Air Force Space Command

A Transformation Case Study

DR. MICHAEL F. STUMBORG

Editorial Abstract: Many organizations claim to have undergone "transformation." However, Dr. Stumborg asserts that a gradual, seamless shift in an organization's operational environment does not constitute transformation but merely reflects change. Working now to achieve transformational elements through a strategic action plan of seven thrust areas, Air Force Space Command has undertaken a true transformational process in order to guarantee future US space superiority.

CONSISTENTLY SUCCESSFUL organizations maintain their core purpose and values even as their strategies and practices adapt to changing operational environments. When changes in the operational environment occur gradually, the organization can likewise undergo a gradual, seemingly naturally occurring, and apparently effortless shift to cope with the new reality. This is change but not transformation. If instead the change in the operating environment is so abrupt or severe that it threatens the effectiveness, relevance, or even survival of the organization, then the organization must undertake a concerted effort to adapt to the new reality.

We define *transformation* as *any purposefully directed change necessary to ensure an organization's future success in a drastically different operational environment.* Using this definition, Air Force Space Command (AFSPC) is fundamentally changing the American use of space for military purposes, and recent initiatives position the command to capitalize on its initial successes, regardless of its final organizational form.

But is that so? Is AFSPC transforming or not? The American use of space for military purposes has experienced evolutionary changes and revolutionary transformations during its roughly 50-year history. Sometimes it has been difficult to distinguish one from the other. This observation raises a question: to what de-

gree is the American use of space for military purposes today in the throes of a transformation, requiring reasoned and focused action by the space community's leadership, or to what degree is it instead experiencing a period of rapid but manageable change that can be accommodated by a less dramatic or urgent approach?

To answer this question, we look to the history of military space, to case studies from other military organizations that have achieved successful transformations, and to the information-age corporate community, which, because of the rapid and accelerating pace of change in business's operating environment, provides a diverse array of transformation case studies for comparison. Robust data within these case studies, both military and civilian, illuminate the elements of successful transformation. Because these elements appear widely in business literature, one need not develop them here. John P. Kotter's best-selling book *Leading Change* identifies eight elements common to most successfully executed transformations:

- *Establish a Sense of Urgency.* Some internal or external stimuli, either recently introduced or predicted to occur soon, create a threatening change in the operational environment.
- *Create a Guiding Coalition.* The leadership must identify, convert, and align those individuals who can marshal the resources necessary to effect the transformation.
- *Develop a Vision and Strategy.* A unifying and easily understood vision has the power to direct, align, and inspire the actions of every member of the organization.
- *Communicate the Change Vision.* An immediate, unified, and relentlessly repeated communication of the leadership's vision to all members of the organization and its external stakeholders demonstrates the magnitude of the importance placed on the proposed transformation.
- *Empower People for Broad-Based Action.* Empowering people to overcome obstacles to change plays an important role in maintaining morale.
- *Generate Short-Term Wins.* A few "first downs" engineered along the way to the ultimate goal line play an important part in maintaining momentum.
- *Consolidate Gains and Produce More Change.* Leadership must recognize intermediate victories, remind the organization of its ultimate goal, and press forward.
- *Anchor New Approaches in the Culture.* One must inculcate the new behaviors necessary for success in the new operating environment into the social norms and shared values of the transformed organization's members.[1]

These eight elements draw from extensive experience with transformation in both public- and private-sector organizations. A set of elements drawn from successful military innovations, particularly those that drove peacetime transformation, would prove equally germane.

Some have argued that the current AFSPC finds itself in a period analogous to the beginning of the interwar period from 1918 to 1939.[2] World War I saw the introduction of technologies and tactics in aerial, submarine, and mobile armored warfare that did hint at their great potential but did not begin to predict the extent or manner of their employment during World War II. The great potential alluded to on the battlefields of World War I put military planners on notice that they would have to contend with (and ideally employ) aerial, submarine, and mobile armored warfare in the next Great War.

Operation Desert Storm serves as the analog to World War I for space warfare. Gen Merrill McPeak, former Air Force chief of staff, labeled the conflict in the Persian Gulf as the "first space war," and Lt Gen Michael Hamel called Operations Enduring Freedom and Iraqi Freedom "graduation exercises."[3] The great promise of space demonstrated in the deserts of Iraq put military planners from all spacefaring nations (as well as nonspacefaring nations or groups who might oppose them) on notice that the next Great War will very likely have a space theater of operations.[4]

A collection of transformation case studies from the interwar period that identifies the elements of successful transformation would thus have great relevance to this case study. Because the understanding of transformation is just as critical to military leaders as it is to corporate leaders, an analog to Kotter's study exists in the military realm. Williamson Murray and Allan R. Millett's *Military Innovation in the Interwar Period*, which examines the elements of successful military innovation/transformation during peacetime, offers today's military planners the following six elements for successful peacetime military transformation:[5]

- *A Concrete Military Problem.* A specific problem whose solution is critical to carrying out the national security strategy and a military institution with a vital interest in solving it are common to the interwar period.[6] This explains the interest in amphibious warfare by the Japanese and American navies who sat astride the Pacific theater of operations, the interest in strategic bombing by America and Britain, and the development of blitzkrieg by the Germans, recent losers of a two-front continental war.
- *An Empowered Officer Corps.* Military transformation cannot depend (entirely) on the maverick charisma of a Billy Mitchell or a Heinz Guderian. Institutionalizing new warfare methods requires attracting a cadre of the best and brightest officers at all levels. The education and training of officers who gamble their military careers on new forms of warfare are of critical importance, as is the existence of viable promotion paths.[7] Officers who support transformation must not be "firewalled" from those pursuing more traditional—sometimes competing—methods of warfare. Instead, members of the new cadre must be in the mainstream of their profession with some prospect of attaining high rank.[8]
- *Bureaucratic Acceptance.* For transformation to have real staying power, it must evolve from an endeavor undertaken "outside the system" to one thoroughly entrenched in bureaucratic processes. It can then compete for funding and personnel on a level playing field with the more established warfare communities. Congress's creation of the Navy Bureau of Aeronautics in 1921 offers a good example. Headed by Adm William Moffett, it created well-informed and accredited officers to make the case for naval aviation to Congress.[9]
- *Consistency of Message and Purpose.* One can attain such consistency by a succession of like-minded champions in key leadership positions or by the reappointment of the original champion. They must consistently and continually beat the drum, making it clear that the transformational capability is here to stay. Admiral Moffett again provides the historical example: he was able to obtain two four-year extensions at the Bureau of Aeronautics, a feat that required presidential intervention over the objection of the chief of naval operations.[10]
- *A Cadre of Warriors at All Ranks.* Military transformation often takes a generation, with newly minted officers requiring "top cover" until they can become senior leaders and perpetuate the "officer pipeline" in the new warfare area. "Peacetime innovation has been possible when senior military officers with traditional credentials . . . have acted to create a new promotion pathway for junior officers practicing a new way of war."[11] Sir Hugh Trenchard actively identified and pushed the careers of airmen who provided leadership for the Royal Air Force in World War II.[12] Early proponents of Army air mobility sent senior officers from other combat arms to flight school, modeling their approach after Moffett's.[13]
- *A Military Culture of Honest Study, Reflection, and Projection.* Taking the nascent capabilities demonstrated on the World War I battlefields and turning them into the revolutionary capabilities of World War II required a military culture open not only to critical examination of the les-

> sons from the battlefield, but also a desire for further development that transcended earlier doctrine and tactics. War games designed to justify current doctrine are a recipe for future defeat.[14] Transformation requires that one use "mistakes" in the use of new methods as an opportunity to learn—not as a reason to punish or end a career. Feedback mechanisms must be created so that combat units can train and exercise to fix identified weaknesses.[15]

It should come as no great surprise that significant overlap exists between Kotter's eight elements of successful business transformation and Murray and Millett's six elements of successful peacetime military transformation; therefore, adding the last (and only unique) element of the military case studies to Kotter's list yields a consolidated list of just nine elements. By using these nine elements of successful transformation as a yardstick to determine the state and probable success of transformation in AFSPC, one can pose a new question for this transformation case study: to what degree have the actions of AFSPC addressed these elements as the command has sought to further operationalize space-based war-fighting capabilities since the release of the "Space Commission's" recommendations?[16]

In April 2002, Gen Lance W. Lord took command of a newly reorganized AFSPC after a tour as the assistant vice-chief of staff of the Air Force, during which he worked with James Roche, secretary of the Air Force at that time, to craft the Air Force's response to recommendations made by the Space Commission.[17] By early 2003, several AFSPC strategic planning off-sites for general officers resulted in a *Strategic Master Plan* with seven thrust areas as part of a "Commanding the Future" initiative: (1) Command the Future, (2) Enterprise, (3) Partner, (4) Unleash Human Talent, (5) War Fighters, (6) Wizards, and (7) Rapidly Move Technology to War Fighting.[18] These thrust areas defined the processes for transforming the command from a force-enhancement organization into a full-spectrum Space Combat Command. The actions undertaken in these areas address each of the nine identified elements for successful transformation.

Establish a Sense of Urgency/ A Concrete Military Problem

Taking a page from past space-related transformations, AFSPC loses few opportunities to identify and articulate the urgent problem that drives today's transformation. In 1945 it was the need to secure air superiority through the development of supersonic flight.[19] In 1958 it was the need to counter the Soviets' "demonstrated capability to launch long-range missiles and space vehicles."[20] As early as 1980, people recognized the emergence of technologies to support tactical operations from space. After the Persian Gulf War, it became abundantly clear that "today's operations are significantly enhanced by US space superiority—tomorrow's will be nearly impossible without it."[21] Thus, the Air Force should articulate the growing space threat and reassert its commitment to the space-control mission. Essentially, that is the urgent message and specific military mission articulated by General Lord in an article titled "Commanding the Future": "These lessons from the past, when coupled with the uncertain threats looming in the dynamic and changing security environment of the twenty-first century, necessitate a change in focus for military space operations: 'Defending the United States of America through the control and exploitation of space.' "[22] Military space professionals reinforce this message as often as possible in every available venue: congressional testimony, professional journals, and speeches to space stakeholders and advocacy groups.[23]

Create a Guiding Coalition/A Cadre of Warriors at All Ranks

If one initiative can be considered the centerpiece of AFSPC's transformation effort, it would have to be the Space Professional Strategy, part of the Unleash Human Talent thrust area. Although the initial "guiding coalition" re-

sponsible for space transformation consisted of general officers who, at the direction of the commander, championed transformation initiatives under the seven thrust areas, the ultimate guiding coalition will be the space cadre itself. The Space Professional Strategy calls for identifying all members of the Air Force's space cadre, tracking their unique space experiences, developing new and improved space education and training courses, and instituting a robust certification program to monitor the progress and status of each individual.[24] Like the advocates of many military transformations before them, members of the space cadre must draw their first champions from the ranks of other warfare communities—the more senior the better.

General officers as well as company- and field-grade officers from all the services attend space-operations and space-familiarization classes at the National Security Space Institute. US Air Force Academy cadets also receive space instruction. Granted, the space cadre will comprise the core of the guiding coalition, but many external coalition partners are also important. AFSPC is working under its Partner thrust area to expand and maintain effective partnerships throughout the defense and national security space arenas to help in the pursuit of innovative solutions and transformational capabilities.[25] These outreach efforts include industry, research labs, academia, and other parts of the government.[26] The National Security Space Institute has signed memoranda of agreement with the National Reconnaissance Office, Army, and Defense Acquisition University. Classes at the institute are purposefully designed to maximize the organizations and career fields represented so that members of the space cadre can expand and solidify relationships initiated by their senior leaders with other communities. Finally, General Lord arranged the first gathering of weapons-school graduates (the "Whiskeys") at the Air War College.

Develop a Vision and Strategy/ Consistency of Purpose

An organization's vision and strategy define its core purpose and values.[27] These in turn drive the creation of actionable plans with objectives, milestones, and metrics for progress. Although the strategic action plan may require adjustments to meet emergent contingencies, the vision, core purpose, and core values remain unchanged. AFSPC developed and published its strategic vision in "Commanding the Future."[28] Over the last 12 years, operationalizing space has served as a central tenet of the command's agenda. Transformation is part and parcel to this vision. In the past, AFSPC focused largely on the force-enhancement role of space systems and the deterrence role of nuclear forces. Space and missile operations of tomorrow will focus on developing and projecting combat power. The core purpose of AFSPC is to generate, maintain, and ensure space superiority. The vision of "Commanding the Future" serves as the guidepost from which yearly planning strategies derive and by which all other actions are judged. Similar to past examples of military transformation, the extension of General Lord's tenure as commander of AFSPC greatly enhanced consistency of purpose.

Communicate the Change Vision/ Consistency of Message

AFSPC exploits multiple venues to get the transformation message out. Publishing the future vision in "Commanding the Future" is just one of these. Every issue of *High Frontier*, the quarterly professional journal of the space community, opens with a message from the commander describing the theme of the current issue and the way it ties into the larger vision for transformation, consistent with General Lord's belief that staying on message is a critical component of transformation.[29] *Air and Space Power Journal*, the official professional publication of the US Air Force, now dedicates entire issues to space.[30] As General Lord passes the mantle of responsibility to his

successor (General Lord retired on 3 March 2006), consistency of message will be aided greatly by the contents of the report to the secretary of defense on the impact of the Space Commission's report.

Beyond the written word, AFSPC's commander and vice-commander miss few opportunities to give speeches or provide testimony to drive home the message of space transformation. One speech presented by General Lord to the Royal United Services Institute in London (later published in *Vital Speeches of the Day*) outlined for an international and allied audience the heritage of AFSPC, ways in which space has transformed war fighting, and the importance of defending space capabilities.[31] The command's public affairs Web site lists no fewer than 47 public presentations by General Lord in 2004 and 2005.[32] These are supplemented by numerous private presentations by senior leaders, who speak with one voice, to influential individuals and groups both inside and outside the national security establishment. Of particular interest is General Lord's ability to sum up and simplify the transformation message for his audience with his preferred closing: "If you're not in space, you're not in the race."

Empower People for Broad-Based Action/An Empowered Officer Corps

It is not enough to simply create a space cadre. Military officers who will lead that cadre must have the opportunities and tools to advance the cause of transformation. Many of those tools come from in-depth technical education and training via multiple initiatives under the Unleash Human Talent thrust area. Just as at the dawn of the space age, so too will space transformation today require "a broad training program for officers in scientific and engineering fields," and "officers with engineering training and duty should not be handicapped with regard to promotion."[33] One can best ensure the promotability of these technically savvy officers by expanding the set of staff and command opportunities so they can apply their space competencies in direct support of war-fighting operations.

Establishing space cadre billets in the numbered air forces, war-fighting headquarters, and air and space expeditionary force (AEF) offers one example. Participation in AEF rotations has resulted in many more space cadre personnel with experience in combat operations—one of the critical ingredients of promotability. Stand-up of the Joint Space Operations Center by Fourteenth Air Force has made space planning and execution routine, placing space cadre officers precisely where they need to be: in the mainstream of combat arms. Having a director of space forces (DIRSPACEFOR) on the staff of the combatant commanders provides additional opportunities. Much of this activity falls under the Enterprise thrust area's objective of creating an operationally responsive AFSPC.

Generate Short-Term Wins

A key aspect of the seven thrust areas in the "Commanding the Future" initiative of AFSPC's *Strategic Master Plan* is the identification of a general-officer champion for each area and General Lord's insistence that the generals develop three-month action plans which would generate quick wins in each thrust area. Despite the critical nature of these quick wins in developing programs, people, and processes that will transform space, the more important (and motivational) wins come from battlefield examples of outcomes that would have been decidedly different—and not for the better—in the absence of capabilities fielded by the transformed use of space. US Army soldiers in Iraq surrounded by 20 tanks and more than 10 other armored vehicles lived to fight another day because of their confidence in requesting the dropping of Joint Direct Attack Munitions (from B-1 bombers) enabled by the global positioning system (GPS) in close proximity to their position.[34] On at least one occasion, GPS-enabled pinpoint bombing of enemy armor convinced enemy soldiers to flee rather than engage the 1st Marine Expeditionary Force in

Iraq.[35] Space provided over 60 percent of communications at the height of Iraqi Freedom and 100 percent of secure satellite communications.[36]

During Exercise Resultant Fury in November 2004, Navy F-18 and Air Force B-52 aircraft conducted unprecedented precision strikes on moving targets under significant cloud cover at sea.[37] Although Navy F-14 crew members had to bail out over hostile territory in Iraq at the height of combat operations due to an aircraft malfunction, a search-and-rescue operation quickly recovered them. As Gen John Jumper, former USAF chief of staff, liked to say, "Space takes the 'search' out of search and rescue."[38] AFSPC has apprised the space cadre and key stakeholders of these wins to help maintain a high level of morale, dedication, and support.

Consolidate Gains and Produce More Change

One can best consolidate gains by clearly and explicitly demonstrating the value of space to the war fighter in an operational setting. This in turn will produce more beneficial change as combatant commanders begin to instantiate—even fight for—the continued presence of value-added space capabilities. The presence of DIRSPACEFORs in-theater illustrates this effect. Currently in US Central Command, Korea, and Pacific Air Forces, they are becoming a highly desirable part of warfighting commands. Originally established simply to demonstrate space expertise, they now see extensive use because they also put a face on joint space, speak for all services, and facilitate communications between the joint space operations center and the theater. Combatant commanders from all services who have come to depend on DIRSPACEFORs would now be hard pressed to give them up.[39] Realizing the value of space support, senior military planners are now beginning to include them in their campaign plans.

Anchor New Approaches in the Culture/ Bureaucratic Acceptance

Bureaucracy and transformation are seemingly antithetical to each other, with bureaucratic resistance often cited as the single greatest impediment to successful transformation.[40] Bureaucracy is not an enabler of transformation, but its presence in new forms indicates successfully *completed* transformation. If bureaucracy defends the status quo, new bureaucratic forms provide an indication of a new, firmly anchored status quo. Transformational capabilities must grow deep cultural and bureaucratic roots.

Both concrete and symbolic actions introduce new cultures. Culture creates a powerful sense of community. Substantial symbolic acts, such as creation of the new Space Badge now worn by space and missile warriors and presentation of the first one to military-space pioneer Gen Bernard A. Schriever by General Lord, help cultivate these cultural roots.[41] Additionally, each year AFSPC recognizes and honors individuals who played a significant role in the history of the Air Force's space and missile programs.

In 1980 the Air Force Scientific Advisory Board noted that "Air Force commanders do not generally believe that the space program is an Air Force program in which all can take pride."[42] That attitude can only change with the elevation of the space cadre's cultural institutions, recognition of AFSPC as a full-spectrum Space Combat Command, and establishment of a warrior ethos—the focus of the War Fighters thrust area. Bureaucratic acceptance may prove a much tougher task, often requiring as a first step consolidation and control. New forms of warfare frequently require the integration of capabilities (and resources) that exist across multiple organizations within the subject military service. As far back as 1945, taking a page from German successes in World War II, the US Army Air Forces recognized that "leadership in the development of these new weapons of the future can be assured only by uniting experts in aero-

dynamics, structural design, electronics, servomechanisms, gyros and control devices, propulsion, and warheads under one leadership, and providing them with facilities . . . adequately funded by the highest ranking military and civilian leaders."[43] In 1993 the Air Force was advised to seek designation as the single Department of Defense manager for space acquisition *and* operation, establish a Space Warfare Center, and integrate air-and-space employment in all training and education programs.[44]

Clearly, AFSPC has applied these lessons from the past under the Rapidly Move Technology to War Fighting thrust area, which aims to integrate space-modernization planning, research, and development with acquisition organizations and processes, with the end focus on war-fighting capabilities. Additionally, the Space and Missile Systems Center has been folded into AFSPC to provide better linkage between space-acquiring and space-operating commands.

A Military Culture of Honest Study, Reflection, *and* Projection

AFSPC is taking significant steps on many levels to ensure that the US military not only learns the lessons of past space operations, but also grows beyond them to employ space systems for projecting combat power in future conflicts. This will require a robust physical and organizational infrastructure dedicated to intellectual debate, experimentation, war gaming, and development of concepts of operations. The journal *High Frontier* was designed from the onset to generate vigorous intellectual debate.[45] Space experimentation is alive and well at the US Air Force Academy, where cadets design and construct satellite systems in the laboratory.

Although the Air Force Doctrine Center serves as the single voice of all doctrinal matters in the Air Force, the National Security Space Institute will arm space professionals from all services with the knowledge of space systems they will need to participate in space-doctrine debates. In this way, the institute will aid and accelerate the development of space power doctrine and push for space technologies, just as the Air Corps Tactical School did for airpower, beginning in 1926.[46] AFSPC's Wizards thrust area aims to encourage and challenge space professionals to develop new space power theories as well as operational, readiness, and war-fighting concepts.[47] The war gaming of space-based capabilities, limited in the past to scenarios in which they were either present or not, is evolving to a state that allows gaming participants to understand and learn how to counter enemy attempts to degrade or deny space assets. War-gaming venues exist, but new training equipment must be developed to inject these scenarios into joint exercises at the tactical level.

Conclusion

Comparing the organizational environs of today's AFSPC to the historical analogs of multiple services from multiple nations makes clear that a transformation is required and is indeed under way. One sees the degree of the command's revolutionary transformation (as opposed to evolutionary change) in the extent to which AFSPC's current strategic actions mirror those of the transformation efforts that have gone before. That these actions mirror those of *successful* past transformations bodes well for the eventual success of AFSPC's current transformation strategy. Furthermore, the nine-point transformation-evaluation criteria developed here can serve as a useful guidepost to commanders attempting military organizational transformation in the future. Under the seven thrusts of "Commanding the Future," AFSPC's leadership has taken—and continues to take—actions to ensure the success of a transformation vital to space superiority, American military dominance, and the American way of life. ❑

Notes

1. John P. Kotter, *Leading Change* (Boston: Harvard Business School Press, 1996), 33–158.

2. Gen Lance W. Lord, "Space Superiority," *High Frontier* 1, no. 3 (Winter 2005): 5, http://www.peterson.af.mil/hqafspc/news/images/JournalWinter05.pdf.

3. Rick W. Sturdevant, "The Satellite—From Definite Possibility to Absolute Necessity: Five Decades of Technological Change," in *Golden Legacy, Boundless Future: Essays on the United States Air Force and the Rise of Aerospace Power*, ed. Rebecca H. Cameron and Barbara Wittig (Washington, DC: Air Force History and Museums Program, 2000), 323; and Lt Gen Michael A. Hamel, commander, Space and Missile Systems Center, Air Force Space Command, interview by the author, 13 September 2005.

4. This same promise manifested itself later, during Enduring Freedom and Iraqi Freedom in the mountains of Afghanistan and the urban centers of Iraq, respectively. Jacob Kipp, senior analyst, Foreign Military Studies Office, US Army Training and Doctrine Command, made the point that the Soviets viewed space as a part of a theater of military operations (TVD). As such, their objective of space superiority was integral to an overall objective of air superiority in the TVD. Col Lawrence E. Stellmon, *A Comparison of the U.S. and Soviet Space Programs: The Forgotten Dimension*, National Defense University Library Special Collections Report 87-2 C.1 (Washington, DC: National Defense University, 1987), 23.

5. Williamson Murray and Allan R. Millett, eds., *Military Innovation in the Interwar Period* (Cambridge: Cambridge University Press, 1996). The six elements are not listed explicitly, as are the eight elements of Kotter's study. Instead, they reappear repeatedly in similar forms throughout the 10 essays of this collection. Barry Watts and Williamson Murray ask a question similar to that of this case study when they propose the hypothesis that "we are now in the early stages of a period in which advances in precision weaponry, sensing and surveillance, computational and information-processing capabilities, and related systems will trigger substantial changes in future wars." "Military Innovation in Peacetime," in *Military Innovation*, 405. The similarity lies in the fact that each of these transformational capabilities is heavily dependent on space.

6. Williamson Murray, "Innovation: Past and Future," in *Military Innovation*, 311.

7. Ibid., 325.

8. Ibid., 326.

9. Geoffrey Till, "Adopting the Aircraft Carrier: The British, American, and Japanese Case Studies," in *Military Innovation*, 211.

10. Ibid., 210.

11. Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military*, reprint ed. (Ithaca, NY: Cornell University Press, 1994), 251.

12. Williamson Murray, "Strategic Bombing: The British, American, and German Experiences," in *Military Innovation*, 104.

13. Rosen, *Winning the Next War*, 87–90.

14. Murray, "Innovation: Past and Future," 317.

15. Ibid., 314.

16. See *Report of the Commission to Assess United States National Security Space Management and Organization* (Washington, DC: The Commission, 11 January 2001), http://www.defenselink.mil/pubs/space20010111.pdf.

17. In response to a recommendation by the Space Commission, the commander of AFSPC was no longer triple-hatted; neither were the commanders of North American Aerospace Defense Command and US Space Command.

18. *Air Force Space Command Strategic Master Plan FY06 and Beyond* (Peterson AFB, CO: Headquarters AFSPC/XPXP, 1 October 2003), 3, http://www.peterson.af.mil/hqafspc/library/AFSPCPAOffice/Final%2006%20SMP--Signed!v1.pdf.

19. Theodor von Kármán, "Where We Stand: First Report to General of the Army H. H. Arnold on Long Range Research Problems of the Air Forces with a Review of German Plans and Developments" (Wright-Patterson AFB, OH: Air Force Materiel Command History Office, 22 August 1945), 12.

20. Sturdevant, "Satellite," 315.

21. John L. McLucas to Ray Bisplinghoff, chairman, Scientific Advisory Board, United States Air Force, letter, 13 August 1980; and Lt Gen Thomas S. Moorman Jr., *Blue Ribbon Panel of the Air Force in Space in the 21st Century* (Washington, DC: Office of the Chief of Staff of the Air Force, February 1993), 9–27.

22. Gen Lance W. Lord, "Commanding the Future: The Transformation of Air Force Space Command," *Air and Space Power Journal* 18, no. 2 (Summer 2004): 13, http://www.airpower.maxwell.af.mil/airchronicles/apj/apj04/sum04/sum04.pdf.

23. House, *Congressional Testimony of General Lance W. Lord, Commander, Air Force Space Command, before the House Armed Services Strategic Forces Subcommittee*, 109th Cong., 1st sess., 12 July 2005; and Col Jeffrey Yuen, "Warfighting Needs and Uses for Responsive Space in the USPACOM Theater," *High Frontier* 1, no. 4 (n.d.): 22.

24. Gen Lance W. Lord, "Developing Space Professionals," *High Frontier* 1, no. 1 (Summer 2004): 7.

25. Senate, *Congressional Testimony of General Lance W. Lord, Commander, Air Force Space Command, before the Senate Armed Services Strategic Forces Subcommittee*, 109th Cong., 1st sess., 16 March 2005.

26. Gen Lance W. Lord (speech, National Defense Industrial Association, Space Policy and Architecture Symposium, 20 July 2004).

27. James C. Collins and Jerry I. Porras, "Building Your Company's Vision," *Harvard Business Review*, September–October 1996, 65.

28. Lord, "Commanding the Future," 9–15; and Hon. Peter B. Teets, "National Security Space in the Twenty-first Century," *Air and Space Power Journal* 18, no. 2 (Summer 2004): 4–8.

29. Gen Lance W. Lord, interview by the author, 21 November 2005.

30. See, for example, *Air and Space Power Journal* 18, no. 2 (Summer 2004); and Hon. Peter B. Teets, "Develop-

ing Space Power: Building on the Airpower Legacy," *Air and Space Power Journal* 17, no. 1 (Spring 2003): 11–15.

31. Gen Lance W. Lord, "The Impact of Space on Security: Stability in International Affairs," *Vital Speeches of the Day*, 15 March 2004, 325–30.

32. Air Force Space Command, http://www.peterson.af.mil/hqafspc/library/speeches/speeches.asp?.

33. Von Kármán, "Where We Stand," 88.

34. Gen Lance W. Lord, "The Face of Space" (speech, Air Power Council, Fort Worth, TX, 27 July 2005).

35. House, *Congressional Testimony.*

36. Senate, *Congressional Testimony.*

37. Ibid.

38. Gen Lance W. Lord, "Space: The Lynchpin to Joint Operations" (speech, Air Force Defense Strategy and Transformation Breakfast Seminar, Capitol Hill Club, Washington, DC, 9 March 2005).

39. Maj Gen Douglas Fraser, director of air and space operations, AFSPC, interview by the author, 28 August 2005.

40. Combining these two elements may seem an oversimplification, but the contention is that bureaucratic acceptance is a direct reflection of the new method's acceptance within the organizational culture.

41. Gen Lance W. Lord, "We Walked with a Legend: General Bernard A. Schriever, 1910–2005," *High Frontier* 1, no. 4 (n.d.): 54.

42. McLucas to Bisplinghoff, letter.

43. Von Kármán, "Where We Stand," 26.

44. Moorman, *Blue Ribbon Panel*, recommendations 1, 5, 12, and 15a.

45. Gen Lance W. Lord, "Welcome to High Frontier!" *High Frontier* 1, no. 1 (Summer 2004): 3–4.

46. Lt Col Joseph E. Brouillard, "SOPSC Educates Space Warriors," *High Frontier* 1, no. 1 (Summer 2004): 22–23.

47. Taking a leaf from Fred Kaplan's *The Wizards of Armageddon* (Stanford: Stanford University Press, 1991), an examination of the process and people who created the US vision of warfare using nuclear weapons, one sees that the Wizards thrust area intended to apply equal energy to war fighting in space.

Operational space systems are critical for our nation. Our satellites provide war fighters in the field with situational awareness, aid operational mission planning, and are crucial for precision navigation, communications, and missile defense operations.

—Dr. Ronald M. Sega
Undersecretary of the Air Force and Executive Agent for Space