

**T**he JFQ "Essay Contest on the Revolution in Military Affairs" was conceived in late 1993 to encourage innovative thinking and writing on serious changes in the conduct of war that many analysts predict for the coming decades. A total of 70 essays were forwarded to a panel of judges. Both the number of entries and the range of contributors reflected a much wider and deeper interest in RMA than anticipated. This initial

adopting new operational and organizational concepts. A few essays presented an alternative view that the revolution is an essentially socio-political phenomenon which will be characterized by the predominance of low-intensity conflict and non-nation-state enemies.

Most contestants saw the revolution as an expanded opportunity rather than a growing risk. Their assumption was that the Nation can

forces. Emerging sensors will reveal far more about the battlespace as weapons strike with greater accuracy and lethality at virtually unlimited ranges. Survivability will require speed, stealth, and mobility. Only one essay predicted that vastly improved battlefield defenses might effectively nullify long-range precision strike.

*Span of conflict* in the next century will increase demands on the Armed Forces to deal with an ever wider spectrum of threat, ranging from operations other than war to wholly new types of high tech, high intensity combat. The essays entered in the contest reflect a divergence of opinion regarding whether a common force structure exploiting RMA technologies will be able to deal with both types of conflict, or whether very different kinds of forces will be needed for each threat.

*Time* as reflected in an improved information flow will result in vast increases in the tempo of operations, which will lead to faster command cycles. One result will be to merge the strategic, operational, and tactical levels of war as sequential operations give way to simultaneous or parallel operations. Some predict that wars of attrition will be reduced to a short series of engagements.

*Information domination* will be increasingly critical for battlefield success. Many foresee the predominance of information operations over strike and maneuver. To some, the cyberworld will become an independent theater of warfare. One writer even predicted the possibility of future "bloodless" victories through battlefield cyberwar, while several envisioned prospects of bloodless strategic defeat for the Nation resulting from the vulnerabilities of an information-based society.

*Space control* will be increasingly critical to battlefield success. Some see American dominance in space offering relative advantages over the long term, while others see an asymmetric U.S. reliance on space as a critical vulnerability. The emerging importance of space may result in its becoming an independent theater of warfare.

# THE 1995 RMA ESSAY CONTEST

success has led to a decision to conduct a second contest in 1996 (see the announcement on page 19).

## The Contestants

A total of 75 individuals, including 69 men and 6 women, were authors or coauthors of the essays (three submitted multiple entries). Of this number, 59 were members of the Armed Forces: 44 active, 9 Reserve, and 6 retired. Among these military contestants were 28 active and Reserve officers or officer candidates in the grade of O4 and below including enlisted personnel from each service. The overall breakdown, both active and Reserve, was 16 Army, 16 Navy, 24 Air Force, and 3 Marine Corps. Of the 14 civilian entrants, 6 were DOD employees. Moreover, two foreign officers were among the contestants.

## The Essays

The 70 essays reflected a broad range of RMA-related issues. Most supported the contest's major suppositions: that we are in the midst of a technology-based military revolution and that the key to military leverage is

maintain a significant technological lead over prospective enemies and also leverage this lead to profound military effect if it so chooses. On the other hand, a number of authors took the significant future threat to be the increasing availability of high-tech military capabilities to less-developed nations. In their view, there is a real danger that states with conflicting values may exploit U.S. and Western vulnerabilities using highly lethal systems. Such potential enemies may be less concerned about casualties, collateral damage, or conflict escalation.

Some essays addressed new technologies—such as microsystems and biotechnology—but a majority focused on operational and organizational issues emanating from information and long-range precision strike systems. These and other themes on the future of warfare were articulated in the essays.

## Operational Issues

*Strike effectiveness* through long-range precision strike and information technologies will greatly increase the future vulnerability of large signature

## Organizational Issues

*Smaller and lighter:* Information and strike technologies will provide much greater combat effectiveness to smaller systems and units. This capability, and the need to reduce unit signatures, will result in smaller, lighter, and more mobile forces—with more flexible organizational requirements.

*Function over form:* RMA operational needs will result in less service-specific and more function-specific approaches such as standing joint commands on the tactical level. Jointness and the traditional view of individual services will become outmoded. In their place functionally based commands will focus on space, information, strategic operations, mobility, etc.

*Increased automation* of traditional command and control functions will be required because of the faster tempo of battlefield operations. New roles will have to be found for decisionmakers in a system that processes information more quickly than it can be assimilated and acted upon.

*Virtual organizations.* Information technology—especially vast increases in communication bandwidths—will allow real-time networking of many units and individuals, regardless of physical location. Traditional command hierarchies may prove too cumbersome for system requirements. We may see the growth of virtual organizations—especially reconnaissance strike complexes—that define themselves by function and capability instead of seniority and service relationships. One of the essays advocated complete elimination of formal battlefield hierarchies, allowing the networked system itself to naturally define the most efficient future organizational structures.

A number of the essays focused on the need for more innovation in the military to deal with the challenges of RMA. One made a case for a process of evolutionary development while another saw a necessity to skip a generation and leap into RMA. Still others centered on institutionalizing the process of innovation as well as dealing with cultural impediments to organizational change.

The entries in the 1995 contest offered much food for thought and, in many critical areas, reflected a wide divergence of opinion on the dominant aspects of the future of warfare. These essays as a group also posed a number of intriguing theoretical questions:

■ Assuming a tech-based RMA, can we choose our future? What are our deterrence and warfighting goals? What specifically can we achieve through this revolution?

■ To what extent will technology itself determine future change? Where will it lead us?

■ Will our enemies be the first to achieve an RMA by using technologies that exploit our vulnerabilities? If so, will they redefine warfare?

## The Winners

The judges included officers of all services as well as senior civilian officials. Each judge was familiar with the broad range of historical and recent issues and literature surrounding RMA. A blind judging process was used. The editor of *JFQ* masked the identities of entrants before their essays were passed to the panel and the names were not revealed until a determination on the prize winners had been finally reached.

The contest rules stipulated three questions that were to be “rigorously addressed.” While no entries that met the basic contest rules were dismissed out of hand, the judges looked for quite compelling arguments in considering essays that departed from the announced contest parameters. The entries that fared best and were considered competitive (including many that were not selected) tended to meet two criteria:

■ They offered clear guidance on linking RMA theory with real choices and decisions that will need to be made in the future. (While these were some intriguing theoretical pieces, they did not fare as well as the more practical approaches.)

■ They tended to be focused on long-range change, particularly concepts and organizations for exploiting technology.

Although only three prize winners were named, a number of other entries were considered highly competitive, two of which appear herein.

## RMA Essay Contest Award Ceremony

The Vice Chairman, Admiral William A. Owens, presented awards to winners in the first annual *JFQ* “Essay Contest on the Revolution in Military Affairs” in a ceremony held at the Pentagon on January 11, 1996. Cosponsored by the National Defense University Foundation and the Office of Net Assessment, the contest solicits innovative concepts for operational doctrine and organization by which the Armed Forces can exploit emerging technologies.

Prizes of \$2,000, \$1,000, and \$500 were awarded for the three top entries. The cash awards were made possible by contributions to the National Defense University Foundation from Northrop Grumman and SAIC. First prize was presented to Ensign Thomas G. Mahnken, USNR, for “War in the Information Age” (in addition, he won a \$500 prize for the best essay by a junior officer). Lieutenant Colonel Marvin G. Metcalf, ARNG, took second place for “Acoustics on the 21<sup>st</sup> Century Battlefield.” Finally, Major Jeffrey L. Caton, USAF, received the third prize for “Joint Warfare and Military Dependence on Space.” All three essays are published in this issue. **JFQ**



Joint Chiefs of Staff (Mamie M. Burke)

Award ceremony participants: Caton, Metcalf, Mahnken, and Owens.