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The Military Use of Space: A Diagnostic Assessment

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complicated by the apparent lack of interest that was displayed by both the Joint Chiefs of Staff and the national command authorities in focusing upon the Kosovo situation.

The third part of the book, “The Air Campaign,” addresses the execution phase of ALLIED FORCE. Here Clark’s shortfalls in planning and his inability to forge a supportive relationship with the Joint Chiefs of Staff and the secretary of defense become apparent. Two days into the operation, Clark wrestled with the implications of having no defined end-state and the resulting fuzzy linkage between military and political objectives. Incredibly, he attempts to deflect criticism toward the political leadership for the fundamental flaws in the plan. The effects of this confused strategy vacuum lingered throughout the operation. In addition to the strategy challenges faced by Clark, the Washington leadership was not supportive—indeed, Clark depicts it as an impediment. His assessments of then Secretary of Defense William Cohen, Chairman of the Joint Chiefs of Staff General Hugh Shelton, and Army Chief of Staff General Dennis Reimer are damning. Clark is unambiguous that from his perspective, all three men contributed to a lack of national strategic coherence during the operation. This section ends by depicting a slippery slope toward an inevitable ground invasion of Kosovo—something that everyone wanted to avoid.

The final section of the book, “End-game,” details the sudden change in circumstances and Milosevic’s willingness to accept a deal. Clark outlines the time-sensitive and painstaking negotiations required to ensure an executable plan for the Nato peacekeeping force. He also addresses the now famous refusal of

his subordinate, Lieutenant General Sir Michael Jackson of the British army, to send forces into Pristina airfield to block the impending arrival of Russian forces. Clark concludes with an examination of his experience and its implications for future warfare.

This is a worthwhile book for those interested in the Kosovo conflict and how the Nato alliance works in practice. Subsequent memoirs from other key participants will add balance to this historical perspective. As for contributing to the body of knowledge on military theory, as the title implies, one must be less enthusiastic. Instead of presenting new theoretical constructs applicable to modern war, in reality the book displays the pitfalls faced by a joint-force commander and his national-level superiors when they disregard the fundamental tenets of operational art.

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Watts, Barry D. *The Military Use of Space: A Diagnostic Assessment*. Washington, D.C.: Center for Strategic and Budgetary Assessments, 2001. 130pp.

Barry Watts, former director of the Northrop Grumman Analysis Center and now the director of the Office of the Secretary of Defense (OSD) Program Analysis and Evaluation, has written an assessment of military competition in near-earth space and how that competition may evolve over the next twenty-five years. Aside from the importance of its subject, this book is of particular interest because it explicitly attempts a “net assessment.” Watts worked for Andrew Marshall, director of the OSD Office of

Net Assessment (ONA) from its establishment in 1973. Marshall played a major role in, among other things, the conceptualization of the “revolution in military affairs” (RMA) and is currently playing a major role in the Bush administration’s defense review. Much of the work of ONA is highly classified, and it has been difficult to understand just what is involved in “net assessment.” Now we have an example. How does it look?

Watts observes that the United States is the preeminent user of space today and that the way it uses space has changed from the preconflict reconnaissance and warning of before, say, 1991 to enhancement of operations by traditional sea, air, and land forces since then. Watts argues that the U.S. primacy is unlikely to change, because the cost of moving mass into orbit is likely to remain high, and because much of the U.S. advantage originates in its organization and the tacit knowledge of its operators rather than the assets themselves. A key asymmetry between the United States and its potential adversaries is that America is inherently more dependent on space-based assets. Rather than repeat the U.S. effort, adversaries without the same budgetary and organizational constraints may be able to exploit commercial and dual-use technologies to meet their needs adequately and may attempt to reduce U.S. capabilities by attacking terrestrial downlinks rather than space-based assets. Thus Watts does not think it likely that overt military competition or conflict in space will happen over the next twenty-five years, to the extent that weaponization of space occurs, but he does believe it is inevitable over the long run, if more gradual than abrupt. That said, Watts does not expect that the military use of space for communications

and intelligence in 2025 will be essentially different from its use today.

Watts’s assessment, although nuanced, is sometimes confusing. One of the most puzzling issues is whether space is considered to be a military or economic center of gravity. Watts says that the survival of the United States does not depend on space-based assets. Yet he repeatedly observes that U.S. forces are increasingly dependent on satellites for communications and intelligence. What would happen if U.S. satellites were attacked? He discusses this only in terms of attacks on satellites in low earth orbits (LEO). Watts’s judgment that nonnuclear antisatellite (ASAT) attacks on individual satellites would be taken seriously by the U.S. leadership but might not lead to war seems plausible. In contrast, his argument that nuclear attacks on satellites in LEO would not have much military effect yet would be met with so strong a response that even pariahs would be deterred seems summary. Why would there be a strong response if space is not a center of gravity? Also, what happens if deterrence fails? As Marshall has said, “It is not a matter of deterring someone like us, but someone like him.”

The significance of the issue may be visible in a situation Watts does not consider—the effects of large-scale nonnuclear attacks on satellites in higher orbits. Given the interest in RMAs at Net Assessment, it is curious that he does not consider what might be a true RMA for the U.S. military, albeit one in reverse—a large-scale degradation of U.S. communications, reconnaissance, and Global Positioning System satellites. For example, while the cost of moving mass into geostationary transfer orbit may be expensive (according to Watts, moving 2,200 pounds to geostationary transfer orbit using a

Chinese Long March 2C costs twenty-five million dollars), middle tens to low hundreds of millions of dollars for an anti-satellite program may be an attractive price for a capability to attack the small number of high-value U.S. communications satellites in high orbits. A direct-ascent ASAT program might cost less.

Indeed, a country contemplating war with the United States might consider a billion dollars or so to degrade U.S. capability substantially by attacking thirty-five or forty American satellites money well spent. Hard, yes; guaranteed successful, no; but the severity of the outcome might be merely a function of money for an adversary and a serious problem for the United States if satellites move from being force multipliers to force divisors. In an explicit net assessment the issue of U.S. vulnerability and the capability of potential adversaries should be addressed more thoroughly before the wisdom of raining titanium rods from space is considered.

This book is recommended as an introduction to an important and insufficiently understood topic. It is also recommended as an example of net assessment, though, perhaps as intended, it is better at asking significant and useful questions and sensitizing readers to problems than at providing answers.

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Alexander, John B. *Future War: Non-Lethal Weapons in Twenty-first Century Warfare*. New York: St. Martin's Griffin, 1999. 255pp. \$14.95

The purpose of this book is to draw attention to the use of nonlethal weaponry in future warfare scenarios. The subject is

divided into three major sections that, respectively, discuss the rationale behind the use of nonlethal weaponry, provide an introduction to new technologies, and suggest scenarios of tactical and strategic uses. Throughout the book, Alexander focuses the reader's attention on some of the more critical issues of the appropriate use of nonlethal weaponry in the U.S. arsenal and, in so doing, demonstrates that new weaponry is needed to respond adequately to new and emerging types of conflict.

One of Alexander's fundamental assumptions is that "war has always represented the controlled application of force" and that nonlethal weaponry can be part of that controlled application of force consistent with military objectives. The questions are: How will new technologies be used to control the level, type, and effects of the force? How do these new technologies relate to changing military and political objectives? How can nonlethal weaponry best be applied when the objective is to limit force application in a variety of situations? These are not easy questions by any stretch of the imagination, but Alexander has had the temerity to put them forward for public scrutiny.

Alexander is no dilettante; his expertise in this area is recognized by the number of well-known serving military officers who have written short scenario-vignettes printed in the front of the book. Neither should it go unnoticed that Tom Clancy wrote the foreword and General John J. Sheehan wrote the introduction. Notably, Alexander chaired one of the first major conferences on nonlethal weaponry and participated in the landmark study by the Council on Foreign Relations on nonlethal weapons. He has experience as a military commander with the Green Berets in Vietnam, as Dade