- The support component commander (COSCOM or DISCOM for corps or divisions, respectively),
- The Air Liaison Officer (ALO), and
- The principal subordinate echelon commanders.⁴

In addition, the unit brings along the supporting staff necessary to provide situation updates, staff support, decision support, and orders preparation. This supporting staff, working under the supervision of the CoS and assistant chiefs of staff, prepares briefs for the primary participants of situation descriptions provided by the BCTP and prepares courses of action and detailed war plans that are generated by the primary participants during the decision exercises. The support staff personnel are not provided the reading material and do not participate in the workshop discussions. The BCTP recommends that approximately eight supporting staff personnel attend, representing the operations, intelligence, combat service support, fire support, and engineer functions.⁵

In this section, we will discuss the components of the Battle Seminar as they refresh doctrine, exercise decisionmaking, and promote team-building. The analyses in this section are based on observations of Battle Seminars, reading the BCTP reading lists, interviews with BCTP and unit staff, and examinations of questionnaires given by the BCTP to units at the close of the Battle Seminar.⁶

THE READING PROGRAM

The reading program consists of a set of materials mailed about a month ahead of the Battle Seminar to each of the primary participants. The readings are selected by the BCTP staff, with the assistance of the U.S. Army Command and General Staff College

³Fire Support Element (FSE) commander for corps and division artillery (DIVARTY) commander for divisions.

⁴For corps, this includes the division commanders and corps specialized brigade (e.g., aviation, engineers, signals, military police) commanders. For divisions, this includes the maneuver and aviation brigade commanders.

⁵BCTP (1988).

⁶This questionnaire was developed by Mr. James Flanagan of the Army Research Institute (ARI), with some assistance from RAND. Unfortunately, the BCTP was unable to supply us with questionnaire data for all of the units that have participated, so we had to rely on summaries for many of the Battle Seminars. For this reason, we cannot compare questionnaires from different Battle Seminars. Our analyses are independent of efforts conducted by ARI or other observers of the BCTP.

faculty, and cover Army doctrine from tactical to strategic levels. The readings are not only doctrinal publications, but also include articles commenting on doctrine, articles on military history, and articles on threat doctrine. The package is a substantial one. Along with the package is a Table of Contents dividing the material into categories of "Required Reading (Home Station)," "Required Reading (During Seminar Week)," and "Suggested Reading."⁷ The lists are updated frequently in response to feedback from units and changing ideas within the Army.

To give an idea of the scope of the reading, one recent list contained the following:

Required Reading (Home Station):

- Two doctrinal manuals (FM 100-5, *Operations*, and FM 22-103, *Leadership and Command at Senior Levels*),
- Eight articles commenting on doctrine,
- Nine monographs on military history, threat, and leadership, and
- A thick set of volumes detailing the situation to be faced in the decision exercise.

Required Reading (During Seminar Week):

- Ten articles on doctrine, history, threat, and leadership; and
- The Operations Order from higher headquarters for the decision exercise.

Suggested Reading:

- Eleven articles and four monographs following up on the themes established in the Required Reading.

Unit Reactions to the Reading Program

The questionnaires and our interviews indicate that the material provided by the BCTP is not being read. Fewer than half of the participants read more than one-third of the material; the average time spent reading the "Required Reading" before coming to Fort Leavenworth was 10 hours. Further, not much material was read during the seminar week itself; in several instances, difficulties during the decision exercises could be traced to participants not

⁷This categorization of readings was suggested by the first several units to undergo the BCTP and was soon adopted by the BCTP staff.

having read the higher headquarters operations orders. Items on the "Suggested Reading" list were virtually certain to remain unread.

For the material that was read, the primary participants did not agree as to whether the readings and other Battle Seminar components were adequately connected. Some respondents requested specific keying of reading materials to workshop sessions, while others believed that such a step was unnecessary. Most participants readily provided lists of reading materials to add to or delete from the BCTP package; these lists, however, showed no consistent pattern and instead revealed the wide variety of opinions of unit principal decisionmakers.

Recommendations for the Reading Program

If the BCTP is to continue the reading program as part of its Battle Seminar, then it must address the issues of identifying essential reading materials, motivating primary participants to read the materials, and—assuming that total compliance with reading requests will never happen—considering alternative means of transmitting the information in the readings. We believe that several steps might be taken to address these issues and thereby make the reading program a more integral part of the BCTP cycle.

1. Lighten the load. The reading package, especially the required home station reading part, is too large; the very weight of the package probably discourages the typically overworked staffer. The list should be pared to a bare minimum of perhaps less than half of its current length.

The "Required Reading During the Seminar Week," which is almost never read in advance, should be supplied when the unit has arrived at Fort Leavenworth, perhaps on a day-by-day basis keyed to the following day's workshops. The material should require no more than one hour to read. This material, along with the "Suggested Reading," should be sent in a single package (two to three copies of each item) to the unit CoS so that the few individuals who wish to read the material in advance can have access to it.

2. Reinforce the reading. The reading program should be better connected to the remainder of the BCTP cycle. Other than invocations of doctrinal publications, references to readings were rare in the workshops. The readings need to be used in the workshops; otherwise the meaning of the requirement becomes lost.

3. Tailor the list. To increase the relevance of the reading materials to units, the required reading should be part standard

materials selected by the BCTP and part material tailored to and selected by the trainee. A couple of months before the Battle Seminar, the BCTP and trainee should go over a list of possible materials and check off the ones that are of most interest to the trainee. At that time, the trainee can suggest materials of his own. For example, during one seminar, a brigade commander suggested including a recent journal article directly addressing the role of units in the light of the tenets of AirLand Battle; generally, the questionnaires revealed several useful candidates for reading which might better have been elicited before the seminar. The guidelines for preparing the reading list might come from an orientation that gives expertise for basic doctrine and tactics to the BCTP and expertise for the special needs of the trainee to the trainee.

4. Distribute the task. It might be that not everybody should read everything. In particular, individual staff members in the unit may be encouraged to read more intensively on specific topics and report what they learned to their peers. This specialization has occurred in a number of Battle Seminars, with more or less success depending on the enthusiasm and involvement of the particular unit. We recommend that this option be presented to the trainee as a "good idea" at the time the reading package is selected.

BATTLE SEMINAR WORKSHOP TOPICS

The first Battle Seminar had nine workshop sessions which reflected the early intention of the BCTP to use workshops to refresh doctrine. The session titles therefore read like a list of headings from basic doctrinal publications. The first four were on AirLand Battle doctrine, including an overview and three separate workshops on agility, initiative, and synchronization and depth. Single workshops on leadership and rear operations were followed by a pair of workshops on the nature of the threat. The last workshop was on building the high performance command and staff team.

Unit Reactions to the Seminar Workshop Topics

Originally, the workshop content in Battle Seminars was as abstract as the titles might indicate. Questionnaires and interviews showed that units believed that the issues addressed were at too high a level of abstraction to be of concern to them; our observations of workshop sessions showed that interest in many of them was very

low, as evidenced by a low level of participation and the superficiality of many discussions.

Units were not dissatisfied with the workshop topics themselves, only with the abstract way in which they were presented. The BCTP makes time available to units to have additional workshops on topics of the unit commander's choosing, although this option is not frequently exercised.⁸ Individual participants suggested a wide variety of fairly concrete and tactical topics for additional workshops, such as intelligence and electronic warfare, close air support, terrain analysis, deception, and civil-military operations. Requested less frequently were topics such as command post communication, how to calculate combat multipliers, and "getting inside the enemy's decision cycle." No topic was listed on more than two questionnaires (out of over 50 analyzed). Only one topic—the spectrum of conflict—was suggested for deletion; this topic was deleted by the BCTP. The wide variety and lack of commonality of topics suggested for additional workshops and the paucity of topics suggested for deletion indicates that the BCTP list is appropriate; there is no theme in the suggestions that points to a consistently felt need.

A New Orientation for Seminar Workshop Topics

In response to unit feedback, the BCTP (with the assistance of RAND staff) changed the orientation of the workshops. The new orientation considered the workshops in terms of a BCTP "cycle," with the Battle Seminar and WFX elements of that cycle. This meant that the workshops were part of a larger process more focused on the tasks facing units. Each day at the Battle Seminar was devoted to a theme. The workshops within that day were connected to the theme and, if possible, to the decision exercise. This orientation yielded a recommendation for a five-day series of workshops—largely adopted by the BCTP—as follows:

• DAY 1: INTRODUCTION AND UNIT MISSIONS

Workshop #0: Introduction. The first workshop slot familiarizes the unit with the BCTP.

⁸One unit had two additional workshops and two others had one each. Each of these supplementary workshops called on experts at Fort Leavenworth to update the unit on tactical (as opposed to doctrinal) matters; the sessions were therefore more briefings than discussions.

Workshop #1: Unit Missions and Decisionmaking. The objective for the first workshop is to consider the role of the unit (as a corps or as a mechanized, light, or armored division) in the larger context of the U.S. use of military force. What may this unit be called upon to do? What will remain constant over missions? What will vary depending on the mission? FM 71-100 (for divisions) or FM 100-15 (for corps) provide a basis for reference. The emphasis is on how the unit thinks tactically, operationally, and strategically, with an eye toward considering the communications inside the command post that lead the staff to "read off the same sheet of music."

• DAY 2: THE THREAT

Workshop #2: The Nature of the Threat. This a presentation on the threat most relevant to the unit, be it Soviet, Korean, Cuban, or some other. The workshop considers threat capability, threat mentality, and threat history. For this workshop, either the BCTP World Class Opposing Force (WCOF) or outside experts make the presentation.

Workshop #3: Thinking RED. This workshop is a practical application of the lessons learned in Workshop #2. A WCOF facilitator leads a discussion designed to put pressure on the training audience to *think RED*. The workshop concentrates on the difference between thinking RED and thinking about RED and why it is important to put oneself in the mindset of the opponent. Examples are given of how knowledge of enemy doctrine can help the unit gain the initiative.

• DAY 3: THE LARGER BATTLEFIELD

Workshop #4: Rear Area Operations. This workshop presents the Army's latest thinking on rear area operational concepts; much of the material is therefore new to unit members. It also serves as a connection to thinking beyond the scope of the unit to higher head-

quarters. The rear area operations presentation is followed by discussion of how rear area operations link to other parts of the unit.

Workshop #5: Higher Echelons. Up to the third day, most of the discussion has been about command and control of the unit (e.g., a division) and its immediately lower echelon (e.g., its brigades). In this workshop, the relationship of the unit to higher headquarters is the main topic. In addition, the transmission and reduction of detail as information is passed between echelons is discussed. The concept of instilling a common image of the battlefield, introduced in the workshops on decisionmaking and leadership, serves as a means for deciding how much detail to push upwards.

Workshop #6: Joint and Combined Warfare. At echelons above brigade, virtually all operations will be in large part joint ones, involving at least the Air Force and (depending on location) possibly the Navy and Marines as well. This workshop, which includes presentations by sister services, covers how to fight in joint and combined environments.

• **DAY 4: INSTILLING A COMMON IMAGE OF THE BATTLEFIELD**

Workshop #7: Leadership and Senior Leadership. This workshop is a discussion with the assistance of an acknowledged senior leader on the meaning of leadership. Discussion concentrates on the importance of the leader providing an image of the battlefield and ensuring that this image is shared by his staff, on the qualities of a leader, and on how the commander's intent gets translated into a concept of operations, which is in turn executed.

Workshop #8: Building the High Performance Team. This workshop extends the principles of leadership developed earlier in the day to the entire group of primary participants. Each staff member learns his place in the command staff as well as his relationship to other

staffers. The importance of information flow and feedback loops within the command staff is emphasized. The workshop is tied to the ongoing decision exercise by discussing mission/doctrine pairs to teach the relationship of information to function at each staff element. The primary participants gain awareness of how the unit's decision cycle works to keep the team functioning at a high level of performance and how the team works both with and without the commander.

• **DAY 5: AIRLAND BATTLE AND LOOKING AHEAD**

Workshop #9: AirLand Battle. Now, after the unit has experienced a week of the Battle Seminar, the tenets of AirLand Battle summarize the total experience. The unit discusses what has been learned in the previous workshops and in the decision exercises. The entire seminar experience is used to give substance to the abstract tenets of AirLand Battle.

Workshop #10: An Introduction to the WFX. The final workshop prepares for the forthcoming WFX by discussing the nature of the exercise, the role of the computer exercise driver, and the ground rules of the exercise. Up-front objections or reservations are discussed. The main purpose of this session is to link the BCTP's role in the WFX to the unit's expectations. Included in the workshop is an AAR of the Battle Seminar as a whole, in which the unit and the BCTP identify what the unit needs to sustain itself and improve. This identification of issues helps frame the nature of the WFX.

The movement of the discussion of the tenets of AirLand Battle from the first day of the seminar to the last is a good indicator of the change in focus of the workshops that has taken place in the first year of the BCTP. Formerly, the tenets were presented and discussed abstractly, emphasizing on the definitions provided in the basic doctrinal manual on operations, FM 100-5. Now, the tenets are introduced after four days of decision exercise and discussions and serve to summarize, frame, and give meaning to the activities of the

week. Doctrine is now presented as a way of thinking about what the unit has done rather than as a set of abstract objectives to be achieved.

CONDUCTING WORKSHOPS

In considering how the BCTP conducted Battle Seminar workshops, our observations focused on two major characteristics over which the BCTP might have control: the format of workshop sessions and the choice of workshop leaders.

Workshop Format

In the course of implementing the BCTP, different formats have been used for workshops, including lectures, audiovisual presentations, quizzes, panel discussions, structured group discussions, and unstructured group discussions. Based on audience reaction and our observations, it is fair to say that the quality of the workshops has varied widely. Some workshops have captured the interest, attention, and participation of the unit from beginning to end; some have been battlefields of "us" (warfighters on the front line) vs. "them" (denizens of the ivory towers of Leavenworth); and some have simply bored the primary participants.

Effective workshop sessions tied abstract principles directly to the mission of the unit. For example, a workshop discussion on "agility" examined the meaning of the term for the unit's unique capabilities. For another example, a special workshop comparing U.S. Marine Corps and U.S. Army procedures riveted the attention of a unit facing the strong likelihood of joint Army/Marine missions. Set-pieces, proceeding through rehearsed material instead of developing thought on the spot, generally yielded ineffective workshop sessions. For example, in one workshop, two unit staff members seemingly competed for favor by showing off their rote knowledge, to the manifest annoyance of the rest of the staff. Another workshop was an abstract lecture by a CGSC faculty member that generated no overt discussion.

The BCTP has grappled with an inherent conflict of goals in the course of implementing the workshops. On the one hand, the goal of team-building means that the BCTP wants the unit to participate heavily in the workshop discussions. Units concur with that desire;

the primary participants have shown limited patience for being talked at. But on the other hand, the BCTP has to offer something new and interesting to the unit staff to make the trip to Leavenworth worthwhile. The first objective, plus the philosophical orientation at Fort Leavenworth toward participatory instruction,⁹ leads to open discussions; the second leads to structured lectures or presentations.

In a more strictly educational setting, such as the Command and General Staff Officers' Course or other CGSC programs, the resolution of the problem is in the readings; the student comes to class prepared by readings for small group instruction. But, as we have seen, the BCTP must limit its reading requirements and cannot assume diligence in reading even a limited offering. It must therefore take an approach based on variety and flexibility.

Our principal recommendation is to tailor workshop formats to the topic—to employ different formats depending on the role the BCTP wishes the primary participants to take. When new information is presented (e.g., threat information) or an unfamiliar point of view expressed (e.g., the Air Force view of battlefield air interdiction), the primary participants take the role of an audience. In these instances, the format must be designed to seize and maintain the interest of an audience. Army experience indicates that such a design is one of a polished briefing, making extensive use of audio-visual aids and lasting no longer than 30 minutes.

Most workshops, however, attempt to put the primary participants in the role of active discussant. For these workshops, a format similar to the successful one developed for AARs should be followed.¹⁰ The format would include a brief (five-to-seven minute) presentation to set the stage, directed questions to participants, and a focus linking the key workshop issues to the unit's specialized assets, anticipated missions, and exercise practices. To facilitate team-building, the discussion should include probes to obtain the meaning of the topic for individual participants with respect to their roles within the command structure.

⁹M. D. Pearlman, "SGI [Small Group Instruction] in TRADOC," *Military Review*, Vol. 67, No. 5, May 1987, pp. 20-27.

¹⁰See, e.g., I. T. Kaplan and J. J. Fallesen, *After Action Review (AAR) Guide for the Army Training Battle Simulation System (ARTBASS)*, U.S. Army Research Institute, Research Product 86-32, Alexandria, Virginia, October 1986; U.S. Army Combined Arms Center (USACAC), *A Leader's Guide to After Action Reviews*, USACAC, Field Circular FC 25-20, Fort Leavenworth, Kansas, December 1985.

Workshop Leaders

The choice of workshop leader has varied as widely as the choice of workshop format. Workshops have been led by senior BCTP staff, junior BCTP staff, CGSC faculty, invited outside experts, retired generals, unit commanders, and unit staff. The most successful workshops—again based on questionnaire data and our observations of participant interest and participation—have been led by somebody with expert credentials in the topic at hand. For example, retired generals have effectively led the workshops on leadership. BCTP and outside experts on threat have successfully led the threat workshops. And Air Force and Marine presenters have effectively presented joint points of view. Workshops have been less successful when led by the unit staff. Even when the staff member had unimpeachable credentials with regard to the topic, the session did not capture the interest of the audience. Finally, some units have criticized junior BCTP workshop leaders as inexperienced and not sufficiently knowledgeable.¹¹

The question of who should lead workshop sessions is not easy to answer. Although our suggestion here is not firmly based on evidence or experience, we believe that the workshops should be led by two people. One should be the BCTP Training Team Director, who would take the role of group moderator—setting the terms of the meeting, eliciting the war stories, and probing for more information. He would be a constant presence over all of the workshop discussions. The other leader would be a class knowledge expert, who would make formal presentations, answer questions from the participants, and generally act as a knowledge base. The expert could be, depending on circumstances, a BCTP staff member, a CGSC faculty member, a retired general, or an outside expert.

The key to this model of workshop leadership is that the group moderator builds a rapport with the unit and can elicit their open participation, while the expert, who can be unfamiliar to the audience, provides the knowledge resources that no single moderator can possess. Recent workshops on senior leadership have successfully employed this dual-leader model, with the BCTP staff member and a retired general essentially co-directing the discussion. Some threat workshops, employing two WCOF staff members, have also employed

¹¹Our own perceptions do not always agree with units in this regard. Nonetheless, because units have this perception, it is a matter requiring attention.

the model, although in these cases there was no division of labor between expert and moderator.

THE DECISION EXERCISE

The decision exercise consists of four days of choosing and planning courses of action in a hypothetical mid- to high-intensity conflict. In the morning of each Battle Seminar day, the commander and primary staff are given an update briefing by their own staff and collectively discuss the situation. The discussion culminates in the commander's guidance. Then, while the general staff (CoS, G1, G2, G3, G4, and unit specialists brought to Fort Leavenworth for the occasion) formulate courses of action, the command group (CG, deputy commander, fire support, sustainment, and subordinate echelon commanders) separately discusses the situation and makes its own plans. The two subgroups are then brought together in a decision briefing to select a course of action. In the afternoon, the BCTP conducts an AAR of the morning's proceedings. Meanwhile, with the assistance of the subordinate commanders, the BCTP takes the chosen course of action and enters it into a computerized exercise driver (CORBAN and CBS¹² have been used). That night, the "war" is run on the computer up to a stage requiring a new command decision. Early the next morning, the staff are given the results of the computer run and prepare a situation briefing to begin the cycle anew. Thus, four separate decision cycles are exercised in the five days of the Battle Seminar.

Our observations of the decision exercise will concentrate on three interrelated areas: (1) the design of the decision exercise, (2) the role of the computerized drivers for this exercise, and (3) linking the decision exercise to the WFX. For each of these areas, our observations lead to recommendations for changes from present BCTP practices.

The Design of the Decision Exercise

For the primary participants, the decision exercise provides an arena to build the high-performance team necessary to lead the staff sections and subordinate commands in a synchronized effort. We have observed occasions when the commander and primary staff are standing around a map animatedly discussing the situation; the

¹²Formerly known as the Joint Exercise Support System (JESS).

commander is both sharing his way of thinking about such situations and learning how his subordinates transform his thoughts into ways in which they approach their jobs. The participants unanimously agreed that the decision exercise offered a valuable training opportunity. Almost all agreed that the exercise provided a realistic and challenging training opportunity for both the primary participants and the supporting staff; many rated it the strongest part of the week.

The effectiveness of the decision exercise, in terms of both our observations of command group interactions and participant ratings, was greatest when the situation posed in the exercise was one that the unit might reasonably anticipate. Unrealistic play, caused by unrealistic geographic constraints, unrealistic higher headquarters orders, or playing units out of their capabilities,¹³ decreased unit interest and involvement.

The participants were by and large satisfied with the tasks posed by the decision exercises. There was, however, a consistent theme in the suggestions for improving the decision exercises. This theme was to introduce specific problems to solve, such as a severe rear area threat, flank attack, supply shortage, bad weather, or reconstitution. We observed that interest in the exercise flagged in the third and fourth days of the seminar, perhaps because the progress of the war became predictable and opportunities for creative problem solving became more rare.

Two modifications of the design of the decision exercise might maintain the interest and involvement of the unit. The first is to employ a situation directly relevant to the primary mission of the unit. For most Battle Seminars, the situation presented has been the TRADOC¹⁴ Standard Teaching Scenario, in which the unit is a front line force of the hypothetical U.S. X Corps in Central Europe, with a hypothetical U.S. division on one flank and a hypothetical West German Corps on the other. This standard scenario is of primary relevance for only four of the 18 active component divisions and two of the five U.S. Army corps; for other units, it would be preferable to employ a different situation.¹⁵

¹³For example, using a light infantry division like an air assault division or using a mechanized infantry division like an armored division.

¹⁴U.S. Army Training and Doctrine Command.

¹⁵In part, the choice of situation is dictated by scenarios that are available to computer exercise drivers. Reconsidering the employment of these drivers, as we recommend immediately below, would ease this constraint.

The second modification in design we recommend is to make each day of the seminar an independent decision exercise, focused on a specific problem related to the workshops of that particular day.¹⁶ Such a modification would not only respond to the units' suggestions for exercising specific problems, but would better provide the multiple, varied opportunities commanders and staffs need to understand each others' thinking.¹⁷ When exercises cover the same situation repeatedly, the staff learns only how the commander thinks about that single situation. By studying a variety of situations, the staff sees the commander displaying a variety of images and can learn by inference the major dimensions by which the commander characterizes situations.

Computerized Decision Exercises

The BCTP began by using the CORBAN exercise driver for its early Battle Seminars. There was general dissatisfaction with CORBAN for this purpose, largely because of its inability to provide requested information.¹⁸ As a result of these dissatisfactions, and to better coordinate the Battle Seminar decision exercise with the WFX, the CBS (Corps Battle Simulation) driver was substituted for CORBAN. But CBS itself is not without problems. The level of detail that is required by CBS is incompatible with the level of decisionmaking in the exercise; as a consequence, subordinate unit commanders and BCTP staff need to interpret the courses of action into input for CBS. Courses of action cannot be programmed into CBS per se; someone must monitor the machine and sequentially enter planned moves. The CBS output, in turn, needs to be aggregated to forms usable by the unit staff. Additionally, CBS does not solve many of the problems of CORBAN. The entire process is very labor-intensive; our own observations, corroborated by interviews with BCTP and unit personnel, indicated that the gain from either CORBAN or CBS was not worth the effort that went into running them.

The question arises, must the decision exercise have a computerized driver at all? If a manual exercise can provide a similar quality exercise at a lower cost in manpower and material, the computer may not be necessary. The argument for computerization

¹⁶The Army calls such an exercise a "vigilante."

¹⁷Kahan, Worley, and Stasz (1989).

¹⁸Indeed, CORBAN is a combat development model, not designed for training.

rests on two premises: (1) computerized results have a credibility that adjudicated outcomes do not have, and (2) an exercise using CBS provides practice for using CBS in the WFX.

On close examination, neither of these arguments appears convincing. The argument for credibility presumes acceptance of the computer model as a valid representation of the battlefield; to date, neither CBS nor any other computer model proposed for decision exercise use has merited that acceptance. The belief that computer-produced outcomes are less subject to debate than staff adjudications has not been upheld in our many observations of command post exercises. Similarly, the belief that credibility is gained by providing great detail is not upheld; this belief is particularly suspect in decision exercises where the detailed information produced by CBS must be reduced by the BCTP into a form manageable by the primary participants and supporting staff. The level of detail of the operations orders (OPORDS) and fragmentary operations orders (FRAGOS) issued by unit is much more gross than the detail required by CBS, and the outcomes fed back to the unit are more gross than CBS output. Moreover, and this is the important point, the feedback from the BCTP to the unit is not in terms of battle outcomes, but rather in terms of the *process* the unit used in arriving at its decision. The main purpose of the CBS run seems to be to have a situation for the next day's decision exercise. There is no reason why this *must* be based on the unit's decision the day before, especially when that decision is interpreted by BCTP staff into CBS moves. The main requirement for the situation to be briefed in a decision exercise is that it be realistic and comprehensible. The human and technical resources required by CBS are not necessary to meet that requirement.

The argument for practice using CBS is similarly weak. A cardinal principle of CBS in the WFX is that the computer should not be evident to the players. An elaborate system of work station interfaces with brigade headquarters ensures that all of the information available to unit headquarters comes from normal communication channels, not from computers. If the system is working properly, the unit should be unaware of CBS. Therefore, there should be no reason to need to become familiar with the workings of CBS. Indeed, the most likely result of such a familiarization is that the unit might "game" the exercise according to its impressions of the idiosyncrasies of the computer model instead of the battlefield situation.

Therefore, we recommend that neither CORBAN, CBS, nor any currently available computerized exercise driver be used at the deci-

sion exercise.¹⁹ Situations for second and later decision exercises can themselves be planned in advance for presentation to staff; if desired, multiple versions can be prepared, from which one that most closely would result from the unit's selected course of action can be chosen. The BCTP staff, including the professional OPFOR staff and supplemented by CGSC expertise if necessary, can examine the unit's selected course of action and construct a realistic and likely outcome. It should be possible to describe this outcome in general terms during the afternoon AAR, and thus make this (macro level) outcome part of the self-examination. The staff time saved can be employed in more systematic observation of the processes of the decision exercise.

Linking the Decision Exercise and the WFX

Part of the purpose of this project is to examine the linkages among the phases of the BCTP cycle. We found no information available to measure the effect of having participated in the decision exercise on performance in the exercise. Within the limited domain of our own observations of the participants, we found little effect. On one occasion, a unit commander informally commented that the decision exercise had led to the selection of some topics for discussion at home-based unit seminars to prepare for the WFX. Another commander said that the familiarity gained with the computerized exercise driver facilitated acceptance of the computer results at the WFX. One Battle Seminar resulted in a list of areas to be covered in the WFX; this list could not be said to have driven the design of that exercise.

There needs to be a more explicit linkage between the Battle Seminar and the WFX. One major form of this linkage is to use the results of the decision exercise to help structure the exercise. During the decision exercise, different areas that the trainee needs to improve on will emerge; these should be recorded and used in the construction of the Master Schedule of Events List (MSEL).²⁰ We recommend that this schedule not be revealed to the unit commander. In this way, the participants will have an incentive for attending to the decision exercise lessons learned in their preparation for the WFX. The items on the MSEL can be designed to test many different levels of command post functioning, from Battlefield Operating

¹⁹This is not a blanket condemnation of computerized exercise drivers. Should such a tool be found or developed that meets the expressed needs of the decision exercise, it should be adopted.

²⁰The MSEL is a list of events intended to occur in the WFX that provides a structure for the scripts of the exercise.

System (BOS) procedures through understanding the commander's intent well enough to independently take appropriate actions.

TEAM-BUILDING

One of the reasons for the Battle Seminar is to help the trainee build a team. If this is to be seriously undertaken, then there needs to be an assessment of team performance. We did not observe any BCTP mechanism for assessing team-building, nor any way for the BCTP to communicate observations about team-building back to the trainee.

Generally, the Battle Seminar provides the opportunity for team-building. Unit commanders recognize this; one stated it explicitly when he phrased the goal of the week as, "You need to know me, warts and all." The discussions during the workshops provide an opportunity for the unit commander and staff to "read off the same sheet of music." The decision exercise gives the primary participants and—to a lesser extent—the supporting staff an opportunity to implement that common understanding in several concrete examples.

The measurement of team-building is a delicate problem that the BCTP should attempt to solve. Part of the problem is that, without highly detailed psychologically based measurements, team-building is difficult to objectively define. But, given the smallness of the group of primary participants and the sensitivities of the unit participants, it does not appear appropriate to have a team of psychologists observe and assess unit performance. As an alternative, "second-best" strategy, we recommend that some higher-ranking member of the BCTP staff be trained as an informal interpersonal process observer, and that this individual be tasked with assessing team-building. That person would then prepare, by the fourth day of the Battle Seminar, a brief report for the commander of the BCTP assessing team cohesion. The commander, perhaps with a retired general, the commander of CATA,²¹ or other general officer,²² would then privately brief the unit commanding general and other appropriate individuals and together prepare a plan for communicating, off-line, suggestions for team-building.

²¹CATA, the Combined Arms Training Activity, is the parent organization of the BCTP

²²See the discussion of the grade structure of the BCTP, below.

UNIT OVERALL REACTIONS TO THE BATTLE SEMINAR

We close this section with an analysis of units' overall reactions to the Battle Seminars. Participants were asked to what extent the seminar improved the unit with regard to understanding AirLand Battle, warfighting skills, command and staff procedures, and the threat. The aggregated responses from 34 respondents, representing three units who participated in 1988 Battle Seminars, are shown in Table 1.

Table 1
UNIT ASSESSMENT OF BATTLE SEMINAR OBJECTIVES
(In percentages)

Objective	Not Addressed	Moderately Addressed	Strongly Addressed
Improved command and staff procedures		9	91
Improved command and staff teamwork		15	85
Improved understanding of AirLand Battle		62	38
Improved understanding of threat	6	68	26
Improved warfighting skills	6	41	53

The responses indicate that the seminar is successful in its attempt to provide units with an opportunity to train and improve staff procedures and teamwork. Less successful, however, are the attempts to provide a doctrinal refresher and to train warfighting skills. The latter is not of immediate importance, as the WFX is the primary vehicle for warfighting training, but the former is a signal to the BCTP that the workshops require sharpening.

III. THE WARFIGHTER EXERCISE

From three to six months after the Battle Seminar, the BCTP conducts a computer-driven command post exercise called the WarFighter Exercise (WFX) for the unit. The WFX takes place at the unit's home station if facilities exist, or at the superordinate corps for those divisions without adequate facilities to support the WFX.¹ The BCTP computers driving the exercise remain at Fort Leavenworth, as does the OPFOR; unit and scripted material are transmitted from the WFX site to the central computer. The scenario for the WFX is agreed upon by the unit being exercised, its superordinate headquarters, and the BCTP; it is based on the unit's war plan.

In the WFX, the unit puts its main, tactical, rear, fire support, and combat service support command posts in the field along with the main command posts of its subordinates. All communication among these command posts is on organic equipment. The subordinate commands, in their turn, communicate through organic equipment to lower headquarters, but these lower headquarters,² rather than being in the field, are at computer terminal workstations. Computer-generated results appear on the workstations, where they are interpreted into messages sent up to the main subordinates on organic communication equipment. Similarly, unit actions are communicated down for computer entry. In this way, the unit headquarters are two echelons removed from the computer; the intent is that they will receive only information through channels that would ordinarily be available to them.

The BCTP takes on two roles in a WFX, that of exercise provider and that of feedback provider. In the exercise provider role, the BCTP is responsible for providing the unit with a credible exercise. This means that the situation is realistic, that the computer driver provides valid and realistic responses to unit moves, and that entities other than the training unit (higher, adjacent, and lower echelons as well as the OPFOR) behave in ways that are both doctrinally correct and that aid the unit in its training.

The exercise provider role is, however, not sufficient. While constructing realistic command post exercises is a *necessary* part of the

¹Distributed systems have also been run where the computer and workstation controllers are at one site and the unit is in the field at another site.

²Brigades for corps exercises and battalions for division exercises.

BCTP, it is not a *sufficient* justification for the expense of the program. Therefore, a second major aspect of the BCTP is the role of feedback provider. This means that the BCTP must structure a WFX to provide individual units and the Army as a whole with valuable feedback that can lead to improvements in performance, readiness, and doctrine.

THE BCTP AS EXERCISE PROVIDER

We examined the BCTP as exercise provider from three different perspectives: (1) the view from the training unit and its subordinate echelons, (2) the view from the computer, and (3) the view from inside BCTP operations. From the point of view of the training unit, the BCTP should supply an exercise that tests the unit's strengths and weaknesses in as realistic an environment as possible. From the point of view of the computer, the BCTP should have a software system that is reliable, comprehensive, and valid. From the point of view of operations, the BCTP should function smoothly, coherently, unambiguously, and with a minimum of crises.

The View from Unit Headquarters

Whatever the benefit of the rest of the package, it is clear that the BCTP has made a major contribution to command post exercises by providing a control team. In the typical exercise, the unit must take "out of hide" (or borrow from higher headquarters or other units) all of the threat forces, exercise controllers, and representatives of adjacent and superior headquarters. The BCTP, in providing these services, frees up the unit to exercise its whole team. In the view of most unit commanders, this alone makes the BCTP "worth the price of admission."³

Subordinate commanders,⁴ as well as unit commanders, have expressed great satisfaction with the WFXs. As the echelon midway between the computer and the major training unit (which obtains "artificial" information from higher and adjacent units), subordinate command posts perceive the exercise play as close to reality. For example, one subordinate commander stated that the WFX was "the

³See W. H. Harrison, and L. Saunders, "Fighting the First Battle Now," *Military Review*, October 1988, pp. 12-19; and M. F. Spigelmire and H. S. Tuttle, "BCTP and the Victory Division," *Military Review*, October 1988, pp. 20-26.

⁴Brigade commanders for division exercises and division commanders for corps exercises.

best CPX (command post exercise) he had ever participated in." His subsequent remarks indicated that "best" meant in terms of the breadth of the experience, particularly in decisionmaking and in understanding the consequences of his decisions. We have observed that at AARs, it is the subordinate commanders who are most forthcoming with lessons learned; they are much more active participants in the discussions than they were at the Battle Seminars.

Although the WFX is a fairly realistic battle, some potential stressors of the unit are not exercised. For example, units move command posts as part of the exercise requirements. But this is never exercised fully. In some WFXs, the tents were never actually pulled down, so the ability of the signal battalions to dismantle and reassemble communications equipment was not tested. In other WFXs, the distance between the command posts was so little that individual staffers could move from the main command post to the tactical command post in five minutes and thus never be isolated from the war; in a real-world configuration, this luxury would be impossible. Given that one of the primary purposes of the BCTP is to improve trainee command and control, these unrealities are weaknesses of the exercise. The control team can solve some of these problems by imposing rules of conduct on the units to reduce the impact of such performance artificialities.

The View from the Computer Room⁵

The BCTP has used the Corps Battle Simulation, a recently developed computer program for playing two-sided battles, as the exercise driver for each of the WFXs. CBS was developed specifically to provide computer-based battle simulation support for command post exercises at the joint task force, corps, division, and brigade levels. It simulates combat, combat support, and combat service support aspects of battle, including movement, close combat, fire support, chemical, engineer, maintenance, medical, resupply, air, and air defense. A combination of graphics and menu-driven commands

⁵Most of the issues raised here are joint and beyond the sole province of the Army, much less the BCTP. Within the Army, primary responsibility for CBS lies with the Training Simulations Systems Manager (TSSM) of CATA at Fort Leavenworth, although the BCTP, as the principal user of CBS, has a de facto leadership role in specifying CBS requirements. Each Army corps has a battle simulation center and CBS software; in addition, other services and joint sites such as the Joint Warfare Center and Warrior Preparation Center conduct computer-driven higher-echelon CPXs. Steps to coordinate all of these efforts are under way.

are used to send orders to the simulation and to control the sophisticated video displays provided at CBS workstations. Satellite communications permit the linkage of remote CBS workstations.⁶

Technical Aspects of CBS. On the whole, given the capabilities and limitations of CBS, the modeling part of the exercises have been successful. Our overall view is that CBS, with projected improvements in the software, could be an appropriate choice for the task of driving the exercise. On the other hand, for purposes of providing data for short-term feedback during the exercise or for providing a larger picture for later analysis, CBS requires major improvements that, to our knowledge, have not yet been scheduled. In this subsection, we will comment on specifics of the technical qualities of CBS and comment on the important matter of units "fighting CBS" instead of fighting the war. Below, we will return to consider CBS as provider of data for feedback.

CBS has been relatively reliable and maintainable. There have been occasional crashes of the model, but in most instances they were so quickly fixed that players were unaware that the system had gone down. There has been to date only one complete collapse of the system requiring a shutdown of the exercise, and this was due to loss of both long-distance communication lines during a severe thunderstorm. This positive feature of the model should not be denigrated in any training wargame involving a large number of players.

Although CBS generally played the wars fairly well, it does have some weak points. Weapons effects, engineering, intelligence, the role of air, logistics, and maneuver all merit discussion in this regard.⁷

Weapons Effects. The effects of fires appear to be problematic in CBS. Often, the results of artillery barrages or engagements do not correspond to what experts would anticipate, given the conditions. Part of the problem is that CBS documentation is silent on what the probabilities of kill are based upon. BCTP CBS operators have had to deal with complaints during each exercise that some BLUE weapon isn't as effective as somebody thinks it should be or that some RED weapon is more effective than it should be. While at the National Training Center, such criticism may be answered by reference to the transparency of the simulation; with CBS, this is not the case. In the

⁶Jet Propulsion Laboratory, *Joint Exercise Support System (JESS) Version 1.1: Executive Overview*, California Institute of Technology, JPL D-5781, Pasadena, California, March 1989.

⁷Harrison and Saunders (1988) also make this point in their critique of the first BCTP cycle.

absence of adequate documentation of CBS, the BCTP has established direct connections with the Jet Propulsion Laboratory to resolve such issues.⁸

Engineer. The engineer function, particularly barriers, is not played well. The model does not represent minefields very well. The delay barriers cause, the time before they are no longer effective, and their placements all suffer in CBS. Barriers are located at the edges of the hexes⁹ as near as possible to where they are actually located on the map. Breaching opens a hex edge after a delay is assessed, but actions related to barriers, such as overwatch and attrition from other weapons (made more effective by the delay) do not work well. A large number of "magic moves" were necessary to make engineering functions perform realistically.

Intelligence. Intelligence is not played by CBS.¹⁰ At first, intelligence was performed off-line without automation, resulting in delays in intelligence play; both players and controllers were often in the dark regarding intelligence. Recently, the Jet Propulsion Laboratory has developed a Tactical Simulation (TACSIM) Interface Processor to link CBS data to the TACSIM intelligence simulator. TSSM is making efforts at automating the linkages from TACSIM to unit intelligence sections, using the BCTP as a test bed.

Air. Air play, and its influence of the war, is seldom mentioned, perhaps because of the lack of desire to play much air as well as the inability to play it well. This, while not a fatal problem in division-level WFXs, must be solved for corps level.

Logistics. Although CBS plays gross logistics fairly well, there appears to be a need to simulate the "retail" end (supply point to user) in more detail.¹¹ Currently, it provides information on consumption, but relies on the controller to decide on the effect. The threat does not seem to be hampered by logistics complications. Detail of trucks and supply points killed, rather than across-the-board percentage reductions in supply, can have a profound effect on the speed of the battle

⁸We wish to thank James Hodges of RAND and Jack Hixson of RDA for valuable conversations on this topic.

⁹CBS superimposes a grid of three-kilometer-wide hexagons over the terrain map and uses these "hexes" to determine the location of objects.

¹⁰At present, virtually no models (JANUS is an exception) handle information acquisition in a real-world manner. In other words, the battlefield is not portrayed as it is developed. Commanders and staff know things that they wouldn't know in a real campaign, or they get information for free that they'd have to buy with assets in a real war.

¹¹For example, CBS simulates spare parts—Category IX supplies—in terms of truckloads instead of the specific parts that the support command must coordinate.

and the attrition of other elements. Of significance, for example, might be the enemy not killed because of lack of ammunition and friendly killed because of inability to move without fuel.

Maneuver. Even maneuver had some problems. In particular, some "units" are too small for the scale of CBS. For example, reconnaissance patrols have to be played manually. Moreover, infiltrating small units are likely to move behind enemy lines and not be detected, but CBS does not permit BLUE and RED forces in the same hex and automatically provides forces with data on enemy units in adjacent hexes.¹² Because of rules of engagement in the model, artillery can be stopped by the presence of small remnants of enemy forces many miles away (at the opposite end of an adjacent hex).

There are also problems with "ghost" units, or units who have been reduced in strength to the vanishing point. These units are no longer visible on the screen and cannot be addressed by normal or "magic move" commands, yet can influence maneuver.

All of these problems, while irksome and time consuming, are not insurmountable. By judicious use of "magic moves" and clever exercise controlling, the BCTP has employed CBS to provide credible and relatively realistic situations for the players. Continuing improvements to CBS (especially the anticipated improvements in CBS 1.2 and 2.0), as well as borrowing good ideas from other systems such as the Warrior Preparation Center (WPC) kluge of models, will provide more comprehensive and realistic battlefield simulations.

Fighting the Model vs. Fighting the War. The design of the BCTP, with players buffered from the model by workstations, effectively and appropriately isolated units from the model. All in all, the workstation personnel effectively executed their buffering task. The staff at the workstations said that their training had been adequate and that their experience at the exercise was educational; their performance was consistent with this.

Some fighting of the scenario is inevitable and cannot be overcome. For example, there have been occasional complaints about CBS not reconstituting forces well; these problems generally get resolved on the spot, usually by invoking some mutually agreed-upon "magic moves."

Early on, the BCTP instituted an explicit "*no sniveling*" rule for trainees, which has been generally adhered to. Every unit commander has accepted the condition that CBS results be regarded as truth

¹²Improvements to CBS in early 1989 have made less severe but not completely fixed this problem.

for the duration of the exercise, no matter how incredible the unit might at first think they are. Given this strong stance by the BCTP and acceptance by unit commanders, model-fighting by the exercise trainee is not a major problem at the WFXs at this time; keeping the "no sniveling" rule is the best guarantee of avoiding the problem in the future.

The View from BCTP Operations

In addition to making sure the computer does its job, the BCTP must make sure that all elements of the exercise that are not automated operate effectively. Two elements of the BCTP have this responsibility. First, *Exercise Control* makes decisions about the progress of the war, executes "magic moves," and generally coordinates the efforts of the exercise. It encompasses the scripting cells (who decide on the situation to be presented to the unit in training), the OPFOR (who decides what the enemy will do), and the exercise direction (who acts as higher headquarters and ultimate adjudicator). The second operations element of the BCTP is the *Operations Center* (OpCtr), which coordinates the computer, Exercise Control, and the data gathering functions of the BCTP.

Exercise Control. Exercise Control, if it is to function efficiently, must be a well-structured organization. That is, the chain of command must be unambiguous, lines of communication must be open, and the exercise must be well-planned so that crises and emergency "fixes" are kept to a minimum. Our observations produced recommendations that address each of these aspects of organizational functioning.

Who's In Charge? If all the people attending the WFX were placed in one dark room (so that they wouldn't know who else was present) and somebody asked the "senior controller" to stand up, each of the following might rise in response:

- The exercise director,
- (Especially for corps) the unit commander,
- An officer assigned by higher headquarters to the control and scripting groups,
- The retired general hired by the BCTP to oversee the exercise and offer friendly advice,

- A BCTP lieutenant colonel in charge of the conduct of the war (through CBS "magic moves" and short-term adjudication), or
- The BCTP commander.

The curious thing is that, depending on circumstance, each of these people should rise. At different times, each of these people appropriately takes on the functions of a senior controller. Occasionally, different "senior controllers" have given conflicting instructions to different staff members, who then find themselves working at cross purposes. It is important, therefore, that the exercise direction ensure that it "speaks with one voice."

To Remote or Not to Remote? The location of Exercise Control has changed from exercise to exercise, depending on the facilities available. In different WFXs, Exercise Control has either been centralized or in multiple locations; parts of it have been located in the same room as the OpCtr, across the hall from the OpCtr, or a two-hour airplane ride from the OpCtr. We found that when Exercise Control was remotely located, so that OpCtr staff did not have face-to-face contact with many Exercise Control staff, that there was a lot of misunderstanding leading to mutual blaming and inefficiencies. Exercise Control staff were angry at the OpCtr staff for making peremptory demands upon them for seemingly frivolous reasons, while the OpCtr staff were angry at the Exercise Control staff for dragging their heels on providing necessary information. Many of the problems could have been resolved by quick meetings to ensure that all parties were working on a common problem. In our opinion, experience in running WFXs will not make this problem go away; each WFX will have unique characteristics and unique problems, many of which cannot be predicted in advance. Responding to these characteristics and solving these problems will require the type of coordinated effort that is best done in face-to-face meetings. Just as battlefield commanders must visit their subordinate command posts to fully comprehend the battle, so the BCTP OpCtr and Exercise Control staff must meet to fully comprehend the exercise. Therefore, we recommend that, whenever possible, all elements of the WFX Exercise Control staff be colocated.

How Much Should Be Planned in Advance? Each day, the "scripting cell" met to discuss proceedings and to plan the next day's activity. Although there was generally no sense of panic, the scripters often worked under time stress; this could have affected the quality of their work. The restraints upon the scripting cell mean

that many of their activities cannot be specified in advance. For example, the scripting cell is obligated to adjust adjacent units, higher headquarters, and enemy units to provide the unit in training with a fair fight; this necessarily requires quick reactions. But there are a number of areas—notably deception, deciding what intelligence information is available upon unit request, and availability of air support—that should be able to be prepared in advance. Such preparation would simplify the tasks of the scripting cell and make data recording and analysis easier for the BCTP O/Cs and OpCtr.

The Operations Center. The purpose of the OpCtr is to coordinate all of the information about the status of the war among the controllers and feedback providers. The OpCtr has critical functions in both the exercise provider and feedback provider roles; within the former, it serves as a TOC (Tactical Operations Center), or place to go to find out what is happening. Because it is one of the most important information centers in the exercise, dissatisfaction with OpCtr functioning has led the BCTP to consider a number of different implementations.

In most battlefield TOCs, the G3 operations officer has the responsibility of knowing at any time the current status of the battle. This officer is in turn supervised by the G3 or the Chief of Staff. The BCTP OpCtr is run by a BCTP staff member who has the job of a Chief of Staff but is supposed to be the person who knows the current status. The two roles are incompatible, given the size and tasks of the OpCtr. A quick clue that the OpCtr supervisor is a Chief of Staff at one exercise was that the current operations map faced a desk where two junior staff members sat; the chief's desk allowed him to see the junior officers, not the map. The chief expected one of his captains to know the current battle. Unfortunately, these captains were not under the control of the chief; they could be sent on errands by other people at any time. Also, the chief himself was required to attend a variety of out-of-OpCtr meetings.

The work of maintaining the current operations map was left, by default, to noncommissioned officers. One junior enlisted man periodically took a snapshot of the current CBS screen and laboriously copied detailed unit information from the CBS screen onto paper. Two senior enlisted men¹³ used those data to keep the current operations map up to date. Often there was no officer present actively

¹³At one exercise, these noncommissioned officers were personnel/administrative staff rather than people with operations experience. Although both were well motivated, their inexperience meant that they required more supervision than is usual for senior enlisted men.

monitoring these activities. Unless someone is watching the changes on the map, it's difficult to understand or explain those changes and to recognize trends. Anybody can read unit position from a map. This combination of conditions can lead to a situation where nobody really knows the current situation. An extreme example of an unfortunate consequence of this state of affairs was the occasion when a corps commander visited the OpCtr for a current operations update but was unable to obtain one.

If the BCTP plans to provide a current situation service (which we believe it should), it needs to more closely imitate the organization of a battlefield TOC, with at least one junior-level officer dedicated to being present at all times to follow changes in the current operations map and to brief any BCTP staff or visitors on the current situation.

THE BCTP AS FEEDBACK PROVIDER

As a provider of feedback, the BCTP must collect data from different sources, integrate and analyze those data, and present them in an accessible format to the unit. Although data integration and analysis take place after collection, the analysis plan guides the collection and must be considered first. Therefore, in this subsection we first consider the planning necessary to design the data analysis, the different elements of data collection, and finally the communication of feedback through the AARs.

A Plan for BCTP Data Collection and Analysis

The biggest current problem for the BCTP as feedback provider is the absence of a system to *systematically transform* data into useful feedback and to *preserve* them for later use. The original BCTP approach to data collection might be characterized as mostly *holistic* and *retrospective*. Holistic data collection is obtaining general impressions, as opposed to employing analytic frameworks to collect detailed pieces of data. Holistic data collection is useful as a descriptive tool and for generating hypotheses and can help establish the relative value of coarse-grained hypotheses. But, to answer the questions about training audience attainment of objectives and the impact of the BCTP on Army training, analytic data collection is necessary.¹⁴

¹⁴The BDM Corporation, under contract to the BCTP, is designing a detailed analytic data collection plan.

BCTP data collection is retrospective in that data are first collected and then examined to see what can be learned. This approach is inadequate for the task of the BCTP because the scope of a WFX is too large to collect all the data potentially available. Of necessity, observations will be incomplete, and unless a structure is placed on data collection, the risk is that the data will not be able to reveal important patterns. Instead, there must be specific measurements based on unit objectives.

The overriding need for the BCTP is to plan its data collection proactively.¹⁵ By proactive data collection, we mean that a specific methodology should support data collection directed toward specific objectives. Although the specific objectives can vary widely from training audience to training audience, the collection methodology should remain a constant and be broadly applicable, specifying in advance what data is to be collected and the purposes to which they will be put.

Therefore, the BCTP must eventually plan for comprehensive retrospective and prospective data collection. The collective experience of training audiences provides a rich data base for both the analysis of command and control and the training of high-quality command post performance. This data base should be accessible for retrospective data analyses across different training audiences, and could have great value for doctrinal formulation, development of training concepts, and the design of future command and control systems. But effective retrospective data collection awaits the ability to "preprocess" CBS data into manageable form and to systematically record observer/controller observations. Both of these capabilities should be actively pursued.

The basic process of prospective data collection can be presented (in a simple form) as five steps:

1. Generate *objectives* to be achieved in the WFX. These objectives can be based on Army Training and Evaluation Program (ARTEP) standards, observations from the Battle Seminar, suggestions by the unit or its higher headquarters, and the like.
2. Translate the objectives into *propositions* about unit behavior that can be tested for truth or falsity. Propositions are

¹⁵The approach we present here was influenced by conversations and communications we had with Lieutenant Colonel John Norris, Lieutenant Colonel (USAF, Ret.) Jack Smith, and Colonel Samuel Wasaff.

essentially abstract objectives recast in terms of specific unit performance criteria.

3. Define *measures of effectiveness*, or variables that correspond to tests of the propositions. There should be agreement by all parties that the measures of effectiveness are fair tests of the propositions.
4. Identify *methods of collecting data*. Data collection should be closely related to measures of effectiveness. The methods of collection must be public and replicable (that is, not restricted to the expertise of one person, but potentially usable by anybody trained appropriately), and must possess reliability and validity.
5. Collect data, analyze the measures of effectiveness, confirm or reject the propositions, and make conclusions about the objectives.

An example can illustrate these five steps. Based on the Battle Seminar, the BCTP decides that a particular division should seek to be able to synchronize its intelligence and fire support battlefield operating systems. This objective can in part be examined by looking at the proposition that the division effectively uses intelligence resources to establish artillery fires priorities. One measure of effectiveness that would test this proposition is the extent to which higher echelon intelligence is made part of fires planning. Data that may be used for this measure of effectiveness are (1) whether corps intelligence reports (designed by the scripters to be) appropriate for fires planning are received at DIVARTY headquarters within a (specified) time that allows them to be included in planning, (2) whether these reports are communicated to DIVARTY planners in a (specified) timely manner, (3) whether these reports are explicitly discussed in fires planning meetings, and (4) whether the actual fires planned are responsive to the intelligence information (where appropriate responses are defined by the scripters who prepared the reports). The data collectors at DIVARTY are tasked to collect the specific data items. If the intelligence produced at corps was received at DIVARTY, disseminated to appropriate staff members, referenced in planning, and used to target appropriately, then the proposition of effective use of intelligence in fires planning is confirmed. This proposition supports the objective of synchronization of intelligence and artillery. Detection of faulty processing at any one of the stages disconfirms the proposition and produces a specific recommendation for improvement in unit performance.

Data Collection

During the WFX, data collecting is done by Observer/Controllers in the field and OpCtr staff reading output from CBS.

Observer/Controllers. The O/Cs¹⁶ are a team of BCTP staff members, ranging in rank from captain to lieutenant colonel, who observe proceedings at each command post active during the WFX. They record their observations in great detail and feed this information back to the OpCtr for the AARs. O/Cs also conduct local AARs at their own command posts.

At O/C meetings we observed, the team was able to provide the O/C team leader, AAR director, and BCTP commander needed information in a timely and accurate manner. When given enough of an idea about what was wanted, the O/Cs are able to respond with appropriate information about the command posts they observed.

Even though their mission precludes interfering with unit performance, the O/C team has a positive effect on that performance, in the form of implicit, backchannel AARs. A unit staff member will make a mistake and will both know that he has made the mistake and that the O/C has seen it. That awareness alone is enough to cause the staff member to pay attention to his error and lessens the likelihood of his repeating it. The O/C makes no overt statement, but the lesson is learned anyway, whereas if the O/C had not been present, the lesson might not have been learned.

Our main recommendation for O/Cs does not have to do with their behavior but rather with their mission. O/C data should be based on the proactive data collection plan recommended immediately above. Presently, O/Cs have a list of things they are supposed to report to feed into the BCTP OpCtr, including procedural details, the command post's perception of the war, and significant events. But unless the priorities for their information are well specified, they don't have a clear objective in mind. Too often, whatever priority list they have constructed is overridden by "crash" information requests, which themselves are sometimes only partially integrated into the exercise. For example, at one exercise, O/Cs were given a list of key actions to track for the next AAR. Twenty-four hours later, none of the key actions fit into the construction of the AAR; instead, the O/Cs had to

¹⁶The term is taken from and meant to reflect the role taken by field personnel of the NTC. However, BCTP O/Cs do a lot more observing and a lot less controlling than their NTC counterparts. The BCTP might consider using another term, such as Field Observers, to make this difference clearer.

feed information for other actions. For this reason, O/Cs have come to have little incentive to plan their data collection procedures in advance, as they can anticipate that things will change at the last minute.

We also recommend that data from the O/Cs be more thoroughly analyzed. Reliability should be tracked by analyzing whether two O/Cs in the same place report the same things. Comprehensiveness should be assessed by analyzing whether the focus on requested information causes the O/Cs to miss major events. Validity can be assessed by comparing O/C data to other sources of information. In general, the data available should be better used, both in terms of internal BCTP quality control and external feedback to the unit.

CBS Output. Quantitative results were difficult to extract from CBS because there was no postprocessor software available. We have seen analysts, armed with hand calculators and pencils, poring over large stacks of computer output in efforts to discover such basic information as the number of casualties suffered in the past 24 hours of the war or the total number of enemy chemical rounds fired. With means to produce data such as killer-victim score boards, force ratios and survival ratios, the outcome of battle could be better portrayed to the players in a timely fashion. Earlier (in briefings to the BCTP in 1988), we recommended that the Interactive Graphics Retrieval System (INGRES) used in the Joint Theater Level Simulation (JTLS)—CBS's "big brother"—be coupled with the CBS system. RDA constructed WARS, a prototype version of such a postprocessor for CBS, which has been used in AAR preparation since April 1989. WARS has, even within its present limitations, greatly facilitated analyses and data presentations for AARs.

Moreover, even when the unit has advanced technological means of displaying battle information, there is no way to translate CBS information into those means so that actual battle conditions and perceived battle conditions can be directly compared. For example, the Maneuver Control System (MCS) is a means of electronically sharing battlefield status information among linked command posts. But there is no way that CBS information can be translated into MCS-readable form. Such a translation would be invaluable for providing on-the-spot feedback to a unit of the efficacy of its command and control system.

It is essential that CBS or any other computer-based exercise driver be designed from its inception to have postprocessing capabilities so that its power as an exercise controller can be harnessed to teach the lessons learned from the exercise. Without

such a capability, the exercise driver remains incomplete, lacking the capacity to make a documentable impact on quality of performance.

After Action Reviews

The AAR is the formal means of quick-response feedback from the BCTP to the trainee. The BCTP conducts two kinds of AARs. "Minor" AARs are conducted by Observer/Controllers at their observation sites on an unscheduled time-available basis. These less formal AARs are largely based on the O/Cs' individual observations. "Major" AARs, modeled on the NTC AARs,¹⁷ are two-hour sessions at the unit level. Three or four of these AARs occur at scheduled times throughout the exercise; the meetings take place in a central meeting room within the exercise Control Center, with attendance largely limited to the unit personnel who attended the Battle Seminar, some additional support staff, and senior BCTP and exercise control personnel.¹⁸ At each WFX we attended, RAND staff observed in detail the preparation for and conduct of these AARs.

The BCTP has developed a procedure for AARs that contains six steps. First, members of the primary participating staff are asked to supply performance items that they believe the unit should sustain and items that the unit needs to improve. Then, a "Seven Minute War" summary, accompanied by graphic displays photographed from CBS, is presented. Third, an OPFOR representative (via telephone line from Fort Leavenworth) presents the enemy intent and actions. Fourth, evaluations of the performance of standard operating procedures at each command post are shown, with brief reasons given for ratings that are less than satisfactory. Fifth, the unit is led through a discussion of about three key issues identified by the BCTP. Sixth, specific performance issues are mentioned within the framework of the seven BOS.¹⁹ More often than not, the sixth step is severely curtailed as the two-hour limit for AARs nears.

The AAR Should Tell a Story.²⁰ The focus of an AAR should be on telling the story of what happened in the battle from the "objective" perspective of the exercise controllers and reconciling that

¹⁷See, e.g., I. T. Kaplan and J. J. Fallesen (1986); FC 25-20 (1985).

¹⁸The AARs are videotaped. Monitors in adjoining rooms permit a wider "passive" audience to the proceedings. Limiting the primary audience to persons with a role to play or a need to observe has proved to be a successful strategy in generating discussion.

¹⁹The seven BOS are intelligence, maneuver, fire support, engineering (mobility and countermobility), air defense, combat service support, and command and control.

²⁰As Kaplan and Fallesen argue, each AAR must lead to a summary.

version with the "subjective" experience of the unit. An AAR should present a body of facts and impressions and then employ discussion to (1) uncover the causes of inappropriate performance and (2) reconcile diverse perceptions. As such, an AAR has an inherently consensual agenda; the goal is to have the group members agree on what happened, why it happened, how misperceptions may have occurred, and what can be done to improve performance.

The BCTP AARs, although they present information to the unit, have not been able to capture that sense of consensus. Instead, each event in the AAR sequence is presented as an independent entity, and it is left to the imagination of the audience to give an overall meaning to the session. For example, the list of items to sustain and improve that opens the AAR is never touched upon again in the session. Similarly, the great detail that accompanies the evaluation of standard operating procedures and the assessment of the BOS is not employed in the discussion of key issues.

A Format for AARs. We recommend that the AAR be reorganized into a sequence of events that culminates in a unit's consensus of what aspects of performance need to be sustained at acceptable quality and what aspects need to be improved. A possible order is as follows:

1. *Introduction.* The higher headquarters commander, as exercise director, should lead off, briefly signalling themes that he would like to see developed during the AAR.

2. *Summary of recent events.* A summary of recent events, from the perspective of game "truth" and enemy intentions, should come next. The primary purpose of this summary is to ensure that the assembled staff have a common understanding of the events that have occurred. This segment of the AAR is largely to inform the unit, so it is anticipated that discussion will be limited to questions clarifying the presentation.

3. *Analysis by BOS.* The analysis by BOS presents the O/Cs' view of the unit. It can also be viewed as an analysis of the events summarized in the previous AAR segment. This analysis, which has as its objective identifying divergent perceptions and inappropriate performance, is jointly made by the BCTP and the unit.

4. *Discussion of key issues.* The key issues are themes identified by the BCTP as critical. They may be major items from the BOS analysis or may be items whose relevance crosses several operating systems. The objective of the discussion is to begin to reconcile the diverse perceptions identified earlier and to suggest alternative actions to replace identified inappropriate performance.

5. *Items to sustain and improve.* To cap the AAR, individual unit staff members suggest and the group accepts by consensus a self-evaluation. The items to sustain and improve can form the basis of what needs attending to during the remainder of the WFX and what needs attention in post-BCTP training. The BCTP will use these items to prepare the sustainment exercise the unit will undergo six to nine months after the WFX.

6. *Conclusion.* The exercise director or unit commander can, if they so choose, summarize the AAR in terms of the tenets of AirLand Battle.

IV. ORGANIZATIONAL ISSUES

In this section, we turn from the activities of the BCTP to the BCTP's intramural and extramural organizational relationships. The success of the program is as dependent on these relationships as it is on the way the BCTP conducts seminars and exercises. For the first year of the BCTP experience, an organization was constructed like Topsy; it "just grew." In the growth process, several potential problems arose and were solved. In this section, we touch on a number of organizational issues that still remain, some large and some small, that affect the BCTP's interactions with the units it trains and with other Army institutions. These issues are the grade structure within the BCTP, where the BCTP fits within the Army organizational structure, the role of the retired general officers who serve as "senior advisors" to the BCTP, the scheduling plan for BCTP cycles, and the role of the OPFOR.

GRADE STRUCTURE

Our observations indicate that the grade structure of the BCTP is inadequate to its task. That is, the military rank (and consequently the experience) of the BCTP staff is too low. There are two reasons for this inadequacy; the first has to do with relationships among BCTP staff whereas the second has to do with relationships between the BCTP and the units it trains.

The BCTP is commanded by a colonel, with the vice commander, three team chiefs,¹ and O/C team leaders also billets for colonels.² Observer/controllers and other BCTP staff are lieutenant colonels, majors, and captains; there is often little distinction among the tasks performed by these officers of differing rank. The common rank of three levels of leadership gives rise to ambiguities of command, which can result in organizational dysfunction. The presence of officers holding three ranks performing the same job produces the opportunity for resentment on the part of the higher-ranked staff as well as differences in the quality of performance. Within other Army

¹The core of the BCTP staff consists of three "Mobile Training Teams." Teams A and B work in parallel conducting, observing, and controlling BCTP cycles, while Team C acts as the OPFOR for all Battle Seminars and WFXs.

²These slots are often filled by promotable lieutenant colonels; team chiefs are frocked to full colonelcy in those instances.

organizations, when staff of similar rank work with each other (e.g., the general staff of a division), there is a differentiation based on specialty that defines roles; when staff of dissimilar rank work together, there is a differentiation based on chain of command. Within the BCTP, there is neither a separation of specialties among the leaders nor a rank-based chain of command among the staff.

The inter-organizational grade structure problem for the BCTP arises because the units trained by the BCTP are divisions and corps, commanded by major generals and lieutenant generals, respectively. In a hierarchical organization like the Army, it is difficult for a colonel or lieutenant colonel to evaluate the performance of a general officer. Both the actor and the critic can be embarrassed, and the evaluator, having never experienced higher-echelon command,³ can with some justification be liable to the charge of not comprehending the situation. At the National Training Center, AARs are conducted according to the principle of peer review; lieutenant colonels lead battalion-level AARs, captains lead company-level AARs, and so forth. That there is no peer to whom division and corps commanders must be accountable means that the BCTP can lose control of its own evaluation processes and consequently can lose the ability to provide valid feedback.

Even at the "minor" AARs at unit command posts, the grade structure problem arises. There, the O/Cs (captains through lieutenant colonels) provide the AARs. We have observed that the attendees at these AARs tend to be of similar or lower rank than the providers; colonels and general officers largely do not attend these sessions.

From a training feedback point of view, the BCTP commander should be a lieutenant general with corps command experience; this, however, is presently beyond the realm of the possible. Alternatively, to ameliorate the intra-BCTP grade problem and partially solve the BCTP-unit grade problem, we recommend elevating the rank of the commander of the BCTP to brigadier general⁴ and elevating the job of team chief to full colonel with brigade command experience. Alternatively or concomitantly, division and corps commanders should serve as exercise senior observer and AAR leader for the BCTP cycle subsequent to their own. In addition, O/Cs should be majors or

³Indeed, most BCTP staff have not held any command beyond company level and have little general staff experience.

⁴We make this recommendation with the full knowledge that, given projected cutbacks in Army manpower, new brigadier general positions might be difficult to find. Nonetheless, if the Army is serious about the major importance and potential of the BCTP, it should take this step.

lieutenant colonels with some division or corps level general staff experience; senior O/Cs should have battalion command experience and/or divisional assistant chief of staff experience. In as many cases as possible, the AARs should be delivered by a person of rank equal to the commander of the observed unit.

In summary, the Army should consider adopting a "do one, teach one" philosophy for the BCTP and other Combat Training Centers (CTCs),⁵ whereby all staff would have had experience performing the tasks they observe and evaluate. This training function could become part of the normal career path of field grade and general officers.

THE HOME OF THE BCTP

The Army located the BCTP at Fort Leavenworth so that it would be near the developers and expositors of doctrine at the Command and General Staff College. After a year of being de facto under the supervision of the Deputy Commandant of the CGSC, the BCTP was moved to the Combined Arms Training Activity; the philosophical underpinning of this move was that the BCTP was the capstone of the CTCs. Whereas there is logic in having the CTCs under a common command, the loss of a direct, formal connection to the CGSC could impede the objective of the BCTP of feeding back lessons learned to the doctrine writers. If our recommendation for changing the grade structure of the BCTP is adopted, the BCTP could stand as a separate function of the Combined Arms Center (CAC), coordinating with CATA on training systems and CGSC on doctrinal matters.

THE TIME TO COME TO THE BCTP

The original plan for the BCTP was to have divisions and corps participate in the Battle Seminar within the first few months of a new commander's tenure, then hold the WFX about six months later. During the first year of the BCTP, this schedule was followed only once.⁶ On one occasion, there was a change of command and of half of the primary staff between the Battle Seminar and the WFX; some of this change could have been anticipated and accommodated by a change in scheduling.

⁵The other CTCs are the NTC, the Joint Warfare Training Center (JWTC) in Arkansas, and the Combat Maneuver Training Center (CMTC) in Germany. All but the BCTP train lower-echelon units in field exercises.

⁶Even in this single instance, the commander was given an early reassignment to a different position shortly after the completion of the BCTP cycle.

We believe that the logic of the original schedule was good and should be adhered to. Because the purposes of the BCTP are to build a cohesive unit and train it to a high level of performance, it is appropriate to conduct the cycle early in the commander's tenure, when there is no apprehension that the commander will be evaluated on his achievement. Removing this apprehension opens the door to acknowledging areas for improvement publicly, to the benefit of the trainee, the BCTP, and the Army as a whole.

It might be argued that the need to plan exercises well in advance makes the ideal scheduling of BCTP cycles impossible. Indeed, BCTP cycles are being planned up to four years in advance. And it is certainly true that unanticipated changes of command do occur at division and corps level, either because of events internal to the division or because of external events that make the commanding general more valuable elsewhere.

Still, a combination of planning explicitly keyed to the anticipated command cycle of divisions and corps, in combination with a willingness to be flexible in scheduling, should enable the BCTP to provide its services to divisions and corps at more opportune times in their life cycles.⁷

THE ROLE OF RETIRED GENERAL OFFICERS AS ADVISORS

Well aware of its long history, the Army attempts to communicate its accumulated wisdom by seeking the advice of retired general officers. The BCTP has employed such retired generals to attend the Battle Seminar (especially the leadership workshops) and the WFX (as senior controllers). These senior advisors perform valuable functions; their sense of the battle enables the BCTP to conduct a more realistic exercise.

However, we noticed that at times the presence of the senior advisors was disruptive. They sometimes would dominate the conversation out of proportion to their roles as observers and advisors. At Battle Seminars, the chair would implicitly pass to the senior advisors when they spoke. While this was of benefit during the leadership workshops, it was sometimes disruptive at other workshops or during decision exercises.

⁷This topic is analyzed in greater detail in J. P. Kahan, *Corps and Division Command Staff Turnover in the 1980s*, The RAND Corporation, N-2944-A, 1989.

The problem of using retired commanders is that, throughout their careers, they have been used to (and are very good at) taking charge. Moreover, there is a significant likelihood that the senior officers present have served under the retired commander at some time in their Army careers and maintain a subordinate-superior relationship with him. Therefore, these generals can, inadvertently, have an influence beyond what is desirable for the BCTP. In the worse case, the retired general becomes the *de facto* commander and the unit learns his approach rather than that of its own commander.

The BCTP needs its senior advisors, but must balance the wisdom they impart against their potential for overpowering the unit commanders. To obtain the maximum benefit of the wisdom and experience of retired commanders, we recommend that they participate in BCTP activities with explicit missions of what they should and should not do. We believe, if these restrictions on their role are presented tactfully but forcefully, and the reasons for the restrictions carefully explained, that these valuable resources will continue to make significant contributions to the BCTP.

It has been suggested that the senior advisors are an answer to the problem of lower-grade BCTP officers evaluating the performance of division and corps commanders. While this is an attractive idea and certainly works on an *informal* basis, we do not believe it to be a solution to the problem. Our observations indicate that although not all of the senior advisors are universally admired, their influence and power rest solely on such admiration. Because retired generals are, by virtue of their retirement, outside the Army system, they speak with what *personal* authority they can muster, but not with the *institutional* authority that the NTC conveys to battalions and that the BCTP must convey to divisions and corps.

THE WORLD CLASS OPFOR

In addition to Training Teams A and B to observe, control, and feed back the results of the BCTP cycle to divisions and corps, the BCTP has a Team C, a dedicated "World Class OPFOR" (WCOF). The job of the WCOF is to provide expertise on the threat for the Battle Seminar and to play the role of an intelligent RED command at the WFXs.⁸

The presence of an intelligent, independent OPFOR raises the question of what the relationship should be between the control team

⁸It is envisioned that the WCOF will have major duties outside of the BCTP cycle. These duties are beyond the purview of the present report.

and RED in exercises designed to train BLUE command and control. Two opposing philosophies exist about that relationship. One holds that exercises should be "free play," where RED opposes BLUE in equal combat. The other holds that exercises should be "scripted," where RED is part of the control team and helps design situations to critically test BLUE.

The free-play philosophy is exemplified by the NTC, where a highly trained resident professional RED force fights BLUE attendees on an allegedly equal basis. The control team gives RED no special information and places no special restraints on its options. According to the free-play model, BLUE will learn best by experiencing as closely as possible the type of fight that might occur in the real world of war. Criticisms of the free-play model have been made on two grounds. First, this method of training risks emphasizing chance factors because of the uncertainties introduced by the fog and friction of the exercise. Second, even the most realistic training simulation does not include the shock value of battle, including real fire and real casualties; therefore, trainees can be deceived into thinking that they have actually trained as they will fight and may be unprepared for the "real thing."

The scripting philosophy is exemplified by the traditional command post exercise. At CPXs, the control team and the threat are the same set of individuals. Enemy actions are written up as a script that the control team gives to BLUE according to a master schedule. Using the scripting model, BLUE learns by solving a sequence of problems designed to test the critical parts of its command and control system. The major criticism of scripting is that the battle portrayed is nonreactive to BLUE actions and unrealistic; what incentives exist in the exercise are to "game" the scenario rather than to fight realistically.

For training higher-echelon command posts, it has always been clear that a free-play field exercise is economically and logistically infeasible; there is no way to mount division-sized, much less corps-sized, NTC-style training exercises on any regular basis. Therefore, the question of a full-fledged OPFOR was moot, and the scripted CPX was developed as an alternative. With the development of computerized exercise drivers that have the capability of "playing" forces seemingly down to any desired level of detail, the possibility of a "computerized field exercise" has once again raised the possibility of a fully two-sided exercise at higher echelons.

The two models become slightly revised in the context of "computer wars." The fully two-sided game would have workstations for both

RED and BLUE, with chains of command conforming to each side's doctrinal structure to communicate the computer's situation status to the command group being exercised. Information about terrain, friendly status, and enemy status would be provided symmetrically to the two sides. The fully scripted game would have RED strategies (including preplanned contingencies for reacting to BLUE moves) built into the computer; the OPFOR team would program those strategies ahead of time instead of participating in the exercise.

Current thinking at the BCTP and elsewhere (e.g., the Warrior Preparation Center or the Joint Warfare Center) is nominally aimed at providing as much of a two-sided game as possible; actual practice brings the control and RED teams fairly close together. At the BCTP, the OPFOR is nominally separate from the control team. However, the OPFOR team chief is an exercise controller. He is a full member of the scripting group and has access to computer-determined "ground truth." Based on the direction control believes the exercise should move, he provides RED with overall direction but has no say in the specifics of how that direction is implemented.

In a scripted WFX, BLUE faces a "giant" opponent with an unfair advantage. Moreover, any efforts at battlefield deception or creative use of combined forces cannot get a fair test. But in a free-play WFX, the fate of BLUE may be determined by possible errors of perception and judgment made by the OPFOR instead of by the quality of BLUE decisionmaking. It seems unrealistic to expect that U.S. Army lieutenant colonels can precisely replicate the behavior of Soviet Bloc general officers. A compromise option would have the OPFOR guided so that it does not make "stupid" moves, yet can be fooled by good trainee deception. But such guidance would offer the OPFOR proximity to ground truth and might inhibit aggressive play.

The realities of the state of the art of computer wars make both models straw men for the present. Artificialities of adjacent and higher echelon maneuver, representation of forces, intelligence play, obstacles, etc. (discussed at length above) mean that control team intervention in the conduct of RED forces is required to maintain a coherent picture for BLUE. And the contingencies of the battle are so complicated that an intelligent RED representation is required at the exercise to react to unplanned situations.

The appropriate role to be played by the WCOF at BCTP exercises depends on a clear specification of the training goals of those exercises. If the main goal of the exercise is to train one specific unit, then the rest of the play within the exercise, including higher headquarters, adjacent units, and OPFOR, must be in the service of

that goal. This means that on some occasions it is appropriate for the OPFOR to do everything it can to win, while on others the OPFOR must exercise restraint to keep the exercise focused. For example, consider a situation where the OPFOR was facing the unit, but had available a promising course of action that would have it face an adjacent (largely scripted) unit. While the OPFOR might win the battle by adopting the alternative course of action, the training experience for the unit would be lost.⁹

⁹One might legitimately criticize the scriptors for preparing such an exercise scenario. But such a criticism does not make our argument less cogent or the possibility of such a situation arising less likely.

V. CONCLUSION

As the BCTP progresses from its implementation phase into a mature program, it has won the support of almost every division and corps commander who has experienced it.¹ In this concluding section, we briefly explore some of the specifics of the BCTP's early success and consider what must be done to assess its long-term effect.

A SUCCESSFUL IMPLEMENTATION

One immediate impact of the BCTP we have observed is that it has provided an opportunity for growth in both the depth and breadth of division training. Army leaders seem to have an unquenchable desire to exploit training opportunities to the maximum extent possible, and corps, division, and brigade commanders are coming to view the BCTP as a tool for their own self-improvement. We observed many examples of the division expanding their training activity at the WFXs. One of the most striking was when a major showed up at the main command post with two aides in tow and injected complaints about the handling of prisoners and the rape and beating of villagers. Several people were surprised and no one knew whose initiative was responsible.

Another indication of the overall success of the BCTP has been the increasing interest of the corps in the division-level WFXs. On the senior level, corps commanders have been taking an increasing interest in the ability of this new instrument, the BCTP, to train *their* corps. On a lower level, one corps' operations chief (a sergeant-major) said he would have brought a full complement of 70 staff for the corps tactical command post and thought a significant part of the 1300 staff of the corps command staff should be assigned to such an exercise.

Whereas the interest of the corps is gratifying to the BCTP and provides evidence of its immediate usefulness, that interest also poses a danger that the BCTP could become extraneous as corps develop their own abilities to provide the services that the BCTP offers. At present, the enthusiasm of corps and divisions for the BCTP is based on its ability to conduct exercises for self-training. The feedback the BCTP provides, both for individual divisions and for the Army as a whole through experience with many divisions, is less well

¹See, for example, Harrison and Saunders (1988) and Spigelmire and Tuttle (1988).

appreciated. As corps and divisions concentrate on the gains from computer-driven CPXs such as the WFX, they will be tempted to use their own equipment and conduct such exercises more frequently than the projected once every two years of the BCTP. The risk is that, as the corps and divisions get good at conducting their own exercises, the perceived need for the BCTP will fade away.

We believe that such an event would be unfortunate. As we have emphasized, the *potential* value of the BCTP goes beyond its presently *realized* value as an exercise conductor. This potential value can become realized only as BCTP refines its data collection, data analysis, and data feedback capabilities.

THE POTENTIAL OF THE BCTP

The long-term assessment of the BCTP will be based on how it provides feedback to improve unit performance and how it contributes to the Army's developing doctrine and procedures. This feedback is based on the data generated by the BCTP and how those data are treated. The BCTP has the potential to provide a rich data base for studying both short and long term Army higher-echelon command and control. Below, we discuss some of the potential uses for this data base.

Trace Changes in Division Training Practices

The lists of items to sustain and improve from the AARs and the discussion of lessons learned that has characterized the unit commander's AAR at the end of the exercise provide information that can be used to construct a well-formulated list of unit training objectives. This list provides one of the major answers to the question of the usefulness of the BCTP. The list should be compared with the unit's actual training regime before and after the BCTP cycle. If changes in training (both in terms of training focus and unit performance at subsequent exercises) can be traced to these specific items, then there is evidence that the BCTP is affecting unit performance.

Uncover Common Themes

The information provided by the BCTP has a value beyond feedback to individual divisions and corps. Analyzing the record over several BCTP cycles can produce evidence pointing to systematic

strengths and weaknesses in higher-echelon command and control doctrine and training. We caution, however, against attempting such analyses until improved data collection and recording mechanisms are in place.

Already, informal lessons learned are being derived from the BCTP; the use of the data base derived from the BCTP experience can bring home those lessons in a more formal and perhaps more accurate way. By designing its data collection efforts at the beginning of its program, the BCTP can provide the data for these analyses.

Develop a Self-Monitoring Plan

The BCTP should have an explicit self-monitoring plan to maintain its own level of performance. The plan should cover all phases of BCTP performance. Part of the self-monitoring plan should be direct feedback from divisions and corps cycling through the BCTP. This type of feedback is essential for continuing improvement of the BCTP. The questionnaires in the Battle Seminars and interviews after the WFXs are steps in the right direction, but these have not yet been employed to their fullest extent. Participants should be encouraged to suggest improvements in BCTP procedures, processes, and organization.

Other parts of the self-monitoring plan should examine the reliability, validity, and comprehensiveness of data collection. For example, the O/C cards should be examined and cross-checked to ensure validity and comprehensiveness. From time to time, two O/Cs should independently assess the same command post to check on interrater reliability. Taped AARs should be analyzed for quality control. After-exercise reviews can identify and document areas for sustaining and improving performance.

IN SUMMARY

Our observations indicate that the BCTP has provided an excellent training experience and good feedback to the training unit, but it is still in the implementation stage in providing data for Army-wide lessons learned. The BCTP is on the cutting edge of the art of providing computer-driven command post exercises; other trainers now turn to it for leadership. AARs and other unit feedback mechanisms are useful but could improve in major ways.

The most important critiques and recommendations we have made in this report are those aimed at increasing data handling perfor-

mance. Proactive, thorough, and systematic data collection and analysis at all stages—the Battle Seminar, the WFX, and after the BCTP cycle to assess sustainment—constitute the difference between a good exercise conductor and a good training program. The scientific approach engendered by proactive data handling will not only make the BCTP a more effective immediate training instrument, but will also assure a long-term role for the BCTP in higher-echelon command and control training and doctrine.