



What's Ahead for the Armed Forces

By DAVID E. JEREMIAH

Late each December the supermarket tabloids run New Year's predictions of famous astrologers and psychics. These forecast celebrity marriages, divorces, and dalliances, alien encounters, disasters-to-be, and the latest message from Elvis. To my knowledge, no one ever goes back a year later to tally the accuracy

of the tabloid mavens, and probably for good reason. Foretelling the future can be a dicey enterprise.

This does not mean that the future is entirely opaque. While it may not be possible to predict specific events or outcomes, one can draw useful conclusions and take prudent actions based on major trends and alternative scenarios.

Summary

The security architecture of the Cold War and the doctrine of containment are fading away. But without a formal mechanism to redraw disputed international boundaries, we seem to be in for a prolonged period of regional conflict. Challenges will proliferate as the world population grows, ethnic and religious antagonisms are unleashed by the end of communism, and political and military institutions undergo change. Who will be our adversaries and how can the Armed Forces prepare for the warfare of the future? Moreover, how can we plan sensibly in the face of declining budgets and technological developments? What should be scrapped, what must be procured, and how can rivers of information be reduced to usable products and directed to where they are needed? Looking ahead like the great military visionaries of the past, and with the benefit of sound analysis, we can begin to discern trends that have import for our national interests and the joint capabilities which the services will need to defend them.

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Since becoming Vice Chairman of the Joint Chiefs of Staff, I've been deeply interested in the tremendous change our world is undergoing. The national security paradigm of the past half-century, an architecture built on containment of communism and competition with the Soviet Union, has given way.

What will take its place? What are the implications for the Armed Forces? And what should we be doing now to prepare for future demands? Following are some thoughts on how our world is changing and what those changes portend for the future of the American military and our overall national security posture.

Elements of Change

Great wars leave turbulence in their wake. World War I left a civil war in Russia, a sullen Germany wracked by internal strife, and flotsam adrift in what had once been Austria-Hungary and the Ottoman Empire. Similarly, the defeat of the Axis powers in World War II unleashed forces that changed the face of Europe, Asia, and Africa. The passing of the Cold War now has map-makers scrambling for pens and fresh ink, while territorial squabbles, civil wars, and humanitarian tragedies are popping up like poisonous mushrooms.

After earlier wars, nations commonly held grand conclaves to restore order. Delegates to the Versailles Peace Conference after World War I tinkered with international boundaries and devised new states, mandates, and protectorates. As World War II drew to a close, Allied leaders solemnly brokered territorial adjustments and otherwise laid the framework for a changed post-war world. They also agreed to create the United Nations, hoping its lofty councils would find peaceful, rational ways to resolve (or at least referee) international problems.

But when the Cold War finally shuddered to a halt, no epoch-making summit gathered to pore over maps, pencil in new boundaries, or formally induct new, odd-sounding states into the fraternity of nations. Would-be new members have

been left to establish an independent political identity by their own devices. Some, such as united Germany, Slovakia, and many new republics of the former Soviet Union, have done this through a more or less smooth political transition. Other aspirants such as Bosnia, Armenia, and Georgia found the path to statehood slippery with blood.

Many Americans hope that the quarrels and feuds around the world are merely a Cold War hangover. They assure themselves that things will "quiet down" once lingering Cold War toxins are finally metabolized. Sadly, that seems highly unlikely. The problems simmering in so many parts of the world show no signs of abating. On the contrary, we may be in for a prolonged period of conflict and crisis in the international arena. And the Armed Forces are in for some very dangerous years as they stand ready to protect our Nation's interests through these volatile times.

As it faces the future, our military is being buffeted by winds of change from three different compass points: changes in the international community, changes in the way our forces are organized and employed, and changes in the realm of technology. Each of these is gusting with such force that any one alone would make our future extremely demanding.

New World Disorder

The world is going through an incredible metamorphosis. Some changes are directly related to the end of the Cold War; others have no connection with the late East-West conflict. The sum total of these changes, whatever their source, is a world teeming with nascent crises. A new administration took office earlier this year determined to make domestic issues its first priority, but vexing international problems demand its attention with the persistence of a salesman with his foot in the door. What does this portend?

The end of the Cold War invalidated all the old strategic postulates of the past four decades. The most obvious changes rippled along the old East-West fault lines, where former antagonists have become friends and partners. The ease with which we negotiated the START II treaty with the Russians is a

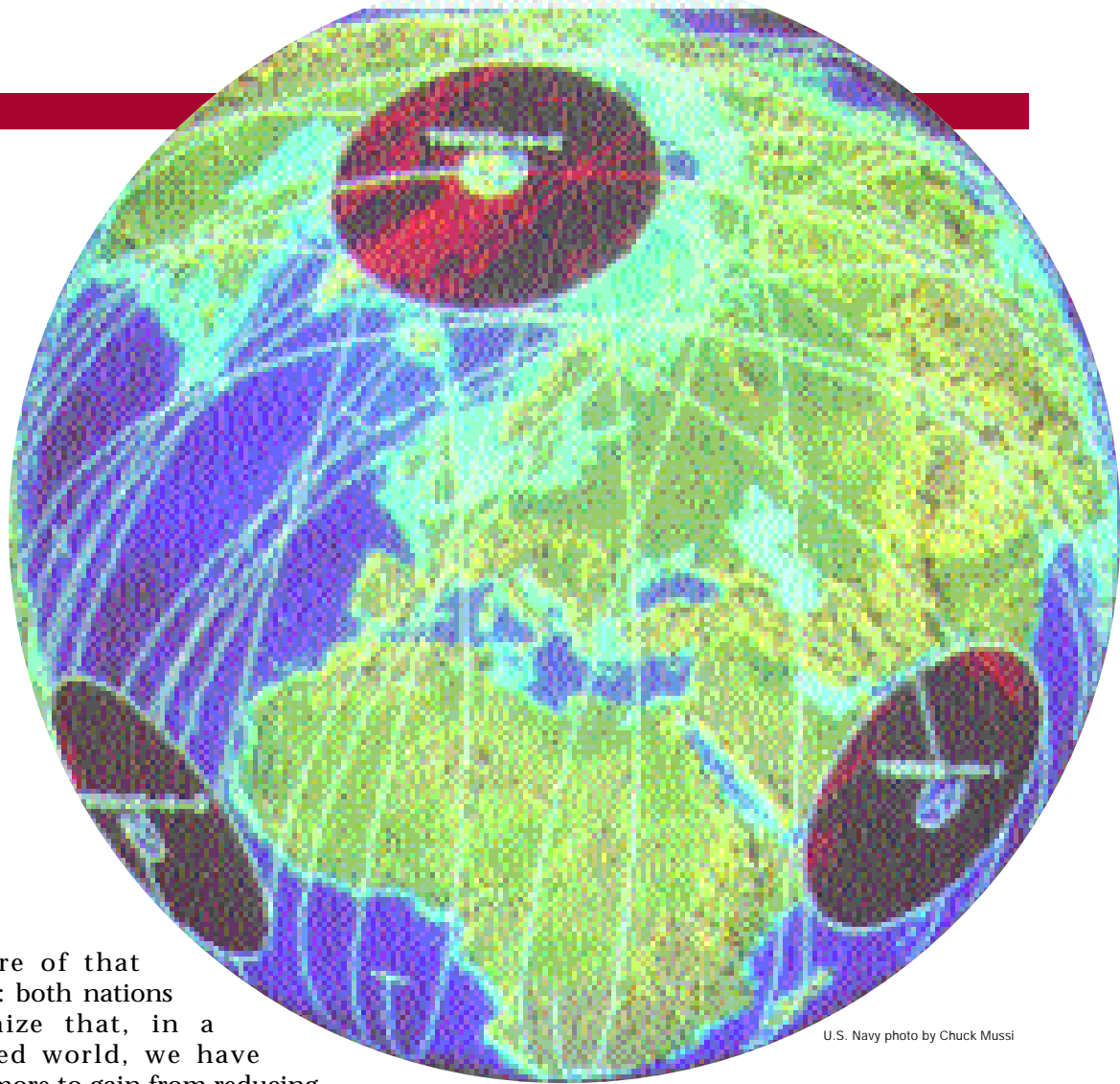


Joint Combat Camera photo by H.H. Delfner

A soldier standing guard outside the village of Belet Uen, Somalia, during Operation Restore Hope.

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A computer screen in the Navy Space Command Operations Center displaying satellite tracks and coverage areas.



U.S. Navy photo by Chuck Mussi

measure of that change: both nations recognize that, in a changed world, we have much more to gain from reducing stockpiles than from clinging to the overlarge nuclear arsenals that were once the tokens of superpower manhood.

The spectacular collapse of the Soviet Union and its empire raises hopes that the last Communist holdouts—namely, China, North Korea, and Cuba—will succumb as well. Looking at the likes of Fidel Castro and Kim Il Sung, one can scarcely avoid the conclusion that communism is increasingly an ideology of embittered

old men and that it may very well die out when they do. But the turmoil attending the dismantling of communism in the former Soviet Union warns us of the difficulty of going from a police-state dictatorship to democracy and from a state-run to a market economy. While the demise of communism in its few remaining strongholds would be a joyous triumph (especially for the people living in those benighted lands), it is not at all certain that this will happen without strife and bloodshed.

we must know, decide, and act faster than our enemy at every turn

The end of the Cold War has brought change in less obvious ways as well. It caused the bottom to fall out of the market for *strategic* real estate and leverage in the Third World. Nonaligned states can no longer panhandle the United States or the Soviet Union for aid, arms, and political patronage by playing one superpower against the other. On the other hand, the United Nations has finally been released from the rack that once painfully stretched it between Washington and Moscow. Still pale, trembling, and rubbing its wrists, it has begun to grapple with the substantive role first envisioned for it nearly fifty years ago—and to suffer new agonies from the real work of international problem solving.

The focus of our multilateral and bilateral security treaties is also shifting. Originally intended to contain Communist expansion, their value has outlasted the Soviet Union and the Warsaw Pact. In Europe, the

Middle East, Asia, and the Pacific, our security ties and forward presence are the cornerstones of regional stability. As we saw in the Persian Gulf, existing security arrangements form the hard nucleus around which wider partnerships can quickly coalesce during major crises. And in the future, regional alliances such as NATO may yet become executive agents for the United Nations, deputized to act on behalf of the entire international community to resolve neighborhood disputes.



A GDU-27 prototype laser guided bomb being dropped from an A-117 stealth fighter during weapons separation testing.

DOD photo

For the United States itself, the end of the East-West conflict profoundly changed our entire strategic outlook. A few years ago we threw away the old strategy focused on the Soviet threat and replaced it with a new one. We calculated that regional crises were the most likely threats, so instead of a *global capability for global war* we now have a strategy aimed at a *global capability for regional crises*.

This new strategy recognizes that we no longer have a single great adversary. It acknowledges new realities in international affairs. It recognizes the practical limits to our own resources and relies on a smaller force structure. But it also recognizes that the United States still needs strong, capable military forces to defend its interests. And it recognizes that, even with the end of the Cold War, the world is still unstable and dangerous. This perception is extremely important because, independent of the changes arising from the end of the Cold War, there is a high probability we will see a general worsening of international conditions over the next twenty or thirty years.

A few years ago I commissioned a study that looks ahead to the year 2025. That study, Project 2025, found some very disturbing trends. Perhaps the most powerful trend is demography: the world population will balloon to nearly ten billion people over the next few decades, with most of that increase coming in lesser developed countries. For them, population growth is like a giant millstone crushing their hopes for economic, social, and political progress. Without an international effort to get population growth under control, perhaps one-quarter of the Earth's population will be hungry every day in 2025. Many governments will

be chronically unable to meet their people's most basic needs. We may have already seen this future in Somalia. Even among fairly well-to-do nations, we can expect fierce competition for natural resources, including energy, unpolluted water, and perhaps even fresh air.

There is great potential for huge migrations as people flee conflict or search for better economic conditions. In many areas, these new pressures will rub salt in festering ethnic, religious, or political wounds. Right now Europe has more refugees and displaced persons than at any time since the end of World War II, with more than three million generated by the fighting in the Balkans alone. Germany's problems with refugees and foreign residents—plus the chillingly familiar antagonisms they have aroused—constitute the most explosive domestic issue there since the end of the Third Reich. Stir into this soup the proliferation of modern armaments, including ballistic missiles and weapons of mass destruction, and the result is a real witch's brew.

All this adds up to a strong likelihood of international crisis and conflict. But recent events remind us that, in a world village increasingly linked by modern communications, even *intra*-national problems can sometimes rouse the international community to collective action, either in anger or in sympathy.

More collective action is likely in the future. Traditionally, no matter how outrageous or despicable their conduct, tyrants from Idi Amin and Pol Pot to Saddam Hussein had little to fear so long as they confined their cruelty to their own territory. Their immunity sprang from the idea that national sovereignty supersedes any complaint about a nation's internal behavior, an axiom particularly dear to thugs and despots. Out of respect for this rule, the family of nations has repeatedly averted its eyes from even the most monstrous atrocities.

This inertia is disappearing as the international community slowly recognizes a moral imperative to step in to halt genocidal crimes even when they are committed under the claim of national sovereignty. But getting from the theoretical acceptance of this idea to

instead of a *global capability for global war* we have a *global capability for regional crises*

the practical how's, why's, and wherefore's is another matter. So far, the United Nations has not found a formula that would allow last-resort intervention while at the same time safeguarding against abuse of this power. (And abuse is not an unrealistic worry. The U.N. General Assembly is not that far removed from the days when it gleefully endorsed almost any anti-Western or anti-Israeli screed, the more venomous the better.)

In times to come, the international community may close the loophole that today allows tyrants to abuse their own people as they please. I do not advocate a diminution of national sovereignty, nor would I want to incite international lynch mobs. But genocidal crimes such as those committed by the Khmer Rouge in Cambodia, by Saddam Hussein against Iraq's Kurds and Shi'as, and by Bosnian Serbs—who have made “ethnic cleansing” a synonym for wholesale rape and massacre—should not be tolerated. The right to national sovereignty ought not to be absolute in cases of genocide any more than child abuse carried

out in a private home should be beyond the reach of criminal law. Perhaps the community of nations will find a way to address this need. If so, this will become another new element in the international security environment.

Amid these changes, there is one important constant that remains true in spite of the end of the Cold War, and in spite of all the fretful problems on the horizon: the unique leadership role of the United States in world affairs. We are not just the world's only superpower; we are also a leader in promoting

human rights, democracy, free enterprise, and the rule of law in international affairs. Other nations trust and respect us not just because we are powerful, but because we represent humanity's moral conscience. We do not always do this perfectly, but on the whole we do it well enough and often enough that we have a unique stature in the international community. General Sir Peter de la Billière, who commanded British forces during the Persian Gulf War, expressed this very clearly when he said recently that “the one stabilizing influence in the world today is the power and the common sense of America.”

Consider Somalia. When I was there last fall, Somalia looked like hell's waiting room. But despite a lot of media exposure and international hand wringing, nothing much happened to help the relief agencies until the United States stepped forward. Then other nations followed our lead, and today Somalia has been saved from starvation and banditry by a remarkable international effort. For better or worse, no other country, not even the United Nations, can mobilize international energies the way the United States can. We cannot abdicate that responsibility now just because we have other things on our plate.

We cannot be the world's policeman—but we are obliged to be its most civic-minded citizen. To carry out this role we will need well-trained, well-armed, and highly mobile forces. But these forces may be configured differently than in years past and find themselves performing tasks other than the traditional missions of “deter and defend.”

The Future of American Forces

A few years ago we designed a new structure for the Armed Forces. Our principal concern in doing this was to tailor them to the demands of a post-Cold War world of regional crises rather than global conflict. This has already meant large cuts in forces and programs, especially those (strategic and tactical nuclear weapons, forward-deployed forces in Europe, attack submarines, and so forth) that were geared chiefly toward a showdown with the Soviet Union. Today Defense Secretary Les Aspin is overseeing a “bottom-up” review to identify where more streamlining or restructuring can be done. The final result will be smaller, lighter, more



Joint Combat Camera Center photo

A unit of the 10th Mountain Division coordinating with Canadian forces in Somalia.

flexible, and more lethal forces than ever. More of these forces will be based in the United States. We are making large investments in strategic mobility—the C-17 aircraft and fast sealift—that will strengthen our ability to hurry forces and their supporting logistics to distant trouble spots.

An important part of this downsizing and realignment is a stronger-than-ever commitment to joint operations. No matter where we fight in the future, and no matter what the circumstances, we will fight as a joint team. The Armed Forces of the United States will never again poke as individual fingers; rather they will always strike as a closed fist. As we learned in Vietnam, when you go into combat, you go after a clearly defined objective and you go to win. We will gang up with every joint resource at our disposal whenever summoned to battle.

The transition to a smaller force tailored for regional crises is going very well, but it could still be lured onto the rocks unless we are careful. Siren voices are already calling for faster cuts, for narrowing current broad-based capabilities, or for sacrificing day-to-day readiness to retain structure or programs.

We are already cutting our forces as quickly as we can without compromising readiness. The importance of caution was burned into our memory after World War II, when our demobilization looked like a mass jail break. Just five months after Japan's surrender, Admiral Chester Nimitz complained that the United States itself had "done what no enemy could do, and that is reduce its Navy almost to impotency. . . . [Today] your Navy has not the strength in ships and personnel to carry on a major military operation." The Army suffered a similar fate. At war's end, it had six million men under arms; by March 1948, that number had shriveled to barely 530,000, most of whom were new conscripts. General Omar Bradley wrote that as a result the Army "could not fight its way out of a paper bag." He was very nearly right, as the opening of the Korean war sadly

demonstrated. We need to resist attempts to speed up our cuts lest we wind up once again with hollow forces unready for combat.

Our forces were meat-axed after World War II because our government naively thought atomic weapons and strategic bombing made other elements of military power obsolete. Secretary of Defense James Forrestal eventually complained to Congress that possession of the atomic bomb had "engendered [a] . . . mistaken sense of security and complacency" in the country. It took the debacle of Task Force Smith in the first days of the Korean War to shake us out of this complacency and to remind us of the need for broad-based, balanced forces. Every military situation is different, and each requires a force specially tailored to its unique conditions. The forces we sent to Somalia, for example, are unlike those that fought their way into Kuwait and Iraq. America's future is best served by a force mix that does not place too many eggs in any one basket, but which instead draws on the synergy of balanced, flexible joint forces.

Another proposal suggests we replace active forces with *cheaper* Reserve component ones. To fulfill our new strategy, we need strong, tough, capable forces that can go quickly—within days or even hours—to the scene of a smoldering crisis. For this to be done by Reserve units, they would have to maintain a level of day-to-day readiness identical to that of active forces. Such a high standard of readiness costs about the same whether in the Reserve, the Guard, or active forces. Reserve combat forces with the readiness necessary for tomorrow's problems would have to be active units in all but name. A better choice is for us to maintain active fire brigades backed up by appropriate elements of the Reserve components, especially in the areas of combat support and combat service support.

This will require a downsizing and reshuffling of our Reserve components comparable to that taking place in the active forces. We greatly expanded our Reserve and National Guard forces in the 1980s to counterbalance the Warsaw Pact's huge numerical superiority in ground troops. Today it makes no sense to keep that enlarged Cold War-era force. Consequently, we have laid out cuts that will align our Reserve components to new strategic needs—cuts that will



Joint Combat Camera Center photo by Jamel Schroeder

U.S. and Spanish aircraft used in support of Operation Restore Hope in Somalia line the runway at Moron Air Base in Spain.

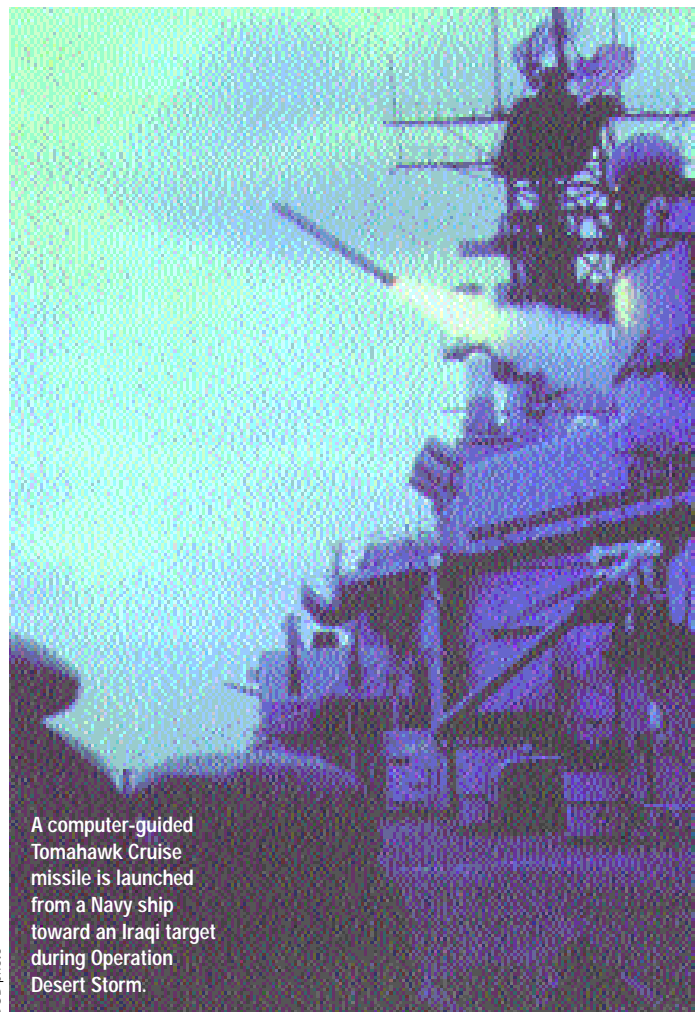
still leave them larger than before their expansion in the last decade. But most importantly, this will leave the Armed Forces *overall* in a stronger, more robust, more capable posture than could be achieved by schemes that would skew us away from a balanced structure.

The third temptation is to create false savings by plundering our operations and maintenance accounts. The superb forces we have today—qualitatively our best ever—would be betrayed by such a policy. Combat readiness is more than the sum of ships, planes, and divisions. It demands soldiers, sailors, marines, and airmen who are well trained and well led. Readiness cannot be achieved or sustained on the cheap. But since *readiness* is hard to quantify, sometimes our operations and maintenance accounts are viewed as piggy banks we can break into for spare change. The absolute importance of good training and sound maintenance shows up only on battlefield ledgers, where the red ink entries are written in blood.

In addition to the challenges posed by downsizing and restructuring, our forces will also have to adapt to changing missions. We have already seen a substantial expansion of their roles in just the past few years, everything from counterdrug operations to relief efforts in Iraq, Russia, Somalia, and elsewhere.

There is nothing inherently wrong with such departures from traditional roles provided we remember that the first purpose of military forces is to fight, not sniff out drugs or deliver food baskets. The reason we are good at other things is because, relative to other law enforcement or relief agencies, we are big, have ample trained manpower and capable leaders, and can call on marvelous resources—including a logistical system that surpasses the wildest dreams of any civilian agency. But all these advantages are, in one way or another, byproducts of combat readiness.

The future may widen the gap between the role of military *force* in the old sense and the modern utility of military *forces*. Those of us in uniform have been trained to see the two as being almost inextricably intertwined, as Clausewitz and Mahan contend. But today and in the future our forces may be assigned missions that have little or nothing to do with coercive military force in the



A computer-guided Tomahawk Cruise missile is launched from a Navy ship toward an Iraqi target during Operation Desert Storm.

DOD photo

traditional sense—like Operation Restore Hope in Somalia.

This does not mean the old roles are going away. We reminded Saddam Hussein of that two years ago. We used overt military power to force his withdrawal from Kuwait, and later we successfully used the threat of military force to create a safe haven for Kurds in northern Iraq.

But there are also situations in which military force alone can do very little. Yugoslavia is a good example. We all wish the carnage would stop; but injecting U.S. ground forces into Bosnia without a workable peace agreement among all parties would be no more successful than in Beirut ten years ago. The killing would go on, the horror would continue, and Americans would be among the dead. A noble desire to “do something” is not an adequate basis for risking our service men and women. There are limits to what

force can do, and we need to remember that our military power is not the only—or often even the best—way to promote peace and stability abroad.

By themselves these two big trends—continuing changes in the international community and restructuring our forces to address those changes—would be amply challenging. But they are not the only agents of change on the horizon. Right now we are surfing just below the crest of a fabulous revolution in technology, and that crest is about to crash down on us.

The Challenges of New Technology

Superior weaponry has been a characteristic of the U.S. Armed Forces for a long time and will remain so. But to fully exploit dazzling new opportunities, we need to streamline our procurement system. We also need to pay attention to how we adapt new technologies to military use, and to how we will command and control our future forces.

Like the tabloid astrologers, we cannot predict for certain which new technologies will prove most useful. But we can make out some ways they will reshape our forces, and because of this R&D is already shifting. We are moving away from systems that cannot be easily adapted to exploit new technologies that do not have a high degree of strategic or tactical mobility, or that are so highly specialized they can only be used against a narrow threat or in a unique environment. We do not want systems that lack low-observable or stealth technologies. We intend to get away from systems that need large, vulnerable logistical tails. And we may very well move away from expensive, highly sophisticated platforms in favor of cheaper *trucks* or *barges* based on commercial vehicles but crammed with state-of-the-art long-range weapons, sensors, and communications gear.

This does not mean we are about to sound the death knell for the major capital systems of our services—the main battle tank, the manned aircraft, and the large surface combatant. These will have their place in the Armed Forces of the future, although—and this is important—that place

may not be the central position they have held for the past half century or more. It is not yet time to kill all the sacred cows, but they should be put into a very selective breeding program.

We cannot be too beholden to any outdated or obsolete system because technological change *makes our day-to-day grip on technological superiority all the more fragile*. Our position is similar to that of the Royal Navy a century ago when the British introduced a new class of large, fast, heavily armed warship. Overnight, the dreadnought (essentially the first modern battleship) made every other type of surface combatant obsolete. The irony for the British was that this made the rest of the Royal Navy, the strongest navy in the world, obsolete as well. The British had to start over like everybody else, and this meant competitors could take a short cut. Nations like Germany, which had never dreamed of challenging the Royal Navy before, could become formidable sea powers simply by building fleets of dreadnoughts.

Today we are in an analogous position. Although we are by far the strongest military power in the world, our superiority no longer depends on outproducing our enemies as we did when we were “The Arsenal of Democracy” in World War II, nor even on superior design in aircraft, ships, and tanks like we had during the Cold War. Increasingly, our superiority depends on having the latest microchip, the latest superminiature sensor, or the most advanced information-processing software. But right now, we have an acquisition system that is not designed to assure our superiority in those areas.

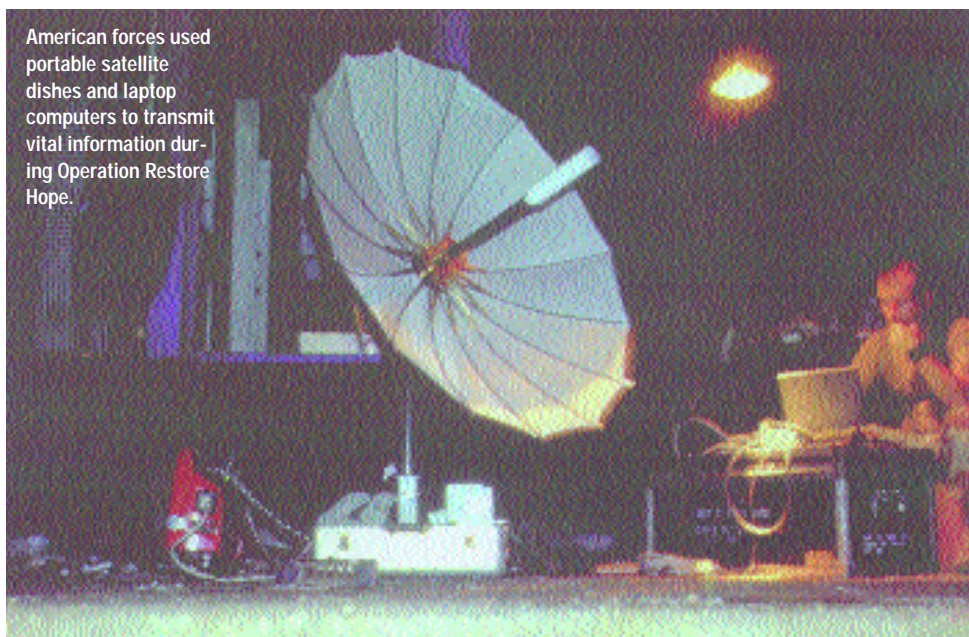
Our current acquisition system is a product of the Cold War. It was designed to give us large numbers of advanced systems as rapidly as possible. This was costly, but it served us well when we faced great national danger. Over time, however, that acquisition system also became risk-averse. We got so concerned about scandals that we loaded it down with checks and audits. These helped us avoid procurement scandals but at the price of driving up costs and impeding rapid technological progress. As a result, we have lost our technological agility.

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no matter what the
circumstances, we will fight
as a joint team

We desperately need to streamline our defense acquisition system. We need a *broad front* R&D strategy so we will not be surprised by breakthroughs in areas where our technology lags behind. We also need to compress the time from concept to final product so the acquisition cycle can keep up with state-of-the-art technology. And we need to do all this within the constraints of future defense spending. To get there from here, we need to strip away some of the legislative and regulatory barnacles that encrust the acquisition

dustrial base while holding down overall acquisition costs. Instead of insisting on a uniform force structure made up, say, of a single type of air superiority aircraft, we may sequence new acquisitions through the force. While overall this would produce a heterogeneous force, we could draw from it the right mixture of sophistication and mass appropriate to any particular crisis. The result may be more programs like the F-117 rather than the F-16, with our most highly advanced systems deployed in only a few selected units.

Technological superiority is not just a measure of hardware; it is also a measure of organizational adaptability. One aspect of this might be called *learning curve dominance*. It refers to the ability to develop the tactics, organizations, training programs, and warfighting doctrines to exploit new technology effectively. A good example is the Germans at the beginning of World War II. They had fewer tanks than the British or French, and the tanks they had were technically inferior. But because they had new tactics and organizations which allowed them to use their technology more effectively, the German *Blitzkrieg* crushed the French and British



Joint Combat Camera Center photo

American forces used portable satellite dishes and laptop computers to transmit vital information during Operation Restore Hope.

cycle. We need to exploit shortcuts such as hardware-in-the-loop testing and computer-aided design, manufacturing, and logistical support. We may need to reverse the historical relationship between defense and commercial technologies. In the past, commercial applications were often the spin-off byproducts of defense R&D; in the future, we will probably rely more on adapting the latest commercial technologies for military use—a change that promises to yield new military applications faster, cheaper, and better than the old Cold War process.

We also need to open our minds to new ideas about how we can separate technological progress from costly full-scale deployment. Our new regional-crisis strategy frees us from the need to keep large, homogeneously equipped forces. Instead, we can now tolerate more unique units as a way to quickly integrate new technology and keep a warm in-

armies in a matter of weeks. We should heed such lessons and aggressively seek the new applications that get the most out of our new systems.

With longer range, greater precision, and horizontal integration of real-time intelligence and targeting, future weapons will be able to strike enemy forces at great distances. In mid- or high-intensity combat, it may not always be necessary to physically occupy key terrain on the ground, vital airspace, or critical chokepoints at sea in order to control them. While wars will still be won only when soldiers occupy the enemy's territory, it may not be necessary in every case to "close with" the enemy in order to destroy him. We may even reach a point at which fire and maneuver become essentially the same thing under some circumstances. Such elements as



U.S. Navy photo by Jeff Wood

Missile launcher
on the deck of
USS McClusky.

traditional unit organization, tactics, and modes of thinking may not be appropriate to such a future. We need to find out what is appropriate and acquire it before our adversaries do. Otherwise, it will be like hitching a Corvette behind a draft horse: we will not be using our new hardware in a way that truly exploits its capabilities.

The future also demands superior command, control, communications, computers and intelligence (C⁴I). Good weapons, advanced tactics, and flexible, efficient organizations will give us a superb military instrument. But we need to know where to point

that instrument and how to control it. This is where C⁴I comes in.

The end of the Cold War presents us with a whole new set of C⁴I problems. When the Soviets were our primary worry, we needed expensive systems to meet specialized needs. We bought whole networks of hardened, redundant, focused systems to give us strategic warning or to enable us to fight a global war against a nuclear adversary. These assets have not become irrelevant; but in shifting from a global strategy for global war to a global strategy for regional crises, we now have a new menu of C⁴I requirements.

Strategic warning now takes on new meaning. The theater, the adversary, even the nature of the problem—whether it is a military conflict or a humanitarian crisis—can change rapidly and may be much tougher to sort out than in the days of the old East-West rivalry. Many of our current systems are not designed for that kind of work. For example, satellites cannot tell whether a crowd is going to a soccer match or a civil war—admittedly sometimes the same thing in many parts of the world.

To act quickly and effectively in future regional crises (and especially with our smaller force structure, more of which will be based in the United States), we need a global C⁴I capability that can alert us very early to a potential problem, focus on a trouble spot as events develop, surge in capacity when needed, and respond to the peculiar operational needs of the joint or combined task force commander.

No one else does this as well as we can. Our experiences in Grenada, Panama, and the Persian Gulf taught us a lot, and the advances we have made in just the past two years are eye-watering. But technology is spawning a new problem: an information explosion that threatens to choke our C⁴I systems with more data than we can analyze. We need to make sure that our future efforts give us not only more, but also better, more usable information when and where we most need it.

We also must understand that such systems fundamentally change the way we command and control forces. Our traditional methods have emphasized the flow of infor-

mation along vertical paths: information up, orders and instructions down. But increasingly we have architectures in which information flows laterally as well. As a result, knowledge is more pervasive and control functions more decen-

tralized. We have not yet come to grips with what that means organizationally, but we need to soon.

We also need to work on end-to-end integration of our C⁴I systems. We must be able to know, decide, and act faster than our enemy at every turn. The data our reconnaissance systems gather must be transmitted in real time to command centers, where targeting decisions can be made in a matter of moments. Then we need to send targeting instructions to loitering cruise missiles or other weapons that hit their targets with specially tailored munitions packages—possibly with terminal guidance from overhead systems. And all this must happen rapidly, since future combat may resemble a game of electronic cat and mouse between the enemy's *hid*ers and our *find*ers. (Project 2025 gives a sobering assessment of so-called *pop up* warfare and its implications for U.S. security.)

We need to harness this exciting new technology to our emerging requirements. Superior military power in the future will depend on superior C⁴I. Since our adversaries may have access to some of the same sophisticated weapons technologies we do, our ultimate trump card will be our ability to know, decide, and act more quickly than they can.

Some Final Thoughts

It will not be easy for us to tackle these challenges in the years ahead. Many see our declining defense budgets as just another obstacle, one that makes the others insurmountable. I disagree with this view. In fact, I think the next few decades will be some of the most exciting and successful our Armed Forces have ever experienced.

Historically, many of our most important transformations have come during periods of constrained defense spending. In the

A Marine Corps F-4 fighter launching a missile.

U.S. Navy photo



1930s we developed a modern, capable carrier force that later turned the tide against the Japanese in the Pacific. In 1945, General Hap Arnold made a controversial decision to push research and development of guided missiles when many in the Air Force howled that this would make manned aircraft obsolete. Despite this resistance and the slim budgets of the late '40s and '50s, Arnold's vision eventually became reality in our ICBM forces. After Vietnam left the Nation with a foul taste for military investments, General Creighton Abrams started the Army on a spiritual and doctrinal renewal that paid off spectacularly in the deserts of Iraq and Kuwait. In every case, the keys to success have been a vision of the future and the determination to make it become reality.

In this respect the U.S. Armed Forces have always been lucky, not just because they produced visionaries like Hap Arnold, Creighton Abrams, George Marshall, and Arleigh Burke, but because so many service men and women at every level joined them in making their visions come to life. Times of change have a way of placing a premium not on narrow, specialized knowledge, but on breadth of understanding and clear thinking. For this, our military education system is the best in the world. We produce officers who, while well trained in their technical specialties, can also calmly gaze into the eye of the tiger when it comes to problems of international politics, grand strategy, force modernization and restructuring, or the complex consequences of future technology.

I place my faith in them. They are in for some exciting times.

JFQ