SPACE: A Military Far Frontier No More

By Lincoln P. Bloomfield, Jr. and
Richard Hart Sinnreich

If recent reports are accurate, those who hold out hope that the militarization of Space can yet be avoided are doomed to disappointment. As Space platforms and the services they provide to U.S. military forces proliferate, Space is drawing closer to becoming a theater of war. The implications are as profound as they are unexpected.

Thanks to an innovative wargaming program sponsored by the U.S. Army, national security specialists in and out of government have experienced a taste of the world we may inhabit not long from now. This experience has yielded an early look at significant policy issues likely to arise from the growing integration of Space in U.S. military operations.

Riding the Technological Revolution

That Space has become an inescapable adjunct of military power is an empirical observation, not an ideological statement. During the past two decades, the military no less than society at large has become an avid consumer — and industry an equally avid producer of Space-enabled products from communications to intelligence. Military reliance on Space increasingly extends to commercial as well as government systems.

Expertise on Space capabilities is rapidly becoming embedded in military organizations at virtually every level of command. Today, involvement of Space experts in theater-level planning and operations is routine. Tomorrow, the interplay of Space systems with individual soldiers may be just as common. In Space, the Revolution in Military Affairs is already here.

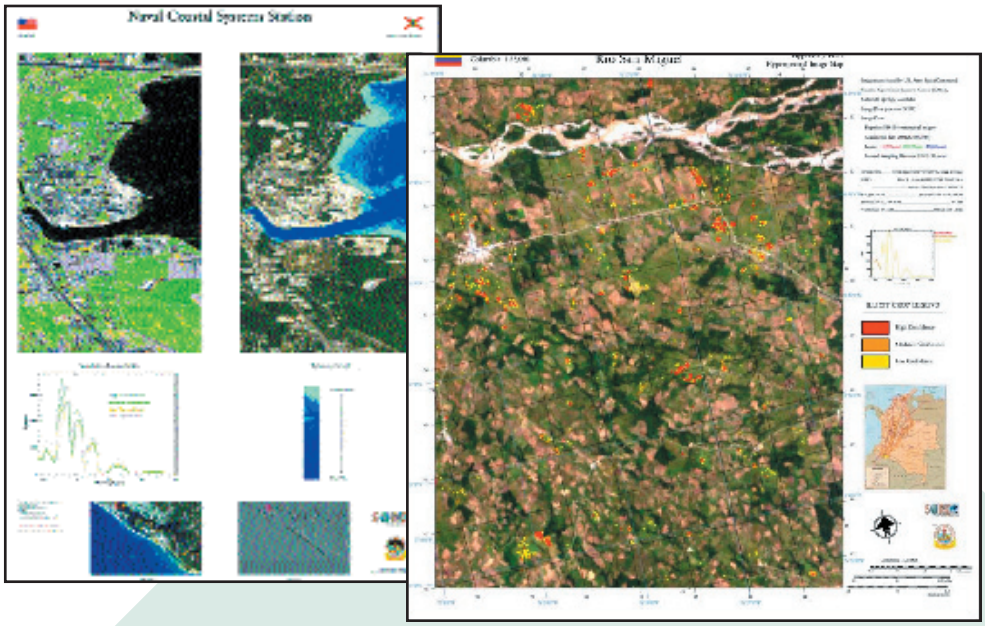
Our country's growing reliance on Space as an integral dimension of its military as well as its commercial strength poses profound policy challenges. Should Space-based communications and intelligence collection systems be defended? Should they be armed? Does the growing reliance on Space assets to achieve "information dominance" over an adversary suggest a potential need for pre-emption? And are crisis decision-making processes swift enough to respond successfully to threats to the peace in the Space "theater"?

Moreover, how grave a matter would we consider an attack on a U.S. satellite - as much an act of war as an act of aggression sited within U.S. Air, Land, Sea or Space? As grave as a strike against a U.S. vessel, aircraft, or facility where no persons were harmed? And how much certainty must U.S. leaders have about the apparent sudden loss of the use of one or more Space assets before determining that retaliatory action is justified?

Because questions such as these are central to our capacity to manage a future crisis on acceptable terms, they ought to be considered at the front end of the U.S. military's move into Space. From the perspective of military planners and arms controllers alike, the accelerating military reliance on Space marks a seminal change in the security environment. Already today, Space is host to global mobile telephony, beeper-based services, intercontinental bulk data transmission, multi-spectral imagery-assisted industry and agriculture, navigational tracking, and other information age services. Why should the military be expected to operate at any less a technological baseline than society at large?

On the contrary, the imperative of assuring reliable use of these capabilities in military contingencies will only intensify in the coming years as more capable orbiting systems are added to the world's commercial and governmental Space inventories. With the expanding ability to move information between continents, the military is availing itself of new efficiencies in much the same manner as sophisticated global commercial entities. All of which is to say that, even though no country yet has emplaced weapons in Space, the effective militarization of Space has already occurred, because Space is fundamental to our own military superiority.

Political efforts to keep the Space militarization 'cat' in the 'bag' or, failing that, 'walk it back' before some line of no return is crossed, have simply been bypassed by the natural evolution in civil-military Space utilization. Space defies any existing 'arms race' paradigm: here there



is no bag, no reverse gear on the cat, and no obvious line at which to halt the cat's forward movement even were it desirable.

Many will argue that the United States still can and, indeed must, refrain from deploying lethal weapons in Space to dissuade the rest of the world from doing so. Yet that is precisely the policy ideal we believe is already well on its way to being usurped by the inherent operational logic of the Space age.

Crisis Management: The Future is Now

In the wargaming setting, participants exposed to the advanced integration of Space-based and terrestrial military operations quickly discover that some of the military 'do's' and 'don'ts' perennially imposed by political leaders to control an escalating crisis may increasingly be impracticable, and that Space support of military operations therefore has burdensome implications for national-level crisis management.

In a future crisis, the president and senior advisors will likely be inclined to follow impulses honed by their predecessors over several decades of nuclear brinksmanship, such as:

- A desire to bound the conflict arena geographically;
- A concern over collateral civilian damage and effects;
- A preference for discrete and therefore more controllable escalatory steps;
- An aversion to military actions that might be particularly destabilizing if misperceived or misinterpreted; and
- A determination to keep strategic nuclear warning and communication capabilities visibly segregated from those associated with the military operations at hand.

The simulated future war environment suggests that all of these policy desiderata are much more elusive in the Space age. This environment reveals how suddenly a future adversary could place American satellites in its technological 'cross-hairs,' confronting U.S. field commanders with the prospect that these assets might be destroyed in seconds absent immediate counter-action. It highlights the challenge of judging, in that moment of uncertainty, whether and to what extent an adversary might expand its anti-Space operations beyond military to civil support systems. And it demonstrates the complexity of trying to preserve enough of an adversary's Space systems, in the midst of fast-paced escalation, to permit its leadership to make and implement war termination decisions without also preserving its continued capacity and will to fight on.

In short, while our nation's military forces reap major operational benefits from Space, one price is likely to be an acute sharpening of the dilemmas confronting our civilian leaders committed to retaining political control of military operations.

Pre-emption Problem

As the world's most extensive user of military Space resources and the most reliant on them, the United States would seem to have little incentive to initiate hostilities in Space. But as the likely military responder in a crisis rather than the aggressor, U.S. forces typically will be more vulnerable than their adversaries during the early stages of mobilization and deployment, and both information and information security will be precious. Hence, there will be immense pressure on U.S. decision-makers to deprive a potential adversary of Space-based information and communication capabilities before the latter can be used to target deploying U.S. and allied forces. Those pressures will increase in proportion to the expansion of potentially hostile non-U.S. Space capabilities.

Complicating matters is the likelihood that some of the capabilities used by an adversary very likely will be owned and operated by third parties such as multinational corporations, global private investment consortia, and non-belligerent foreign governments. Attacking these assets would present legal and political problems not unlike those historically associated with naval blockades. Meanwhile, our own Space-based assets are likely to be increasingly

What seems beyond the art of the possible, however, is for future adversaries to consider U.S. Space systems something other than a fabulously lucrative target and a center of gravity for our high-tech military.

vulnerable to damage or destruction by an enemy whose familiarity with the contested ground makes him less sensitive to a mutual degradation of Space-based capabilities.

Put differently, access to Space systems will be more valuable to the United States than to its adversaries in a future conflict. A general degradation of Space capabilities on both sides will be expected to benefit the adversary. That prospect will only intensify pressures on U.S. commanders to deprive an enemy of the ability to interfere with friendly Space systems.

This pressure is all the more likely as Space platforms become more versatile. It has already become virtually impossible to distinguish platforms intended to support conventional theater operations from those supporting strategic nuclear systems. As single platforms increasingly host multiple critical military functions from command and control to lethal attack, an adversary cannot be expected to distinguish among them. And as threats to U.S. systems supporting theater operations become indistinguishable from perceived threats to our strategic defense systems, the incentive to pre-empt all such threats will increase. In turn, reciprocal pre-emptive pressures on a potential adversary will mount, all the more so if the latter also is a nuclear power.

Escalation Problem

Troublesome as these pre-emptive incentives are, they would be less dangerous were they limited to the Space platforms themselves. But it requires little imagination to forecast the emergence of surface weapons such as high-energy lasers or hypersonic missiles able to hit Space platforms from the Earth, and vice versa. Moreover, the ground-based support systems through which Space systems operate present technically less challenging and potentially more lucrative military targets than the platforms themselves. Blinding a satellite removes one eye from the sky; neutralizing the ground station controlling that satellite and others like it, whether by lethal or nonlethal means, impairs the entire system and may be easier to accomplish.

This surface-to-Space continuum increases escalation risks, since critical ground systems, whether friendly, hostile, or neutral, tend to reside in the owners' homelands or those of their security allies. At best, therefore, attacking ground-based Space assets would breach the threshold between theater and worldwide operations. At worst, it could foreclose any chance of localizing hostilities, the more so if the facilities attacked belonged to third parties. And if they belonged to a nuclear power, such attacks — however limited in scale and objective —could hardly be more destabilizing. That this concern merits careful study is abundantly illustrated by repeated recent wargame experience in which Space operations have produced rapid and uncontrolled conflict escalation.

Decision Problem

All this would place heavy burdens on leaders even in circumstances permitting both combatants to make measured decisions. But it is in the nature of Space capabilities that decisions concerning them will be among the first to confront policymakers in a crisis. Except in the case of a surprise attack against forward-deployed U.S. forces, such as in South Korea, Space in the future is a good bet to be the first locus of engagement.

In this sense, Space hostilities depart from the classic Washington model of nuclear crisis management in which Western decision-makers assumed that both sides would use nuclear weapons only as a last resort. Thus, throughout the Cold War, U.S. and NATO military strategy sought to diminish the incentives for early nuclear use by either side.

The luxury of deferring a nuclear decision, however, relied on possession by both sides of assured second-strike capabilities. Hence, the emergence of potentially destabilizing capabilities such as accurate independently targetable and maneuverable re-entry vehicles and heavy payload boosters offered major incentives to negotiate nuclear arms limitations. No corresponding incentive weighs in favor of limiting Space capabilities, particularly given America's commanding lead in such capabilities. Nor are current systems so robust or readily replaceable that the United States could with equanimity ride out a serious effort to degrade them in a crisis.

Unlike nuclear weapons, Space systems are active agents of tactical military effectiveness. And unlike nuclear weapons, they are capabilities of first rather than last resort. Even their ability to recover rapidly from attack would not overcome the immediate operational penalty resulting from their temporary loss or degradation. Hence, in contrast with nuclear weapons, recuperability of Space systems would not eliminate preemptive pressures. Rather, tomorrow's decision-makers can expect to be confronted with potentially escalatory decisions in a radically compressed time frame.

Perhaps nothing is more ironic about

As with every new development in military technology, Space presents a familiar two-fold challenge: to reach for the future without losing one's grip on what is enduring in the conduct of war.

emerging military Space developments than the very real prospect that systems once considered essential to dampening escalatory pressures may well instead become the most dangerous of escalation triggers.

Searching for Solutions

Since the trend toward military reliance on Space no longer seems reversible, if it ever was, we have an urgent obligation to assess how that reliance will affect geopolitics and military strategy, and how to minimize its adverse consequences. If possible, future U.S. Space-based capabilities should be made sufficiently robust to absorb attack without depriving our leaders and deployed forces of essential information in the early stages of a crisis, and thus without all-but-requiring preemptive action against threats to those systems.

It may also be desirable to reinforce escalation thresholds by restricting some clearly identifiable Space systems to strategic functions and encouraging other military Space users to do likewise. While thus far there has been little incentive to build self-defense capabilities into Space systems, such capabilities in the future may well be necessary to dampen pre-emptive temptations.

Meanwhile, operational planning should prejudge neither the availability of friendly Space capabilities nor the extent to which hostile capabilities will be subjected to attack. It follows that for every essential Space-based capability — and especially for communications, surveillance, and command and control — non-Space-based alternatives must be available on short notice to sustain continuity of operations. Our future soldiers must also be prepared to function in combat without the benefit of tactical information transmitted via Space.

Given the cost of developing and fielding Space systems, budgeting for robustness and redundancy is no trivial matter. Military Space systems are far too specialized to permit significant economies of scale. One obvious solution is for the military to continue to capitalize on the maturing commercial Space industry.

But relying on commercial platforms for wartime operations carries its own risks, not least the likelihood that doing so will result in both major economic disruptions and legal and diplomatic controversy at the most inopportune time. An adversary, it bears emphasizing, cannot be relied upon to distinguish between military and commercial platforms when both are operating to its detriment. Military employment of commercial Space systems thus has undesirable escalatory implications not unlike those already discussed with respect to theater and strategic Space support systems.

Finally, there is the practical problem of weighing the value of Space capabilities against conventional military capabilities. Today, Space systems are essentially enablers; their costs to some extent can be factored into those of the land, sea, and air systems that rely on them. That will change if and when Space platforms host lethal strike capabilities. At that point, it no longer will be possible to avoid direct cost and capability comparisons between Space systems and ground, sea, and air platforms achieving roughly comparable effects. We can also expect pressures to redefine the organizational relationship of Space capabilities to the military services; indeed, such pressures are already visible.

Comprehensive Policy Exam

While non-experts may fret about the risks of placing weapons in Space and the political consequences of being the first state to use them, the reality is that today's U.S. air, land, and sea-based attacks owe an important measure of their effectiveness to Space systems. We can try to develop weapons that will give future presidents alternatives to weaponizing Space and devise attack options that minimize escalation of a conflict.

What seems beyond the art of the possible, however, is for future adversaries to consider U.S. Space systems something other than a fabulously lucrative target and a center of gravity for our high-tech military. Having awakened in just the last few years to the implications of our military's growing dependence on this potent yet fragile domain of Space, defense planners have drawn the obvious conclusion that our military Space capabilities must not be left undefended.

As with every new development in military technology, Space presents a familiar two-fold challenge: to reach

(See Frontier, page 34)

SORC ... from Page 13

bullet" for Space Operations Officers or other warfighters. As the Army's Space professionals, inside knowledge of these spectral successes and the ability to tap the SORC will help in the larger context to "normalize" Space while providing another reliable and responsive Space support tool for commanders at all levels.

The SORC can be tasked through the U.S. Space Command or Army Space Operations Center, and the Army Space Command G3.

Bo Dunaway is currently the Chief, Spectral Operations Resource Center and Remote Sensing Branch, G-3 Operations, Army Space Command at Colorado Springs, Colo. He served in the Army Space Command as the Chief, Remote Sensing Branch from 1998 until recently retiring from 24 years' active duty in the Army.
Chuck Brice has supported the Army Space Command's Remote Sensing Branch, G-3 Operations since 1993, following a 20-year career in the Army.

End notes

1. From After Action Review notes of Dave Carruthers, FDIC Liaison to TRADOC Seminar War Game III, October 2001. Email dated October 22, 2001, Subject: Tradoc Seminar Wargame III, david.carruthers@monroe.army.mil
2. Why the Army Has Space Operations Officers, by BG Richard V. Geraci, JASO, Vol.1, No.1, September 2001
3. US Army Space Command SIPRNET website at http://arspdb2.armySpace.Spacecom.smil.mil/MSI
4. Ibid.
5. NIMA Spectral Image Map SIPRNET website at http://www.nima.smil/products/armysim/index.html

DCG ... from Page 5

air defense structure using ground-based air defense assets to support homeland security. Army Space Command has worked extensively with NORAD to develop plans and potential options to support homeland defense. Operation Noble Eagle changed the dynamics of how we address air defense of the Nation. Army Air Defense soldiers from various commands, active, reserve, and National Guard, Department of the Army Civilians, and contractors have worked together to complete comprehensive studies and analysis on defending national assets, as well as to conduct exercises and demonstrations, to determine tactics, techniques, and procedures to protect critical assets. We are a part of the joint team working to protect North America with a seamless air and missile defense.

Since September 11, Space operations officers at all levels of command have been engaged in current operations to support the entire Army. This has been a particularly exciting time to be assigned to and supporting Army Space and Missile Defense Command. Our role across the full spectrum of military operations has been clearly recognized. We have been called upon like never before to provide services, products, and expertise at the strategic, as well as, operational and tactical levels. We have created new products, found ways of doing things better and faster, created tactics, techniques and procedures where none existed, identified areas of doctrine that need to be updated, gathered lessons learned, improved the integration of civilians and contractors into operations, mobilized Reserve Component Space officers and soldiers to man newly created elements and centers. We have met the warfighter's requests for support, products, and expertise without exception. Every member of this command and our Space operations officers stationed worldwide can be proud of the support we've provided in this global war.

FRONTIER ... from Page 23

for the future without losing one's grip on what is enduring in the conduct of war. In the case of Space, the future promises unprecedented capabilities to acquire and communicate information, exert command and control, enhance the performance of surface and air systems, and ultimately expand the reach of military power. What endures is the reality that the ultimate test of military Space capabilities remains their impact on what transpires on the surface, for it is there that the political impact of military operations finally must be measured.

Space is already becoming a domain not unlike the high seas. However, in contrast to maritime usage, international law and custom relating to Space remain largely undeveloped. But that condition will not endure much longer. Whether we like it or not, because Space has become militarily significant, there is no going back. That it will be so exploited, by others as well as ourselves, is no longer in question.

Accordingly, the time has come for the United States to begin in earnest to define political guidelines for the military utilization of Space. Our great challenge is to manage the exploitation of technology's promise in a manner that preserves and reinforces the capacity of our democratic leaders to control a future crisis. By that measure we will know if our nation and the world are made more secure.

Lincoln P. Bloomfield, Jr. served as Principal Deputy Assistant Secretary of Defense for International Security Affairs, Deputy Assistant to the Vice President for National Security Affairs, and Deputy Assistant Secretary of State for Near Eastern Affairs in the Reagan and Bush Administrations. Richard Hart Sinnreich, a retired Army officer, is a former director of the Army's School of Advanced Military Studies and served on the Army, Joint, Supreme Headquarters Allied Powers Europe (SHAPE), and National Security Council staffs. Both authors have participated in recent Army seminars and wargames.

The Army After Next project, directed by the U.S. Army Training and Doctrine Command, which looked 15-25 years into the future and explored technological and operational concepts dramatically different from those of the present.