JTF Commander: "Send Me Our Combat Analysts"

CAPT **Jeff Kline**, USN, NWDC Chair of Warfare Innovation, Naval Postgraduate School, jekline@nps.navy.mil

Editor's Note: This article was developed for the MORS Workshop, Combat Analyst: Deploying Quantitative Support to the Combatant Commander, held 28-30 January 2003 at Booz Allen and Hamilton at Tysons Corner. More information on the workshop will be published in the June 2003 PHALANX and presented in a special session at the 71st MORS Symposium to be held at the Marine Corps Base Quantico, Virginia 10-12 June 2003.

Combat: *adjective* 1: relating to combat (~missions) 2: designed or destined for combat (~troops)

Analyst: *noun* 1: a person who analyzes or who is skilled in analysis[1]

Combat Analyst: Pro-active crisis-planning operator capable of applying critical thinking and problem solving techniques to war fighting environments at the Joint Task Force (JTF) level. Not to be confused with an Analyst of Combat.

The Army's Southern European Task Force (SETAF) Commanding General receives a call from European Command staff – he is to prepare to lead a Joint Task Force in Western Africa. He is given a general mission, strategic goals, told what forces will be available, and asked to begin planning. After he breaks the phone connection, he punches his speed dial to the G-3 and directs, "Send me our combat analysts!"

Well, maybe not. Certainly not now. But in the future?

For years, military officers educated in Operations Analysis (OA) have been closely allied with Washington programming, budgeting and procurement. Analytical tools learned in their graduate programs are applied to future force structure analysis, major systems acquisition or training. Have they been there too long? Is OA becoming synonymous for programming rationale, requirements assessments, and budget justification? Are we capitalizing on military OA specialists' unique combination of operational experience and analytical education by focusing this select group's efforts on future planning instead of immediate crisis planning?

My view: Yes, Yes, and No. Our services should re-focus our training, education, and assignment of Army ORSA officers, Air Force Operations Research specialists, and Naval OA officers to allow them to pro-actively contribute to Joint Task Force crisis action planning and execution at the operational level of warfare. Let's make them combat analysts!

Versed in Operations Research history, the reader may cite many examples of problem formulation, applied search theory, decision theory, game theory, linear programming, networks, simulation, data analysis and other forms of applied mathematics used in operations from World War II to the recent Operation Enduring Freedom. He may be skeptical there is a problem. To the reader's credit, recent conflict analyses have been extremely beneficial in targeting and weapon analyses, logistics scheduling, and post-conflict lessons learned (e.g. Center for Naval Analyses post-Gulf War Tomahawk analysis positively influenced weapon and operational doctrine). This work is accomplished by dedicated, experienced civilians and officers stationed in Washington and around the world. They are fine analysts of combat and produce critical work – but we can do better. We can put some of them to work in the J3 organizations of brigade and fleet-level commands where JTFs are formed to execute our nation's wars.

Military officers with the ORSA and OA designations are unique. Combined with an education in analytical tools to support decision making and operational execution, they have operational air, field or sea experience. Their talents could make a serious contribution during a joint staff's 96-hour crisis action planning cycle or long-term deliberate planning cycle — given they are in a position to do so and their education is oriented toward combat application.

The Navy codes several at-sea staff operations jobs for unrestricted line OA sub-specialists in an attempt to capture this operations experience and analyst synergy. In theory, the Marines, Army and Air Force could adopt a similar model to place their analysts knowledgeable in combat arms at the division, regiment, brigade and wing level. Due to a lack of Navy unrestricted line OA sub-specialists, however, analysts rarely fill these billets. The priority fill Navy OA jobs are those in Washington. Great sea-going officers fill the operations positions, do a wonderful, effective job, and never consider applying the problem formulation or tools of OA to their planning and execution efforts. Meanwhile, our Navy OA specialists march on and accomplish great work in the service's programming, acquisition, and test and evaluation fields.

The Navy is actively seeking more unrestricted line officers to study Operations Research and hopes to increase their fill rate of jobs designated to be OA sub-specialists. A priority should be placed on those billets at sea. All services should be placing their OA educated officers within their operations organizations to be tapped during the planning and execution phase of combat, and where these officers can develop into the future joint war-fighting Flag and General Officer leaders.

Our officers' OA education also needs to place emphasis on becoming combat analysts. How? At each phase of the Joint Planning Process (Note One to educators: combat analysts need to know the current Joint Planning Process) the future combat analyst can make positive contributions. For example, during the Commander's Estimate, his education in problem formulation and critical thinking can help derive centers of gravity, decisive points, objectives, and tasks (Note Two to educators: combat analysts must be familiar with theories of war). In course of action formulation, knowledge of campaign analysis, networks, search theory,

(See **COMMANDER,** *p. 19)*

NEW TECHNIQUES

(continued from p. 14)

using Data Resampling software. Finally, Prof Buttrey lectured on various aspects of Data Mining and their applications. Again, example software packages were provided to the attendees and classroom work complemented the instruction.

Specific applications presented included Resampling for the operational test community and data mining for Homeland Security.

As discussed earlier, the format of each tutorial called for theoretical presentations in the JHU/APL Kossiakoff Center auditorium followed by hands-on exercises in the adjacent classrooms. A large number of volunteers acted as "Teaching Assistants (TAs)" to augment the primary lecturers in the classrooms.

For Agent-based Models, the TAs included: **Steve Upton** and **Sarah Johnson** (both from MITRE), **Ned Bent**, **Dan Croghan**, and **Jessica Reed** (all from L-3 Com Analytics Corp.), **Mary McDonald** (SAIC), **Ed Bitinas** and **Zoe Mazur** (both from TRW), **Matt Koehler** (CAA), and Dr **Greg Cox** (CNA). The SEAS model was covered by: **Eric Frisco** (SPARTA), **Dorian Buitrago** (Aerospace), and Lt **Clint Clark** (SMC/XRA). A Counter Drug Scenario was covered by: Dr **Sergey Malinckik** and Dr **Mike Neeley** (both from BiosGroup). International Trade and Finance were addressed by: Dr **Matthew Hendrey** and Dr **Rob Axtell** (also both from BiosGroup).

For Optimization Heuristics, the TAs included: Steve Upton (MITRE), MAJ **Rob Kewley** (CAA), Lt Col Ray Hill, Col Bee Carlton, Lt Col Alan Johnson, and LTC Darrall Henderson, and Dr **Kirk Yost** (L-3 Com Analytics Corp.).

For Statistical Resampling and Data Mining, the TAs included: Dr **Mike Cochrane** (MTMCTEA), Lt Col **Pete Vanden Bosch,** Lt Col **Jerome J Akerson,** Capt **August Roesener** (the last three from 53rd Wing), Dr **Bradley Warner** (AFSPC/XPY), Lt Col **Daniel Zalewski** (USAFA/XPY), and Maj **Steven L Forsythe** (AFPOA/DPYE).

Featured Speakers

Each day, at lunch, speakers who are recognized leaders in their fields presented briefings to show the usefulness, potential applications, and ongoing research in particular areas. On Tuesday, Dr Eric Bonabeau, Chairman and Chief Scientific Officer of Icosystem Corporation, gave an interesting presentation on complex systems and distributed adaptive problem solving. On Wednesday, Dr **Kenneth De Jong**, from George Mason University, spoke on the development of new eEvolutionary Aalgorithm (EA) theory and evolutionary programming. Finally, on Thursday, **Peter Bruce**, Vice President of Resampling Stats, Inc., presented methods of Data Resampling and their uses.

Feedback from many attendees highlighted the opinion that the combination of dynamic lectures and lively hands-on demos (with take-away CDs including software from several of the demos they could keep) helped them walk away with a much-improved understanding of current developments in these new techniques. Many attendees suggested future topics around which MORS might want to structure another similar Mini-symposium (such as Design of Experiments and Multivariate Resampling) while **Ted Smyth** challenged our community to publish the results of using such new techniques as applied to military analyses. ✪

COMMANDER

(continued from p. 15)

and game theory can assist in producing feasible alternatives while wargaming, simulation, and decision theory can help evaluate the formulated courses of action and produce final recommendations for plan development.

When planning moves to operations, the combat analyst's knowledge of linear programming, search theory, statistics, and decision theory can help schedule and direct Intelligence, Sensor and Reconnaissance (ISR) assets, generate effective target lists within the rules of engagement guidelines, schedule air assets, or evaluate on-going operations. The combat analyst can apply his knowledge in the day-to-day work of any Joint Task Force.

To give the future combat analyst a proper frame of reference, educational course material should be formulated around scenario-based instruction and designed to integrate into the JTF planning process cited in the proceeding paragraphs. This allows the military OA student an opportunity to apply and evaluate tools learned in class to a planning or execution action while still at school. Courses in Combat modeling and simulation, wargaming, and Campaign Analysis should be magnet courses exercising as many OA disciplines as possible in a planning or execution scenario. This experience allows the Combat Analyst to graduate with an operational view of operations research.

For those unable to obtain graduate education in OA, the OA education community can pair with the institutions responsible for Joint Professional Military Education (our War Colleges) to provide short courses displaying how combat analysts' skills in problem formulation and analytical tools can be integrated into the Joint Planning Process. These short courses may also be taught independent of War College instruction to operational staffs as certificate programs. Either way, the intent of the instruction is to give the operations and planning staffs an appreciation for what Combat Analysts can do for them at the operational level of war.

As specific OA tools' value are dependent on the nature of the problems to which they are applied, the combat analyst's best contributions to a Joint Task Force staff is one of problem formulation and critical thinking. Combined with operational experience, these attributes make a lethal combination to any enemy. When faced with crisis planning, it would certainly tempt SETAF's Commander to first call for his combat analyst!

Reference

1. Webster's New Collegiate Dictionary, G.&C. Merriam Co, Springfield, MA 1979.

Biography

*CAPT **Jeff Kline**, USN, is a Surface Warfare Officer who commanded two ships, has extensive Combat Analyst experience while serving as Deputy Operations on Sixth Fleet and several CJTF staffs, and is now the Naval Warfare Development Command's Ops Research Chair of Warfare Innovation at the Naval Postgraduate School.* ✪