

The Influence of Space Power upon History (1944-1998)*

by

Captain John Shaw, USAF

* My interest in this subject grew during my experiences as an Air Force Intern 1997-98, working in both the Office of the Deputy Undersecretary of Defense for Space, and in SAF/AQ, Space and Nuclear Deterrence Directorate. I owe thanks to Mr. Gil Klinger (acting DUSD(Space)) and BGen James Beale (SAF/AQS) for their advice and guidance during my internships. Thanks also to Mr. John Landon, Col Michael Mantz, Col James Warner, Lt Col Robert Fisher, and Lt Col David Spataro. Special thanks to Col Simon P. Worden for his insight on this topic.

A primary task of the historian is to interpret events in the course of history through a unique lens, affording the scholar a new, and more intellectually useful, understanding of historical outcomes. This is precisely what Alfred Thayer Mahan achieved when he wrote his tour de force *The Influence of Sea Power upon History (1660-1783)*. He interpreted the ebb and flow of national power in terms of naval power, and his conclusions on the necessity of sea control to guarantee national welfare led many governments of his time to expand their naval capabilities.

When Mahan published his work in 1890, naval power had for centuries already been a central determinant of national military power.¹ It remained so until joined, even eclipsed, by airpower in this century. Space, by contrast, was still the subject of extreme fiction a mere one hundred years ago, when Jules Verne's *From the Earth to the Moon* and H.G. Wells' *First Men in the Moon* were the "authoritative works" on the subject. But in an exceptionally short period of time, all within this century, humankind has broken the bonds of gravity and explored not only atmosphere but also the vastness that lies beyond. These forays into space, manned and unmanned, have already had profound influence on the events on the globe below.

In the same way Mahan interpreted history through the lens of sea power, so, too, can we interpret the history of the last half-century through the lens of *space power*. My purpose in this essay is to give only the broadest of overviews on how the medium of space and humankind's attempts to master it have already made their impact felt on the unfolding history of humankind. In so doing, I will discuss two key ideas. First, that the initiatives and outcome of the latter half of the 20th century's bipolar Cold War were determined overwhelmingly by space power. Second, that space power is currently undergoing a historic transformation (and proliferation) from a primarily strategic tool of national security to one germane to all forms of national activities: civil, commercial, and military. Together, these ideas have important ramifications for the Air Force as it attempts to wield space power in the 21st century.

BEGINNINGS

Space Power's influence on the course of history began in 1944, when a metallic cigar rose vertically from the ground in Nazi-occupied Holland and flew, unimpeded (indeed, unstoppable) into the British Isles. The fear of this new *Vergeltung* wonder weapon forced a change in the grand strategy of the Western Allies, diverting supplies and air support from Patton's rampant 3rd Army to Montgomery to allow Monty to capture the launch sites.² One might speculate on how

an unimpeded Patton could have crossed the Rhine earlier than he did and driven deeper into Germany, possibly beating the Russians to Berlin and altering the post-war environment. The influence of space on world history had begun.

The German V-2 program played a significant role in the post-war attitude of the Soviet Union towards technology. In the words of Walter McDougall,³ the USSR, out of national fear and necessity, became, at least temporarily, an extremely efficient technocracy, catching up quickly with Western Allied atomic successes and, ultimately, placing the first satellite into orbit. The small metal sphere that hurtled into planetary freefall on 4 Oct 1957 has had, for its small size, an extraordinarily huge influence on human events. It an instant victory for the Soviet Union on many fronts. The nation that was supposedly so far behind the Western Allies, so backward, had demonstrated to the world that its technology, and therefore (by the logic of the day) its ideology, was formidable.

Although it was a technological and political coup, Sputnik backfired on the Soviets in a number of unexpected ways. First, it aroused American public interest and galvanized political will towards a national space effort. Even though in 1957 the American space program was in full development and right on Sputnik's heels, Sputnik transformed it from a concern of scientists and engineers into one of concern to politicians and everyday Americans.

Also, more subtly, Sputnik made the first crack in what would be an ever-growing schism between the Soviet Union and Red China. Whereas prior to Sputnik the relationship between the two Communist countries had been one of technological collaboration, soon afterward, perhaps now feeling more comfortable standing alone against the West, the Soviet Union refused to share further nuclear and missile technology. Thus began the rift that set the stage for the political coup President Nixon would effect a decade and a half later.⁴

Furthermore, in one swift stroke Sputnik resolved a highly debated issue (both within the United States and internationally) of the day—the question of spacecraft overflight. Did national sovereignty extend *ad caelum*? If so, was permission required from each nation a satellite might pass over in its flight? Could the U.S. use space for strategic reconnaissance over the increasingly hermetic Soviet Union? In its haste to demonstrate technological (and, hence, ideological) superiority, the USSR resolved the problem for the Americans--the nation which boasted about the small sphere which passed over North America could hardly now object to later overflights of its territory by Western satellites.

The shock of Sputnik's success registered its effect on many levels. Many were surprised by the symbolic (and ideologically profitable) act of surpassing the United States in technology. But some saw Sputnik clearly for what it was—the implied ability, for the first time, for a nation in the Eastern Hemisphere to make a direct attack on the supposedly insulated continent of North America. The vast oceans and airspaces could protect America no longer, and a new weapon emerged which changed the entire strategic balance of offensive warfare.

FIRST SPACE WEAPONS

The marriage of American atomic weapon technology with German rocketry produced what is arguably the single most influential weapon of the 20th century—the Inter-Continental Ballistic Missile. The ICBM was, in fact, the very first military space system. Even though no silo-based ICBM has ever sprung from its subterranean lair in anger, the ICBM was the first weapon designed to travel into and through space. ICBM technology is also very closely linked with the engineering challenges of spacelift; in fact, with the exception of the Apollo launchers, every expendable launch vehicle developed in the United States has derived from an ICBM platform. Furthermore, and with important implications for the future, any desired capability to defend against ICBMs (and other long-range missiles), ground-based or not, would ultimately involve space technology.

The ICBM (and its sister, the SLBM) completely transformed the nature of strategic warfare, effectively and ultimately realizing Douhet's theories of indefensible aerial bombardment. ICBMs could visit megatons of destruction on any point on the globe with little or no chance of being intercepted. It was this fundamental change Bernard Brodie referred to when he said, "Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them."⁵ Likewise, B.H. Liddell Hart called nuclear weapons a "revolution in warfare" and theorized they made war between rational actors impossible.⁶ In the Soviet Union, the new Strategic Rocket Forces quickly became the most elite branch of the Soviet armed forces--such was their faith in the effectiveness of this new space weapon.

Nuclear weapons have since had a peculiar impact on warfare. As the Friedmans point out in their book *The Future of War*, nations that have the ultimate weapon have been unwilling to use them in times of war, even when losing. There is no simple answer to the question of why nuclear weapons were not employed against Hanoi by the U.S. or against Kabul by the U.S.S.R, or, more interestingly, against Algeria by France, against Vietnam by China in 1977, or against the Arabs by Israel in 1973.⁷ Hiroshima and Nagasaki, rather than setting a precedent for atomic/nuclear bombing, instead seem to represent exceptions. At what point will a nation feel threatened enough to resort to use of nuclear weapons? Will reluctance dissipate once the nuclear "spell" is broken by first use? The importance of these questions increases as other weapons of mass destruction proliferate around the globe.

The debate about the military and political significance of ICBMs is far from over. But one thing that cannot be denied is that such significance exists—that the world's first space weapon has also been the most influential one of this century. It was, finally, both the central focus of and eventual means to victory in the Cold War.

THE FIRST SPACE RACE

The success of Sputnik sent Soviets into jubilation, and American technologists and policy-makers into pandemonium. In an era when the ideological battle between East and West was still taking form, Sputnik provided a focus for the competition, a yardstick with which the world could judge the superpowers. What followed in the next 13 years was an extraordinarily unique focus of the national wills and resources of both countries as they competed in a contest of "one-upmanship" in accomplishing "peaceful" technological feats in space.

In a sense, this first space race was a highly prized football game in which the Soviet Union played the underdog that had managed to score several unanswered touchdowns. Though formidable, Soviet technology had serious flaws—the immense size of their rockets, for example, was more a sign of backwardness than technological might.⁸ It was really only a matter of time before the United States, once again the sleeping giant of Yammamoto's fears, made its industrial and technological power felt. The question was, would it do so before the clock ran out? In this instance, "sudden death"—in the eyes of the U.S., at least--was a lunar landing (although, had the Soviets reached the moon first, one could speculate on a proposed mission to Mars to perpetuate the space race until victory could be claimed). Thus, sights were focused firmly on a target, a symbol recognized by modern and primitive cultures alike, one the whole world could see and understand: the moon. The ensuing race for the moon encompassed and focused national will on a single technological achievement in a manner never seen before. In the end, the United States was victorious, accomplishing a feat which even the most hardened skeptics of the wisdom of such a venture must shake their heads at in amazement.

But the American victory was by no means decisive. What it *did* do was recover a great deal of respect for American technology and way of life amid a series of embarrassing "seconds," some over which American culture still seems to be in a state of denial.* The United States had managed, at least, to partially exorcise the demon named Sputnik and bring the space-centered theater of the ideological Cold War to stalemate, for the Soviet Union could no longer claim superiority (though it could deny inferiority) in space.

* How many Americans are truly aware that Yuri Gagarin (not Alan Shepard or John Glenn) was the first human in space *and* the first to complete a full orbit? Or that Alexei Leonov (not Ed White Jr.) was the first human to spacewalk, or that Valentina Tereshkova (not Sally Ride) was the first woman in space, two decades before Ride? Or that the U.S.S.R. was the first nation to send unmanned craft to, around, and on return trips from the moon? We have tended to write our space history with more emphasis on "American firsts" rather than "human firsts."

The historical influence of this first space race is felt to this day. First, in Walter McDougall's view, the lasting legacy of the space race in Americana was the founding of technocracy, the precedent that the federal government can fund and direct scientific and technological progress on a large scale. There was also the resulting "can do" attitude, a belief that technology can solve great problems, epitomized by the phrase "if we could land men on the moon, then we can certainly do 'X'."⁹ Both of these legacies are still felt today within the technical communities of the U.S. Also, the race forced the Soviet Union onto a propaganda PR defensive in space. Despite the fact evidence clearly shows the Soviets were attempting to beat the United States to at least a manned circumlunar mission,¹⁰ the public response in Soviet press to the American moon landings was that rubles were better spent on earth-orbiting space stations exploring humankind's ability to live in space. The irony in the Soviet backpedaling has been its endurance. Whereas the former Soviet Union is still operating its aging Mir (the last in a series of manned space stations), America has yet to return to the moon after over 25 years of absence.

Most importantly for the military, the overt "non-military" approach of the first space race left a lasting legacy on subsequent military space efforts. Great pains were taken by both the USSR and the U.S. to de-militarize the race for space feats and the moon. This was, at the time, a political necessity for both nations. The first space race was cast as a contest between ideologies

and economic systems. Thus, winning the race had to appear to be done through the peaceful, natural technological superiority of championed culture, not by brute military force. This also meant the pursuit, though outwardly peaceful, could not possibly be cooperative. Even Soviet academician Leonid Sedov admitted as much: "if we really cooperated on man-in-space, neither country would have a program because the necessary large support in money and manpower was only because of the competitive element and for political reasons."¹¹ "Peaceful" exploration of space, like war, in Clausewitzian fashion, was simply an extension of politics by other means.

In many ways, this proclaimed de-militarization, though outwardly profitable and politically necessary, was inwardly inefficient and artificial. NASA and the Department of Defense received separate space budgets, and there was to be redundancy in spending for years to come as the military tried to develop its own manned space platforms, all of which were ultimately canceled. The Air Force's Dyna-Soar, Blue Gemini, and Manned Orbiting Laboratory (MOL) programs are prime examples.

This public emphasis on de-militarization resulted in a prevailing feeling among many that space should be a sanctuary; that it was no place for military missions and hardware. In truth, this was simply not ever the case, for military machines vital to national security were already in orbit before Yuri Gagarin ever got off the ground.

THE SECOND SPACE RACE: EYES IN SPACE

While the boisterous race for spacewalks and moonshots ensued, a quieter, and in many ways vastly more important, contest was being fought. The Cold War nuclear stability depended on accurate information of the opposing enemy's capabilities, lest policy and strategy degrade into the bomber and missile gap panic of the late 1950s. The initial American strategy for conducting reconnaissance over the vast Soviet Union was to employ high-flying aircraft, secretly overflying the Soviet Union, and theoretically "invulnerable" to shootdown. But even before the Gary Powers' incident, Eisenhower recognized the need to migrate the strategic reconnaissance mission to space. Powers only served to hasten this end.

The advantage of space systems for strategic reconnaissance was clear—they operated in the open "international" realm of space, and were therefore (technically) free from being intercepted. As discussed, in an ironic twist, by being the first to launch a satellite, the Soviet Union had implicitly declared its position on the "space overflight" question. Since overflight was now "permissible," the only things the Soviets might oppose were intelligence-collecting payloads—a much harder characteristic to verify and prove. President Kennedy's answer to this was to black-out all space-based intelligence collection sources, hoping the USSR would back off its complaints if the fact of reconnaissance overflight were less public (since it, too, was developing spy satellites).¹² The gamble worked, and space-based intelligence collection moved into deep shrouds of secrecy.

It was in this atmosphere of secrecy that the National Reconnaissance Office was founded in 1961.¹³ Composed of Air Force, Navy, and Central Intelligence Agency program offices, it built, launched, and operated intelligence-collecting spacecraft for the duration of the Cold War.¹⁴ The

Soviets did the same, orbiting numbers of imaging and radar platforms to track American nuclear capabilities and fleet movements.¹⁵

NRO satellites were not alone on their watch. Operating in concert with the NRO's spy craft were the Air Force's missile warning satellites—originally the Missile Detection Alarm System (MIDAS) and later the Defense Support Program (DSP). These spacecraft represented the "first line of defense" against preemptive strikes, deterring such strikes by giving ample warning time to scramble manned bombers or to send instructions to ICBM Launch Control Centers and missile subs.

Only now is the NRO emerging from its nocturnal habitat in the "deep black" of bipolar confrontation, blinking uncertainly in the morning twilight of the post-Cold War. Declassification of early missions, acknowledgment of its very existence, and the first formal publication of (a part of) its history are evidence that the NRO's roles, and the way it sees itself, are changing.

The importance and influence of the "eyes in space" in winning the Cold War cannot be understated. The knowledge each superpower was able to gain of the other's nuclear inventory size and location served to make the nuclear question transparent, and contributed greatly to the stability of the Cold War. Neither nation was operating in the panicky dark, nor was vulnerable to "nuclear ambush." A nation could neither conceal a nuclear superiority that might tempt it into launching a preemptive strike, nor could it hide inferiority and bluff a boasted position of strength that might lure its foe into a false arms race. This "leveling of the field," in turn, further dampened chances of a nuclear confrontation.

THE THIRD SPACE RACE

In the United States, the successes of the Apollo missions and the euphoria of emerging victorious in the first space race gave way to the space doldrums of the 1970s, where détente prevailed, the Outer Space, ABM, and other treaties closed doors to some policies, and Skylab (somehow metaphorically appropriately) reentered the atmosphere. The Soviets embarked upon a program of ICBM modernization, and also developed the first antisatellite weapon. The United States countered with cruise missile development and deployment, as well as the new Peacekeeper ICBM. And the secret eyes in space continued their ceaseless vigil, counting the ICBMs, following the fleets, maintaining the Cold War stability.

But the pace would quicken yet again, with the successful launch of America's reusable space shuttle in 1981, and then the announcement in 1983, by President Reagan, of his Strategic Defense Initiative. The Reagan administration's grand strategy was to break, once and for all, the Cold War stalemate, which, as Reagan saw it, was leading the world on an inexorable path to nuclear war. His plan, oddly enough, was to force the Soviets into an arms race, to eliminate the threat of nuclear war and weapons by building more of them. His course of action frightened many and gave rise to the nuclear freeze movement.

The renewed arms race of the 1980s, many historians and political scientists are convinced, is what ultimately drove the Soviet Union to disintegration. Mikhail Gorbachev's social reforms

(*Glasnost*) and economic reconstruction (*Perestroika*), to be sure, played key roles. But one wonders if they would have had the same impact or been as successful if the Soviet Union found itself the front-running global ideological leader of Krushchev's hopes, rather than the exhausted marathoner falling further and further behind the United States and its thriving economy.

At the core of this arms race was Reagan's Strategic Defense Initiative (SDI). It threatened to completely undermine the existing Soviet nuclear counterforce strategy and antique the draining modernization they had accomplished in the previous decade. The summit at Reykjavik in October 1986 stands as the best evidence of the Soviet fear of U.S. gains in space technology. Gorbachev, desperate for some sort of agreement, brought everything to the table, not only short-range missiles in Europe but also long-range ICBMs and even human rights issues. The one concession he demanded from the U.S. was a curtailment of SDI and a restriction to the laboratory. And this was the one concession Reagan refused.¹⁶ Yet despite the lack of visible progress in negotiations at Reykjavik, it was the beginning of the end of the Cold War.

Thus, in a sense, in the same way the Cold War was a hot war never played out, so, too, was SDI a decisive space weapon never deployed. In the complex psychological arena of deterrence, where threat alone influences behavior, so, too, did the unrealized space threat of SDI influence superpower behavior.

THE FIRST SPACE WAR

The passing of the night of the Cold War brought a new dawn to the role of space power in warfare. The 1991 Gulf War stands as the first major conflict where space assets played an integral role in attaining victory. Some have called it the "first space war." General Kutyna (CINC Space during the Gulf War) rephrased it as the "first space applications war."¹⁷

Space power had already played a role in numerous other conflicts in its infancy, including early photoreconnaissance and weather imagery over Vietnam,¹⁸ and photo and signals intelligence to Great Britain during the Falklands war.¹⁹ But, whereas in these instances the contributions of space were small and made only at the higher decision-making levels, in the Gulf War space technology permeated nearly every level of the battlefield. Commanders relied upon satellite communications to keep in touch within theater and between the Middle East and the United States. Weather data and imagery from Defense Meteorological Satellite Program (DMSP) and other weather satellites greatly aided airstrike sortie planning and troop movements. The Global Positioning System (GPS) was used by land, sea, and air forces, and made possible precise ground maneuvers in a featureless desert. Missile warning data from DSP satellites alerted Israel and Saudi Arabia alike of incoming Scud missiles. Finally, imaging and signals collection platforms provided the essential precision targeting information to execute the tremendously successful air campaign.²⁰

Thus, it was with the end of the Cold War that space power was ushered into its new, and latest, role. No longer was it relegated solely to a strategic role of monitoring and guaranteeing deterrence. It had finally made its way to the battlefield, to the "grunt in the grass," and is there to stay. Even the use of space during the Gulf War appears primitive by today's standards, which include far more reliable and accurate missile warning capabilities, more Military Satellite

Communications (MilSatCom) terminals, and unmanned aerial vehicles using satellite links. The presence and influence of space power since the end of the Cold War has filtered from the closed chambers and capsules of national security to cockpits, CICs, tents, and even civilian automobiles, telephones, and living rooms.

THE EXODUS INTO SPACE

Space was once almost exclusively the domain of superpower government-sponsored research or national security payloads. Not so today. A host of nations and corporations now have satellites in orbit, making the situation in space, like the political one on the ground, a multipolar maze.

The use of space for civilian uses is growing exponentially. In 1998, for the first time in history, commercial space expenditures will exceed defense spending on space. What was once an arena limited to a few communications satellites in geosynchronous orbit broadcasting HBO and MTV is now an industry teeming with systems of every conceivable kind. Numerous commercial programs are either being deployed or on the drawing board, guaranteeing to replace terrestrial communication pathways and move voice, data, and the Internet into space. Space is swiftly becoming the center of gravity for the newest commodity in human history: information.

The Global Positioning System (GPS), once intended solely for military use, is now practically a household word. It has become what some have called the "last word in global navigation," and may well emerge as one of the most significant globally influential technologies of the 20th century. Commercial remote sensing platforms now offer imagery to those who can afford it, presenting new opportunities to nations or actors previously denied information from space, and raising new problems for national security. Finally, launch vehicles, once the Cold War symbol of a country's national will, are for sale. One can only imagine Krushchev's horror, were he alive today, at witnessing the practice of Russian boosters bidding, in capitalistic fashion, for Western launch business. The expectations of the man who boasted Sputnik and declared to decadent, mortal Western society "We will bury you" have suffered profound and utter reversal.

THE FUTURE

Historically, it is often the battle never fought that proves as decisive as any actual military engagement. In the words of Sun Tzu, "To win 100 victories in 100 battles is not the acme of skill. To subdue the enemy without fighting is the acme of skill." If so, then space power, in its brief history, has proven to be a valuable national security skill indeed.

In many ways, the Cold War was as much a real war as any "hot" shooting war. It pitted the national resources, ideologies, and will of the national leadership and people of both superpowers against each other. Space power in its many forms—moonshots, missiles, spy satellites, SDI, etc.—was, I have argued, the decisive force in winning it. It could be recast as "The Great 50-Year Space War." It was won on as many fronts as the human psyche can experience. It was won in the political and ideologically symbolic race to the moon. It was won by the omnipresent threat of massive ICBM (and SLBM) retaliation, which suppressed major conventional confrontation in Europe and elsewhere for three decades. It was won by the NRO, which verified the size and nature of the Soviet threat. And it was SDI—the threatened

development and deployment of space-based defense systems—that put the final nail in the coffin of the Soviet Union. It was space that provided the stabilizing "crisis containment" which allowed the otherwise unstable, frightful Cold War to reach full maturity and go gentle into that good night, relegating the Soviet Union, in Reagan's now-prophetic terms, to the dust heap of history.

This is not to say conventional forces were meaningless, or that the manned bomber leg of the nuclear triad was impotent. But these were merely supporting actors in a drama where space power took center stage.

The influence of space power is increasing. New commercial ventures in the communications and imaging arenas are blossoming, creating a whole new class of space merchant traffic. Space is no longer the realm of the former bipolar powers. The number of actors gaining access to space, whether they be nations, corporations, or international consortiums, is accelerating.

ISSUES FOR THE 21st CENTURY AIR & SPACE FORCE

What, then, does this new era mean for the developing doctrine and force structure of military space? The sacred teachings of Mahan on the influence of sea power on history may hold part of the answer. Mahan believed that national power derived from a nation's ability to control the critical medium of his time: the sea. A nation, therefore, which relied upon the sea for economic success and military protection could not hope to be a truly powerful nation unless it could also *control* the sea. Appropriately, then, the U.S. Navy was founded upon defensive principles. Its primary mission was not an offensive one limited to wartime only, but rather a full-time commitment oriented towards protection of coastline, sea lanes, and merchant shipping.

As space becomes more and more the "ocean of the future," the military's role in space will necessarily evolve along these same lines—the *need for effective control of space*. How do we protect ("escort") our space assets: military, civil, and merchant? Can we truly expect, in this increasingly complex multipolar world, to rely on the traditional "sanctity of space" to protect them? How do we deny ("blockade") use of space to an adversary? Space is certain to become a center of gravity for military forces other than those of the United States. Only the most foolish of national security strategies would allow such a target to go unnoticed when American lives are at stake.

Historian Bruce Catton has said "Far from being isolated by the great seas, we are exposed by them...our only real defense lies in our ability to make our presence felt far beyond the horizon..."²¹ In similar fashion, we are not insulated by space; indeed, as more of what we do on a daily basis moves into space, we, our national interests, are exposed by it. Thus, the United States is, truly, a spacefaring nation. It becomes the mission, then, of the evolving Air and Space Force, to find the ways to best defend these national interests.

Mahan records the actions of Carthaginian Admiral Bomilcar among the very first demonstrations of sea power. The influence of space power upon history is only just beginning to make its weight felt. We can no more conceive how it will shape military power and global history than Admiral Bomilcar could have predicted the historically influential naval events at

Lepanto, Trafalgar, and Yorktown. But, in the short history of space power, we have been given a glimpse of the awesome impact it will have in the years to come. It is a necessity, then, to learn from this history, and thus understand, develop, and employ space power effectively in order to meet the challenges of the future.

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Contributor

Captain John E. Shaw

Captain John E. Shaw holds a B.S. in Astronautical Engineering from the United States Air Force Academy, an M.S. in Aeronautics and Astronautics from the University of Washington, and an M.A. in Organizational Management from The George Washington University. Captain Shaw is currently assigned to Headquarters, United States Air Forces in Europe, Ramstein AB, Germany. His previous assignments have included tours in Air Force Space Command and the National Reconnaissance Office, as well as internships as an Air Force Intern in the Office of the Deputy Under Secretary of Defense for Space, and in SAF/AQ, Space and Nuclear Deterrence Directorate. He is a Distinguished Graduate of the United States Air Force Academy in Colorado Springs, CO, and of Squadron Officer School, Maxwell AFB, AL.
