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Edward A. Smith Jr.
U.S. Navy

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The Navy RMA War Game Series

April 1995–November 1996

Captain Edward A. Smith, Jr., U.S. Navy

IN THE WAKE OF DESERT STORM and the phenomenal success of the coalition forces, it appeared to a considerable number of observers that the United States was experiencing a “revolution in military affairs,” or “RMA,” a sharp discontinuity in warfare like that represented by the blitzkrieg of 1940. The introduction of stealth, precision, and information technologies had clearly brought at least a dramatic change in the implements of war—that is, a “military technical revolution.” What was less clear was whether DESERT STORM reflected a radically new form of warfare, one that optimized these new technologies as the blitzkrieg had radio and mechanized armor, or whether it amounted to an application of new technologies to old tasks and concepts. How else might the new technologies be applied? Which other technologies might have a similarly dramatic military application? To what degree would the U.S. armed forces need to rethink their concepts of warfare?

To address such questions as these, between April 1995 and November 1996 the military staff of the Chief of Naval Operations Executive Panel (the CEP), in conjunction with the Office of Net Assessment of the Office of the Secretary of Defense and later the Assessment Division of the Navy Staff, conducted a series of six coordinated, seminar-type war games. The collective effort, which was designed to examine various aspects of a potential RMA and their implications for the U.S. Navy, was based on the work of three task forces of the Executive Panel: a “Strategies for an Uncertain Future” group, which assessed

Captain Smith holds an undergraduate degree from Ohio State University and a doctorate in international relations from The American University. After commissioning he served as a surface warfare officer, as an intelligence officer in combat in Vietnam, at the Navy Field Operational Intelligence Office, in the Office of the Secretary of Defense, on the staff of the Commander in Chief, Atlantic Command, and Supreme Allied Commander Atlantic, as Deputy Director for Intelligence in the Office of Naval Intelligence, and as an assistant naval attaché. Captain Smith is currently a staff member of the Chief of Naval Operations Executive Panel.

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future trends and their implications for naval warfare; a “Ship Design Task Force,” which looked at the possibilities for radical changes not only in ship design but force structure as well; and the “Innovation Task Force,” which examined the process of doctrinal and technological innovation within the Navy and the prospects for encouraging revolutionary thinking in that organization.

During the series, two additional CEP task forces were established that likewise contributed to the course of the gaming. The assignment of the first of these was to study “Navy Support to the Land Battle,” examining Army and Marine Corps requirements for naval support in a precision warfare environment. The other’s purview was “Information Assurance,” the requirements and vulnerabilities of information warfare.

Objectives of the Game Series

Throughout the project there was continual discussion and collaboration among the CNO, the CEP task forces, and the gamers, with task force members themselves participating in some of the games. At the outset, however, the orientation and objectives of the game series were worked out by the Chief of Naval Operations, the Director of Net Assessment, and the military staff of the CEP. The CNO, the Director of Net Assessment, and many members of the Executive Panel urged the gamers to break new ground, to try innovative approaches to the RMA problem. Underlying this creative encouragement was a bluntly practical directive from the CNO: to remain realistic and operational in both the problems examined and the solutions proposed. This guidance and direction produced a focus and a methodology that was, in three specific ways, unlike those of previous games organized to deal with RMA issues.

Earlier games had concentrated primarily on identifying technologies that might have a revolutionary impact on warfare. For example, which information technologies would enable forces to move tactical data from sensor to shooter in the most efficient manner? As several panel members observed, this had often caused games to focus on the applicability of some undefined set of technologies to present-day warfare problems, whereas it would be wiser to think about what new tasks such capabilities might make possible, or what other technologies ought to be considered as well. Having as its specific purpose to address such larger matters, the 1995–1996 RMA game series reversed the previous approach. It asked first what would the U.S. Navy need to be able to do in the uncertain future described by the Strategies task force. Then it posed the question, what kind of revolution in thinking and approaches to warfare would the service need to meet these requirements? Only subsequently would the gamers investigate what kinds of technologies and capabilities might be called for to implement the revolution.

Similarly, close attention was urged to the question of how the RMA might contribute to preventing and containing conflict. War gamers were not to consider deterrence and control of conflict as “lesser included cases” of warfighting but were to treat them instead as actions that might require quite different operational approaches and capabilities. Such peacetime and crisis applications of RMA ideas and technologies were of particular concern to the Navy because of their importance for effective forward naval presence. Close examination of peace and crisis operations would also usefully raise the broader issue of how an RMA might contribute to the political and diplomatic utility of U.S. military forces.

Third, the war gaming also took account of the fact that a revolution in *naval* thinking and warfare had already started. The white papers “. . . From the Sea” (1992) and “Forward . . . from the Sea” (1994) had asserted that the Navy–Marine Corps team could have a decisive *direct* impact on events ashore. This view was a radical departure from the Navy’s Mahanian tradition of *indirect* influence there, and it clearly had significant implications for the future. One of the game’s challenges, then, was to refine avenues by which the strategic concepts of “Forward . . . from the Sea” might be implemented. However, as the game series proceeded, the draft of a new white paper by the Chairman of the Joint Chiefs of Staff, “Joint Vision 2010,” appeared, and its ideas were likewise incorporated. They became the basic model, in the context of the games, for implementing the Navy’s strategic concept.

The outcome of any war game that looks into the future is very dependent on two variables. The first has to do with its critical assumptions about military capabilities and scenario events. The farther into the future one looks, the more conjectural the assumptions must be. Second, the background and character of the participants affect the results obtained. Although every attempt is made to select the right players for a given scenario, the quality of the lessons learned greatly depends on their imagination and individual expertise. The insights derived from these or any games, therefore, do not reflect absolute truths or necessarily accurate predictions about the future but, rather, plausible outcomes that planners and decision makers might usefully consider.

Force Structure. In the design of any war game, critical decisions have to be made as to the set of “pieces” with which the gamers are to play—in classic terms, the “order of battle.” Its suitability to a game’s scenario and underlying purpose strongly affects the quality of play and the analytical usefulness of the outcome. In these games the players were to deal with the total force structure of the naval service; what that in turn would be was largely a function of the “setting” (that is, how far in the future the players were to consider themselves

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to be) and what levels of national defense spending were assumed to have existed in the intervening years.

The time frame chosen for the entire series was 2020. Considerable thought was given to using 2010, the date associated with the Chairman's "Joint Vision," but designers concluded that a jump of only fifteen years into the future would not produce naval forces much different from those of the present. It was estimated that about 85 percent of the fleet of 2010 is already in commission or under construction. By pushing the setting further out, a substantially different force, one incorporating a wide array of new technologies and concepts, could be posited.* However, to ensure realism, the designers limited themselves to units and capabilities that might be expected to be operational by 2020—those derivable from naval or defense research already underway in 1995, or that off-the-shelf commercial technology seemed likely to produce over the next twenty-five years.

The chosen force structure, likewise, had to be affordable within Navy and defense department budgets that were assumed not to have increased in real terms over the same quarter-century. The costs of various alternatives were calculated, and trade-offs were made, both between new systems and among the demands of platform construction, weapons, and maintenance. The result was a pair of possible force structures representing fundamentally different approaches, each of which was deemed achievable within the projected budgets. One was an evolutionary continuation of the current (1995) programs; the other was optimized for precision and maneuver warfare. The latter specifically reflected trade-offs in favor of such capabilities as arsenal ships, "fire-and-forget" precision weapons, targeting and analysis systems, and the stocks necessary to sustain strike operations from the sea. Notwithstanding "real world" constraints, however, players were encouraged to point out capabilities that, whether or not they might meet acquisition or budgetary criteria, would have been useful or even critical to their operations. These results were later used to suggest ways in which naval research and development programs might be used to better effect, and to support a dialogue with industry about civilian technologies that might be applicable to the evolving military problem.

Scenarios. A second basic task of game designers is to devise the "world" in which the hypothesized interactions will take place: the entities involved, their purposes, and the underlying or external forces that will act upon them in the course of play. For a strategic-level seminar war game, designers must define the

*The scale of this difference is most obvious in retrospect. The fleet of 1995 had substantially the same character as that of 1980. The F-14s, Los Angeles-class SSNs, and Nimitz-class carriers of today's fleet had all entered service by 1980. By contrast, the fleet of just ten years earlier had been mostly of World War II vintage, and its "sunrise systems" are now being rapidly retired from service.

“actors” (whose parts might be performed freely by players, represented by a control group, or simply “scripted”), generate recent “historical” data to establish the geopolitical situation at the outset, and plan a series of major “events” to channel the course of play. The designers must produce a scenario that is matched to the backgrounds of the players and will lead them to deal with issues pursuant to the overall game objectives. They must also choose a level of detail and complexity that allows useful analysis but avoids artificiality or skewed results (by, for instance, inadvertently excluding vital considerations). Finally, they must define a cycle of “moves” that sequence the course of play—each move comprising situation briefings, discussions and decisions by players, and control group consultations.

The original guidance for the RMA game series directed, as noted above, that play focus on operational problems that might reasonably be expected in the world of 2020. The work of the CEP task force on “Strategies for an Uncertain Future” provided the geopolitical assumptions, while the Navy white papers established in outline the missions and warfare tasks to be examined. The Strategies group had pointed to an unstable world in which “asymmetric” foes (that is, with forces and methods of warfare substantially different from those of the United States) would challenge this nation. Such opponents might range from terrorists to major military competitors. The task force emphasized the inevitability of the proliferation of new technologies and the high probability that future foes would use these tools not only in unexpected ways but to pursue ends quite different from those of the United States.

For their part, the Navy-Marine Corps white papers had argued that the fundamental naval operational problem will remain the necessity of going “in harm’s way” to project power and influence ashore. This postulate implies that an effective forward presence, able to deter would-be aggressors or provide the basis for a military coalition, will be required. It also emphasizes the significance of being able to achieve and maintain sea control and project decisive power ashore against even a well equipped major adversary.

Taking all these considerations into account, the game designers crafted scenarios that dealt with problems of peace, crisis, and war, and organized moves around three transitions: from peace to crisis, from crisis to war, and from war to war-termination. The emphasis on “cusps” reflected several recognitions. First, transitions pose the most complex challenges, inasmuch as they involve rapid changes in the tasks and objectives of the forces involved and may pose the greatest risks for forward units. Naval forces, representing (as the white papers asserted they would) the leading edge of U.S. responses in each of the transitions from peace to crisis to war and also the major residual capability once hostilities have ended, are likely to be particularly stressed by such shifts. Finally, more than

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any steady phase of conflict, the transitions test the politico-military aspects of an RMA.

The designers also included a "Move Zero," a final, retrospective phase in which players were asked to return from 2020 to the present and use the insights they had gained to suggest what "should have been done" differently in the years from 1995 to 2020 to prepare for the circumstances they had encountered in the war games.

Game Play: Regional Conflict

The series began with a group of three games designed to identify capabilities, organizational modes, and strategies that might be required to implement the Navy's white papers, and to assess the limits of such RMA concepts as precision, maneuver warfare from the sea, and speed of command. In the first two games, the players representing the United States (known by convention as BLUE) were divided into three teams. One used current strategies and an "evolutionary" force structure, in effect a straight-line projection of the 1995 forces; both other groups played the precision and maneuver warfare forces. However, one of the latter was urged to investigate alternative offensive and defensive applications of this precision and maneuver force, while the other was asked to explore how the new capabilities might be applied to current approaches to warfare. Before the third game of this sequence, a basic strategy had been fleshed out for applying precision capabilities to maneuver warfare, based on ". . . From the Sea"; the third game, therefore, began to assess the relative advantages of precision-optimized forces in this context and to fix the specific requirements for implementing such a force. (The results became an input to the Navy's Long Range Planners' Conference, held in March 1996.)

At the CNO's request, the first three games involved a Southwest Asia scenario, assessing what naval and joint forces could do to project effective power without immediate access to local bases. The adversary (RED) was an aggressive regional power that, in league with local ideological and ethnic allies, was threatening its neighbors. In keeping with the observations of the CEP's Strategies task force, this state was assumed to have obtained weapons and information technologies from a relatively unconstrained international arms market and to have adapted them to its particular strategic needs. Since among these needs would have been to forestall BLUE intervention, the regional foe was presumed to have created a surveillance and targeting system that allowed it to attack air bases and other fixed targets in the area and ships and aircraft in the Gulf and the northern Arabian Sea. To this end, it had created what amounted to a two-tier military: a small but relatively sophisticated air, air defense, and sea force, whose primary purpose was to deny access to the area; and a much larger and less modern land

force, used chiefly to deal with neighboring states. Taken together, these capabilities posed a complex military problem, one whose effects extended as far seaward as RED's sensors and weapons systems could act, and as far inland as BLUE forces and weapons could reach. It also implied a mix of naval tasks: applications of high-technology precision warfare, certainly, but also traditional operations like evacuation of BLUE's citizens, escort of friendly shipping, maritime blockade, mine clearance, and landing significant ground forces on a hostile coast.

Players were asked to address how, in such a context, information-based precision and maneuver concepts and capabilities—as used by both RED and BLUE—would affect two basic missions of the U.S. armed forces: deterrence (preventing, containing, or controlling a crisis or conflict), and projecting decisive power ashore.

The deterrence problem was threefold. The most obvious question was, what options did the BLUE military, and particularly its forward naval forces, possess that might contain a crisis and prevent hostile actions? Investigating that issue required players to evaluate which forms of military power the foe would respect, how much of that power would have to be applied or threatened, and how quickly, if it was to have a decisive impact. In the context of game play, these deterrent options for BLUE fell into two categories: those that threatened unacceptable damage, and those that simply prevented the opponent from effectively applying its military power. Examples of the latter would be blocking RED forces that attempted to cross the Gulf, or intercepting and destroying air and missile attacks.

A second and equally intriguing aspect of deterrence appeared to be the degree to which BLUE might itself be deterred by RED, particularly RED's ability to attack any local ports and airfields opened to BLUE use and to target BLUE forces in or approaching the Gulf. Most players felt that BLUE's ability to "stand off" beyond surveillance or strike range was not a solution to this problem. Such an approach, some pointed out, might be seen by local states as evidence that the RED deterrence strategy had succeeded or that, worse still, BLUE had conceded *de facto* hegemony to the opponent within the effective range of RED area-denial systems. Players concluded that BLUE, in order to deter, had to demonstrate an ability to deal successfully with the foe's interdiction capabilities.

The third element examined was the reassurance and reinforcement of local allies. This form of deterrence appeared heavily dependent on the visibility of BLUE forces in critical periods of crisis—what players termed "evidence of shared risk"—and on their ability to provide protection. The latter led players to the "Catch 22" of coalition building: that land-based air and missile defense of local states requires access to local territory and at least an informal coalition between BLUE and the states involved, but that local states will not—almost *cannot*—join

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a coalition or grant access without *prior* protection from air and missile threats, especially if they involve weapons of mass destruction. Players judged that the ability to conduct such a defense from the high seas—beyond the constraints of sovereignty and politics—had become a critical necessity during at least the early stages of a crisis. The principal operational problem, then, became balancing the requirement for visibility with the vulnerability of the forces so employed.

As for power projection ashore, game play revolved about two questions arising respectively from the two naval forms of projection outlined in “. . . From the Sea”—independent strike operations, and support to the land battle. How, first of all, could precision strike capabilities at sea be made “decisive”? As early as the first game, players noted that the force-multiplying effect of “precision” was more a matter of “smart” targeting than of weapons accuracy, and that a “soft” information attack could be as much a precision strike as “hot steel on target.” The paramount matter was to identify the targets that were most critical or offered the most leverage in a given situation. By the third game, this view had led to a distinction between three kinds of targets: politico-military, directly influencing the actions of the regime; infrastructure, such as lines of communications, whose destruction would undermine military effectiveness; and the forces themselves. As the reader understands, each set presents markedly different operational requirements and constraints.

The second question relating to power projection was how amphibious operations could be mounted and sustained entirely from the sea. Flowing from this were a series of subsidiary questions. How would the absence of access to ports, bases, and airfields in the crisis area affect BLUE’s ability to seize a foothold ashore? What kind of enclave would be required if heavier army and air forces were to be brought in? How could large-scale operations ashore then be sustained from the sea? Although the emphasis was on optimizing maneuver warfare from the sea, it quickly appeared to players that the critical factor was to deliver sufficient numbers of joint forces and capabilities in the right place at the right time and then to provide them comprehensive protection and fire support from off shore. Just as quickly, players noted that even a rudimentary missile or “weapons of mass destruction” capability in the hands of a foe places these requirements in an entirely new light. Forces at sea would have to suppress that offensive strike capability in order to achieve “battlespace dominance” before amphibious operations could be launched; they would then have to sustain that dominance as well as provide informational, logistical, and fire support for a considerable period of time thereafter.

The players’ assessment of these questions, particularly in the third game of this sequence, produced a loosely prioritized “wish list,” divided into six categories: sea control, deterrence, strike, expeditionary and amphibious warfare, campaign, and infrastructure. Across these categories, however, certain

requirements stood out: for massive conventional firepower from the sea (for strike, support to forces ashore, and sea control), for information superiority (specifically, a comprehensive joint offensive and defensive battle management capability), and for sustainable sea-based logistics for joint operations. Each was seen as key to meeting the challenges of "...From the Sea" and "Joint Vision 2010."

Game Play: A Major Adversary

In the second group of games, the focus shifted to dealing with a foe possessing military forces of a scale and quality roughly equivalent to those the United States could bring to bear on the scene. It was accepted that such an adversary need not pose a global threat or have forces similar to those of the United States, and specifically that it need not possess a large, blue-water navy capable of challenging the U.S. Navy at sea. It needed only to be capable of effectively confronting American military power in a region of mutual concern. This shift in the focus of the scenarios also underlined two problems that had surfaced in the first group of games but had not been considered in depth: the scale and the duration of operations required to deal with a large opponent, and how a "major adversary" might capitalize on the RMA, especially by using precision and information technologies against U.S. forces.

The Navy Staff's Assessment Division was heavily involved in designing force structures for use in the second group of games. That office provided a detailed extrapolation of plans and programs to inform both straight-line and precision-optimized force structures posited for 2020, and it invented a mechanism for assessing trade-offs. In the games, each team was given a limited amount of extra "chips" to "spend" on additional systems (from a set list) it thought would be helpful in meeting the problems of the scenario; however, to obtain any more chips a team was obliged to "trade-in" portions of its existing forces. Possible new systems comprised a variety of items currently in research and development or recommended by the March 1996 Long Range Planners' Conference, as well as some highlighted by the first three games of the series. They included such systems as a vertical-firing long-range gun, a hypersonic missile, advanced mine detection gear, and extended cooperative-engagement capabilities that allow joint and allied forces to achieve synergistic collaboration with U.S. forces.

The first game of this group addressed the problems of preventing and containing a crisis involving a major power (ORANGE) capable of waging precision warfare some distance to seaward. In the scenario, ORANGE had established a blockade of a BLUE ally (which we will refer to as GRAY) using a long-distance precision strike capability and was now threatening an invasion. The BLUE goal was to neutralize the blockade and discourage the impending

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aggression. Inasmuch (the briefing materials postulated) as dispatching land-based forces to the ally was likely to constitute a *casus belli*, BLUE efforts were to be limited primarily to operations by naval forces and by long-range air power based at home. Consequently, players faced a threefold problem.

First, shipping was to be protected deep inside ORANGE's area-denial zone, which meant that BLUE escort operations would be under a threat of precision attack. BLUE, therefore, would need to establish the kind of "full dimensional force protection" envisaged by "Joint Vision 2010"—land, sea, air, and missile—using primarily sea-based forces. It would have to sustain such protection indefinitely, and under peacetime constraints and rules of engagement. Second, not only naval forces but the local ally itself had to be defended, visibly and credibly, from air and missile strikes and even airborne and amphibious assault—and all of these things would have to be done without access to local facilities. Finally, BLUE forces would strive to reduce the possibility of escalation, whether by ORANGE or GRAY. In part that meant convincing the "major adversary" that it could not hope to conquer GRAY and that any actual use of force would result in direly painful consequences. It also meant, as players pointed out, controlling the actions of the ally, especially if it was tempted to provoke ORANGE under the protection of BLUE's umbrella.

The players' deliberations on all three problems underlined the continued value of traditional warfare capabilities, especially the undiminished relevance of "mass" even in precision warfare. The questions posed by players revealed some of their foremost considerations: How much missile defense would be necessary to block a large-scale attack? Could such a number be kept at sea? How many precision strikes, against how many targets, and of what kinds, would be needed to pose a credible threat to an adversary as large and capable as the game postulated?

The second game of the series examined the problem of force projection in a major regional conflict resulting from a land invasion of a BLUE ally (which we will call GREEN) contiguous to ORANGE. In effect, players were asked to plan for major wartime operations inside the area denial zone of a powerful adversary. The first part of the players' operational problem was how to project sufficient combat strength into the area, in view of the fact that ports and airfields used to deploy BLUE forces were subject to attack, as were any concentrations of forces in or near GREEN. Moving heavy forces into the area in the face of such a threat was a very dangerous and difficult proposition, one that would require sustained, full-dimensional protection. Players observed that such protection involved a "roll-back," or blunting, of ORANGE area-denial capabilities, which was not simply a joint matter but one requiring both considerable use of national assets and extensive coordination at the national command level. Second, given the foregoing and the precision capabilities of BLUE forces, what amount of combat

power might be required? It was necessary to render aid to an ally and block the aggressor's assault without prompting a resort to weapons of mass destruction. To protect the ally, players had to address how the land battle might be supported from the sea—to ask, in effect, what a sea-based “assault breaker” might look like. The specter of escalation, however, led players to examine the use of precise conventional weapons in a strategic role and to ask how their impact might best be multiplied to achieve a decisive impact.

The final game of the series pursued a different dimension of major regional conflict. It introduced a second, nearly simultaneous, crisis elsewhere in the world, one instigated by a regional power attempting to take advantage of BLUE absorption in the first conflict. The object of this war game was, specifically, to examine the nation's ability, while heavily committed in one major conflict, to deal with a second. Taking advantage of a video link to the U.S. Naval Postgraduate School, in Monterey, California, the game designers called for four teams: two were given a Southwest Asia scenario similar to that played in the first group of games; the other two were given a different problem, in the eastern Mediterranean.

The crux here, of course, was a severe resource-allocation problem. Major forces would continue to flow to the first conflict; the players were asked for innovative ways to deal with the other one. They soon concluded that *no* major conventional land operation could be conducted in a second theater, any time soon; some entirely different approach would be required. The pairs of teams produced that alternative in different ways. Those playing the Southwest Asia scenario envisioned a precision strike campaign, combined with comprehensive protection of local allies, using Navy and Air Force assets “swung,” or diverted, to the theater. By contrast, players in the eastern Mediterranean scenario relied heavily on the combat assets of major allies in Europe and elsewhere; they proposed to use BLUE's RMA capabilities, such as precision targeting, to multiply the impact of allied forces.

Insights

The RMA war game series, taken as a whole, yielded two distinct categories of insights. To begin with, recommendations arose about new technology that might be required to implement the “. . . From the Sea” white paper and the principles of “Joint Vision 2010”; these proposals (which had been laid out at the Long Range Planners' Conference in March 1996) were later carried over into the Navy assessment and acquisition process.

Perhaps more significant were new thoughts concerning the *limitations* of the revolution in military affairs itself. The first of these was that *what's good for fighting a war may not help prevent it*. It was quickly apparent to players that while stealth,

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precision, and information technologies afforded U.S. forces a unique wartime ability to engage at great distance while hidden from a foe, it was close-in, *visible* presence that was critical to preventing war by deterring or containing a crisis in the first place. Such deterrence considerations could not be treated as simply a “lesser included case” of fighting a war; the two things present distinctly different requirements, as became obvious in the first war game and continued to be a factor in every game thereafter.

Avoiding enemy weapons and surveillance by stealth or submerging makes sense in wartime, but it does not obviate the need for surface forces to go in harm’s way in situations short of war. Indeed, the new kinds of threats to local allies make it more essential than ever that U.S. forces go well forward and make themselves conspicuous. As choices made by players suggested, if an American RMA is to be effective across the spectrum of conflict, it must enhance defensive capabilities and survivability as much as, if not more than, offensive power.

In the games, the demands placed upon command, control, and communications (C3), especially with respect to control of forces by the national command authorities, were not uniform; on the contrary, they changed drastically with each move. Outside of actual combat operations, they little resembled the revolutionary “flat architectures” permitted by new information technologies. While peacetime operations were highly decentralized, with little national-leadership involvement, matters changed dramatically in a crisis, when direct national control was established over the military forces engaged. As crisis turned to conflict, C3 shifted to a two-tier arrangement: local commanders were given defensive freedom of action, while offensive operations remained tightly regulated, specified, and directed. Once combat began, however, the advanced C3 architectures came into their own, being clearly needed to attain the speed of command required for success. Finally, however, with war termination came a re-imposition of strict national control.

Second, *the RMA does not answer every need*. It was evident to players as early as the first game that new precision and information technologies cannot fulfill all military requirements, much less all the demands of warfare. Instead, it appeared, the real impact of precision and information technologies is in their ability to multiply the effect of the weapons carried by naval forces. In each of the war games there arose requirements to perform traditional military functions—mine clearance, escort operations, evacuation of nationals, urban and guerrilla warfare, and so on. Players inferred that while the “revolution” might let forces do certain warfare tasks more efficiently, it is not a substitute for traditional capabilities but a new kind of warfare superimposed on things already being done. “Precise warfare” gives one the ability to exploit highly specific enemy vulnerabilities in such a way as to achieve a disproportionate impact;

exactly how it might do so depends on the opponent and the exact objectives in hand.

In particular, precision is not a straightforward substitute for mass or attrition. In each game, no matter how accurate the weapon or precise the targeting, there was still an irreducible number of weapons to be delivered or actions to be taken so as to achieve the desired purpose. The difficulty was in deciding which targets, in what numbers, and with what timing, would prove decisive.

Third, *the RMA works both ways*. The work of the CNO Executive Panel's Strategies task force strongly indicates that no RMA can remain a U.S. monopoly for very long. The precision and information technologies are proliferating and will be used by others to create their own RMAs—quite possibly with the United States in mind. As the games highlighted, such local “revolutions” could pose a major challenge to the long-distance projection of military power upon which the U.S. national military strategy is—and by virtue of geography must be—based. The threat will be most immediate to fixed facilities, such as ports and airfields, then to relatively immobile concentrations of forces and materiel ashore. Naval and air forces will present an opponent with a more complicated surveillance and targeting problem, but they likewise will be subject, in varying degrees, to detection and attack. The implications were clear to the gamers: the United States must be prepared to deal with an RMA directed against itself, and sustained operations of any sort are likely to require the defeat of an enemy “system of systems” for surveillance and targeting.

The insights as to the character and limitations of an American RMA also bear on the relationship between the principles of the “Joint Vision 2010” and those of the Navy's “. . . From the Sea.” In effect, the “Joint Vision” promises to multiply the impact of every naval unit by applying joint and national precision targeting to their high-technology capabilities. As the games suggested, this synergy will be most profound for forward naval forces, which will bear the brunt of operations for peacetime deterrence, initial crisis response, and, increasingly, the early “assault breaker” phase of conflict. However, the games further suggested that the effect might also act, and even more strongly, in the opposite direction: that is, that forward naval forces bring a new dimension to the “Joint Vision.” They offer to joint forces a balanced set of options and capabilities for both high-technology and traditional combat at sea, in the air, and on land. They offer the freedom to maneuver from the sea and to apply the principles of precise engagement, full-dimensional protection, and focused logistics unhampered by constraints of sovereignty. Finally, they embody the capabilities of the “Vision” and make them visible in a manner that can help shape local security environments around the world in peace and crisis as well as war.

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Where Now?

Because the Navy's 1995–1996 RMA war games were by nature an exploration of new ideas for which there was no existing model, they were designed as seminar games—structured brainstorming sessions meant to identify new problems and flesh out hypothesized concepts. Appropriately, each raised as many questions as it answered. However, as the games and the thinking progressed, the questions, the concepts, and the results became more specific. What began as seminars searching for new operating concepts became “battle problems” seeking solutions for new tactical questions. Three such questions arose that remain to be explored.

How are U.S. forces to defeat an area-denial effort? The second group of games, in particular, established that any sustained forward operations, especially ashore, will face enemy attempts to prevent access to the region, and that even the *possibility* that they might succeed would undermine the utility of U.S. forces in peace and crisis. Dealing with this challenge is likely to require a complex and highly coordinated effort at the national, theater, and joint task force levels, one directed at taking apart an enemy's surveillance and targeting capability—something yet to be attempted.

How would the United States sustain campaign operations in an RMA environment? Previous RMA discussions have seemed to assume that precision and maneuver are the antithesis of attrition, that a single devastating blow will bring an enemy to terms. To the contrary, these games continually raised serious questions of how powerful such a blow could be made and how often it would have to be repeated, if in fact it could be. In the words of one player, “What if the enemy doesn't know he has lost?” Indeed, the second group of games took this one step further, asking in essence, “How would we defeat a major foe if land warfare were not an option?”

Finally, how will the U.S. Navy support operations ashore in a precision warfare environment? In the games, threats by weapons of precision or mass destruction repeatedly obliged defensible, sea-based forces to provide an entirely new dimension of fire, logistical, and information support. The games also made clear the complexity of the problems involved, as well as the importance of coordinating Navy efforts with Army and Marine Corps experiments in maneuver warfare ashore.

Indeed, the breadth of the questions raised by the games in itself suggests deeper problems with precise, high-tempo operations. One senior player argued that the entire idea of executing national control through rules of engagement was a relic of the Cold War, one that needed to be revisited in the context of today's precision capabilities. He suggested military planning in terms of “options,” self-contained sets of pre-approved and highly specific actions and

political objectives. A member of the Executive Panel, the late Professor Albert Wohlstetter, carried the observation one step further, to argue that what the expanding capabilities for precision really implied was the need to rethink the nature of deterrence itself, in peace, crisis, or war—a process that, he observed, had scarcely begun.

Each of these new questions, like those arising in the previous Navy RMA war games, has its roots in the U.S. Navy's own revolution in military affairs, outlined in "... From the Sea." Each focuses on the white paper's challenge: to project decisive power and influence ashore. Each seeks to apply the thinking and technology of a new age to determine how the U.S. Navy and Marine Corps will meet that challenge. One should not expect immediate and definitive answers to such questions. Rather, the 1995–1996 RMA war game series should be seen as beginning a long-term iterative process that must reach to the fleet, to innovators within the Navy and Marine Corps, to the Army and the Air Force, to national agencies, and to a larger policy community. However, one realization is already clear. In the last analysis, it may matter less that there exists an American revolution in military affairs than that others will use new technologies and thinking to challenge the United States with RMAs of their own.



U.S. Naval Institute Arleigh Burke Essay Contest

Essays must persuasively discuss a topic related to the objective of the U.S. Naval Institute: "The advancement of professional, literary, and scientific knowledge in the naval and maritime services, and the advancement of the knowledge of sea power." Essays may be up to 3,500 words in length; three will be selected for prizes (cash and medals), and winners will be published in the April *Proceedings*. Anyone may enter. Entries to: Arleigh Burke Essay Contest, U.S. Naval Institute, 118 Maryland Ave., Annapolis, Md., 21402-5035 (contact Valry Fetrow, tel. 410-268-6110, fax 410-269-7940); deadline 1 December 1997.