NATIONAL DEFENSE UNIVERSITY
STRATEGIC FORUM
INSTITUTE FOR NATIONAL STRATEGIC STUDIES

Number 61, February 1996

War in the Pits:

Marine-Futures Traders Wargame

by F. J. West, Jr.

Conclusion

The computer chip and digital systems for ground combat are as radical as the machinegun in World War I and the blitzkrieg in World War II; they permit standoff attacks rather than closure to rifle range, decreasing U.S. casualty rates and increasing the tempo and breadth of the battlefield.

Combat Operations Centers will resemble the trading pits both in the speed and volume of fire requests and in decisionmaking under stress.

The wargame, matching 22 traders and 22 Marine generals and colonels, brought out strong parallels. But where the military stress input processes for fire coordination, the traders stress output techniques to anticipate the market.

The traders are willing to share techniques learned from years of digital financial warfighting.

Setting: The Digital Battlefield

In the past, infantry used firepower to close within rifle range of the enemy and destroy him. In the future, small teams can apply standoff firepower to break the cohesion of the enemy, with the infantry closing only to administer the coup de grace. If the United States can maneuver fires as adroitly as it maneuvers units, this will save lives and hasten victory.

Infantry routinely see the enemy. For example, in a Vietnam operation called Stingray, Marine reconnaissance patrols saw over 20,000 North Vietnamese, yet only called in fires on 1,500. U.S. casualties were lower than in infantry battalions; the patrols hid to avoid firefights. On average, a three-day patrol reported six sightings totaling 40 enemy; however, the enemy could not be hit because the patrols were not certain of their location.

The United States can change such battlefields. The Global Positioning System, target designators, and digital communications transfer data instantly to supporting arms. This assumes the command system will adapt as the troops adapt. The division structure was designed by Napoleon (squads to platoons, etc.) to insure response to orders shouted over the din of battle. This organizational pyramid filtered information, specified responsibilities, and limited spans of control--essential prescriptions for linear

warfare where one unit ties into another.

In the next war, the enemy may break into nonlinear formations to avoid offering lucrative targets. But with digital equipment, U.S. strike teams can stand off and call in fires upon dispersed enemy units of diverse sizes--80% of fires will be spontaneous and unplanned. The command headquarters will receive dozens of simultaneous messages. Those engaged in battle at the small unit level will not be filtered through platoons, companies, and the like before their reports and requests are known. When information transfer is instant and ecumenical, who will get what fires when, and why?

Role of the Futures Market

Futures trading is an eponym for the American way of war at the close of the millennium. A Combat Operations Center (COC)--combining intelligence, operations and fire support coordination--will resemble the trading floor. Commodity markets, like battlefields, are zero-sum games where every winner has a loser. Futures traders fight economic wars daily; Marines fight about once a decade. Some of the best traders are former military. Military skills translate to the trading world; conversely, can traders sharpen military decisionmaking?

The GAMA Corporation proposed a digital-based command & control wargame, with units reporting hundreds of firing opportunities through an animated program. The idea was championed by General Richard D. Hearney, Assistant Commandant of the Marine Corps, and Mr. Patrick Thompson, President of the New York Mercantile Exchange (NYMEX). On December 4-5 in New York City, 22 Marines teamed one-on-one with 22 traders.

The first day the Marines went on the tumultuous trading floor and participated in a mock trading simulation. The simulation enabled the Marines to experience how quickly large-dollar decisions are made and how important an underlying strategy is when market tempo surges.

The next day the traders joined the Marines in the computer wargame. The nonlinear battlefield consisted of 300 square miles of mountainous terrain. Seventy small teams were deployed, relying upon stealth for survival and indirect systems for firepower. The intent was to bring constant pressure upon dispersed enemy units and break unit cohesion.

At the conclusion, each trader was asked: Can trading techniques assist combat decisionmaking when digital data and fire missions are rapidly received?

Gen. Richard D. Hearney, USMC awaits the opening bell at the NYMEX. Source: F. J. West, Jr.

Traders on Decisionmaking

1. Affinity: Decisionmaking under Stress. Both in simulations and social gatherings, the Marines and traders intermingled easily: They spoke each other's language. As the Chairman of the NYMEX, Daniel Rappaport, observed: "We play the same game of risk-reward analysis, only your stakes are much higher. We both confront chaotic information...and act quickly."

Traders, like fighter pilots, fight for six hours. Rarely do they leave a position open at the end of the trading day. In contrast, everyone in a COC puts in prodigious hours. If a trader cannot trust his instincts to make consistently sound decisions after six hours, COC duty hours in combat need to be reexamined.

2. Experience as the Key to Decisionmaking. The traders stressed that it was experience which enabled them to view multiple streams of data and discriminate between the important and the trivial. If experience is the key to successful trading, its analogue is 'professional military judgment.' How is experience gained when warfighting is infrequent?

Like the military, futures traders are a guild, where working from the bottom up is the traditional learning path. NYMEX has now added a training course, with mock trading to develop experience. The apprentice learns by losing money, just as the pilot learns when he crashes in the flight simulator. The Marines will have to do the same thing, not in terms of fire coordination--that input is done routinely--but in the output of net fire effectiveness: What targets are struck with what volume and why, and were these the right targets, given the market (the other fire missions pending)?

3. Accumulating Information. The military worries about decision paralysis due to information overload. For the traders there is no such thing as too much information. Traders absorb data simultaneously from multiple sources--text, graphics, boards of digits, television, shouts--with little loss in efficiency. They employ quantitative tools to search and sort the data and urged the same for the COC.

4. Displaying Information. The traders identified two requirements. The first was computer-based data, with Windows for retrieval. Second, the display should be graphic, with information symbols overlaid. Traders use charts to grasp the macro picture and numerics (digitals) for actual trades. The map is the military's equivalent to their graphs--giving perspective to diverse data.

Traders and Marines agreed a primary goal on the nonlinear battlefield is the early recognition of enemy location and movement; e.g., displays of the size, direction and speed of disparate units may indicate a base. The traders offered numerous suggestions for graphical aids to superimpose on the computer-based map.

5. Interpreting Information. A cherished, if Delphic military axiom is to turn inside the enemy's OODA loop (Observe-Orient-Decide-Act). The traders' OODA loop, executed at much higher speed, is ISAA: Information, Sort by Priority, Act, Assess. For a COC monitoring a steady stream of fire requests, ISAA provides a guideline for two functions.

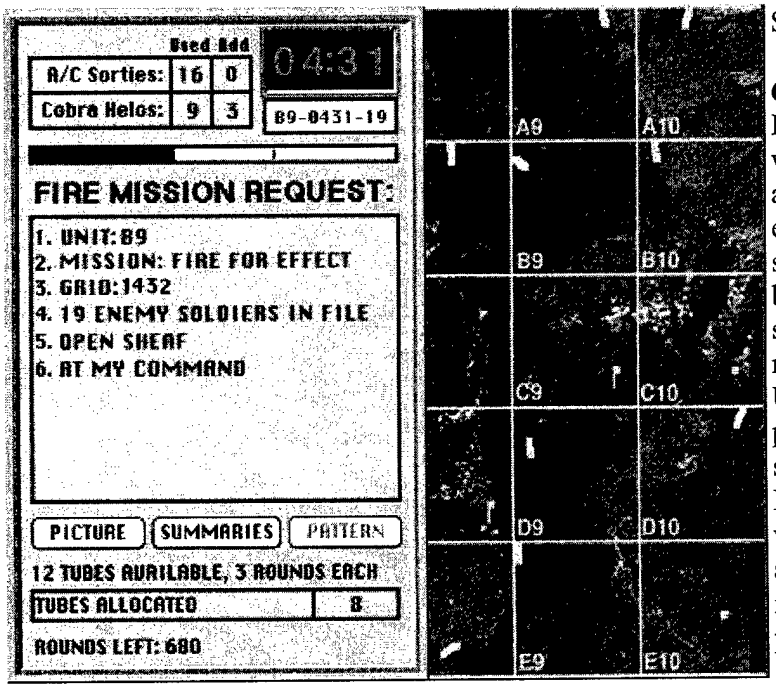
The first is setting priorities, which traders call 'sorting the order deck.' The decisionmaking in a fire support center often consists of filling orders for maneuvers, logistics or fires in the next 12 to 24 hours. Similarly, traders often are filling orders from clients to buy or sell at a certain price.

A second function is assessing feedback and adjusting the battle. A trader calls this speculating, or 'testing the market.' He will take a series of small positions; if the market does not react as he anticipates, he will test the other side. Capital is risked on an assessment of the market. Similarly, the multitude of fire missions will lead to constant assessments at the COC--whether to keep away from the action or increase the fires requested.

The heaviest sustained fighting since World War II occurred in the spring of 1968 along the DMZ--50,000 North Vietnamese against 11 U.S. battalions. Spon-taneous fire missions averaged nine per hour. In the simulation, there were 36 missions in the first hour. This is an accelerated battlefield for the COC--not filling orders for the next day, but immediate decisionmaking based on a sense of the battlefield.

In the game, the traders focused upon detecting patterns among the "trades;" that is, among the simulated calls for fire. But the information in a fire mission format focuses upon the technicalities of its execution. What the traders sought--the systematic association of one fire mission with another--needs development.

Training Simulation



Source: GAMA Corporation

6. Mission Control: Centralized or Decentralized? The trend in air warfare is toward centralized planning and mission control and decentralized execution; the airborne controller has a symbolic picture of the entire air battlefield. The COC will see the symbolic location of friendly units, but most enemy are hidden on the ground. Unlike air control, a COC cannot presume to understand the terrain and situation from computer symbols. Mission control of infantry is achieved when the unit in contact understands and acts in accord with the general intention of the higher commander. In past wars, with comparatively few spontaneous fire missions, COCs

operated under 'silence as consent,' with requests going directly to the supporting arms. There weren't enough interconnected teams to let a target mature or patterns develop.

Now any unit can instantly designate a target. It is an open question how to amass the fire support, munitions, and logistics in order to support a hundred or more strike teams, day after day, when the targets are ephemeral and elliptical.

The traders pointed out the dilemma. Was the COC exercising centralized mission control, as analogous to the AWACS air controller, or keeping its hands-off? Command & Coordination seemed a better description than Command & Control. Adjustments occurred in accord with the larger picture but tactical directives did not. The teams have the better sense of the immediate tactical battlefield. While it may be some time before the proper role of the COC on the nonlinear battlefield is defined, it will be more decentralized than the air war.

7. Strategies: Risk, Reward & Consequences. Traders talk of risk-reward ratios usually 1:3 so they can take small losses and still average out ahead. Derivatives and options allow the possibility of large reward at low cost by the transfer of risk. But the applicability of risk-reward was elusive in the wargame.

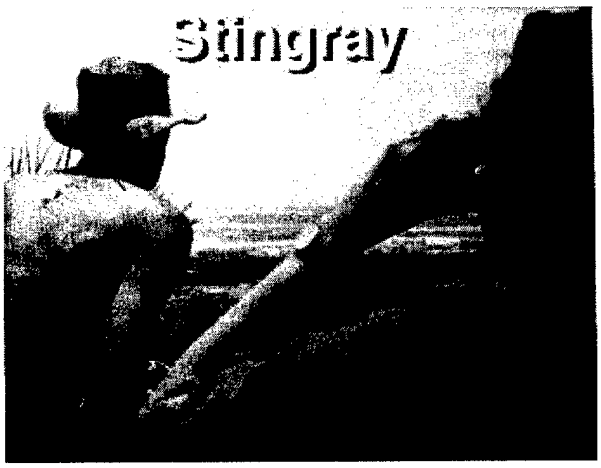
The American doctrine of overwhelming force is intended to minimize risk. When vital interests are not involved, the commander who takes a risk and loses is in political jeopardy. Indeed, with no peer competitor to stretch American resources, even on a nonlinear battlefield, American forces may deploy in traditional linear formations just to avoid risk (i.e., maneuvering by battalion rather than small teams). How is risk (occasional failure) introduced in a wargame when the American political system will not tolerate it?

Time--allowing the enemy to slip away and rest--is the enemy of the United States on the nonlinear battlefield. Hence the risk is not so much casualties, as it is enervation and failure to bring the operation to a swift conclusion. The United States loses if the enemy can extend the conflict and make it appear endless.

In the Traders' Game, the mission of 70 Stingray-type teams, each with a 3x3 mile search grid, was to locate and call fires upon enemy units dispersed across a large nonlinear battlefield.

The instinctive focus of the traders was to find a pattern. Traders invest heavily in research to identify market trends and suggested technical analyses (rules based on statistics) to aid in rapid pattern detection. The Marines focused on forcing a high operational tempo. As Operation Dewey Canyon in 1969 showed, no large unit can avoid contact, even in a jungle, if placed under constant patrolling pressure. Any unit can be broken by fatigue and dehydration.

With many independent units widely dispersed, the COC must balance total fire support and reinforcements against a serial stream of requests, uncertain whether future sightings and requests will be more deserving of exploitation than current opportunities. The most challenging aspect of the COC on the nonlinear battlefield is locating and pinning the critical enemy units. This will require quantitative techniques, pattern recognition, and adjustment of patrol areas to maintain incessant pressure. When the COC faces a flood of fire missions and sightings, the traders' insights will pertain.



Source: F.J. West, Quang Tri, 1966

8. Iterating Assumptions. The feedback to traders is profit or loss, which they know with certainty and without time-consuming search. In contrast, battle damage assessment is uncertain and slow. The displays mentioned above will give the COC a set of clues about enemy behavior, but assumptions must be continuously challenged. A trader detects trends from charting and taking small positions. If he loses after a few tries, he will test the other side of the market. Only when the market gives positive feedback will he increase his trades. Similarly, a COC must identify indices about enemy patterns and then test them, throwing fires or units into sectors based on uncertain data. If it is wrong, it has to correct immediately in order to sustain unremitting pressure.

9. Training. Traders suffer a high attrition rate--over 70%; the surviving traders display certain characteristics There is no analogue in manning a COC; any officer is equivalent to any other officer. The Joint Task Force for combat contingencies is often an unmanned 'ghost' billet, to be filled when the crisis breaks. How does a COC become as skilled as a trader? A trader develops a feel for the market through experience. What sort of training can substitute for experience? Models with different scenarios should be run again and again, with the players making decisions under stress. Repetition will aid the COC to see patterns on the battlefield.

Like trading, this is an art; some officers will be better at it than others. Tests could determine who performed better, allowing for a stand-by cadre (In Desert Storm, the 'Jedi Knights' and 'Instant Thunder' planning teams were not selected at random).

Recommendations

If enemies learned from Desert Storm and disperse their units in nonlinear fashion to avoid offering clear 'Centers of Gravity,' then fixing the enemy becomes more important than synchronizing large friendly formations. Displaying diverse data and responding quickly under uncertainty will characterize the COC.

COC should plan on four times as many immediate fire missions as in past wars, necessitating adaptation of trader techniques.

The traders believed the COC could assimilate much more data through the use of computer graphics.

The traders urged tests to determine which officers in a COC apply fires more effectively.

The traders focused on the effects of fires and stressed practice in decisionmaking and hedging strategies to apply expensive fires efficiently.

Mr. West, President of GAMA Corporation, designed and facilitated The Traders' Game. Mr. West is at (703) 578-1700 or fax 578-1704 or Internet: GAMACorp@aol.com. For the full report, a product of the Commandants Warfighting Lab, contact Cmdr. Kevin Cheezum, USN at (703) 784-3276, or fax 784-2815.

NOTE

|Return to Top | Return to Strategic Forum Index |Return to Research and Publications|

The Strategic Forum provides summaries of work by members and guests of the Institute for National Strategic Studies and the National Defense University faculty. These include reports of original research, synopses of seminars and conferences,the results of unclassified war games, and digests of remarks by distinguished speakers.

Editor - Jonathan W. Pierce

INTERNET DOCUMENT INFORMATION FORM

A . Report Title: War in the Pits: Marine-Futures Traders Wargame

B. DATE Report Downloaded From the Internet: 09/28/01

C. Report's Point of Contact: (Name, Organization, Address, Office Symbol, & Ph #): **National Defense University Press**
Institute for National Strategic Studies
Washington, DC 20001

D. Currently Applicable Classification Level: Unclassified

E. Distribution Statement A: Approved for Public Release

F. The foregoing information was compiled and provided by:
DTIC-OCA, Initials: __VM__ **Preparation Date 09/28/01**

The foregoing information should exactly correspond to the Title, Report Number, and the Date on the accompanying report document. If there are mismatches, or other questions, contact the above OCA Representative for resolution.