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Wargames Revival Breaks New Ground

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Full text: U.S. military services, government agencies and private companies are rediscovering the art of wargaming as a cost-effective vehicle for exploring complex policy, doctrine and strategic issues such as combat in space, missile defense and information operations. Insights gained from today's high-level wargames are having a profound impact on defining new warfighting concepts and shaping weapon system acquisition programs.

Although wargaming has been used to train military and government leaders for well over 100 years, new "gaming" techniques--augmented by computer models and simulations--are providing critical insights and new perspectives that are otherwise unattainable. Wargames are confronting national civilian and military leaders with tough questions that often are shelved because they fall into the "too-hard-to-do" category. Does intentional interference with a U.S.-owned satellite orbiting 600 mi. above the Earth constitute an act of war? How critical is "space" to U.S. military operations today? How would a military spaceplane, several Airborne Laser platforms, and a space-based radar work together to protect ships at sea or spacecraft in orbit? If a huge, near-neutral-buoyancy, rigid-hull airship could carry a light unit of troops and equipment at speeds up to 200 kt., how would it alter future Army operations?

"WARGAMES ARE CRITICALLY important . . . to address real policy issues that need to be straightened out," said Gen. Howell M. Estes, 3rd (USAF, Ret.), former chief of U.S. Space Command. "Certainly, in the space business, [wargames] have much improved understanding of the critical nature of [space] systems."

"Wargaming is a tool--one arrow in the quiver--for testing future scenarios. Wargaming doesn't predict the future, but it can test and evaluate future scenarios, help assess your strategies and validate your assumptions as the world continually changes," said Michael J. Coumatos, president of MC Associates, a Colorado Springs-based aerospace consulting firm that specializes in training corporate executives to use wargame techniques for competitive advantage. "The classic, most fundamental [feature] of wargaming is that decision makers can run through a series of 'what-ifs.'"

At one time, wargaming was a highly respected, integral part of U.S. military planning and strategy development, particularly in the Navy. Prior to World War 2, naval wargames that depicted Japan as an adversary initially revealed U.S. deficiencies, but eventually led to development of the island campaign and other strategies that proved effective in combat.

Fleet Adm. Chester M. Nimitz later said: "The war with Japan had been reenacted in game rooms at the War College by so many people, and in so many ways, that nothing that happened during the war was a surprise--

absolutely nothing, except the Kamikaze tactics toward the end of the war. We had not visualized these." A headlong rush to embrace technology after World War 2 led to the atrophy of wargaming, although it remained a reliable training and education tool at service war colleges. The rise of systems analysis as the preferred decision-making tool during the Vietnam era was testimony to then-Defense Secretary Robert McNamara's belief that almost any military issue could be quantified and analyzed "by the numbers." Consequently, wargaming had very little influence on decisions made throughout the Vietnam conflict. Today, wargames have made a strong comeback. Their influence on shaping the nation's air and space future is "big and getting bigger," Coumatos said. "People who have been doing wargaming have always known about its mainstream impacts, but it just didn't have universal appeal. Today, we have a new round of participants. We're getting more senior leaders to experience the wargaming process; it's not just left to the students at war colleges."

Again, the U.S. Navy can take credit for sparking a resurgence in wargaming. In 1979, the Naval War College started its annual "Global" wargame series to test new ideas in a joint and combined-forces environment. Global was conducted at the "Secret" classification level, and, unlike training-oriented games, incorporated detailed intelligence information to get "the best understanding of what our adversaries looked like. That allowed us to get out of the abstract and into applications," said O.E. (Bud) Hay, chairman of Gaming and Research Techniques in the Naval War College's Center for Naval Warfare Studies. Hay was a member of the original team that designed and directed the first Global War Game, and has continued to guide the Global series' design, execution and analysis.

Participants discovered "the enemy wasn't really 10-ft. tall, and we weren't all going to die," Hay said. The game also helped eliminate the opposite attitude, common among some senior officers, that then-Soviet Union military power was "not a problem; we're going to win." A more realistic view of both U.S. and Soviet capabilities became a priceless by-product of three now-completed Global game series, each five years long. Ultimately, Global wargames helped shape the Navy's 1980s-era "Maritime Strategy" (see p. 61).

IN A SUMMARY OUTLINING issues that emerged during Global's first series, Hay and coauthor Capt. Bob Gile (USNR, Ret.) observed: "From a military perspective, one of the most valuable results of the first Global . . . series was that it forced game participants to test 'accepted truths' in a realistic simulation. The consequent modifying or discarding of what had been accepted as 'gospel' permitted a new appraisal of how a war between superpowers might better be waged."

Global quickly expanded to include civilians from the Pentagon and other agencies. Game designers knew that senior civilians "would have a different and more realistic appreciation of the political process than would senior military officers," Hay said. These participants played major roles on the Blue (U.S. or allied) team, such as the National Command Authority, and as the Red (opposing or enemy) Supreme High Command. "Further, as the Global War Game gained stature, the accuracy of results became crucial. Without realistic policy decisions to guide the military aspects of the game, issues raised and insights gained could well be flawed or irrelevant," he explained.

Today, senior leaders in the White House, Pentagon, State Dept., Federal Emergency Management Agency (FEMA) and various three-lettered intelligence entities are participating in high-level wargames to work through advanced concepts for dealing with myriad national crises. As technology advances, even more representatives will take part, interacting remotely from a desktop computer in Washington, perhaps.

"I THINK THAT, IN THE FUTURE, we'll be able to get even more National Command Authority [people involved]," said Lt. Gen. Joseph J. Redden, commander of the Air Force's Air University. "Right now, we try to pull all these people together in Washington, or up at Carlisle [Barracks, Pa.], but we draw them away from their workplace to do that. The ability to [participate] on a more regular basis, in a more compressed period of time, is going to be available within a few years.

"The President [won't] be playing wargames, but certainly National Security Council [personnel] will be able to

sit at a workstation on their desk and be participants. They'll be able to [function] as the national command authority. . . . in a synthetic situation. It could be a small, three-day exercise dealing with a terrorist and weapons of mass destruction. It might involve members of Congress' intelligence committees and others who might be consulted by the President. They'd all be linked through this synthetic environment with the other players, participating in discussions about policy decisions being made," Redden said.

Today's sophisticated, multidimensional wargames force leaders to think about the decisions they or their superiors would have to make during a national emergency. "It's very important to have State [Dept.], FEMA and even the American Red Cross and others involved, especially when it's a humanitarian or disaster [wargame]," the general noted. "These are [who] you'd want to bring up on the Net when you're postulating a certain environment. In their normal, day-to-day activities, they don't have time to think about these [situations]. However, the fact that they've thought through difficult policy issues [during a game] is valuable experience." EVEN WITHOUT HIGH-TECHNOLOGY link-ups, three major U.S. wargames--called "Title-10" games, since they are service-level venues with roles and missions defined by U.S. codes--sometimes attract more than 1,000 players, including national-level military officers and civilian leaders. The Army's "Army After Next" (AAN) and Air Force's "Global Engagement" (GE) games, which are modeled after the Navy's "Global" event, give these leaders an opportunity to address some of the most difficult questions facing the nation today. And the games are having an impact.

For example, the Navy is using wargames to help assess the operational value of certain design features now being considered for its next-generation aircraft carrier, CVX. Considerations raised by these games are having a direct impact on the carrier's acquisition. Similarly, the 1998 Global game explored the relevance of a concept called "network-centric" warfare.

In early 1997, the Army's "Army After Next" wargame jolted military and civilian leaders by showing that, if U.S. satellites are quickly destroyed in the early stages of a conflict, ground forces can rapidly grind to a halt. A former assistant defense secretary, who had played the "Blue" or U.S. president in that wargame, was prompted to write a letter to Defense Secretary William S. Cohen, urging timely action on space control issues (AW&ST Apr. 28, 1997, p. 60). That "president's" wargame experience made a much stronger impression than any briefing about space control ever could, according to an Army officer.

The Air Force's "Global Engagement 97" game showed the value of protecting space resources from attack, and featured use of both a suborbital military spaceplane and expendable launchers to quickly replenish orbital sensor satellites lost in attacks. Defensive weapons on a space maneuvering vehicle (SMV) enabled their protection of high-value assets in space, which was "very effective," according to a participant (AW&ST Dec. 8, 1997, p. 26).

IN THE CIVIL AND PRIVATE sectors, wargaming is finding application as a way to explore the complex interactions of federal, state and local agencies dealing with disasters. A game for FEMA underscored the need for much better organizational links among various governmental groups in order to handle a major earthquake. Without that wargame, unidentified "disconnects" could have quickly paralyzed rescue efforts and promulgated life-threatening inefficiencies during an actual disaster.

Today, wargaming is rapidly becoming a valuable tool for business, too. Airlines, financial institutions, oil companies and manufacturers have embraced gaming as a way to study alternative actions in response to a competitor's moves, changes in a critical market or shifts in the global economy. Thanks to training by ex-military experts, business executives have learned that wargaming is not a predictive tool, nor is it infallible. But it can be quite effective at surfacing knotty issues and helping players think logically about situations the company may face (see p. 64).

Although the benefits of wargaming are becoming apparent to many, the mechanics are widely misunderstood. "There's a misconception about today's wargames," said Robert Hylton, a former USAF colonel who headed the Center for Aerospace Doctrine, Research and Education at Air University prior to retirement. Now a defense

programs consultant for Booz-Allen & Hamilton, Hylton observed that "the layman thinks wargames involve computers and everything's automated. [Today], most military games are seminar-based, with computers only augmenting the game. Part of the reason for that--and it's not a minor issue--is the models we have available are still pretty much attrition-warfare-based. And, today, we're talking about everything but attrition warfare." "Seminar-based" wargames are really exercises in human interaction and decision-making. They are characterized by discussions that determine moves and countermoves made by several teams. Typically, a "blue" team represents friendly forces. "Red" is the enemy, challenger or opposition force. A "green" team, in certain games, provides an operating environment or unforeseen events--such as adverse weather or unexpected political maneuvers outside the blue or red teams' control. A "white" team serves as the game's controllers, providing assessment and judgments of actions. The white team keeps a game on track and makes sure pre-wargame objectives are met.

Because they are dependent on decisions made by the participants, wargame outcomes cannot be duplicated via "reruns." "You cannot fight a game [by] changing only the random numbers. The interplay of human decisions and the outcomes of those decisions make it impossible for two games to be the same," wrote Peter Perla, author of *The Art of Wargaming*. He also identifies seven key elements of a wargame:

- Objectives: Specifications of a game's goals, ensuring the required information or issues are identified and discussed.
- Scenario: The situation or context in which players make decisions.
- Database: The information that players could reasonably expect to have available to them, such as the types of weapons in use and their capabilities.
- Models: Usually mathematical expressions that translate decisions into effects. For example, a model might show the amount of damage that could be expected from firing a certain type of theater ballistic missile into an enemy's air base.
- Rules, procedures and umpires: Definitions of what players can and cannot do, which ensure a logical chain of causes and effects.
- Players: Typically, effective games put participants in operational roles, and their decisions affect the game's direction.
- Game analysis: "Capturing" the key elements of a game to help establish links between actions and reactions for post-game review and understanding. "The data collected during game play is only the raw material for the synthesis of insights and identification of issues," Perla wrote in *A Guide to Navy Wargaming*. ALTHOUGH THESE BASIC principles remained unchanged over decades, today's wargames are breaking new ground in terms of sophistication and impact on policy-making, doctrine development, concepts-of-operation definition and strategy formulation. Increasingly, there is a push for linking wargaming with simulation and experimentation in the field, using prototype hardware and innovative concepts to test ideas raised during games (see p. 63).

"Every year, we learn more and more about the cooperative nature of wargaming--and we have a lot more people involved," Hylton said. "We're starting to get at the meatier issues, rather than just telling ourselves how good we are."

Photograph

Photograph: Most high-level military wargames today are "seminar-type," with computers only used in a support role. Players rely on in-depth discussions and interaction before making each game move.

Photograph

Photograph: Sophisticated wargames are giving U.S. national leaders an opportunity to explore complex policy, doctrinal and strategic issues associated with potential combat in space.

Illustration

Illustration: Graph: Major wargames can take a year to develop, but only a few days to "play." Adjudication, the

``refereeing" process that guides outcomes of a move, is done manually or via computer by a control team.

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