Vice Admiral Cebrowski has commanded Fighter Squadron 41 and Carrier Air Wing 8, both embarked in USS Nimitz *(CVN 68). He later commanded the assault ship USS* Guam *(LPH 9) and, during Operation* DESERT STORM, *the aircraft carrier USS* Midway *(CV 41). Following promotion to flag rank he became Commander, Carrier Group 6 and Commander, USS* America *Battle Group. In addition to combat deployments to Vietnam and the Persian Gulf, he has deployed in support of United Nations operations in Iraq, Somalia, and Bosnia. He has served with the U.S. Air Force; the staff of Commander in Chief, Atlantic Fleet; the staff of the Chief of Naval Operations, on four occasions; with the Joint Staff (as J6); and as Director, Navy Space, Information Warfare, and Command and Control (N6). Vice Admiral Cebrowski became the forty-seventh President of the Naval War College in July 1998.*

PRESIDENT'S FORUM

While achieving institutional change has always been an uncertain and perilous undertaking, it is all the more so when we find the foundations of our decision rules to be on shifting sands, as they are now. Put another way, the very factors that make institutional transformation so difficult have made it imperative.

T HE ABILITY OF AMERICA'S defense forces to adapt and maintain a process of continuing transformation will be the key to an enduring competitive advantage, yet it remains a vexing challenge. The spring 2000 intersessional conference at the Naval War College focused on "Strategic Change, Transformation, and Military Innovation"—both timely and pertinent issues.

Strategic Change and Contradictions. To say that such efforts are difficult in these times of great change understates the problem and does not adequately characterize this era. Governing rule sets are changing. Well-understood principles are no longer reliable. This is evident at many levels in the form of contradictions. For example, as the sole superpower and as the world's single largest economic force, the United States is a status-quo power in a rapidly changing world. The United States causes much of the change, and we cannot prevent it. We see ourselves as not only a benign giant but also a well-intended one. Yet our dominating global presence disrupts and even destroys the cultures of people with whom we intend stable relations. Another apparent contradiction is that even as the process of globalization, with its unifying forces, moves forward at an ever-quickening pace, we are witnessing a historic rate of growth in the number of political, social, and economic entities. The United States may have made the world safe for "demassification" of such entities; that is, there is a sense of safety without mass. Yet another apparent contradiction is that wealth increasingly accrues to those who desert the well understood and highly optimized means of wealth generation in favor of emerging and not-yet-understood concepts.

In the national security and military areas, we see similar evidence of tectonic shifts in the reference framework for decision making. Our military theory

springs mainly from the intersection of the industrial age and the concept of mobilizing a nation-at-arms for foreign wars. One is gone, the other defunct. The ramifications are profound but not yet understood. Furthermore, the outcome of military action is no longer closely coupled to the degree of destruction. Even as militaries pursue precision weapons, it is increasingly difficult to see how they can achieve precision *effects*—that is, those that affect the behavioral aspects of an opponent, especially at the policy level. So while achieving institutional change has always been an uncertain and perilous undertaking, it is all the more so when the foundations of our decision rules are on shifting sands, as they are now. Put another way, the very factors that make institutional transformation so difficult have made it imperative.

The era of great power military competition is only temporarily over. In the meantime, new hedging strategies are required. Uncertainties force us to consider a host of military contingencies across the full spectrum of conflict. Perhaps the most important of these involve adversaries who seek ways to deny us the ability to project military power into their regions of the world.

A second challenge is the accelerating pace of technological development, especially in the area of information-based systems. Rapidly emerging technologies hold the prospect of significant changes in the character of warfare over the coming decades—perhaps leading to what have been termed "revolutions in military affairs." Most of these new technologies have yet to be exploited fully for military use or tested in combat; thus, we have only limited insight into either the opportunities or the challenges they may hold for us.

Overarching these challenges is a U.S. defense budget that is static or even declining relative to need. Some see this as greatly limiting the number of options that the nation can comfortably select for our military force of the future. Others see in the budget pressures an opportunity to open our minds to new options and liberate ourselves from our past.

The Need for Innovation. Our military is not alone in having to face a rapidly changing competitive environment. Over the past two decades, the revolutionary pace of the information age has forced virtually every commercial business to reorganize and adapt—or be overrun by the competition. Those who have adapted successfully can give an indication of the scope and depth of organizational transformation with which the military must deal.

This is not the first time that militaries have faced this type of challenge. The history of warfare is a story of both evolution and revolution in military systems and capabilities, as adversaries have sought to exploit new technologies for competitive advantage on the battlefield. A review of military history reveals that some countries have done well in this competition to innovate but that others

have done poorly. Some militaries have failed because they did not see or understand the changes that were occurring in the character of warfare. Others had a clear vision but failed in their efforts to implement that vision. Still others understood what needed to be done but innovated too late or too early. (Yes, it is possible to be right too soon.)

The Process of Innovation. For both the military and for commercial business, innovation has proven very difficult to achieve. Most organizations were created to establish and maintain order and predictability in their operations. Successful organizations are naturally oriented toward continuous *improvements* in what they do—that is, they perpetually seek to optimize the familiar tasks that they have performed so well.

By contrast, an *innovation* is a major departure from this linear path of continuous improvement. It changes the rules of the competition and introduces new measures of effectiveness. A successful innovation can offer significant advantage to the side that first achieves that capability—competitors must emulate and adapt or face the prospect of defeat.

Since major change entails cost and risk, the burden of proof is on the innovator to demonstrate that the bold new approach is a desirable alternative to the existing order. The innovation finds natural opposition within most organizations, because it proposes to trade a familiar and usually successful set of systems and concepts for new and untried methods. Moreover, any innovation alters the social and cultural order established around current systems and operational methods. In the military this often translates into different command relationships and new professional qualifications for promotion and command. This overall disruption of the organization and its culture, often extending well beyond the military itself, serves as the primary impediment to truly innovative activities.

The central lesson is that an innovation is more than just the introduction of new technology. The process of innovation requires the articulation of a vision of how a technology or operational concept can be used to gain a significant advantage in the future competitive environment. Innovation requires implementation of the vision at the right time and across the entire organization—generally in the face of significant resistance. Understanding the technological opportunities, articulating the vision, and actually implementing that vision constitute the essence of the transformation process. Innovators can expect to be confronted by the simple reality that the need has not yet been articulated in an acceptable way and that consent to the indicated changes in methods, organization, careers, etc., is being withheld. What they face can be described simply: "I don't need it, and I don't want it!"

Becoming an Adaptive Organization. Despite the natural impediments to change, many organizations do innovate successfully. History offers broad insights into the pathway to success. Foremost among these is that militaries that have been particularly innovative have tended to focus more on the *process* than the product. Rather than attempting to build forces for predicted futures, they created organizations that could adapt successfully and rapidly to many possible paths and developments.

At its heart, then, transformation is a journey, not a destination—a process, not a goal—a continuum, not an achievement. Efforts at transformation must focus on recognizing, developing, and guiding emergent behavior that will position the enterprise favorably for an unknown and unpredictable future that is also recognized as emergent.

This theoretical discussion of transformation, however, leaves us with many questions, which must be worked out on a continuing basis. For example, how are the character of military operations and their utility to the nation evolving? What new means and methods for securing the national interests will emerge? How do we best exploit emerging technologies and leverage the nation's advantages in these technologies and processes? How do we keep our concerns about the present from consuming our future? What specific qualities will be required of our military-after-next to ensure that it retains dominance even as the definition of dominance shifts? How do we destroy the world's most efficient fighting machine to create a new one appropriate to a new age that we do not yet understand? These issues and others are being addressed here at the Naval War College. But that work cannot be confined to Newport. It must be exported and debated broadly in America. Our future may depend on the expanse and quality of that debate.

ARTHUR K. CEBROWSKI
Vice Admiral, U.S. Navy
President, Naval War College