Experiments

Three findings for the Army Space tribe from the Objective Force Unit of Action Battle Command Experiment No. 1

By John Graham

In February 2003 I had a unique experience with an Army Objective Force Experiment conducted by the Battle Command Battle Laboratory (BCBL)-Leavenworth. Instead of serving as a player or a controller, I served as a data collector. My sole responsibility was to observe the experiment, collect data against a number of predetermined dependent variable constructs, and submit my findings.

As I write this article, the BCBL is collecting and condensing the formal experimental findings into an official report. What follows are my insights about the experiment from a Space operation officer's perspective. As such, these comments are unofficial and certainly biased by my Space operations background. I think, however, that they are relevant to debate within the Army Space community and could be discussed at the next Army Space Symposium.

The Unit of Action Battle Command Experiment No. 1

The focus of this first of many future experiments was on the organization and operation of the unit of action (UA). The experiment followed closely on the heels of the unit of employment exercise conducted at Fort Knox, Ky. The experiment examined a new UA level staff structure conducting multiple operations while using a new decision-making process, the recognitional planning model (RPM). The RPM is a commander-driven, execution-based process designed to support UA commanders operating in a time-constrained environment where full military decision-making process (MDMP) application is not practical.

The experiment blended training sessions for the RPM, multiple simulated battle runs to stress the UA staff, and multiple, detailed after action reports (AARs). Data collectors studied the commander's and staff's ability to plan and execute simultaneous operations in comparison with our current staff structure and MDMP. The experiment was intended to provide insights into the core functions of battle command and investigate key enablers for battle command in the Objective Force.

The BCBL's intent for this first experiment, however, was not resolution of all questions facing the Objective Force unit of action, but to determine which questions were resolved and which questions still needed resolution through future experiments. The experimental CPX-type design addressed the key questions in Table 1.

Personal Observations

Finding One: In the year 2015, you don't want to be a Career Field (CF) S-3 Air.

One goal of the Objective Force UA design is dramatic reduction of the command and control footprint of a brigade-sized force. The greatest savings in manpower will be realized through automation of routine and rule-base driven activities. Expert systems are already under development that can find problems, conduct coordination, and deconflict problems with a mission order such as control measures, asset overtasking, and logistics. Armed with the work we as leaders and trainers put into codifying the task, condition, and standard for staff work, Army scientists, university researchers, and military contractors are now programming prototype systems. The more a staff task has been codified in today's brigade staff, the more likely it will be automated in the UA staff.

The title of this first finding may be explained by imagining that a career field or branch has been created called Tactical S-3 Air. If we estimate that 40 to 70 percent of the tasks of a CF S-3 Air involve deconfliction, coordination, and integration into an existing plan, this imaginary career field would be heading to the chopping block in the Objective Force. Because the most common product of the S-3 Air is a one-sheet matrix developed from and based upon a set of routine heuristics or "rules of thumb," it is an easy target for automation. If one more brigade staff

position can be found that is 40 to 70 percent automatable, the Objective Force staff can combine two positions into one and reduce its footprint. The single combined position would then perform the military "art" portions of the tasks that could not be automated.

Where does that leave the FA 40 Space operations officer? My experiences as a Space operations trainer and as a leader on deployment with the 1st Space Battalion tell me that we are far to the right in the military art end of the spectrum (see Figure 1). I cannot count the number of times that I was asked for a one-page "smart sheet" that a leader could use as heuristics for employing or understanding Space capabilities. After gathering my team together and calling in expertise from the battalion and brigade staff, we would inevitably have a one-page sheet with a four- to-eight-page addendum explaining the "it depends" criteria.

Simply put, the nature of Space operations is more art than operationalized guides. The Space operations staff officer is faced with numerous hurdles that make our task more military art than a set of solutions. The need to apply a large measure of military art to Space operations is due to the fact that many support requirements are just not intuitive. Very intelligent leaders that tell us to "move that satellite" offer a common example of this challenge. The military art requirement is further exacerbated by every friendly, gray, and enemy satellite being one of a kind, by complicated levels of classification and compartmentalization that regulate current Space operations, and by incomplete, still-forming scientific understanding of Space.

This is not to say that the S-3 Air position is now an unimportant function in the Legacy Force brigade staff. I selected the S-3 Air position for discussion purposes only. It is to say that, after years of very intelligent officers seeking to achieve consistency in a difficult and complex task, the result is reams of codified heuristics, representational methods, and look-up tables. When a set of tasks has reached this level of maturity, there is a good chance that many of the tasks can be automated. If 40 percent of the tasks of the two positions can be automated, then I offer that they can be combined into a single position for the Objective Force staff.

Advice to Space operators — gleaned from observations of the Unit of Action experiment

- **Use caution in creating one-page battle book cheat sheets. You may be doing a disservice in oversimplifying the very complex data that a leader needs for decision-making. Your Space knowledge and the military art of application is your true value to the force.**
- **Learn your leader's decision process and figure out when to "push" the right information at the right time. With the expanded role of Army Space in current operations, you are already familiar with this requirement.**
- **If you have the opportunity to affect UA knowledge object construction, take the time to envision where Space operations capabilities will be in 2015.**

Finding Two: Redefine Decision-Making Success

When the Army studies decision-making, one critical measurement is the "relevant information collection time." Because of this metric, the Transformation Force focused on methods to put information at "the finger tips" to be readily accessible to the commander. As a result, we talk about extensive databases with terminals that can rapidly access and present the information in a usable form.

This measurement, however, is not relevant to Objective Force battle command. For the UA commander, information that is readily accessible is information that is too late for the decision at hand. Rapid decisive operations in a dynamic environment change the entire tempo of decision-making. If an operation is dynamic, then, by definition, the ground truth could be

(See Experiments, page 56)

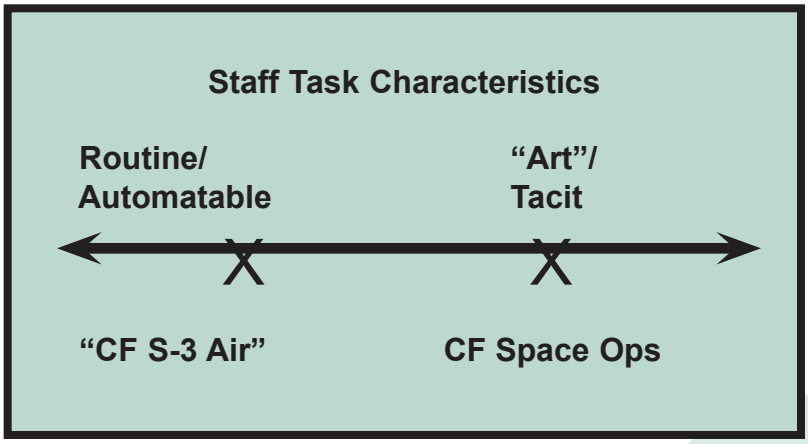
Table 1

UA Experiment Goals (Battle Command Battle Laboratory)

+ Determine core functions of Battle Command by echelon
+ Determine the appropriate decision-making processes
+ Investigate key enablers to facilitate Battle Command
  - Distributed and networked staff
  - Distributed planning
  - Decentralized execution within command's intent
  - Characteristics of collaboration tools for the commander

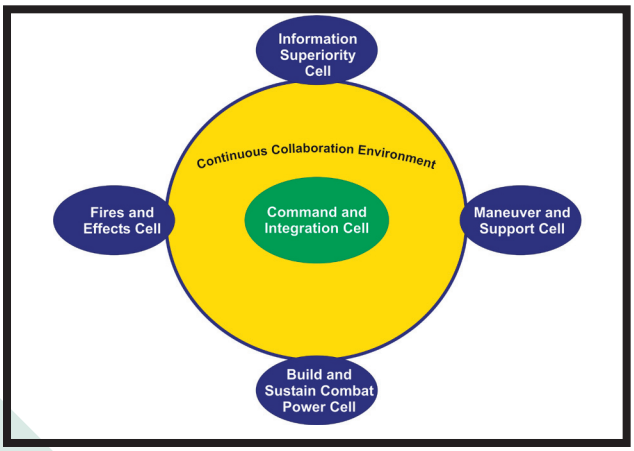
Goals addressed by current and future Fort Leavenworth Battle Command Battle Laboratory Unit of Action experiment series.

Figure 1



The tasks of the notional Career Field S-3 Air are defined by a high proportion of heuristics, while the tasks of the Career Field Space Operations are defined by a high proportion of tacit knowledge and "art."

Figure 2



Cell structure resulting from initial knowledge object distribution workshop conducted at the Fort Leavenworth BCBL. The location of Space operations expertise will depend on the knowledge object identification and distribution.

Experiments ... from Page 17

reliable only for periods of time as short as 10 minutes and be significantly different 10 minutes from now. Waiting to make a decision only forces a further search and reconfirmation of information. Therefore, all the information a UA commander needs to make a decision must already have been presented and understood — before the requirement for a decision has emerged!

Interestingly, the very mini-culture we have developed among the Space operations officer corps makes the FA 40 a solid match to the rapid decisive operational construct. How many of us have had to push our Space operations knowledge into the cognition of the commander? I am reminded of the last line of the article by our senior FA 40 in a previous issue of the ASJ (Vol. 1, No. 4) that stated that Space officers need to "advertise, advertise, advertise." It is implicit in the FA 40 culture to translate very technical data into knowledge, to know when the commander's decision process can benefit from that knowledge, and to "push" that knowledge without waiting for a "pull."

Finding Three: The Location of Space Expertise in the Unit of Action Staff

The first experimental unit of action (brigade-size) staff was organized into five cells. The cell structure was an outcome of a knowledge object workshop held at the Fort Leavenworth BCBL . The workshop developed 246 knowledge objects, a number of which are Space focused. That list may need to be revisited numerous times over the course of the BCBL series of experiments. (I would suggest that Space is currently underrepresented in the knowledge object list.) These knowledge objects were then divided into the roles and responsibilities of the five cells. There were numerous objects considered to be shared, overlapping, and specific to cells.

An initial take on the cell divisions would indicate that the Space operations expertise should reside in the information operations cell. I would argue, however, that Space operations expertise must reside in the Fires and Effects Cell. For those not familiar with effects-based operations, refer to the article by GEN B.B. Bell in ASJ Vol. 1, No. 3 (Fall 2002). The trained Space operations officer knows the pillars of military Space and how to produce a desired effect on the battlefield. It does not take a leap of the imagination to understand how, in 2015, a Space officer in the Effects Coordination Cell would react to an effects task order that stated: "Enemy scouts must be neither able to alert their main body of our approach nor bring precision long-range indirect fires to bear on our forces penetrating their battle zone."

What's Next?

The Fort Leavenworth Battle Command Battle Laboratory Experiment series will continue until the design of the UA staff is resolved and refined. The next experiment is tentatively scheduled for Fall '03. FA 40 officers are maintaining an experienced presence, via FDIC and the SMDC-BL, to ensure our proponency role in UA staff design decisions. In terms of influencing the list of knowledge objects essential to the Objective Force UA staff, our O6 population will participate in studies at the Army War College as well as complete a pending online survey with their recommendations.

Final Thoughts

I will be personally involved in future experiments as well as a revisit to the knowledge object identification and distribution. I believe it is clear that stakeholder participation in the knowledge object process will define the Objective Force roles in the operation and information career field. The further opening of the debate to Army Space professionals operating at the tip of the "sphere" will, in my opinion, ensure we provide the best support possible to the Objective Force.

MAJ John Graham is assigned to the Carnegie Mellon University- Department of Computer Science and is conducting research on the UA Battle Command. His Space assignments include: OIC, Space Control Electronic Warfare Detachment, U.S Army Space and Missile Defense Command; Director, Space Intelligence & Operations Courses; and Missile Officer/Command Center Instructor, North American Aerospace Defense Command.