

## ALTERNATIVE APPROACHES FOR ENSURING SPACE SECURITY

James B. Armor, Jr.

This presentation presents my personal views on approaches to space security. It represents the evolution of my thinking on space security based on 34 years of service as a space and missile systems officer. In keeping with the fundamental goal of the new US National Space Policy to “encourage international cooperation with foreign nations and/or consortia on outer space activities that are of mutual benefit”,<sup>1</sup> this presentation emphasizes my belief that the most effective cooperative approaches to space security will emerge through thoughtful and sustained dialogue among all major space actors in a number of venues. The time is now ripe for a number of primarily incremental, pragmatic, and technical steps forward on space security. It is in this spirit of building and sustaining a dialogue that I offer these thoughts.

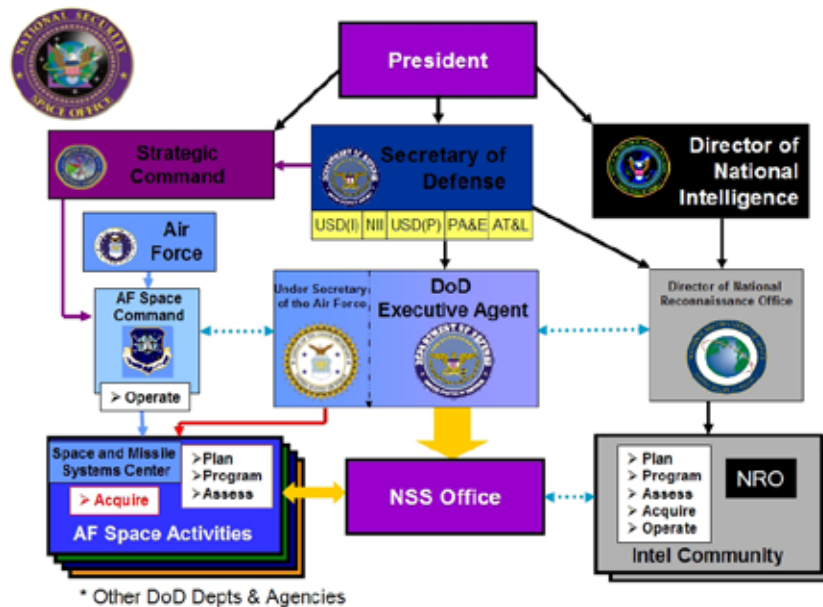
It is important to provide a context before turning to my specific recommendations on approaches to space security. First, a discussion of the major national security space (NSS) bureaucracy within the Department of Defense (DoD) and some less formal structures helps to reveal the roots and foundations for many of my thoughts and provides a sense for where responsibilities may lie within the US government for developing and implementing future approaches to space security. Next, briefly reviewing the growing importance of outer space for military, civil and commercial applications provides perspective on the pathways towards space security that may prove most fruitful. Finally, a discussion of the major elements of the recently released US National Space Policy helps relate my ideas to likely future approaches to space security by the US government.

### ORGANIZATIONAL STRUCTURES AND CONCEPTUAL FRAMEWORKS FOR NSS

A major insight from the study of bureaucratic politics indicates, “where you stand is where you sit”. In other words, the position of an organization on any given issue is usually influenced primarily by the bureaucratic location of the organization. This organizational behaviour reflects Max Weber’s

“iron law of bureaucracy” and is the expected behaviour flowing from Tip O’Neill’s observation that “all politics is local”; organizations must at least survive if not prosper in their local bureaucratic environment in order to advance their broader objectives. As shown in Figure 1, the primary lines of formal authority for NSS flow down from the President through three major paths. The first is an operational military chain of command from US Strategic Command (STRATCOM), the unified (or multi-Service) command responsible for military space, to Air Force Space Command. The second

**Figure 1.** Lines of formal authority for NSS



is the civilian chain of command from the Secretary of Defense into the STRATCOM chain just described, as well as to the Under Secretary of the Air Force in his role as DoD Executive Agent for Space and given his authority over the Space and Missile Systems Center for space system acquisition. The final line flows from the Director of National Intelligence and the Secretary of Defense to the Director of the National Reconnaissance Office (NRO) to plan, acquire and operate NSS systems to support the intelligence community and DoD. The most interesting yet problematic lines of authority

or information flow are those between these three paths, represented by the two-way dotted lines in the figure. As emphasized in the 2001 Report of the Commission to Assess National Security Space Management and Organization (the Space Commission), NSS should be managed and organized as a comprehensive enterprise that includes all these elements. Unfortunately, several key Space Commission recommendations were never implemented and other initially implemented recommendations have devolved into a more constricted structure.<sup>2</sup> In short, it has been a daunting challenge to manage and organize NSS as a single enterprise and it is not yet clear whether the range of current efforts in this area will result in a trend toward more integration or less.

In contrast to the clear lines of responsibility and authority depicted above, Figure 2 (informally known as the “cloud chart”) is a much better illustration of how things actually “sit” when it comes to NSS issues in the United States. For many NSS issues, there are large numbers of actors floating around without clear lines of authority or responsibility, and coalitions of these actors assemble, reassemble and dissolve depending on the issue at hand.

Figure 2. The “cloud chart”



This highlights that things are far from monolithic when it come to NSS decision-making in the United States and that the actual decision-making structure is probably a lot closer to the consensus- and coalition-building required in structures such as the European Union, the North Atlantic Treaty Organization or the Conference on Disarmament.

Other ways to group and conceptualize space activities focus on what is being done rather than the decision-making structure. One of the most useful of these typologies is dividing space activities into the civil, commercial and NSS sectors. For the United States, major stakeholders within the civil space sector include the National Aeronautics and Space Administration (NASA), the National Oceanic and Atmospheric Administration and the Federal Aviation Administration. Key stakeholders in the commercial space activity sector include communications satellite operators such as Intelsat and Loral Skynet, commercial remote-sensing operators GeoEye and DigitalGlobe, and the major space system developers Lockheed Martin, Boeing, and Northrop Grumman. Finally, the key stakeholders within the NSS sector include the Air Force, NRO, other services and agencies within the DoD and intelligence community, and the Department of State. In today's world, with digital convergence and a growing number of dual-use systems, it has become increasingly difficult to draw clear lines between space activity sectors or to delineate between the roles and missions of the major stakeholders.

A final conceptual approach contains 11 capability categories that comprehensively describe all DoD NSS activities. These categories are missile warning/defense; satellite communications; position, navigation and timing; intelligence, surveillance and reconnaissance; space control; space access; space command and control; environmental monitoring; force application; enabling capabilities (science and technology, human capital and the space industrial base); and satellite operations. This is the most descriptive framework and it is the approach most often used by my office and other DoD offices charged with outer space responsibilities.

#### **THE GROWING IMPORTANCE OF COMMERCIAL AND MILITARY SPACE CAPABILITIES**

Thinking about different ways to categorize space activity is helpful but, no matter how those categories are constructed, it is critical to recognize the growing global importance of space activities, particularly in the commercial and military sectors. These short comments can only begin to touch on all

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the ways space capabilities impact nearly every aspect of modern life. It is also clear that the transparent and ubiquitous nature of space capabilities makes it more difficult to assess the full value of their contributions. Space capabilities are essential enablers of globalization and contribute in important ways to what Thomas Friedman describes as the “flattening” of the world.<sup>3</sup> They have become a foundational and increasingly important component of US and global security efforts and, due to their dual-use nature, have become even more important to and seamlessly woven into the modern global economy. Space capabilities enable the opening and development of new markets, such as direct television and radio broadcasting or space tourism, and bring unprecedented levels of knowledge and precision to traditional activities such as farming or package and vehicle tracking. Measuring these space-enabled economic contributions is difficult, but they are clearly growing. The Futron Corporation found that the world satellite industry generated revenue of US\$ 88.8 billion in 2005; the Space Foundation adds government space budgets to these commercial activities and estimates that total space activity was valued at almost US\$ 180 billion worldwide in 2005.<sup>4</sup>

As illustrated by the evolution of warfare over the last century, military space capabilities have played an absolutely critical role in modern warfare. This evolution through the First and Second World Wars showed that coupling the increasingly lethal products of the industrial revolution with improved military organizations and doctrine created fearsome war machines. The results of attrition warfare also necessitated development of what Stephen Biddle calls the modern system: a complex combined-arms approach to fire, manoeuvre and concealment that enables survival and military effectiveness but requires an adaptive and well-trained military to produce the skills required for success in the modern battlespace.<sup>5</sup> Operation Desert Storm in 1991 marked the emergence of space-enabled transitional warfare. Space systems designed for Cold War strategic missions, such as the Defense Support Program (DSP) missile launch detection system and systems that were not yet completed in 1991 such as the Global Positioning System (GPS), produced transformational effects on the conduct of the war from the lowest tactical levels up through the highest strategic-level applications. Today’s military space capabilities have become so seamlessly integrated into the overall US military structure that commanders can remain focused on strategic objectives and simply call for specific effects on specific targets without having to focus on how those effects will be achieved. For example, during Operation Enduring Freedom in Afghanistan during 2001–2002 and

Operation Iraqi Freedom in 2003, the majority of aircraft took off on their combat sorties without having an assigned target; they were dynamically tasked in flight onto targets that emerged after they took off. This is a highly flexible and capable instrument and it simply would not be possible without all the space capabilities that comprehensively enable the military tool of statecraft. Moreover, it is an instrument that can deliver precise effects while minimizing collateral damage.

### THE NEW US NATIONAL SPACE POLICY

Most students of space policy have already become quite familiar with the new US National Space Policy released in October 2006, so this section moves beyond the policy itself to challenge what I consider to be misinformed, if not disingenuous, interpretations of the policy that have since emerged.<sup>6</sup> It is clear that it would have been helpful had the Bush administration been more proactive in rolling out the policy, especially since most of the critiques ultimately come down to matters of style and tone rather than substance. We should also acknowledge, however, that effective perception management must be a long-term, multidimensional effort, and that any work to set the stage for the arrival of the new space policy, regardless of how proactive it might have been, would still have faced significant challenges given the unpopularity of the Administration in many quarters internationally.

Contrary to what one is likely to glean from far too much of the reporting by the media, the current US National Space Policy is very similar to the 1996 Clinton policy and shows great continuity not only with that policy but with all US space policy going back to the Eisenhower administration. The primary objective of the new policy is to enable and maintain free access to and use of outer space for peaceful purposes for the United States and all states of the world—and for the benefit of all humankind. The new policy also emphasizes that US space capabilities should be protected commensurate with their planned use. In the past, almost every incremental investment in NSS went towards developing more capabilities rather than protecting existing capabilities; finding the resources required to develop protection measures, and institutionalizing the changed mindset needed to implement this part of the policy, will be a significant challenge. One key distinction from previous policy is that the new policy more clearly and publicly articulates the longstanding US position that the existing Outer Space Treaty regime is sufficient and that “[t]he United States will oppose

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the development of new legal regimes or other restrictions that seek to prohibit or limit U.S. access to or use of space.”<sup>7</sup> It is my hope that this public candor on the part of the United States will help to make the most likely and productive paths for forward progress more clear and energize efforts in Vienna, Geneva and elsewhere.

#### RECOMMENDED APPROACHES TO SPACE SECURITY

Having briefly provided the context above, this section presents several specific approaches to space security in hopes that they will help to generate and sustain a dialogue on these issues. There is much consensus on the broad outlines of where the international space community is heading on many space security issues, but, as in so many other critical issue areas, the devil is in the details concerning how to proceed. As the most important first step, the United States should work harder to achieve more universal adherence to the Outer Space Treaty regime. It simply does not make sense to charge far ahead when this key foundational piece still has significant gaps in terms of compliance with existing rules and norms. The United States should also encourage more frequent but less formalized cooperation and dialogue among like-minded states and major space actors. Ronald Sega, as the DoD Executive Agent for Space, with my office supporting him, has already taken several steps in this direction. For example, he chairs an annual meeting with the chief executive officers of all major commercial satellite communications providers, such as Intelsat and Inmarsat, and this transparent effort is helping to institutionalize a process for the improved sharing of space situational-awareness information and good housekeeping practices in outer space. One specific good housekeeping tool that may be developed from this effort would be a data warehouse for ephemeris and propagation data for all active satellites. Such a warehouse would make freely available information that could be used by satellite operators to plan for and avoid conjunctions.<sup>8</sup>

History suggests there is a very important role for militaries both in setting the stage for the emergence of international legal regimes and in enforcing the norms of those regimes once they emerge. Consider, for example the role of the UK and US navies in enforcing global norms against slave trading. What are analogous roles in outer space for the US and other military forces today and in the future? What would be the space component of the Proliferation Security Initiative and how might the United States encourage like-minded actors to cooperate on such an initiative? In my view, attempts

to create regimes or enforcement norms that do not specifically include and build upon military capabilities are likely to be stillborn, sterile and ultimately frustrating efforts.<sup>9</sup>

In keeping with the preference of the United States for bilateral efforts or informal discussions with like-minded states and major space actors, rather than formal negotiations among all parties, there is a range of informal transparency- and security-building measures that should be explored at this point. The United States should work, primarily with the UN Committee on the Peaceful Uses of Outer Space (COPUOS), to institutionalize the Inter-Agency Debris Committee guidelines among all major space actors. The incremental, pragmatic and technical perspective of COPUOS is well suited to this effort. Development of “rules of the road” or codes of conduct for outer space should draw closely from the development and operation of similar measures in other domains such as sea or air. We should consider the most appropriate times and ways to separate military activities from civil and commercial activities in the building of these measures because advocating a single standard for how all space activities ought to be regulated is inappropriately ambitious and is likely to be unhelpful. The DoD requires safe and responsible operations by warships and military aircraft, but these do not always follow all the same rules as commercial traffic and often operate within specially protected zones that separate them from other traffic. Full and open vetting of these ideas along with others will help us to develop space rules that draw from our years of experience in operating in these other domains and make the most sense for the unique operational characteristics of outer space.

## Notes

- <sup>1</sup> United States, *U.S. National Space Policy*, 31 August 2006.
- <sup>2</sup> United States, *Report of the Commission to Assess National Security Space Management and Organization*, 11 January 2001.
- <sup>3</sup> Thomas Friedman, *The World is Flat: a Brief History of the Twenty-First Century*, Farrar, Straus, and Giroux, 2005.
- <sup>4</sup> Futron Corporation, *State of the Satellite Industry Report*, June 2006; The Space Foundation, *The Space Report 2006: the Guide to Global Space Activity*, 2006.
- <sup>5</sup> Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle*, Princeton University Press, 2004.

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- <sup>6</sup> Robert Joseph, “Remarks on the President’s National Space Policy—Assuring America’s Vital Interests”, *Center for Space and Defense Forum*, Colorado Springs, 11 January 2007; see also Marshall Institute, *Policy Outlook: What Do You Leave Behind? Evaluating the Bush Administration’s National Security Space Policy*, December 2006.
- <sup>7</sup> United States, *U.S. National Space Policy*, 31 August 2006.
- <sup>8</sup> For other space security ideas fostered by these meetings see David McGlade, “Commentary: Preserving the Orbital Environment”, *Space News*, 19 February 2007, p. 27.
- <sup>9</sup> On the role of militaries in enforcing legal norms and analogies between the law of the sea and space law, see R. Joseph DeSutter, “Space Control, Diplomacy, and Strategic Integration”, *Space and Defense*, vol. 1, no. 1, 2006, pp. 29–51.