

## TRAINING &amp; SIMULATION



## DOD, Services in “Urgent” Embrace of Virtual Training

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A Chinese proverb states that the more one sweats in peace, the less one bleeds in war. As the complexity and unpredictability of modern warfare evolves, the Department of Defense (DOD) and the military services are looking at new ways to apply the essential truth of that proverb to the fast-paced, information-saturated operations of today. The advent of new ways of warfare, and the emergence of new missions for the military has heightened the urgency to find better ways to improve human performance.

## Blurring the Lines

- *Transforming the way the military trains to fight is about changing culture as much as it is about harnessing technology.*
- *Lessons learned from Sept. 11, 2001, from Afghanistan, and from Iraq have shown the urgency for embracing operational and training transformation.*
- *In the future, simulations will evolve to support training experiences that immerse personnel in virtually real environments, blurring the line between “real” training and simulations.*

Dr. Paul W. Mayberry, deputy undersecretary of defense for readiness, told *Sea Power* that lessons learned from Operation Enduring Freedom in Afghanistan during 2001 and 2002, and from Operation Iraqi Freedom show the necessity for new approaches to training. In Afghanistan, allied forces struggled with an adaptive enemy very different from the standing force against which U.S. strategy had been focused.

With a change in the overall strategic environment, Mayberry said the Department of Defense now must have an equally dramatic shift in the way it prepares forces.

“We are operating entirely differently now from the strategy of the Cold War,” he said. “The complexity of our operations is exponentially higher today and ... mass battle damage is no longer the standard calculus upon which our military forces operate.”

Accordingly, the Office of the Secretary of Defense has backed a \$1.3 billion investment in military training improvement to match spending programs aimed at transforming operational capabilities. Transformation, which has become a Pentagon buzzword, means changing the military into a mobile, flexible, more easily sustained, and more lethal force, especially one that embraces cooperative, or “network centric,”



U.S. NAVY/CHRIS HOWELL

**Lt. Cdr. Bryan Kust pilots an F/A-18 Hornet flight simulator aboard the aircraft carrier USS Independence. Increasingly, live and virtual training will be used together to sharpen skills.**

tactics. The goal of transformation is to support a new national military strategy, which abrogates the Cold War approach of fighting and winning two major theater wars, to a “1-4-2-1” force-planning concept. The new strategy requires military readiness sufficient to defend the United States; deter aggression and coercion in four critical world regions; swiftly defeat aggression in two overlapping major conflicts; and win decisively in one of the two major conflicts.

Improved training capabilities are an important element of force transformation, according to DOD’s *Transformation Planning Guidance* published April 2003. U.S. forces enjoy military advantages due in large part to the way they train, the guidance report noted. A rigorous and realistic training regimen imparts “extraordinary battlefield advantages,” coupled with technologically advanced and networked forces.

“For this advantage to persist into the future, we must transform our training in the same way we transform the rest of the force,” wrote Arthur K. Cebrowski, director of the DOD’s Office of Force Transformation. Consequently, the DOD’s budget guidance through the end of this decade calls for transforming training through development of a so-called “Joint National Training Capability.” Along with other initiatives that cross military service and functional boundaries, joint training programs are helping to institutionalize the idea of network centric warfare.

U.S. Navy officials involved in the service’s training programs have embraced network centric warfare and transformation as offering entirely new approaches to preparing forces not only for combat but for achieving the holistic effects of which joint and coalition operations are now component parts, especially the transition from military operations in support of diplomatic efforts, to warfare, and back as has been the sequence of events in Iraq.

The demands of a new way of warfare, one that opposes an

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**Marines from the 24th Marine Expeditionary Unit dismount during a live-fire exercise. For some skill training, like learning infantry fighting tactics, simulations won't replace live action.**

enemy globally dispersed and flexible in the form of his attacks, require a new approach to training, according to Vice Admiral Alfred G. Harms, Jr., commander, Naval Education and Training Command. Harms told *Sea Power* on Nov. 12, 2003, the training requirements for the 21st century are not going to be like those of the Cold War era.

“When I grew up the problem was static; we had the same enemy, we covered the same geography and the same target list, and the same culture for more than 20 years, even the war plans didn’t change very much,” Harms said. “For tomorrow’s warriors, the threat will never be the same. The threat is now world-wide, and whereas we had been accustomed to fighting on the ‘visitor’s court,’ tomorrow the fight will be on both the ‘home court’ and away. The complexity of this threat and the challenge it represents mandate a revolution in training to make our forces more flexible and agile. The technology we have will support that.”

Naval Air Systems Command’s Orlando Training Systems Division is a key node in the Navy’s training support network, in all its mission areas, including aviation, undersea warfare, surface warfare, and expeditionary warfare, as well as a liaison with Army and Marine Corps ground and air operational training, the Coast Guard, and the Air Force’s modeling and simulation community. Capt. Andy Mohler, commanding officer at Orlando, told *Sea Power* he is using the word “training” less often than he is referring to “enhancing human performance.” Mohler explained that what is desired by concepts like network centric warfare and transformation is an improvement in the effectiveness, efficiency, and readiness of the force.

Historically there has been tension in the military training community between preparing a force using simulations, and preparing a force using live-action training, such as occurs at national training centers such as Fort Irwin, Calif., and Fort Polk, La. For many, there will never be a substitute for actual sweat to offset bloodshed in battle, and Mohler agrees. But the cost of arranging live-action training events has risen to a premium, making less-expensive simulations attractive. Also, computer-generated training scenarios can be linked

to various geographic locations simultaneously, meaning that forces physically far apart can act together within the virtual environment of a simulation.

For Mohler, the shift to embracing virtual training capabilities is inevitable and urgent, given the high-tech environment in which people must operate. In the future, he argued, the line between live and simulated training will be blurred. When technology and methods are mature enough to accurately simulate human sensory input, military trainers will have the ability completely to immerse a trainee in real-life situations, so that when confronted by the same situation during an operation, the trainee has a sense of *déjà vu*, that he has done it all before. Part of achieving that level of transformation in training capability is technological, but part is in gaining an understanding of how to mine knowledge from an experienced person’s mind, and capture the knowledge that makes that person an expert at whatever he does, Mohler said.

In January 2001, the DOD’s Defense Science Board analysis group reported, before the Sept. 11, 2001, terrorist attacks, on the effective superiority of U.S. forces compared with most adversaries. But the report cautioned that poorly planned or executed training could negate technological advances, and that enemies could themselves take advantage of advanced training capabilities.

“We don’t have the luxury of going about this transformation in training gradually. This is more urgent now than some people think,” Mohler said. “The Sept. 11, 2001, terrorist attacks were part of a well-crafted mission that was expertly trained and executed. We are going to have to deal with more of that. Sept. 11 was a training surprise. While we cannot predict all of these types of attacks, they might happen. We have to prepare and that leaves us with a sense of urgency that is going to drive us to accept more advanced and flexible training for our forces.”

The cultural challenge remains for the military to accept a more comprehensive marriage of live and virtual training, and to refocus its investments in time, money, and intellectual energy to embrace a new strategy for training and readiness. Because simulation technology, and efforts to harness the psychology of human experience are not yet up to the level of the *Star Trek* science fiction program’s “holodeck” (a holographic simulator room), training experiences available today do not offer a trainee full immersion into a particular scenario, but the technology is being developed. The cultural shift that must occur simultaneously will give credit for the advantages that simulation brings, when complementing real events in Mayberry’s learning environment. Already in the commercial airline industry, as at the National Aeronautics and Space Administration, simulation is a key element in maintaining personnel readiness.

A military force must be ready if it is to be credible and effective. Those at the leading edge of the transformation of both operational and training capabilities are aware that the best use of a credible force is to deter adversaries from provoking conflict in the first place. As Confederate Lt. Gen. James P. Longstreet, in a footnote to the Nov. 4, 1882, *Philadelphia Times* analysis of Gettysburg wrote: “The grandest feat that a general can hope to perform is to win a victory without striking a blow.” ■