LUNAR BASES TO LINEBACKER:

AIR FORCE THOUGHT DURING THE VIETNAM WAR, 1960-1973

A Dissertation

by

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ABSTRACT

One common complaint about the United States Air Force is its overreliance on strategic bombing theory. This dissertation examines that complaint by expounding on the intellectual community within the officer corps during the tumultuous Vietnam War. The sources used include academic theses written by mid to senior field grade officers, articles published in the Air Force's scholarly journal, and articles published by the service's lobbying organization, the Air Force Association. Three schools of thought may be distilled that focused on strategic bombing, the primacy of technology over strategy, and the proper role of airpower to support wars short of a general, nuclear war. These schools are respectively termed strategic warriors, technologists, and tactical warriors.

During the Vietnam War, the influence of these intellectual groups shifted. Beginning in 1960, the strategic warriors and technologists were dominant. The strategic warriors advocated their beliefs that nuclear superiority and threatening massive retaliation could prevent and win wars. The technologists enjoyed support during the space race and believed technological breakthroughs would reshape warfare. Both these schools rested on abstract predictions that gave way to the experience of a limited, non-nuclear war the military faced in Vietnam from 1965 through 1973. By the end of the war, the situation had changed. Technologists were the junior school. The tactical warriors now had at least an equal voice with the strategic warriors.

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I tend to downplay accomplishments in my professional life. The rigor required to earn a doctorate degree at the Texas A&M History Department will prevent me from ever minimizing this milestone. Although academic study can often feel like a lonely experience, it requires the instruction, mentorship, and support of many to graduate. I will be forever thankful to God for placing everyone who helped me achieve this goal in my life.

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NOMENCLATURE

AAA	anti-aircraft artillery
ABM	Anti-Ballistic Missile
ACSC	Air Command and Staff College
ACTS	Air Corps Tactical School
ADC	Air Defense Command
AFA	Air Force Association
AFM	*Air Force Magazine*
AFSC	Air Force Systems Command
AF&SD	*Air Force & Space Digest*
ALO	Air Liaison Officer
AMSA	Advanced Manned Strategic Airplane
ASI	Aerospace Studies Institute
AWACS	Airborne Warning and Control System
AWC	Air War College
AU	Air University
AUQR	*Air University Quarterly Review*
AUR	*Air University Review*
BMEWS	Ballistic Missile and Early Warning System
CAS	Close Air Support
CASF	Composite Air Strike Force
CCTS	Combat Crew Training Squadron
CHECO	Contemporary Historical Evaluation of Current Operations

COIN	Counterinsurgency
CSAF	Chief of Staff of the Air Force
ECM	electronic countermeasure
FAC	forward air controller
ICBM	intercontinental ballistic missile
MOL	Manned Orbital Laboratory
NVA	North Vietnamese Army
PACAF	Pacific Air Forces
PME	Professional Military Education
SAC	Strategic Air Command
SAM	surface to air missile
SDI	Strategic Defense Initiative
SEA	Southeast Asia
SST	Supersonic Transport
STOL	short takeoff and landing
TAC	Tactical Air Command
TACS	Tactical Air Control System
USSR	Union of Soviet Socialist Republics
VCSAF	Vice Chief of Staff of the Air Force
V/STOL	vertical or short takeoff and landing
VTOL	vertical takeoff and landing

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CHAPTER I

INTRODUCTION

In 1961, the new Air Force Chief of Staff General Curtis E. LeMay declared, "education and professionalism go together to produce top quality people." He urged airmen, officer and enlisted alike, to adopt a personal reading program outside of their technical field and advised the "desire" to learn would "mark the difference between the winner and the follower."[1] LeMay's point was that the development of people, not organizations or technology, was the Air Force's most important asset. In 2008, Dennis Drew, a career Air Force officer who spent thirty years after retirement educating the officer corps, urged the service to "recapitalize the Air Force intellect." He claimed the need to produce thoughtful airmen, schooled in history to temper an infatuation with technological "toys," was "at least equal" in importance to upgrading aging aircraft.[2] From this assessment half a century after LeMay's remarks, it would seem that Air Force efforts to improve education never paid off.

The problem with Drew's conclusion is that there have been few scholarly studies of Air Force thought. Robert Futrell's two volume *Ideas, Concepts Doctrine* spans the history of the institution from the beginning of manned flight through to 1984. This work is the most thorough accounting of the Air Force's evolving views on war.[3] For the second volume that includes the Vietnam War era, however, Futrell relied mostly on congressional

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[1] Curtis E. LeMay, "Our First Priority: People," *Air Force & Space Digest* [hereafter *AF&SD]* 44, no. 9 (September 1961): 44-47. LeMay specifically urged airmen to read the *Air University Quarterly Review* and the *AF&SD*.
[2] Dennis M. Drew, *Recapitalizing the Air Force Intellect: Essays on War, Airpower, and Military Education* (Maxwell AFB, AL: Air University Press, 2008), viii, 3.
[3] Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1961-1984*, 2 vols. (Maxwell AFB, AL: Air University Press, 1989).

testimony from general officers which gives the perspective of senior leadership alone, mostly subject to questioning from politicians. He was also employed as an Air Force historian during this period, leaving him close to the ideas he catalogued. Additionally, Futrell's work was excellent at recording the complexity of Air Force thought, but did not offer any methodology to simplify or categorize officer thinking. John Worden's *Rise of the Fighter Generals* also placed a large emphasis on the influence of those occupying the top echelons. His work described how the service's primary source of leadership and guidance changed from bomber to fighter pilots based on generational differences, educational levels, and methods of approaching warfare based largely on different foundational experiences of tactically employing their aircraft type.[4]

Building on Futrell and Worden, this dissertation will focus on strategic, institutional, and military thought among those officers selected to attend professional military education (PME) and from publications with a dedicated Air Force perspective. The views of general officers have been well cited while the voices of field grade officers, often closer to combat experience or the actual development of technology and tactics, have not received the same level of attention. The general's voices are certainly important and will not be ignored, but by focusing on the intellectual beliefs of more junior officers, a clearer picture will emerge of the diversity of Air Force opinions.

This thesis will demonstrate the depth and breadth of US Air Force officers' thinking from 1960 to 1973. It will cover the twilight of the Eisenhower Administration's

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[4] Mike Worden, *The Rise of the Fighter Generals: The Problem of Air Force Leadership, 1945-1982* (Maxwell AFB, Air University Press, 1998), 235-237.

massive retaliation strategy that emphasized a first use of nuclear weapons against any Soviet-led aggression to the denouement of the Vietnam War and an increased emphasis on conventional war. I will argue that there are three competing visions among airmen for how to best prepare for future wars. The first group I term the *technologists*. These were officers who believed in a revolution in warfare based on the expansion of scientific knowledge and its resulting technology. To them, laboratories and new weapons programs had displaced battlefields. The second group I term the *strategic warriors*, who believed that airpower could win or deter wars by itself and should thus be prioritized over other military services and within the Air Force budget. They argued that successful deterrence in the nuclear age required both superior offensive and defensive systems, qualitatively and quantitatively. The third group, the *tactical warriors*, viewed continuous limited wars waged under the umbrella of nuclear deterrence as the most likely type of conflict. These wars could range from sub-limited wars, or insurgencies, up to war between the superpowers that involved tactical nuclear weapons on the battlefield but stopped short of a complete nuclear exchange. In these wars, airpower could not be expected to win alone and would require extensive coordination with other military services and government agencies.

This argument offers three important revisions to accepted historical interpretations. First, it argues the officer corps perceived warfare through diverse perspectives and were not monolithic, united on a single solution of strategic bombing during the Vietnam War. Second, it challenges the argument that militaries produce beliefs among its officers due solely to organizational mechanisms. For the Air Force in particular, this argument is that it is dangerous to allow the service too much autonomy, as

officers will become committed to nuclear warfare. Last, it disputes that intellectual adaptation was limited to a small contingent of visionary, disgruntled officers.

Much of the argument that the Air Force officer corps were guilty of strategic bombing groupthink stems from scholarship of the Vietnam War. Mark Clodfelter's 1989 *The Limits of Airpower* argued the "indelible stamp of Air Force strategic bombing doctrine affected the air war against the North" and that these preformed beliefs "colored" the commanders' interpretation of bombing effectiveness.[5] Earl Tilford's 1991 *Setup: What the USAF did in Vietnam and Why* maintained that Air Force basic doctrine had remained essentially unchanged since 1953 and that its "intellectual leadership" decreased before and during the Vietnam War.[6]

This thesis also challenges scholarship that hold the service continually produces officers welded to an outdated theory of strategic bombing developed a century ago by Guilio Douhet and advocated in America by William "Billy" Mitchel. Robert Farley in *Grounded: The Case for Abolishing the United States Air Force*, maintains the Air Force retains "a vision of warfare that does not, despite tremendous investment, meet the defense needs of the United States."[7] Farley's book is a recent example of scholarship that depends on the assertion that defense organizations are highly effective at developing a military mind where there is a unity of thought amongst members. This belief has a long

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[5] Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York: The Free Press, 1989), xii.
[6] Earl H. Tilford, *Setup: What the Air Force did in Vietnam and Why* (Maxwell AFB, AL: Air University Press, 1991), 285-287.
[7] Robert M. Farley, *Grounded: The Case for Abolishing the United States Air Force* (Lexington: University Press of Kentucky, 2014), 1, 187.

history, but during the Cold War some national security scholars have assumed a unitary military voice that assisted in driving a nation's doctrine independent of the direction set by political leadership.[8]

The argument that military organizations create groupthink began when a scion of international affairs, Graham Allison, posited an organizational behavior model where large institutions designed to produce desired outputs also had a stagnating effect where the institution produced individuals unwilling to quickly innovate and adapt thus constraining the options of "rational actors."[9] In the 1980s, this line of questioning continued when scholars Jack Snyder and Barry Posen each sought to discern why the "cult of the offensive" developed before each of the world wars. Snyder attributed several institutional and personal motivational biases of officers to advance their service as one of the dominant forces that led towards a unified and dangerous offensive mindset.[10] Posen summarized the danger of the "military mind" by stating that left alone, military forces will produce doctrines "inimical" to states' interests and specifically warned that "we [civilian policy experts] should not be overly complacent about nuclear weapons technology" as leaving it to the military alone could prove dangerous.[11]

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[8] This view is not relegated to national security scholarship, William Skelton attributed the development of a "distinctive military mind" to antebellum education at West Point; William B. Skelton, *An American Profession of Arms: The Army Officer Corps, 1784-1861* (Lawrence: University Press of Kansas, 1992), vii.
[9] Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 2nd ed. (New York: Longman Publishers, 1999), 143-196.
[10] Jack Snyder, *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914* (Ithaca, NY: Cornell University Press, 1984), 22-30.
[11] Barry R. Posen, *The Sources of Military Doctrine* (Ithaca, NY: Cornell University Press, 1984), 241-243.

Finally, this dissertation will challenge scholarship that maintains the Air Force waited to adapt until after the war, primarily led by a small contingent of disgruntled officers. This position singled out a small group of "reformers" that challenged the "military-industrial complex." James Fallows, a journalist and a reformer himself, popularized the narrative of mavericks who challenged the military's preference for expensive and exquisite technological aircraft for cheaper, simpler, and ostensibly more effective weapons.[12] Robert Coram's 2007 hagiography of the reformers' leader, Colonel John Boyd, reinforced this historical interpretation that a brave group of half a dozen fighter pilots and civilian allies were the primary catalyst for change within the Air Force.[13]

Another stream of historical argument follows a similar pattern where a handful of junior officers suffered through Vietnam and emerged to transform the military. The triumphal end of this story was DESERT STORM when the ultimate result of the Vietnam War was the world's most effective military in history. James Kitfield's 1995 *Prodigal Soldiers* is the archetype of this historical interpretation.[14] Marshal Michel also follows this typical arch. Michel, however, also challenged the reformers narrative by expanding the pool to include many of the fighter pilot veterans of Vietnam, whom he termed "Iron

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[12] James Fallows, *National Defense* (New York: Vintage Books, 1981).
[13] Robert Coram, *Boyd: The Fighter Pilot Who Changed the Art of War* (New York: Back Bay Books, 2002).
[14] James Kitfield, *Prodigal Soldiers: How the Generation of Officers Born of Vietnam Revolutionized the American Style of War* (Washington DC: Brassey's, 1995); Richard Hallion, *Storm Over Iraq: Air Power and the Gulf War* (Washington DC: Smithsonian Institution Press, 1991); Tom Clancy and Chuck Horner, *Every Man a Tiger: The Gulf War Air Campaign* (New York: Berkeley Books, 1999).

Majors," that remodeled an obstinate Air Force during their staff tours and by improving fighter tactics at Nellis AFB. The Air Force finally embraced advanced conventional technology and improved training after fierce resistance primarily from bomber generals.[15] C. R. Anderegg and Brian Laslie have both reinforced this interpretation by focusing on how fighter pilots improved Air Force conventional warfare training in the Vietnam War's wake.[16] The commonality between those heralding either the reformers or iron majors was that a small group of officers bent the institution to their will and forced change upon it.

In order to challenge these interpretations and demonstrate intellectual diversity within the Air Force, my primary sources will be officer students attending Air Force PME. The US Air Force's officer education system evolved from the US Army. Since the role of aircraft in warfare dramatically increased during World War I, the Army established a separate air arm and a mid-level special school to educate aviation officers. It had several names and was initially located at Langley Field in Virginia but by 1931 had relocated to Maxwell Field in Montgomery, AL and was named the Air Corps Tactical School (ACTS). The school's purpose within the Army structure was still meant as an intermediate and more specialized level of education, but by the 1930s it became largely insular from the Army's Command and General Staff School at Fort Leavenworth, KS. The causes of this insularity stemmed from failures both by ACTS personnel who desired

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[15] Marshall L. Michel III, "The Revolt of the Majors: How the Air Force Changed after Vietnam" (PhD diss., Auburn University, 2006).
[16] C. R. Anderegg, *Sierra Hotel: Flying Air Force Fighters in the Decade After Vietnam* (Washington DC: Ross & Perry, 2001); Brian Laslie, *The Air Force Way of War: U.S. Tactics and Training after Vietnam* (Lexington: University Press of Kentucky, 2015).

independent air operations and from a general disinterest in aircraft at Leavenworth.[17] The cadre and students of ACTS explored the possibilities that rapidly changing aircraft could have on war more than any other PME school. Indeed, the school's apt motto was *Proficimus More Irretenti*, which translates to "We Make Progress Unhindered by Custom."[18]

ACTS has been criticized for this forward looking view and its seemingly exclusive focus on strategic bombing,[19] but the reality is more complicated. By the time the school closed in 1940 its curriculum was split roughly in two halves. The first half served as a "preparatory" course for the Army's Command and General Staff School at Fort Leavenworth, KS with courses emphasizing ground roles of other Army components (e.g. artillery) and staff officer duties. During the second half of the year, ACTS curriculum focused on air subjects such as attack, bombardment, pursuit, and ended with a capstone course to tie all the new airpower concepts together. It was during the capstone where bombardment was given intellectual priority, but the other elements of warfare were not neglected.[20] The importance of this school during WWII was obvious since 261 of the 320

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[17] Peter J. Schifferle, *America's School for War: Fort Leavenworth, Officer Education, and Victory in World War II* (Lawrence: University Press of Kansas, 2010), 193-194.
[18] Robert T. Finney, *History of the Air Corps Tactical School, 1950-1940*, USAF Historical Study no. 100, Air University Research Studies Institute, 1955, vii, https://www.afhra.af.mil/Portals/16/ documents/Studies/51 -100/AFD-090602-019.pdf.
[19] Tami Davis Biddle, *Rhetoric and Reality: The Evolution of British and American Ideas about Strategic Bombing, 1914-1945* (Princeton, NJ: Princeton University Press, 2002), 155-164; Michael Sherry, *The Rise of American Air Power: The Creation of Armageddon* (New Haven, CT: Yale University Press, 1987), 51-56.
[20] Finney, *Air Corps Tactical School*, 20-22.

Army Air Forces general officers were graduates. These generals represented nearly a quarter of the total number of graduates produced at Maxwell and Langley Air Fields.[21]

Following WWII, the Army Air Force created its own system of PME that became the foundation for the current system once the Air Force gained independence in 1947. To correct the struggles ACTS had encountered as a small school attempting to educate the growing number of airmen, the service designed an Air University (AU) with various schools co-located at Maxwell for officers at different stages in their careers. By 1950, there were three levels of schools at Air University around Academic Circle, the name of the circular road surrounding the campus. For the youngest officers, a short course provided basic instruction. After promotion to major, selected officers attended the Air Command and Staff School (ACSC) which was a year-long, graduate level course that involved moving to Alabama. Several years after ACSC some of these officers, now primarily Lieutenant Colonels with nearly two decades of service would move back to attend Air War College (AWC), the senior Air Force PME school.[22]

All these officers wrote academic papers on topics of their own choosing as part of their education, but this dissertation will utilize those by AWC students as the best indicators of attitudes within the officer corps. The curricula for ACSC and AWC were similar making their general focus nearly indistinguishable.[23] Because of this similarity in the schools, the students are what separate the two institutions from each other. AWC

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[21] Finney, 24-25.
[22] Richard L. Davis and Frank P. Donnini, eds., *Professional Military Education for Air Force Officers: Comments and Criticisms* (Maxwell AFB, AL: Air University Press, 1991), 3.
[23] Davis and Donnini, *Professional Military Education,* 39.

attendees were more senior and thus more experienced than their ACSC counterparts, giving their perspective more maturity. Most officers reaching the senior level of PME at AWC had also previously commanded a squadron or worked on a general's staff. In either case, they would have been charged with more responsibility according to their level of duty and would benefit from the added perspective. Selection to attend the senior course in-residence, as opposed to the correspondence study course any eligible officer could pursue, signaled that these officers had potential for further responsibility. Most of these officers would not see promotion to general officer rank. However, they were promising mid-level officers that were expected to command wings or to serve in important staff assignments to plan the future of the service. In other words, they were favored by the Air Force and provide a good bellwether for the direction of intellectual thought for the officer corps.

AWC theses are a large source of relatively untapped intellectual thought which reflected both the officers' career experience and the education received in Alabama. The curriculum sought to place war and aerospace power within the changing geopolitical and national security environment as each year the subjects began with national security or power, then moved to military questions about war theory, operational employment, and finally to a focus on the influence of air power.[24] Studies consisted of reading assigned texts, lecture attendance, and seminars to digest the information in small groups. The

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[24] Vance O. Mitchell, *Air Force Officers Personnel Policy Development* (Washington DC: Air Force History and Museums Program, 1996), 290; Air War College, Curriculum Catalog, 1963-1964, Muir S. Fairchild Research Information Center, Maxwell AFB, AL [hereafter MSFRIC], 6-7; Air War College, Curriculum Catalog, 1967-1968, MSFRIC, 19; Air War College, Curriculum Catalog, 1972-1973, MSFRIC, 19.

faculty dedicated up to forty percent of the students' schedule to individual study for the assigned class readings as well as for research and writing to complete the required theses. As part of a broader push to expand the educational level of the force, AU had established a program with George Washington University so students could receive credit for their year of study with a Master's Degree from an accredited institution.[25] Most students completed their theses in March or April since an academic year at AWC resembled civilian universities, beginning in the fall and ending in the spring. Authors often added emphasis within their text, which I have not altered. All emphasis expressed in quotations throughout this dissertation are in the original documents.

For the period of 1960 through 1973, the Air University Library holds 2.941 AWC theses.[26] The students chose their own topics to research, with help from a list of suggestions the college collected from major commands. The result was a broad array of subjects that never resulted in a majority of students writing on the same topic, as one may expect during a tumultuous war. Only twice did the percentage of papers on one topic near thirty percent. The first topical concentration was the Vietnam War in 1968 when the class size halved due to manpower constraints and during a corresponding institutional push to formally learn from the war called Operation CORONA HARVEST.[27] The other topic was the personnel system in the early 1970s. Left to their own devices, these officers

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[25] Mitchell, *Air Force Officers,* 197-201.
[26] For simplicity, all papers will be termed a thesis. They were also referred to as research reports, staff studies, articles, case studies, and more under different curricula.
[27] Futrell, *Ideas, Concepts, and Doctrine,* 2:318-323.

wrote on a myriad of topics. To simplify the discussion, I read 300 papers whose topics specifically explored views on warfare.

Two other forums, oft cited by the students, will provide additional data to buttress this dissertation. They were the *Air University Review* (*AUR*) and the *Air Force & Space Digest* (*AF&SD*). Both publications routinely published articles penned by Air Force officers of various ranks as well as like-minded (perhaps more aptly air-minded) civilian authors. The *AUR* was the service's professional journal compiled, edited, and published at Maxwell making its institutional and intellectual significance obvious.[28] The *AF&SD* was the Air Force Association's (AFA) publication. The AFA was an institution dedicated to building a community focused on Air Force interests, served as a lobbying institution, and provided a forum for officers, politicians, and airpower supporters to publicly present opinions pertinent to the service. The magazine often published excerpts from conferences, speeches, annual Statements of Policy, and editorial articles favorable to what the AFA believed important to the future of airpower.

Since Air Force history began in 1947 and not 1960, some context to begin the dissertation is necessary. During the 1950s, the strategic warriors were the dominant group and endeavored to make massive retaliation a credible strategy. Massive retaliation came out of the Eisenhower Administration's "New Look" that sought to curb military spending by threatening a large nuclear attack to prevent both a general war and further limited wars

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[28] The journal began as the *Air University Quarterly Review* but switched to a bi-monthly format and renamed the *Air University Review* in 1963 after LeMay expressed his wish "for a greater flow of professional literature on the development and employment of aerospace forces;" *Air University Quarterly Review* 14, no. 3 (Summer 1963): 132.

such as the Korean War.[29] Generals Curtis LeMay and Thomas Power forged the Strategic Air Command (SAC) into the nation's primary deterrent force that comprised seventeen per cent of the entire defense budget.[30] This money paid for hundreds of bombers and aerial refueling tankers that maintained a high level of readiness strike against the Soviet Union should the United States come under attack. To protect against a Soviet attack, the Air Defense Command (ADC) maintained a fleet of high-speed fighter interceptors armed with nuclear rockets. These interceptors were centrally controlled and guided toward their targets by the world's first computerized command and control system that networked radars and command posts across North America.[31] The development of "unmanned missiles" met with resistance within the Air Force who still favored aircraft technology.[32]

The October 1957 Soviet launch of *Sputnik* was a key event that elevated and publicized an internal Air Force debate to build advanced intercontinental ballistic missiles

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[29] John Lewis Gaddis, *Strategies of Containment: A Critical Appraisal of American National Security Policy During the Cold War*, rev. ed. (New York: Oxford University Press, 2005), 145-147.
[30] Phillip S. Meilinger, *Bomber: The Formation Early Years of Strategic Air Command* (Maxwell AFB, AL: Air University Press, 2012), 299; Edward Kaplan, *To Kill Nations: American Strategy in the Air Atomic Age and the Rise of Mutually Assured Destruction* (Ithaca, NY: Cornell University Press, 2015).
[31] Kenneth Schaffel, *The Emerging Shield: The Air Force and the Evolution of Air Defense, 1945-1960* (Washington, DC: Office of Air Force History, 1991), 169-240; Paul N. Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge, MA: The MIT Press, 1996); Thomas P. Hughes, *Rescuing Prometheus: Four Monumental Projects that Changed the World* (New York: Vintage Books, 2000), 15-68.
[32] Neil Sheehan, *A Fiery Peace in a Cold War: Bernard Schriever and the Ultimate Weapon* (New York: Vintage Books, 2010); Jacob Neufield, *The Development of Ballistic Missiles in the Air Force* (Washington DC: Office of Air Force History, 1990); David N. Spires, *Beyond Horizons: A Half Century of Air Force Space Leadership*, rev. ed. (Maxwell AFB, AL: Air University Press, 2004), 3-50.

versus relying on manned bombers. Now, thermonuclear warheads could threaten the continental United States within thirty minutes and the U.S. seemed to have fallen behind the communists technologically. The development of intercontinental ballistic missiles (ICBMs) received higher priority to counter the surprising fact that the Soviet Union had reached space first and could threaten the American homeland, now defenseless against this technological milestone. In response, the technologists' arguments received more attention. Reflecting the new attention on space and its requisite technology, the *Air Force Magazine* added a *Space Digest* (hence *AF&SD*) within its pages in November 1958. The editors cited recent forays into space as only "the beginning of man's great venture into the cosmic void" and it was their intent to capture history as it unfolded while keeping in "sober perspective the overriding implications of space technology" to national security.[33] In 1959, the Air Force altered its doctrine to elevate the importance of space to the future of the service. The concept of strategic air power would no longer have an upper limit in the atmosphere since aerospace was "an operationally indivisible medium" that extended into space and so the force must be comprised of "a family of operating systems—air systems, ballistic missiles, and space vehicle systems."[34]

A dissenting viewpoint, largely external to the Air Force, was on the rise that countered that massive retaliation was an ineffective means to deter limited wars. The military leader of this dissent was the Chief of Staff of the Army General Maxwell Taylor who published *The Uncertain Trumpet* upon his retirement in 1959 to take his case to the

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[33] "From the Editors," *AF&SD* 41, no. 11 (November 1958): 71.
[34] Department of the Air Force, *Air Force Manual 1-2, USAF Basic Doctrine*, December 1, 1959, 6.

public. Taylor contended that the "Great Fallacy" was the promise that nuclear weapons could guarantee peace. Instead, nuclear forces should be limited to deterring general wars while conventional forces should be invested in to provide more options to counter communist aggression via a "Flexible Response" strategy.[35] The Tactical Air Command (TAC) was the Air Force organization charged with supporting land forces, but had prioritized deterring communist aggression around the world with a focus on delivering tactical nuclear weapons to bring overwhelming firepower to the battlefield. By the end of the 1950s, many airmen, including tactical warriors, viewed nuclear firepower as essential to maximize their impact on a battlefield. At the same time, there was increasing cultural and political reluctance to using nuclear weapons during crises giving criticism of massive retaliation more merit.[36]

The belief in strategic bombing as the best method to prepare for an eminent nuclear world war was central within the service. The domestic shock of *Sputnik* and the space race jolted the service and provided the ideas of uniformed scientists added credibility. Although previously at odds with each other over investing in manned bombers or unmanned missiles, the strategic warriors and the technologists aligned with each other to prepare for a direct confrontation with the Soviet Union. The tactical warriors were the junior intellectual group. Their purpose was to fight in smaller conflicts that many in the service did not think would occur or could be deterred with a strategy of massive retaliation. They received limited support primarily from outside the service.

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[35] Maxwell D. Taylor, *The Uncertain Trumpet* (New York: Harper & Brothers, 1959), 4-6.
[36] Gaddis, *Strategies of Containment*, 172-175; Futrell, *Ideas, Concepts, Doctrine*, 1:617.

Support internal to the service was due to fear that if the US Air Force did not have fighters, then the Army would build its own Air Force. This was the environment that Air Force thinking contended with at the dawn of the 1960s.

CHAPTER II

ASSUMPTIONS MEET STRATEGIC TURBULENCE, 1960-1964

Looking forward to the coming decade, Chief of Staff of the Air Force (CSAF) General Thomas White's November 1959 policy letter declared, "figuratively speaking, in the 1960's we must keep our feet on the ground while we reach out to grasp the stars."[1] The tension between the imperatives to reach into space while remaining focused on current airpower needs in the atmosphere exemplified the strain within the intellectual milieu of the service during the coming decade. The exuberance among officers to develop new, exciting technologies that would change where and how the service fought conflicted with the present reality that U.S. national security policy relied on bombers, intercontinental ballistic missiles (ICBMs), and interceptors to win a nuclear war should it ever come. In the wings, a force of tactical fighters existed to help counter smaller wars, but remained marginalized in terms of the research budget and doctrinal application.

The strategic environment underwent a dramatic shift beginning in 1961, during a period that Douglas Blaufarb called "The Kennedy Crucible."[2] Once elected, President John F. Kennedy and Secretary of Defense Robert S. McNamara implemented a Flexible Response Strategy that required additional, conventional forces to counter communist led or supported insurgencies around the world. In January of 1961, Premier Nikita Khrushchev announced the Soviet's intention to support "wars of national liberation,"

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[1] Thomas D. White, Air Force Information Policy Letter for Commanders, Office of the Secretary of the Air Force, 13, no. 7, November 1, 1959, Muir S. Fairchild Research Information Center [hereafter MSFRIC].

[2] Douglas S. Blaufarb, *The Counterinsurgency Era: U.S. Doctrine and Performance, 1950 to the Present* (New York: The Free Press, 1977), 52-88.

lending limited war proponents further credibility. The follow-on bomber to the B-52, the high speed and altitude B-70, was reduced to a reconnaissance prototype in 1961. The rest of the nuclear arsenal continued expanding and modernizing to implement war plans focused on an all-out counterforce strike to destroy the Soviet military (and nation) in one blow.[3] McNamara even adopted the Air Force rhetoric on counterforce (nuclear strikes only on military targets, not cities) briefly because of the strategy's hopeful claim that cities would be spared the full brunt of a nuclear war. By the time of the Cuban Missile Crisis, however, McNamara changed and sought to curb the growth of the American nuclear arsenal to be sufficient to deter rather than superior to win.[4] Another major event among Air Force officers was Kennedy's challenge to reach the moon within the decade. This set a distinct goal for the space race and raised hopes among Air Force intellectuals that wished to militarize the new domain with aerospace vehicles and even bases on the moon.

This chapter will better define the views of the technologists, the strategic warriors, and the tactical warriors. First, each school will be examined separately to more clearly delineate how these three positions viewed the future of warfare. Then, some of the major topics discussed by these officers such as nuclear deterrence, space, and the readiness to meet future wars will be explored to provide more insight into their thinking. In the early 1960s, the technologists and the strategic warriors dominated the intellectual atmosphere

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[3] David A. Rosenberg, "The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960," *International Security* 7, no. 4 (Spring 1983): 3-71.
[4] Francis J. Gavin, *Nuclear Statecraft: History and Strategy in America's Atomic Age* (Ithaca, NY: Cornell University Press, 2012), 33-41.

within the U.S. Air Force. Even at this early stage, however, a dissenting voice can be found within the service that would readily agree with external critiques.

Technologists

Carl Builder stated that the United States Air Force "worshipped at the altar of technology."[5] While technology did not literally serve as a deity to the technologists, as an intellectual group they emphasized developing advanced capabilities as the key to assuring America's security. Their exuberance for technology reflected an assumption that a revolution in warfare had occurred not just with harnessing nuclear power, but with the expansion of scientific knowledge. General Bernard Schriever, a key leader and technologist responsible for the development of the ICBM, declared, "it may be said that warfare has acquired a new phase—technological war."[6] Some, including the editorial staff of the *Air University Quarterly Review* (*AUQR)*, argued that technology, more specifically the ability to develop it, should be elevated to an element of national power alongside the military, psycho-social, economic, and diplomatic elements.[7]

The technologists viewed the future of warfare as a continual race with the Soviets to produce advanced weapons during an ongoing 'technological explosion.' This explosion, fueled by research and development (R&D), expanded human capability and the

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[5] Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: Johns Hopkins University Press, 1989), 19.
[6] Bernard A. Schriever, "The Operational Urgency of R&D," *Air University Quarterly Review* [hereafter *AUQR*] 12, no. 3 & 4 (Winter and Spring 1960-1961): 230.
[7] "Technology in Orbit: A Quarterly Review Staff Study," *AUQR* 12, no. 1 (Spring 1960): 100; Benjamin G. Neff, "The 'Ultimate' Weapon in the Cold War: A Philosophical Inquiry," 1965, Thesis, Air War College [hereafter TAWC], MSFRIC, 46.

ability to stay ahead in this race and was perceived as a new method of warfare. To demonstrate this explosion, Lieutenant Colonel William Davis traced the fastest speeds achieved by man on a chart that resembled a Malthusian curve. He intended to show humanity's technological capacity, represented by speed, had changed from historical stagnation to rapid ascension after successive breakthroughs beginning with the steam engine, then the combustion engine, followed by aviation, which would be surpassed exponentially via spacecraft.[8]

The Chief of Long-Range Planning for the Air Force in 1960, Brigadier General Robert C. Richardson III, compared Air Force planners to ants riding on a log going down a swift stream of "technological progress and unanticipated breakthroughs." They may be able to influence the direction, but "no amount of effort . . . will push the log back upstream very far nor can they beach it."[9] Even if the Air Force could retreat or cease modernizing, the perceived existential threat from the Soviets' continued technological development ensured that this option was not desirable. For Richardson, to stop advanced research was to court disaster.

In the spring of 1961, the Air Force reorganized for this technological war. According to David Spires, the "keystone" change was to elevate the Air Research and Development Command to the Air Force Systems Command (AFSC).[10] AFSC kept the

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[8] William O. Davis, "The Ordering of Technological Warfare," *AUQR* 12, no. 1 (Spring 1960): 69.
[9] Robert C. Richardson III, "The Stalemate in Concepts," *AUQR* 12, no. 2 (Spring 1960): 12.
[10] David N. Spires, *Beyond Horizons: A Half Century of Air Force Space Leadership,* rev. ed. (Maxwell AFB, AL: Air University Press, 2004), 90-91.

same building, but its commander, Schriever, received a fourth star to signify the increased importance. Now, Air Force Headquarters charged AFSC to speed the transition from scientific research to new weapons systems with the assumption that the pace of technological breakthroughs (i.e. atomic bombs, jet engines, missiles, space technology) would continue. Schriever firmly established that the command was fighting a technological war when he stated at the Air Force Association's spring 1961 conference that he considered AFSC "an operating command in every sense of the word."[11]

To help understand this type of warfare and its departure from the past, Colonel Raymond S. Sleeper described the "technological conflict" by identifying seven priorities as "battles." The first two priorities were structural. The nation needed to improve its expertise by focusing on scientific education of the nation, military technicians, and civilian institutions that would help propel the "technological base." This base would provide existing technological knowledge and capabilities that would allow rapid creation of new weapons or improvements to existing ones. A second priority was continual and well-funded R&D, which was required first to discover new technological breakthroughs and then to build new weapons. The remaining five priorities were categories of actual hardware such as the "most critical" area of aerospace technology (including manned spacecraft), but also missiles, other space systems (boosters and payloads), electronics, and nuclear weapons development.[12]

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[11] "Air Force Systems Command," *Air Force & Space Digest* [hereafter *AF&SD]* 41, no. 9 (September 1961): 158-66.
[12] Raymond S. Sleeper, "The Technological Conflict," *AUQR* 14, no. 1 & 2 (Winter 1962 and Spring 1963): 13-17.

Technologists also cautioned that scientific discovery and R&D required patience and substantial funding for success. Colonel Florian Helm looked back at previous projects to show that developments from basic research in science would take up to twenty years to achieve "its greatest impact." He argued that scientists, in and out of uniform, should be given much latitude to explore many possibilities.[13] Lieutenant Colonel Robert Schnabel urged the United States to increase investment in R&D believing that the United States "lagged" behind the Soviets in astronautics. Although his rhetoric indicated urgency to overcome any lost ground, Schnabel cautioned that in the technological war the future was defined as the period from the present to fifteen years in the future. He was more certain that technological progress would show definite results in the "long term [rather] than the short term." Of course, his confidence hinged on sufficient political support for the expense of developing technology.[14]

Strategic Warriors

The strategic warrior school of thinkers were not averse to opportunities in the stars, but were more concerned with the most dangerous threat, which was a nuclear exchange with targets on the ground. More precisely, they sought to deter a nuclear war with a counterforce or damage limitation strategy while building a credible defense to blunt an enemy attack against the homeland. These ideas stemmed primarily from WWII strategic bombing theory, based on a faith in the efficacy of airpower to win the nation's

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[13] Florian A. Holm, "Research and Development Planning," *AUQR* 14, no. 1 & 2 (Winter 1962 and Spring 1963): 36.
[14] Robert E. Schnabel, "The Strategic Implications of Space Technology on War in the Future," 1961, TAWC, MSFRIC, 3.

wars at any level. For them, any doubt raised by the failure of airpower to win without invading Europe were erased by the use of atomic weapons to end the war in the Pacific and preventing a costly invasion of the Japanese mainland. Colonel Albert Sights claimed the primary lesson of useful history, which to him began in 1945, was that the exponential increase in destructive power had "greatly strengthened" strategic bombing as the correct doctrine. Since air-atomic forces should be "credited with having deterred the Soviets" from invading Western Europe following WWII, Sights asserted that the United States had to retain a superior strategic force, offensive and defensive, in order to maintain deterrence.[15]

The advent of the ICBM posed a major technological challenge to the manned bomber. Also, as the Soviet arsenal grew, maintaining superiority became more difficult. To maintain superiority and limit damage in accordance with strategic bombing theory, the force requirements for ICBMs, bombers, defense systems, and nuclear warheads all continued to grow. What's more, the Air Force had developed a massive system to defend against the bomber threat, but there was no technology capable of intercepting an ICBM. Although the Army ultimately won responsibility for ballistic missile defense, strategic warriors allied with technologists to advocate for the need to develop it, regardless of who owned it.

SAC's motto, "Peace is Our Profession," progressively seemed more hollow as fears of a nuclear holocaust grew. General Thomas Power, the Commander of SAC in

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[15] Albert P. Sights, Jr., "Limited War for Unlimited Goals," *AUQR* 13, no 3 (Spring 1962): 39-40.

1960, insisted that "contrary to widespread public opinion," SAC's primary mission was not one of massive retaliation but instead its "peacetime mission of deterrence—to help maintain an honorable peace by discouraging aggression."[16] Although deterrence may sound less intimidating than massive retaliation, in practice these policies produced the same effect. Political scientist Austin Long provided an uncommonly short and concise definition: "deterrence is the generation of fear."[17] Strategic warriors, exemplified by bomber generals LeMay and Power, produced much fear, and much of it domestic. This fear contributed to growing public concerns about a nuclear holocaust manifested in the press, novels, and ultimately in two 1964 films, *Fail Safe* and *Dr. Strangelove*. Because of this, the strategic warrior position faced rising scrutiny on their preferred aircraft procurement programs, such as the XB-70, and enhanced the attractiveness of alternative ideas to adapt existing forces to limited war.

Deterring and maintaining a readiness to fight a nuclear war was the Air Force's top priority at the beginning of the decade. General White listed the top ten procurement requirements of the service in an *Air Force & Space Digest* (*AF&SD)* article: half were directly linked to a strategic war. The top three were offensive systems: an improved ICBM, air-to-surface missiles to extend the reach of the B-52, and follow-on long-range aircraft to replace the current inventory of bombers. The defensive requirements included the Ballistic Missile Early Warning System (BMEWS) to detect Soviet satellites and

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[16] Thomas S. Power, "Strategic Air Command," *AF&SD* 40, no. 9 (September 1960): 62.
[17] Austin Long, *Deterrence: From Cold War to Long War* (Santa Monica, CA: RAND, 2008), 7.

ICBMs as well as long-range defense interceptors to defend against Soviet bombers, which were projected to get faster and more numerous.[18]

Whereas the technologists had tangentially entered official doctrine with the creation of the term "aerospace," the strategic warriors' vision of war had been clearly incorporated into Air Force doctrine. The first purpose of the Air Force was to "deter general or limited war." Should deterrence fail, the service had to maintain the ability to "defeat the enemy as quickly as possible" and bring about "prompt resolution" in the case of a limited war. In either case, massive firepower delivered through the air was the doctrinal solution. To best achieve deterrence, offensive and defensive forces must be "linked" to counter an enemy both at the source and against their attacking forces. Successful deterrence also demanded "a position of general supremacy in the aerospace."[19] Air Force doctrine clearly descended from the ideas first postulated by the Italian theorist Giulio Douhet.[20]

Douhet believed that the most dangerous threat would come from airpower. The possibility of a sudden nuclear attack magnified that threat. Lieutenant Colonel Wagner Dick spoke for many strategic warriors when he argued that the communists were clearly bent on "world domination" and their future strategy "would appear to be one of a mass surprise attack with ICBMs aimed at the U.S. strategic force in an effort to nullify or

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[18] Thomas D. White, "USAF's Ten Top Priorities," *AF&SD* 43, no. 9 (September 1960): 52.
[19] Department of the Air Force, *Air Force Manual 1-2, USAF Basic Doctrine*, December 1, 1959, 9.
[20] Giulio Douhet, *The Command of the Air*, trans. Dino Ferrari (Maxwell AFB, AL: Air University Press, 2019.

destroy its retaliatory capability."[21] Such a sudden attack represented the worst case scenario and the most difficult to contend with. However, if the nation could prepare itself for that level of conflict, then "we should be prepared to deal with and avert lesser threats," as Power expressed it.[22] The combination of a faith in airpower and nuclear forces, along with the high level of threat, contributed to the belief that military superiority was a necessary ingredient to deter or fight future wars.

Tactical Warriors

The tactical warriors acknowledged the need and importance of deterring a general war, but believed the most probable future wars would be limited. This was a minority opinion evidenced by a near complete lack of articles in both the *AF&SD* and *AUQR* from 1960 to the summer of 1962. A minority of Air War College (AWC) theses addressed Tactical Air Command's (TAC) efforts and organization to confront small wars more in line with the Kennedy doctrine of "Flexible Response." Lieutenant Colonel Harry Dennis rather tepidly noted that the "continued likelihood of small war contingencies cannot be discounted, especially when considered in the light of growing total war capabilities in both the Free World and the Communist World."[23] Lieutenant Colonel James Tilton, a fighter pilot with a MiG kill in Korea and future wing commander in Vietnam, more forcefully concluded that, the "massive retaliation threat has proved ineffective and will

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[21] Wagner W. Dick, "Is a Nuclear-Powered Bomber Required for a Balanced Strategy in the Missile Era?" 1960, TAWC, MSFRIC, 7-9.
[22] Power, "Strategic Air Command," 62.
[23] Harry S. Dennis, "The Airlift Package in a Composite Air Strike Force," 1960, TAWC, MSFRIC, 40.

become less credible as a method of containing Communist advances." His solution was for the United States to maintain "invulnerable" strategic forces to deter total war, but also to prepare forces to meet any communist challenge because, "all levels of conflict must be made to look unattractive."[24]

Of the three visions of future warfare, the tactical warriors embraced the implications of accepting an expanded "spectrum of warfare" first. Precisely defining that spectrum proved difficult. Beyond limited war, other terms for this allegedly new phenomenon included conventional wars, cold war, small wars, brushfire wars, guerrilla wars, insurgencies, sub-limited wars, "wars of national liberation," and more. Colonel Robert Fish, in a 1962 *AUQR* article, explained that although the communists were not to blame for all the conflicts in the world, it remained for them a "major tactic to fish in troubled waters."[25] He described the range of warfare with five general levels of war: total, general, limited, cold, and total peace. Nuclear war and utopia were the only examples for extremes, total war and peace respectively. Although, the Olympics were a form of international competition Fish placed on the borderline between peace and cold war. Economic, cultural, and political warfare were all listed under cold war. Defining actual shooting conflicts proved a more difficult task. For instance, Fish listed the Indochina war as definitely limited, but the actual conflicts within it, the Laotian war and

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[24] James E. Tilton, "The Role of the Fighter in the Missile Age," 1961, TAWC, MSFRIC, 14.
[25] Robert W. Fish, "The USAF Role in the Cold War," *AUQR* 13, no. 4 (Summer 1962): 77.

the South Vietnamese insurgency, were somehow less intensive and listed as borderline between limited and cold war.[26]

The complexity of describing the spectrum paled in comparison to what was necessary to prepare for it. Colonel William McBride listed nine objectives and seventeen tasks to counter the Soviets in this low intensity Cold War. His objectives ranged from maintaining forces (including fighters and tactical nuclear weapons) to enhancing the psychosocial element of American power in order to counter Soviet global propaganda. His seventeen specific tasks included training military personnel and their families about foreign customs in order to present a positive American image when stationed abroad, training foreign Air Forces via specialized small teams, and ensuring staffs consider Cold War confrontations and be prepared to respond with "internal security or counterinsurgency operations" if general or limited war forces were incapable of responding adequately to a given situation.[27]

Deterrence

As historian Edward Kaplan has noted, the "apparent stability" between the nuclear superpowers during the Cold War has become, in the post-Cold War era, the only way of conceiving the use of nuclear weapons.[28] This modern assumption harms the ability to understand how officers, academics, and statesmen viewed nuclear war and deterrence

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[26] Fish, 78.
[27] William V. McBride, "USAF Responsibilities and Operations in the Cold War," *AUQR* 13, no 4 (Summer 1962): 88-90.
[28] Edward Kaplan, *To Kill Nations: American Strategy in the Air Atomic Age and the Rise of Mutually Assured Destruction* (Ithaca, NY: Cornell University Press, 2015), 2.

during the 1960s.[29] Mutually assured destruction, with the appropriately named acronym MAD, today seems to exemplify the insanity of the Cold War strategy and logic. However, as Robert Jervis explained in detail in the twilight of the Cold War, "MAD is a fact, not a policy."[30] At the beginning of the 1960s, the term MAD had not yet become popularized. Instead, the precursor of this argument was known as minimum deterrence or finite deterrence. Those that advocated for what would become MAD were moderates between those lobbying for continued nuclear superiority and others in favor of complete disarmament.

The acceptance of parity and assured destruction was anathema to strategic warriors who preferred a continued policy of massive retaliation, based on strategic bombing and counterforce doctrines to dominate an opponent. The problem was that a strategy designed to always prevail in a nuclear war relied on the belief that these weapons would actually be used. As Nina Tannewald has argued, by 1960 there was a rising "nuclear taboo" that completely undermined the political practicality of actually using nuclear weapons.[31] This "taboo" was not yet established among many Air Force intellectuals. This position of continued nuclear superiority rather than accepting assured destruction was a key point of contention that separated technologists and strategic warriors on one side and tactical warriors on the other.

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[29] Kaplan.
[30] Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, NY: Cornell University Press, 1989), 74-106.
[31] Nina Tannenwald. *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons Since 1945* (New York: Cambridge University Press, 2007), 189.

The strategic warriors could not accept the logic of a strategic stalemate. Pondering why support for a force based on nuclear superiority had deteriorated in 1960, Lieutenant Colonel Harold Graham split Americans into two groups, those who believed a nuclear war was "inevitable" and another that believed "that man has too much common sense and judgement to allow a nuclear war to happen."[32] He was surprised to report that some of his colleagues at AWC actually held the latter view. Two Army officers attending AWC examined the problem and even they came to separate conclusions. Lieutenant Colonel John Singlaub agreed with limited war proponents that the future of war would be fought under a "steel umbrella" provided by SAC.[33] Lieutenant Colonel Dwight Brooks was less sanguine, concluding that a general war was "more likely than not" within the next two to three decades.[34]

Accepting minimum deterrence was simply unacceptable to strategic warriors. According to minimum deterrence advocates, the US could limit the number of offensive strategic forces to only that required to destroy a number of enemy cities. Strategic warriors believed that this force posture would not frighten such a determined adversary as the Soviet Union. To Lieutenant Colonel Phillip Cardin, such drastic reductions to nation's strategic forces only made sense from an economic perspective and did not actually prepare to win a war, but solely to inflict "a level of destruction unacceptable to

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[32] Harold B. Graham, "Nuclear War – Implications for USAF Base, Group, Detachment and Squadron Commanders," 1960, TAWC, MSFRIC, 5.
[33] John K. Singlaub, "Optimum Force for Limited Wars," 1960, TAWC, MSFRIC, 97.
[34] Dwight M. Brooks, "The Probability of General War in our Generation," 1962, TAWC, MSFRIC, 90.

the enemy."[35] Furthermore, he predicted that adopting a minimum deterrence strategy would hinder American power due to world-wide "psychosocial reactions" if the lead nation of Western civilization assumed a "definitely inferior military position." For these reasons, it was vital that the nation's leaders educate the public about the dangers of the weakness of minimum deterrence.[36] An anonymous "high level strategic thinker" argued in *AF&SD* that accepting finite deterrence would allow the Communists' arsenal to outgrow America's and that situation "would necessarily mean that we ourselves are deterred."[37]

Technologists agreed with the strategic warriors on the importance of superiority to assure deterrence. Richardson, the Air Force long-range planner and technologist, argued along the same lines as Cardin and added if a minimum deterrent posture was accepted, then "we admit we have no will to use the forces in defense of Europe."[38] Military weapons alone were insufficient to deter, they also required the enemy to clearly understand that Americans had the will to use them. Richardson stated that the minimum deterrence argument was curious as it reversed the classic shield and sword analogy. Instead of promoting an actual shield of defense, limited war advocates viewed the strategic offensive force, SAC, as the shield: "Behind this 'shield' the front line, limited-

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[35] Phillip G. Cardin, "An Evaluation of the Concept of Minimum Deterrence to General War," 1960, TAWC, MSFRIC, 51.
[36] Cardin, 50-54.
[37] Anon, "Deterrence: Everybody's Concept," *AF&SD* 44, no. 7 (July 1961): 51; Curtis E. LeMay, "The Air Force's Future Environment: Thinking in New Dimensions," *AF&SD* 45, no. 9 (September 1962): 42.
[38] Robert C. Richardson III, "The Fallacy of the Concept of Minimum Deterrence," *AUQR* 12, no. 1 (Spring 1960): 117.

war conventional armed masses become the 'sword' and can return to the classical land warfare."[39] To Richardson, the argument was ludicrous, for limited war forces would be unlimited dwarfing in size and expense the current strategic force.

An *AF&SD* 1961 editorial staff report was even more hostile towards limited war proponents: "the suggestion that seems to be going the rounds that conventional, old-fashioned military forces may, after all, be just what we need, stems from escapism, wishful thinking, ignorance, selfishness, or a combination of these factors." Instead, the staff insisted the "unadulterated truth" was that nuclear weapons would remain the centerpiece of American national security and any suggestion otherwise was only meant to increase the budgets of other services at the expense of national security.[40]

Another theme among strategic warriors was defending the manned bomber against charges that ICBMs had made them obsolete.[41] The vision of a future nuclear war did not end with the first salvo of missiles; instead follow on waves would require manned aircraft to penetrate Soviet airspace and seek out elusive targets that were not struck by the missiles guided by obsolete intelligence.[42] That did not mean that missiles had no use, but strategic warriors argued effective deterrence required a mixed manned and unmanned force. Colonel Donald Martin called this force the "key;" missiles could quickly destroy fixed targets while "hunter-killer" manned bombers would penetrate Soviet defenses to

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[39] Richardson.
[40] A Special Report, "The Truth About Conventional Forces," *AF&SD* 44, no. 7 (July 1961): 39.
[41] Ed Mack Miller, "The Gutting of the Valkyrie," *AF&SD* 43, no. 1 (January 1960): 29; Dick, "Nuclear Powered Bomber?" 1-2; Roscoe C. Wilson, "Tomorrow in Aerospace Power," *AUQR* 12, no. 3 & 4 (Winter and Spring 1960-1961): 40-52.
[42] Wilson, "Tomorrow," 41.

seek and destroy mobile targets.[43] The B-70 was the official acquisitions program intended to fly higher and faster than any current interceptor and fulfill this role. Another idea that never left the drawing board was a nuclear-powered bomber that could stay aloft, survive a surprise Russian attack, and have an exceptional loiter time needed to find Soviet targets.[44] Although the advent of Surface to Air Missiles (SAMs) made penetrating enemy defenses far more difficult, discussions about the problem were largely absent.

The other side of the strategic warriors was the insistence on defensive capabilities to counter the Soviet threat. The difficulty of defending against ICBMs meant that the advocates of a strong defense faced an uphill battle to convince others that the ability to defend the nation was vital. Lieutenant General Joseph H. Atkinson described the military situation under the threat of a massive nuclear war as "two supergiants with enormous clubs." He advocated the need to invest in defensive weapons because, "it seems basic to me that the first giant who picks up an effective shield will take the mutuality out of the destruction."[45] He assessed that the threat from Soviet bombers were adequately defended against for now, but to maintain this capability a new high-speed interceptor with advanced avionics, radar, and missile systems would be necessary. The most critical threat to the future of successful deterrence depended upon developing some sort of "anti-ICBM" weapon. "As certain as death and taxes," Atkinson predicted, either the Soviets or the

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[43] Donald F. Martin, "The Pro and Con of Military Force," *AUQR* 14, no. 3 (Summer 1963): 24.
[44] Dick, "Nuclear Powered Bomber?" 40-46.
[45] Joseph H. Atkinson, "Air Defense Command," *AF&SD* 43, no. 9 (September 1960): 130.

United States will develop an ability to defend against ICBMs and pick up their shield, thus obviating the others' nuclear sword.[46]

The need to invest in advanced defensive weaponry was a constant theme over the coming years.[47] Although the BMEWS was a great achievement in terms of providing radar warning of inbound missiles, the ability to actually destroy them remained theoretical. Critics argued that it would be technically impossible to shoot them down and that it would destabilize the delicate balance of terror. Lieutenant General Robert M. Lee, the new commander of ADC, described active defense via interceptors and an anti-ICBM system as the "*sine qua non* of national survival" since the nation would have to defend itself in "fourteen minutes" rather than an interval of months or years the nation enjoyed before the advent of nuclear weapons and missiles.[48]

Expectations for Space

In the space race of the early 1960s, technologists enthusiastically pondered about the opportunities of placing a military man in space. Of all the categories of technological "hardware" that AFSC was charged to develop, space technology revealed most obviously the visions of what technological war could achieve. The official Air Force program that most clearly demonstrated this vision was the X-20 Dyna-Soar.[49] This aerospace craft was

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[46] Atkinson, 134.
[47] "Air Defense Command," *AF&SD* 44, no. 9 (September 1961): 118-22; "Air Defense Command," *AF&SD* 45, no. 9 (September 1962): 136-39; "Air Defense Command," *AF&SD* 46, no. 9 (September 1963): 102-4.
[48] Robert M. Lee, "The Role of Aerospace Defense," *AUQR* 13, no 4 (Summer 1962): 13, 15.
[49] Spires, *Beyond Horizons*, 76; William E. Burrows, *This New Ocean: The Story of the First Space Age* (New York: Random House, 1998), 250-252.

just a drawing board design and resembled the future space shuttle. It was to be launched perched on top a converted Titan II ICBM, manned with a single pilot, would maneuver in orbit, and was intended for a variety of missions from reconnaissance to intercepting Soviet satellites. After its mission, it would then glide back to Earth under the controls of the pilot. Schriever foresaw the Dyna-Soar as one of two distinct systems "early in the space age," the other being manned satellites.[50]

For strategic deterrence, exploration and exploitation of space seemed the logical next step in the evolution of airpower. Doctrinally, the Air Force now considered any separation between the atmosphere and space to be arbitrary since the commonality between the two was an ability to move in a third dimension above the surface of the earth. Major General Hewitt T. Wheless looked past the current bomber fleet, and the next generation of planned XB-70s, to show that the X-15, the Mercury Program, and Dyna-Soar were all exploring "the potential" of "future systems" to eventually place a manned system in space.[51] The addition of Mercury to his list was interesting. Although this was a project for the peaceful exploration of space, this officer foresaw the research from putting a man in orbit would be put to use by the military. Wheless sought to extend the strategic warrior's fight for manned systems against unmanned missiles by reintroducing a pilot into a future vision of nuclear war.

If strategic manned bombers were to find their way into orbit, then logically they would have to be defended against. Lieutenant Colonel Gerard W. Rooney described the

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[50] Schriever, "Operational Urgency," 236.
[51] Hewitt T. Wheless, "The Deterrent Offensive Force," *AUQR* 12, no. 3 & 4 (Winter and Spring 1960-1961): 72.

technological escalation that would require a space defense interceptor. Believing that the current manned interceptors would only be effective for three years, Rooney implored the Air Force to invest quickly in faster airplanes to meet the Soviet bomber threat. The last version of a high-speed interceptor, the F-108, had been projected to reach a top speed of Mach 3. It had been cancelled in 1959 to save the B-70. Because of this cancellation, Rooney feared the nation was behind the Soviets. To meet the future threat, the nation required an interceptor that could fill the radar gap between the DEW line (radars in the Canadian and Alaskan arctic north) and the sensors along the northern border of the United States. This interceptor would have to meet high performance parameters with long range (2,500 miles), high speed (3.5 Mach), high altitude (100,000 feet) and have "great endurance" on top of that. To counter this advanced American interceptor, the Soviets would have to resort to manned bombers in space. With this inferred Soviet reasoning, Rooney felt America should not wait and develop a superior aerospace interceptor now, "long before Russia has developed its aero-space plane."[52]

These two strategic warriors believed in the inevitable advance of space technology. They adapted their own vision of warfare of strategic bombing for the new environment, namely manned spacecraft and the high-speed interceptors that would have to track them down. The only changes were the lack of air outside the cockpit and increased numbers in terms of speed, altitude, and range.

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[52] Gerard W. Rooney, "Requirement for Future Manned Interceptors," 1962, TAWC, MSFRIC, 42-43.

Technologists not only looked to exploit low level, orbital space, but some officers set their sights even higher: to establish military lunar bases. President Kennedy received high praise from Lieutenant Colonel Thomas Sledge for his "daring and courageous commitment" to reach the moon. He predicted that this endeavor would exceed the development of the atomic bomb, nuclear submarines, and both liquid and solid fueled rockets.[53] An *AF&SD* editor, J. S. Butz, opined that the President seemed to be taking the only rational course with his "limited" pursuit of space exploration since the high costs to pursue more advanced programs would prevent congressional support.[54] High costs did not stop these officers from clearly stating their support for further advancement. Invoking Pope Pius XII, Lieutenant Colonel George Boring declared that mankind's insatiable desire for learning was a "gift from God" and therefore there were no intended limits on where humanity should go or what they could do when they got there.[55]

The optimistic zeal about colonizing the moon suggested a faith in technological advancement that was so important in this new form of warfare. Several officers writing in 1961 and 1962 were long on possibilities but short on any details of exactly how to survive for long periods on an inhospitable lunar surface. Lieutenant Colonel Jack Blacker maintained that humans could live underground to shelter from radiation and wild temperatures. Food could be grown in greenhouses built on the surface. Of course, the

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[53] Thomas E. Sledge, "Political and Military Implications of the Race to the Moon," 1962, TAWC, MSFRIC, 1-2.
[54] J. S. Butz, Jr., "Blueprint for Today: Men to the Moon," *AF&SD* 44, no. 6 (July 1961): 45; William Leavitt, "Man in Space: A Time for Realism and Rededication," *AF&SD* 44, no. 6 (June 1961): 59-61.
[55] George R. Boring, "Utilization of Military Bases," 1961, TAWC, MSFRIC, 1-2.

initial expenditures would be costly, but he believed this extraterrestrial outpost was both possible and could become largely self-sustaining.[56] When that goal was attained, military men on the moon could begin vital military and economic tasks.

The primary reason cited for the United States' need to establish moon bases was the Russians were headed there. The first nation that established a base could protect it, exploiting its resources and deny them to all others. The most important advantage to a moon base would be a secure location for a retaliatory nuclear capability. Earthbound missiles took thirty minutes to travel the distance between the continental United States from the Soviet Union. Sledge argued that placing missiles on the moon would provide "eternal security against a surprise attack."[57] Blacker declared that in addition to placing deterrent forces on the "ultimate high ground," a moon base would provide an optimal fixed location for jamming, terrain mapping, radio relay, psychological warfare broadcasting, command and control, and any other mission that "otherwise could be performed by satellites."[58]

The stated reasons to colonize the moon went beyond its potential military utility. Blacker profited from correspondence with I. M. Levitt, a civilian astronomer, who firmly believed the moon contained "strategic materials – be they catalysts, exotic materials, or even water." Levitt even believed that astronauts may find oil on the moon.[59] By mining and then exploiting these resources, the military personnel stationed on the moon could

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[56] Jack A. Blacker, "Use of Bases on the Moon," TAWC, MSFRIC, 1961, 10-16; Boring, "Utilization," 17-19.
[57] Sledge, "Political and Military," 62.
[58] Blacker, "Bases," 60-62.
[59] Blacker, 63-64.

drastically reduce the amount of raw materials required from Earth and, more importantly, deny their use to the Soviets. Eventually, lunar bases could be used for further scientific discovery which would further enhance American prestige. At some point in the future, it could even serve as a "spaceport for further exploration beyond the moon."[60]

These grandiose visions of both strategic warfare in near-orbit and extraterrestrial space bases may have represented how some officers thought, but they were too advanced for the penultimate strategic warrior. LeMay wrote in mid-1962 that it would require both manned and unmanned aircraft, and eventually spacecraft, to control the aerospace. But, he cautioned that "it would do no good to leapfrog into 'outer space' without a simultaneous ability to control the lower aerospace."[61] In LeMay's view, "we should never replace tested and reliable weapons with new and unproven ones until we are sure [of] the new one. . . . In short, I believe in having in-being protection along with progress."[62]

Limited War

The tactical warriors' agreement with limited war proponents were marginalized on the pages of *AUQR* and *AF&SD*, but several dissenting opinions appeared in AWC theses. Lieutenant Colonel Harry S. Dennis cautioned against discounting "the continued likelihood of small war contingencies" considering the "the growing total war capabilities in both the Free World and the Communist World, wherein each power, the United States

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[60] Blacker, 56.
[61] Curtis E. LeMay, "The Ultimate Weapon is Foresight," *AF&SD* 45, no. 5 (May 1962): 31.
[62] LeMay.

and Soviet Russia, possess ever-increasing nuclear deterrent forces."[63] In the same vein but with more force, Lieutenant Colonel Bruce W. Carr, a WWII fighter ace, proclaimed that the "revival of tactical air forces was inevitable" in the Cold War climate.[64] In a clear contrast to pronouncements from more strident proponents of strategic airpower, these officers saw an increasing importance of tactical firepower than the more dominant position in the service.

The early 1960s intellectual beliefs of the tactical warriors focused on TAC's capability to rapidly mobilize and deploy to crises and conflicts anywhere on the globe. This force was charged to respond to the increasing number of "small wars," and the Korean War had revealed the difficulty of assembling aircraft and deploying them when the war began.[65]

The Air Force's answer to limited wars was the Composite Air Strike Force (CASF). By 1960, this concept combined F-100s, KC-50 tankers, and tactical airlift to provide a self-contained force able to deploy quickly and operate for up to thirty days with both conventional and nuclear weapons.[66] The TAC Commander, General Frank Everest, called the CASF the Air Force's "organizational vehicle" to provide "quick reaction, mobility, and wide range of firepower" to commanders throughout the world.[67] Carr

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[63] Dennis, "Airlift Package," 40.
[64] Bruce W. Carr, "The Composite Air Strike Force—An Assessment," 1961, TAWC, MSFRIC, 55.
[65] Conrad C. Crane, *American Airpower Strategy in Korea, 1950-1953* (Lawrence, University Press of Kansas, 2000), 23-24.
[66] Robert Frank Futrell, *Ideas, Concepts, and Doctrine: Basic Thinking in the United States Air Force, 1907-1960,* vol. 1 (Maxwell AFB, AL: Air University Press, 1989), 448-450; Dennis, "Airlift Package," 8.
[67] Frank F. Everest, "Tactical Air Command," *AF&SD* 43, no. 9 (September 1960): 109.

placed the concept into its strategic context when he built upon an analogy of the two superpowers locked in a room, trying to fight with hand grenades, and suddenly discovering the need for a knife and: "CASF is the knife."[68]

Existing war plans, based on the strategy of massive retaliation, still directly influenced the thinking of these tactical warriors. For its supporters, it was important that a CASF be able to fight smaller wars without impeding the deterrence built into existing war plans. Theater tactical forces already assigned to Europe or the Pacific accomplished this deterrence role, in addition to SAC, as they were assigned targets to strike with tactical nuclear weapons in the event of a general war. The solution to this problem according to Lieutenant Colonel Clarence Slaughter was to make TAC the primary force provider for all limited wars and leave theater tactical forces in place. That way, if the conflict the CASF responded to escalated to a general war, the theater commander had all the assets necessary to implement existing war plans. Meanwhile, the theater forces would support the CASF logistically after the initial thirty days they were supplied for. Additionally, existing theater assets could be brought to maximum alert to augment SAC's general war deterrent role leaving the CASF free to deal with the limited war.[69] Even if the American deployment of forces escalated a limited war towards a general one, the theater commander would retain access to forces positioned to deter that scenario.

The officers assessing the CASF did offer some areas for improvement. The main historical reference for this force were two relatively recent responses to crises in Lebanon

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[68] Carr, "Composite Air," 3, 56.
[69] Clarence B. Slaughter, Jr., "Effectiveness of Composite Air Strike Forces in Responding to Crises," 1961, TAWC, MSFRIC, 61-62.

and Taiwan in 1958. Historian Robert Futrell noted that one of the main problems with these deployments were the pilots' lack of experience with conventional weapons since most fighter training centered on delivering tactical nuclear weapons.[70] Fortunately, the American forces deployed to these crises were never used in combat, but tactical warrior assessments of the CASF did not cite their lack of conventional war acumen as a problem. Lieutenant Colonel Harry Dennis proclaimed the deployments a success but his study focused on airlift, which was merely "adequate" due to a lack of training opportunities.[71] Carr assessed that the CASF demonstrated it was capable of "rapid deployment, of gaining air superiority, and providing ground support with either conventional or nuclear weapons" after deploying F-100s to Turkey within 17 hours of notification.[72] Having commanded a squadron during the Lebanon crisis, Carr noted problems with joint coordination, tactical elements arriving before the command element, and poor execution in logistics, intelligence, and administration. He placed these problems in the context of continual improvement by stating, "but without the headache there is no effort directed at the cure."[73]

The overall assessment for the future of TAC's ability to deter or meet future limited wars was that it was bright, however. Several no-notice exercises and deployments since the crises in 1960 and 1961 had validated TAC's ability to deploy rapidly. Carr noted the success of several no-notice exercises, such as Operation SPEAR HEAD, a

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[70] Futrell, *Ideas, Concepts, Doctrine,* 1:610-617.
[71] Dennis, "Airlift Package," 9, 20-22.
[72] Carr, "Composite Air," 2-3, 39.
[73] Carr, 32-35.

deployment to Europe in 1960, that he credited with sparing TAC from further budget cuts.[74]

These tactical warriors had much optimism for the immediate future for TAC's ability to respond to and fight limited wars, but they would also have agreed with the technologists' dreams of rapidly advancing aircraft design as a requirement. One of the brighter spots they pointed to was the replacement fighter for the F-100, the F-105. Slaughter thought the newest tactical fighter would prove to be a "versatile vehicle in that it will provide an all-weather reconnaissance/strike aircraft in one package."[75] Looking further ahead to 1965, General Everest reminded his readers that the F-105 would be obsolescent in five years and that its replacement "must incorporate into one system the flexibility to accomplish the manifold tactical air tasks in the face of the rapidly increasing efficiency of enemy air defense systems."[76] Carr believed that the next model of fighter would need to have a more advanced radar, capable of short takeoff and landing (STOL), and have extended range. The additional range would eliminate the need for air refueling and simplify mobility. Beyond these technological requirements, what was really needed was to secure the "proper emphasis" on limited versus general war capabilities and the realization that CASF could respond to both.[77]

Over the next several years, the CASF became the Air Force's contribution to Strike Command (STRICOM). This unified combatant command's purpose was to project

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[74] Carr, 41-47.
[75] Slaughter, "Effectiveness," 63.
[76] Everest, "Tactical Air Command," 114.
[77] Carr, 54.

military units for limited wars rapidly across the globe. STRICOM exercises such as SWIFT STRIKE III in 1963 and DESERT STRIKE in 1964 tested joint interoperability in a limited war scenario, including the simulated use of tactical nuclear weapons, and were intended to improve Army and Air Force cooperation and close air support procedures.[78] The increased reporting on limited war training in the *AUR* suggests the growing realization of the importance of limited war within the service. Another indication of the exercises' importance came with high ranking retired officers, such as Nathan Twining and Ira Eaker, simulating foreign leaders for the DESERT STRIKE scenario.[79] Assessments and analysis of the training were generally shallow and optimistic. Colonel Frederick Sanders concluded that SWIFT STRIKE III was deemed as "extremely successful and worthwhile." Further analysis, he claimed, would yield detailed lessons and further exercises would further improve battlefield coordination between services.[80]

While these exercises and the joint makeup of STRICOM certainly did not harm interservice cooperation, there were very real disagreements between the Army and the Air Force that this spirit of cooperation did not resolve. The main point of contention was which service would provide the Army's airpower needs. The Army, under the recommendations of the Howze Board, was moving towards an Air Mobile Concept where

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[78] Robert I. Weber, "Close Air Support in the Carolinas," *AUR* 15, no. 2 (January-February 1964): 64-69; Clyde Box, "United States Strike Command," *AUR* 15, no. 6 (September-October 1964): 2-14; Staff Report, "Exercise Desert Strike: Concept and Operations," *AUR* 16, no. 1 (November-December 1964): 2-18.
[79] John C. Meyer, "Umpiring Exercise Desert Strike," *AUR* 16, no. 5 (July-August 1965): 2-13.
[80] Frederick A. Sanders, "Exercise Swift Strike III," *AUR* 15, no. 2 (January-February 1964): 16.

Army helicopters would transport soldiers from one battle to the next. Helicopter gunships, fixed wing close air support aircraft, and transport aircraft would also be operated by the Army. The Air Force disagreed and recommended that they retain responsibility for all aviation. McNamara directed Exercise GOLD FIRE I in 1964 specifically to resolve these doctrinal differences. An *AUR* author optimistically reported about the exercise, "With this spirit of teamwork, there are greater chances of survival for all."[81] However, bridging the deep doctrinal divide between the services actually took the retirement of LeMay and quiet negotiations between his successor, General John P. McConnell and his Army counterpart, General Harold K. Johnson, to reach a compromise in 1965 where the Army could operate helicopters while the Air Force retained all fixed wing aircraft.[82]

Counterinsurgency

While the CASF and STRICOM focused on responding to limited wars between armed forces, tactical warriors also had to contend with insurgencies and counterinsurgency (COIN). The Air Force's contribution was 4400th Combat Crew Training Squadron (CCTS) with the unofficial nickname "Jungle Jim" established in April 1961. Members of the squadron were called air commandoes. Based at Hurlburt AFB in Florida, their mission was to train indigenous forces in their home countries to better resist communist led insurgency. They were armed primarily with WWII vintage aircraft to fight

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[81] Robert G. Sparkman, "Exercise Gold Fire I," *AUR* 16, no. 3 (March-April 1965): 44.
[82] John Schlight, *The War in South Vietnam: The Years of the Offensive, 1965-1968* (Washington DC: The Office of Air Force History, 1988), 122-125.

guerrilla warfare. At first, the squadron consisted of 124 officers, 228 enlisted men, sixteen C-47s, eight B-26s, and eight T-28s. When its first detachment was directed to South Vietnam under Operation FARM GATE soon after the unit's creation, it represented half of the Air Force's new counterinsurgency force.[83] Within a year, the air commandoes grew quickly from a training squadron to a wing in April 1962.

The June 1962 edition of *AF&SD*, titled "What Counterinsurgency is All About," reflected the growing interest in the subject. One aptly named article, "The Air Force Polishes Its New COIN," related a visit Kennedy paid to Eglin AFB to attend a demonstration by the 4400th CCTS focusing on countering small wars. The author, Claude Witze, summarized the objectives of Kennedy's visit. While the air commandoes focused on operations, the Special Air Warfare Center (SAWC), also newly established, searched for a technological solution such as vertical or short takeoff and landing (V/STOL) aircraft to bring airpower closer to the battle lines by being capable of landing without a runway. The idea was to free these aircraft from large, logistically demanding, and vulnerable to attack air bases. Summarizing all the new achievements, he spoke for the service stating that, the "USAF does not believe that COIN wars can be won by airpower and airpower alone. It does believe COIN war can be lost *without* airpower."[84] The magazine also provided space for Colonel Wilfred Smith, a PhD in East Asian studies, to review five books on counterinsurgency stating that he intended to follow Sun Tzu's advice to "know

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[83] James S. Corum and Wray R. Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists* (Lawrence, University Press of Kansas, 2003), 244-247.
[84] Claude Witze, "USAF Polishes Its New COIN," *AF&SD* 45, no. 6 (June 1962): 47-50.

the enemy."[85] This review included Mao's *On Guerrilla Warfare* and Che Guevara's *Guerrilla Warfare*. It also included western scholars' attempts to make sense of this rising form of war, such as Peter Paret and John Shy's *Guerrilla War in the 1960s*. While these articles showed the growing importance of counterinsurgency, advertisements for nuclear war command and control and space flight technology interspersed within the articles highlighted how the service was slow to respond to the Administration's new mission.

This growth of nascent capability for counterinsurgency paralleled an increasing interest at Air University extolling the need for limited warfare. In his article detailing Air Commando training, Allan Scholin described a new academic course dedicated to counterinsurgency. The two-week course, held at Air University, educated 250 officers in COIN theory and operations at a time. It brought together instructors specializing in the subject from across the USAF, RAND, and the Marine Corps to provide the best available instruction for the crash course. Additionally, high ranking speakers including the PACAF Commander, joint staff COIN specialists, and the SAWC Commander were invited to emphasize the importance of COIN.[86]

A small number of students chose to explore the implications of insurgency for the future of American grand strategy. In 1961 David Boak, a civilian AWC student from the National Security Agency, discussed the growing use of guerrilla warfare after reviewing the writings of such communist revolutionaries as Karl Marx, Vladimir Lenin, Mao Tse Tung, and Che Guevarra. He was convinced the communist threat in the American

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[85] Wilfred J. Smith, "Guerrilla-War Bookshelf," *AF&SD* 45, no. 6 (June 1962): 53-58.
[86] Allan R. Scholin, "Air Commandos: USAF's Contribution to Counterinsurgency," *AF&SD* 45, no. 8 (August 1962): 43.

hemisphere was imminent, at worst predicting that the United States may have to resort to guerrilla tactics just to defend North America. To counter communist insurgent movements elsewhere, the U.S. needed to build upon counterinsurgency lessons from Malaysia, Greece, and the Philippines. These lessons were to "avoid unilateral intervention" when possible, but respond with "swift, aggressive" tactics by indigenous forces while protecting civilians even when harboring the enemy, and capitalize on guerrillas' primitive tactics with "technological superiority in weapons, communications, reconnaissance, and supply."[87] The following year, Lieutenant Colonel William Williams declared that the best way to counter the Soviet use of unconventional war under the emerging "delicate balance of terror" was to go on the offensive and "regain the initiative." He implored the Free World to launch a "psychological, ideological, and political offensive to exploit certain contradictions within the Communist bloc."[88] The first arena for this Free World guerrilla offensive, according to Williams, should be the conflict in Vietnam.[89]

Two officers studying counterinsurgency emphasized the importance of an interagency approach as opposed to a reliance on airpower and technology alone. Lieutenant Colonel Leonard Pratt believed that historians would reflect and declare that an insurgency based third world war had raged since the close of WWII, while Americans had been entirely ignorant of it. Remedying this lack of strategic attention required a unified command structure with national direction from a group formed by the President, regional

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[87] David G. Boak, "Guerrillas in Latin America," 1961, TAWC, MSFRIC, 3, 80-81.
[88] William M. Williams, "An Extended Strategy for the Cold War," 1962, TAWC, MSFRIC, 7, 26, 36-37.
[89] Williams, 58.

control via an "Assistant Secretary of State or super-Ambassador," and finally country ambassadors to lead all counterinsurgency activities at a national level, including the military.[90] Similarly, Lieutenant Colonel Earl Miller foresaw the best response to Soviet inspired small wars in a "streamlined from bottom to top" organization that clarified the lines of authority and could establish "unity of effort" among the various government organizations responsible for conducting counterinsurgency operations.[91]

This cohort of AWC students saw guerrilla warfare and insurgency as part of a larger spectrum of conflict with economic, political, and psychosocial elements involved.[92] While these tactical warriors encouraged the use of technological superiority, John Loonsbrock of *AF&SD* gave a technologists' perspective that placed far more emphasis on Western societies' technological advantage. In his editorial, "Airpower versus Guerrillas," he pointed out that guerrilla translated to small war and implied that their small size corresponded to the low amount of importance that should be given to countering them. Instead of spending resources to build a new force, America should seek to deter these small wars first and be ready to fight with overwhelming force if necessary. He argued that "rather than imitating guerrillas we and our allies must take full advantage of what superiority we have. . . . After all, in the long haul the American Indians weren't licked

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[90] Leonard E. Pratt, "Command Organization for Counterinsurgency Operations," 1963, TAWC, MSFRIC, 3, 58-60.
[91] Earl D. Miller, "Counterinsurgency Operations: A Joint Role," 1964, TAWC, MSFRIC, 49.
[92] Boak, "Guerrillas," 3; Williams, "Extended Strategy," 36-37.

because we became more adept with the bow and arrow. They lost out to a combination of the transcontinental railroad, the telegraph, the repeating rifle, and the US cavalry."[93]

The tension over how to prepare technologically for counterinsurgency operations was palpable by 1964. From a tactical warrior perspective, a retired colonel turned Lockheed engineer pleaded for "a modest but increased research effort" in both "quantity and in tempo" to address the needs for the lower levels of limited warfare. He ended his plea by noting that he understood the fact that the subject was not a "glamourous one" compared to the dominant focus on reaching space, flying faster, or developing advanced weaponry.[94] All the same, this type of warfare was bound to increase and he felt the United States was not prepared or equipped to adequately support it. The opposing technologist perspective reflected the faith in technological progress unhindered by insurgent methods. Citing a common euphemism that blamed generals for always fighting the last war, like the Maginot Line, Lieutenant Colonel Warren Curton pondered if the COIN proponents wished to "turn back the clock?" He used the same analogy Loonsbrock had by sarcastically musing whether "the cavalry should have fought the American Indian with the bow and arrow?" His main point was that the jet fighter represented the latest technology and had not been proven to be ineffective or cost prohibitive and thus should be relied on in counterinsurgency operations.[95]

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[93] John F. Loonsbrock, "Airpower vs. Guerrillas: An Editorial," *AF&SD* 45, no. 3 (March 1962): 6.
[94] Robert A. Shane, "Limited-War Research Needs: The Practitioner's Viewpoint," *AUR* 15, no. 3 (March-April 1964): 25.
[95] Warren D. Curton, "Cost Effectiveness and Mission Suitability of Conventional Versus Jet Aircraft for Counterinsurgency Operations," 1964, TAWC, MSFRIC, 6.

The ideas behind strategic bombing had driven massive retaliation, but these notions were challenged during the heyday of the space race and Flexible Response. Technologists looked beyond present capabilities to argue for even more transformative changes than what aircraft alone could provide. Tactical warriors believed more small wars were coming and required more investment in tactical systems and interservice cooperation. These intellectual groups were not completely dismissive of each other's views, but still prioritized and advocated for investment for their vision of the future. Even the *AF&SD* staff (who charged US Army limited war proponents of parochialism) acknowledged the need for infantry, tanks, and fighter aircraft. The proper place for conventional arms, however, was to be "complementary" to the national strategy that should first rely on nuclear retaliation.[96] Lieutenant Colonel Carr realized that a strong reaction to a limited war could result in an escalation to a general war. Because of this, any additional tactical air capability "must be developed and executed without weakening our capability to fight a general war."[97] The technologists' aim was to stay ahead of the enemy's capability. They prioritized direct great power competition which helped explain their focus on technological competition in space. Each school retained its own distinct vision of the nature of warfare and how to best prepare for it.

By 1964, there was a rising animosity within the officer corps between the various views of warfare. Upon his retirement in 1964, General Power published *Design for*

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[96] A Special Report, "The Truth," 39.
[97] Carr, "Composite Air," 18.

Survival that stressed the position of the strategic warriors. He charged that limited war proponents were "misleading" to separate limited war forces from those for a general war since the communists were fighting a general war to destroy the American way of life. By limiting the nation's nuclear forces to fight proxy wars, limited war advocates would weaken America's nuclear deterrent which was "exactly what the Soviets want us to do!"[98] He dismissed technologists' grand plans for exploiting cutting edge science as "quite unrealistic" and derided anyone who sought to replace human beings with "black boxes" or "computers that can do the thinking of a hundred men." Instead, the ultimate weapon was not found in technology, but the American people who had to stand firm and deter the communists by understanding that the "role of the military is no longer to win wars but to help deter them."[99]

One tactical warrior expressed a growing dissatisfaction with the strategic warrior and technologist perspectives with three *AUR* opinion pieces over three years from 1962 to 1964. Colonel Garland Ashley, a WWII veteran of the Chinese-Burma theater and Cold War strategist at the Office of the Secretary of Defense (OSD), argued in 1962 that Air Force senior officers' loose talk about nuclear war had equated the use of any atomic weapon, of any yield, with an all-out general war. This was why there were growing political limitations on the use of nuclear weapons in Korea and after which would deny the military use of the "most efficient firepower that has ever been handed to man."[100] The

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[98] Thomas S. Power, *Design for Survival* (New York: Coward-McCann, 1964), 220-21.
[99] Power, 237-38, 250, 254.
[100] Garland O. Ashley, "In My Opinion: A Momentum of Nuclear Talk," *AUQR* 13, no 4 (Summer 1962): 94-95.

following year, he bluntly described the Air Force officers corps as "deprofessionalized" due to their attachment to "so-called doctrines" of strategic bombing that had not withstood the test of time. As a result, "we [Air Force officers] are feared now, not admired."[101] Although he did not specify who feared airmen, he did work at OSD with McNamara's 'Whiz Kids,' who he may have been referring to. In 1964, Garland turned his ire towards the technologists and their love of arithmetic and various forms of scientific analysis as a "tyrannous crutch" to prove a favored position instead of allowing for objective judgement of what the numbers actually represented.[102]

Ashley's views seem contradictory but offer a glimpse into the troubled relationship some officers had with nuclear weapons. One the one hand, he showed the tactical warriors still believed in the need for and efficiency of low yield, tactical nuclear weapons. On the other, he railed against the dominant intellectual influence in the service that focused too much on a fighting a notional, future general nuclear war or sought to use science to continue developing weapons that did not fit the needs of the current national security policy focused on countering communist-inspired limited wars.

Despite the growing animosity between the groups, the changing strategic and intellectual climate was making an impact in the Air Force. In 1964, the Air Force published a new basic doctrine that as Futrell put it, "even a cursory glance" would reveal

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[101] Garland O. Ashley, "In My Opinion: Off we Go…Where?" *AUQR* 14, no. 3 (Summer 1963): 90-95.

[102] Garland O. Ashley, "In My Opinion: Declaration of Independence from the Statistical Method," *Air University Review* 15, no. 3 (March-April 1964): 83-84. *AUQR* switched to a bi-monthly format and renamed the *Air University Review* in 1963.

was a "radical departure" from previous doctrines.[103] The new version moved away from a binary view of successful peace via deterrence or general war, stating that military power at its core exists to achieve national objectives that are "political rather than military."[104] Although more length was still given to the chapters on general war, this volume had individual chapters addressing limited wars that involved tactical nuclear weapons, conventional air operations alone, and finally counterinsurgency operations. LeMay, nearing the end of his tenure as CSAF, wrote an article in *AF&SD* noting the "high-caliber" people across the spectrum of the Air Force who were designing the next generation of weapons, had deterred major war, had driven the communists to resort to "wars of national liberation," and finally to the airmen who operated the growing tactical forces to meet this new limited war threat.[105] At the same time, 1964 saw the situation in Vietnam deteriorate and a growth in American presence there. The Tonkin Gulf incident in August 1964 gave the President authorization to respond as he deemed necessary, which would lead to an expansion of the US military's mission in 1965.

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[103] Futrell, *Ideas, Concepts, Doctrine*, 2:716.
[104] Department of the Air Force, *AFM 1-1, USAF Basic Doctrine*, August 14, 1964, 1-1.
[105] Curtis E. LeMay, "Public Attitudes and Personal Sacrifices," *AF&SD* 47, no. 10 (October 1964): 41-44.

CHAPTER III

ADJUSTING TO LIMITED WAR, 1965-1966

By early 1965, the war in South Vietnam had escalated in response to multiple attacks on American and Republic of Vietnam forces by the Viet Cong and North Vietnamese Army. On January 27, General William Westmoreland received authorization to use the F-105s, F-4s, and B-57 jet aircraft which had been in Southeast Asia (SEA) for months, but the use of which had been denied for fear of provoking further escalation with the Soviet Union and the People's Republic of China. Following the attack on the Camp Holloway helicopter base at Pleiku on 7 February 1965, President Johnson decided to initiate reprisal strikes against select targets in North Vietnam. Initially termed FLAMING DART, these bombing attacks transitioned to Operation ROLLING THUNDER that for the next four years sought to apply escalating pressure in a bid to convince Hanoi to negotiate. As the initial bombing missions were underway, thirty B-52s and thirty-two KC-135s deployed to Guam and Okinawa, respectively. As additional aircraft flowed into South Vietnam and Thailand, Air Force personnel increased threefold from ten thousand to thirty thousand to support them.[1]

While the violence increased in Southeast Asia, the Air Force senior leadership, the Secretary and Chief of Staff, both transitioned in 1965. In retrospect, the new Secretary did not appear to match the future needs of a service adapting to the new style of warfare. Dr. Harold Brown was a nuclear physicist who *Air Force & Space Digest* (*AF&SD*) editors

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[1] John Schlight, *The War in South Vietnam: The Years of the Offensive, 1965-1968* (Washington DC: The Office of Air Force History, 1988), 5, 16-18.

praised for coming "from the ranks of science" and gave hope to future procurement battles since he enjoyed McNamara's "fullest confidence."[2] Following the retirement of the controversial LeMay, General John P. McConnell succeeded as the top Air Force general officer. H. R. McMaster has criticized McConnell as being one of the five silent men whose "'can-do' attitude and personal loyalty predisposed him to service more as a technician than as an adviser."[3] However, McConnell's background was more diverse than Brown's having led tactical fighter operations in Burma during WWII, commanded within SAC, and served as a planner at USAF Headquarters. McConnell was also more congenial than LeMay, especially working with the Army on aviation matters. On core Air Force policy issues, the first priority of which was the need for a new strategic bomber, he represented more continuity than change.[4] This was the new leadership team that would necessarily split their attention between the immediate needs in Vietnam and the ongoing strategic competition with the Soviets in 1965 and 1966.

The dissonance between tactical warriors focused on the war in Vietnam, technologists' desires to build advanced technology, and the strategic warriors' dogmatic call for nuclear superiority caused intellectual turmoil within the Air Force in 1965 and 1966. The conversation about warfare during these years revolved around four major

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[2] "Scientist in the Slot," *Air Force & Space Digest* [hereafter *AF&SD*] 48, no. 8 (August 1965): 21.
[3] H. R. McMaster, *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies that Led to Vietnam* (New York: Harper Collins, 1997), 224.
[4] Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1961-1984*, vol. 2 (Maxwell AFB, AL: Air University Press, 1989), 281; John P. McConnell and Claude Witze, "Money and People: The Big Problems Ahead for the Air Force," *AF&SD* 48, no. 2 (February 1965): 35-36.

topics. The first topic was the attempt to assess how to win the Vietnam War in particular and limited wars more generally. Among those stressing conventional war, the tactical and strategic warrior points of view clashed. The second area of discussion was what type of aircraft should be developed in the future. This debate revealed a struggle between those that prioritized the current war and others that remained focused on general war who favored the pursuit of high technology. Countering the growing reliance on conventional weapons, the third debate advocated a return to a strategy based on the use of tactical nuclear weapons in limited war and for maintaining strategic nuclear superiority as the only means to assure deterrence for a general war. Finally, the technologists' vision that R&D would continue to change the very face of war weakened as their pursuit of space became less credible and critiques that pursuing the most advanced technology had not prepared the nation for the war it was fighting. Within these four categories, disagreements between the three schools became more distinct even as some technologists shifted their focus from general to limited warfare.

How to Conduct Limited War

By March 1965, one of the major intellectual challenges was to assess the current situation in Indochina. The Johnson Administration struggled to understand the situation as it unfolded and ultimately followed the path of least resistance, especially in terms of domestic politics, into the war.[5] Mid-level officers at AWC had the same problem

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[5] George C. Herring, *America's Longest War: The United States and Vietnam, 1950-1975*, 5th ed. (New York: McGraw-Hill, 2014), 135-137; McMaster, *Dereliction of Duty, 323-34;* Frederick Logevall, *Choosing War: The Lost Chance for Peace and the Escalation of War in Vietnam* (Los Angeles: University of California Press, 1999).

attempting to attain current information to understand the war. Whereas the conflict had generated only minimal interest previously, from spring 1965 onwards articles in the *AF&SD* frequently appeared to keep airmen abreast of current events in this increasingly important conflict.[6] There were three visions of how to win in Vietnam and other limited wars. The first were proponents of counterinsurgency. Then, the belief that airpower via tactical fighters would prevail. Finally, SAC officers proposed that their organization could win limited wars and avoid the expenses of large conventional armies.

General McConnell outlined the official Air Force position in a September 1965 speech that foreshadowed how fractured the military strategy would become. Against North Vietnam, he provided two objectives: interdiction and "strategic persuasion." While the former was self-explanatory, he defined the latter as the application of a "measured amount of strategic airpower in order to persuade the North Vietnamese leaders to cease their aggressive actions and to accede" to a negotiated settlement. While the threat of strategic bombing maintained the "nuclear umbrella," this new concept was an "instrument" aimed solely at "the attainment of a diplomatic objective." In essence, McConnell advocated, or at least paid lip service to, the Johnson Administration's strategy of gradual escalation. For the war in South Vietnam, he lauded aerial interdiction, defoliation, forward air controllers, B-52s, airlift, rescue, and the "most important weapon"

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[6] Kenneth Sams, "The Battle of Long My: Air Support in Action," *AF&SD* 48, no. 3 (March 1965): 35-37; Jerry Greene, "US Airpower in Vietnam – Scalpel Rather than Broadsword," *AF&SD* 48, no. 5 (May 1965): 35-36; Jerry Greene, "Airpower's Buildup in Vietnam," *AF&SD* 48, no. 6 (June 1965): 33-43; Kenneth E. Sams, "Tactical Air Support," *AF&SD* 48, no. 8 (August 1965): 37-40.

of tactical airpower.[7] McConnell's speech described the wide parameters of the Air Force's contribution to the war. Strategic persuasion and the graduated escalation strategy behind it would be referred repeatedly in the future by Air Force thinkers assessing Air Force performance. They would also assess many of the other contributions McConnell described in South Vietnam.

There were two foci for measuring the success or failure of fighting a counterinsurgency in South Vietnam. The first centered on a political battle for the support of the population, or the so-called 'hearts and minds' approach. The other highlighted airpower's important role in bringing insurgents to battle on favorable terms and halting the progress of the insurgents so that they could be defeated by overwhelming American force.

In 1965, Lieutenant Colonel Alvin Herrewig studied the Vietnam conflict through the lens of a David Galula's now classic book, *Counterinsurgency Warfare*. He concluded Galula's progressive model for how communist insurgencies develop and his "laws" for counterinsurgency (COIN) techniques provided "a sound philosophical platform" upon which to base a strategy.[8] Galula's thesis agreed with Mao Tse Tung and rested on the belief that the real objective in fighting an insurgency was the allegiance of the people. This was opposed to using superior military strength to destroy insurgents. Instead of

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[7] John P. McConnell, "Keeper File: The Folly of Strategic Persuasion," *Air Force Magazine* 94, no. 2 (February 2011): 71.
[8] Alvin P. Herrewig, "Analysis of the Adequacy of Galula's Laws and Principles of Counterinsurgency Warfare as Applied to Vietnam," 1965, Thesis, Air War College [hereafter TAWC], Muir S. Fairchild Research Information Center [hereafter MSFRIC], 71; David Galula, *Counterinsurgency Warfare: Theory and Practice* (Westport, CT: Praeger Security International, 2006).

chasing "a ghost in the jungle," COIN operations should instead focus on providing security for the host nation's more static population.[9] Only after this step was accomplished could the embattled government re-establish its authority and influence through good governance that would cause the people to choose the sponsored government.

Having read Galula's new book at the Air War College, several officers evaluated the counterinsurgency campaign within South Vietnam with a focus on the strategic hamlet program. Lieutenant Colonel Gabriel Hartl examined the "problems of the controlled displacement and re-location of the indigenous population." He concluded the hamlets were necessary, but were unsuccessful due to the inability to provide security in the countryside.[10] That same year, Lieutenant Colonel Frank Jowdy also concluded that winning the support of the population was an "established fact of warfare," and the strategic hamlets were a sound strategy. The failure of Prime Minister Ngo Dinh Diem to closely follow counsel of his American advisors and his provincial chiefs had negated the program's effectiveness and served "actually to embitter" the people.[11] Herriwig reasoned that the strategic hamlets had been built on "shifting sands" because no American or Vietnamese authority coordinated the hamlets or the counterinsurgency strategy. The lack of a "single boss" led to a "wide divergence" between Galula's "preachment" and the

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[9] Herriwig, 44-45.
[10] Gabriel A. Hartl, "Controlled Displacement and Relocation of Indigenous Populations in Counterinsurgency," 1965, TAWC, MSFRIC, 3-4, 50.
[11] Frank J. Jowdy, "Strategic Hamlet Program in South Vietnam as a Counterinsurgency Device," 1965, TAWC, MSFRIC, 59-60.

"practice" in the country. Unless another unifying figure arose in the South, Herrewig predicted that Ho Chi Minh would unify all Vietnamese under his charismatic leadership.[12]

Perplexed by how victory was illusive with all the economic and military might of America behind the South Vietnamese, Lieutenant Colonel Millburn Jackson's 1965 thesis declared that "the inference that United States power is not omnipotent is hardly acceptable." Referencing Galula's arguments, he charged that "the United States normally gets called upon when insurgency is already established," and at that point "the task is much more difficult."[13] Jackson concluded that America had been ill-prepared to fight in this type of war, after all it had only recently become the "vogue."[14]

Lieutenant Colonel Norman David argued that one lesson that could be gleamed from Vietnam was to improve integration at the planning stage, before conflict ever erupted. He believed there had been miscommunication between civilian and military leaders over employment of military force in limited conflicts. Since civilian leaders were unfamiliar with military capabilities, the time had come for military officers to acquaint themselves with the political nature of war. David's solution was for "greater political orientation" during the normal, "that is, non-crisis" planning cycle by adding political annexes to war plans.[15]

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[12] Herrewig, "Adequacy of Galula," 48-49, 73-74.
[13] Milburn D. Jackson, "Counterinsurgency in South Vietnam: Why Has It Failed?" 1965, TAWC, MSFRIC, 4, 9-12, 17.
[14] Jackson, iii, 69.
[15] Norman T. David, "Examination of the Requirement for Political Annexes to Air Force Operations Plans," 1965, TAWC, MSFRIC, 57.

Lieutenant Colonel Armand Reiser rejected the service's, or indeed the nation's counterinsurgency strategy in SEA. He insisted that the problems in Vietnam "should clearly indicate the fallacy and folly of accepting as gospel many pseudo-intellectual creations of the liberal ethic in our society."[16] Those "pseudo-intellectual creations" included the idea that wars could be fought and won with restraints on military force in the hope that an enemy could be persuaded to lay down arms to negotiate and avoid further bloodshed. The Vietnam War was part of an "international war," sustained by the Soviet Union and Communist China as part of their drive for global domination. Reiser concluded that COIN "has validity only when applied in support of a government which seeks to suppress internal conflicts which are not inspired, directed, or supported by an external foreign power."[17]

The Air Force historian in Saigon, Kenneth Sams, reported "somewhere in early 1965, the word 'COIN' fell by the wayside" and the fighting escalated to "something approaching conventional warfare."[18] The consensus among the officer corps was that a counterinsurgency approach of winning hearts and minds had failed in South Vietnam. Several officers had pointed to the difficulties of implementing the strategic hamlets without alienating the population. Some laid the blame at the lack of coordination directed by a strong, inspiring political leader. Still others believed that American involvement was too little and too late and had been unprepared due to the recency of the doctrine. In any

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[16] Armand E. Reiser, "Counterinsurgency A Case Study: Southeast Asia," 1966, TAWC, MSFRIC, 119.
[17] Reiser, 37, 118-19.
[18] Kenneth Sams, "Airpower—The Decisive Element," *AF&SD* 49, no. 3 (March 1966): 69, 83.

case, the difficulty experienced in South Vietnam had blunted enthusiasm for counterinsurgency tactics.

The perceived failure of counterinsurgency by mid-1965 was matched by increasing optimism for winning the Vietnam War with conventional military might, buttressed with airpower. Colonel Donald Martin wrote in early 1965 that the current situation remained "at best equivocal" considering the Viet Cong and North Vietnamese Army (NVA) strength and continued resistance of non-aligned factions within South Vietnamese society.[19] Martin provided three strategic options for the future in Vietnam. The first option was to continue with the present strategy. He discounted this option since it had already been tried and had not worked. The other two were offensive courses of action that he termed "covert reprisal" and "overt reprisal." The overt option would be direct military attacks against North Vietnam similar to the retaliatory strikes following the Gulf of Tonkin incident. The covert option, which he contended "might well be" preferred, was to initiate an insurgency against the North itself to destabilize that country.[20] In either case, keeping the fight in the South would not produce results. For Martin, North Vietnam was the real source of continuing resistance and where US strategy needed to shift towards to produce victory.

There were also reports that the conventional use of airpower against fielded forces had saved South Vietnam from a takeover by the Communist Bloc. Jerry Greene, writing for *AF&SD*, reported from Saigon in May 1965 that airpower had halted the growth of the

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[19] Donald F. Martin, "Vietnam: The Difficult Years," *Air University Review* [hereafter *AUR]* 16, no. 3 (March-April 1965): 51-55.
[20] Martin, 56-58.

insurgents. Furthermore, he expressed the optimism that "some experts here believe it might take another two months, perhaps more, to convince Ho Chi Minh and his Communists that real ruin lies just back of yonder cloud." He claimed that a 1964 increase in Viet Cong casualties, "*before* the USAF jets were unleashed," was a predictor that airpower may well do "a rewrite job" on Communist guerrilla warfare books and doctrine.[21] Kenneth Sams provided a more cogent analysis in December by summarizing airpower's contribution to a series of major battles fought during the previous year, the growth of the Theater Air Control System, and the introduction of B-52s. His consistent point was that the South Vietnamese position had strengthened because the enemy "can expect heavy losses from airpower" every time they concentrated for a battle.[22] If there was disagreement over counterinsurgency, there was a consensus that the United States had to ensure the survival of South Vietnam by military force. Herriwig spoke for many when he argued that South Vietnam was a responsibility almost by default, since the United States was "the acknowledged leader in the Free World struggle to contain communism."[23] In a summer 1966 *AUR* article, Lieutenant Colonel Donald Currier reasoned that nuclear deterrence had contained the Soviets: "if we can win in Vietnam, we will show the world that the violent brand of Chinese Communism can be contained."

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[21] Greene, "Airpower in Vietnam," 35-36.
[22] Kenneth Sams, "The Air War in Vietnam: Countering Escalation," *AF&SD* 48, no. 12 (December 1965): 72-83.
[23] Herriwig, "Adequacy of Galula," 10.

This sole point made all other arguments about "our presence in Vietnam pale into insignificance."[24]

The response of the strategic warrior school to the escalation in Vietnam and the emphasis on limited warfare was to advocate that manned bombers could be repurposed for conventional operations. A slew of 1965 theses explored SAC's ability to contribute to a limited war. These were written immediately before and after B-52s were first employed in South Vietnam in June.

New to the study of limited war theory, Lieutenant Colonel Russel Lewis was "astonished" over the many variables (technological change, NATO politics, Communist China's nuclear capability) and the "wide disagreements" among theorists over defining terms and preparing forces for limited wars.[25] Lieutenant Colonel Ralph Jones attached an article from *Time* that listed forty limited wars since the end of WWII which definitively showed the prevalence of limited warfare under the auspices of the Cold War.[26] These more limited conflicts had occurred during periods of American nuclear monopoly, superiority, and the fast approaching nuclear parity with the USSR. The recognition that limited war was becoming a phenomenon that required attention had penetrated strategic warriors, many of whom institutionally hailed from SAC.

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[24] Donald R. Currier, "In My Opinion: Vietnam—The Right Place *And* the Right Time," *AUR* 17, no. 5 (July-August 1966): 70-74.
[25] Russell L. Lewis, "The Use of Strategic Air Power in Limited War Roles," 1965, TAWC, MSFRIC, iii-v.
[26] Ralph R. Jones, "SAC's Degree of Participation in Limited Wars," 1965, TAWC, MSFRIC, 1-2, 49.

One concern of using B-52s in a limited war scenario was the fear they would trigger an escalation towards a general war. SAC and its bombers had become typecast as an instrument solely for a nuclear war and that any attempt to use those forces would inevitably lead to a general war. Lieutenant Colonel Hubert Hatley, who had been assigned to SAC since 1946, rejected this concern and wrote that the only "fundamental restriction" on using SAC forces was a "psychological" fear that any use of B-52s would automatically lead to a wider war with the Soviets. Hatley insisted that there was no "inevitable progression from the introduction of strategic forces, with or without nuclear weapons, in limited war to total war of nuclear holocaust."[27]

Jones and Hatley argued that SAC was just as capable to deter and win limited wars as it had been at deterring a general war. Strategic airpower was uniquely suited due to its long range, ability to deliver massive destruction, and a centralized command and control system to respond quickly to any limited war. Furthermore, SAC could do it faster than other military units, such as fighters.[28] Predicting that the nation would not remain united for a long war due to the economic, social, political, and moral turmoil within America, Lieutenant Colonel Bob Garner pleaded for a "fundamental reshaping" of attitudes and that SAC, in particular, must abandon the "lack of flexibility of strategic thought" focused solely on nuclear weapons.[29] Whereas most limited war enthusiasts foresaw the massive buildup of conventional forces to fight under a 'nuclear umbrella,' Garner believed limited

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[27] Hubert M. Hatley, "Role of Strategic Air Power in Limited War," 1965, TAWC, MSFRIC, 45-47.
[28] Jones, "SAC's Degree," 46-47; Hatley, "Role of Strategic," 46.
[29] Bob M. Garner, "The Use of Strategic Air Command for Deterrence of Limited War (Non-Nuclear)," 1965, TAWC, MSFRIC, 6, 52.

wars could be "deterred instantly" via SAC's ability to deliver massive levels of conventional firepower in any situation that conditions allowed or where tactical forces' ability to fight had been impeded by lack of basing access or logistical support.[30]

The interest in using strategic bombers in Vietnam was complicated by an internal critique of SAC's centralized model by tactical warriors. Some of this was the result of a grievance stemming from LeMay's 1961 forced retirement of General Frank Everest and imposing bomber pilot General Walter Sweeney as the head of TAC.[31] LeMay wanted Sweeney to fix what he perceived as TAC's disorganization with updated, modern management techniques that SAC represented. During Sweeney's tenure, TAC stripped maintenance from operational flying squadrons and centralized it at the base level. He required the measurement of nearly every element of TAC units for scrutiny by Pentagon staffers. He mandated SAC style wing command posts so that higher echelons could control every aspect of daily flight operations. Finally, unit standardization and evaluation offices began to enforce rigid regulations set by higher headquarters. The resistance to these changes among fighter pilots was palpable. Marshal Michel, historian and Vietnam War veteran F-4 pilot, relayed that a common colloquialism among them was that TAC had been "SAC'emcised."[32]

By 1965, the anger of tactical warriors at SAC's dominance was manifest. A major complaint was how SAC's centralized control was inappropriate for fighter units. SAC's

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[30] Garner, 41.
[31] Mike Worden, *The Rise of the Fighter Generals: The Problem of Air Force Leadership, 1945-1982* (Maxwell AFB, AL: Air University Press, 1998), 104-5.
[32] Marshall L. Michel III, *America's Last Vietnam Battle: The Eleven Days of Christmas* (New York: Encounter Books, 2002), 7.

long-range bombers operated out of a fixed number of bases within the continental United States and not only could be, but needed to be tightly managed. But such centralized control hampered the rapid deployment and quick mobility that had proven so effective in earlier deployments of tactical forces. In his 1965 thesis, Lieutenant Colonel Blanton Keller bluntly argued that fighter units had been "forced into" the SAC model and that "the difference in missions was completely disregarded."[33] With a fighter pilot's disdain of bomber pilots, Lieutenant Colonel David Davidson declared SAC was "organized like TWA, Pan American, Air France, or any other airline organization."[34] By contrast, TAC units had to deploy not just their pilots and jets, but also support personnel, maintenance equipment, additional supply stocks, ordnance, and any other functions require to operate an airbase. Keller and Davidson cited General Hunter Harris, head of the Pacific Air Command, who was also critical of the current organizational arrangement for tactical wings. Harris noted that tactical forces were not arriving ready for combat in SEA. Ad hoc maintenance organizations composed of personnel extracted from units that had remained stateside (centrally tied to run that base) hindered flight operations. The fighter squadron commander assumed responsibility for this unorganized maintenance unit, but was now unacquainted with it since this was no longer part of his responsibility in garrison. Due to these problems, units required a "period of adjustment" to reach acceptable performance for combat.[35] Writing in 1966, Lieutenant Colonel Robert Eklund

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[33] Blanton S. Keller, "The Organization of a Tactical Fighter Wing," 1965, TAWC, MSFRIC, 47.
[34] David T. Davidson, "An Organizational Concept for Tactical Fighter Units," 1965, TAWC, MSFRIC, 6.
[35] Keller, "Organization," 47; Davidson, "Organizational Concept," 12-13.

described the problem as TAC's wings and squadrons "must reorganize before they are capable of accomplishing wartime tasks."[36] The three officers cited here, all fighter pilots, were unanimous in recommending decentralization where fighter squadron commanders were directly responsible and resourced for necessary support functions because, as Davidson put it, under the current model "rapid deployment of highly trained, integrated, cohesive units is not possible."[37]

In addition to pushback against centralization in fighter wings, several SAC veterans began in 1965 to question SAC itself as presently organized. Lieutenant Colonel James Marr offered that SAC's organization could be improved by moving away from strictly basing its assets within the continental United States. To better meet the political strategy of "strategic persuasion," Marr argued SAC should undergo a "total realignment" by consolidating current stateside bases and stationing B-52s and KC-135s in Asia and Europe. These units would become "SAC tactical wings" and report to a separate chain of command instead of directly to SAC in Omaha, NE.[38] The implication was that SAC was no longer fulfilling a sole strategic mission and must adapt organizationally to a new, tactical role and thus required reorganization that would deploy its assets to other theaters. This begged the obvious question of whether these assets would continue under SAC authority or would be assigned to the respective regions' geographic combat commanders. Marr did not give an answer, but he did state clearly that the Air Force, SAC in particular,

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[36] Robert G. Eklund, "Fighter Wing Functional Structure (Tactical Air Command)," 1966, TAWC, MSFRIC, 74.
[37] Davidson, "Organizational Concept," 61.
[38] James F. Marr, "Realignment of The Role of the Tactical Aircraft Assigned to the Strategic Air Command," 1965, TAWC, MSFRIC, 39, 44-46.

must heed the times and realize that "change and adaptability are the essential requirements of modern military forces."[39]

SAC's status as the "Single Manager" of the Department of Defense's aerial refueling assets, officially designated since November 1961, also came under scrutiny.[40] One bomber pilot, Lieutenant Colonel Donley Townsend, selected his topic believing that he had an organizational solution for limited wars that would "solve all of our problems." It was only after four months of research and wrestling with the problems of an expanded spectrum of warfare that his "initial enthusiasm" was replaced with "cold hard facts."[41] Townsend pointed to Air Force history during the Korean War that had proved the jet fighter to be vastly superior to older propeller driven aircraft in terms of range, accuracy, and ability to carry a range of ordnance. The main problem with jet fighters was limited range, which could be solved by providing them with dedicated KC-135 refuellers. Since only SAC had these capable aircraft, they would have to be cut loose from the current organization and attached to tactical forces instead. Lieutenant Colonel Arthur Hughes provided the "the opinion of Air Force officers" was that jet fighter bombers, versus propeller driven aircraft, were better at maintaining air superiority and also best suited for "providing over-all tactical support to Army units."[42] Because air refueling was now seen

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[39] Marr, 43.
[40] Bernard C. Nalty, ed., *Winged Shield, Winged Sword: A History of the United States Air Force, 1950-1997*, vol. 2 (Washington DC: Air Force History and Museums Program, 1997), 215.
[41] Donley P. Townsend, "The KC-135-Fighter/Bomber Small Task Force," 1965, TAWC, MSFRIC, 55.
[42] Arthur L. Hughes, "Limited War: The KC-135/F-4C Combat Team," 1965, TAWC, MSFRIC, 2.

as “essential” to tactical air operations, both officers proposed a new organizational structure: a task force where KC-135 and fighters combined to solve the jet fighters’ range problems to reach the required established runways and hotspots all over the world.[43] These two officers echoed earlier proclamations about the aerial refueling needs of the Composite Air Strike Force (CASF), although their calls for a task force once again skirted the specific question of reassigning assets from SAC to TAC.

A more sweeping proposal in 1966 challenged the notion that the tankers should belong within a combat command in the first place. Lieutenant Colonel Paul Greenwade, a veteran SAC tanker pilot, understood that TAC’s influence would grow due to the Vietnam War and future contingencies while missiles would continue to whittle the number of bombers and tankers, thus weakening SAC’s claim on these assets. He perceived that at present the aerial refueling fleet, which he noted was one of the largest fleets in the entire nation, was just “‘tacked on’ to another sphere of interest.” To meet the aerial refueling needs of the Navy, Marines, TAC, SAC, and other allies all over the world, Greenwade proposed that a “unified tanker command,” independent from either a tactical, strategic, or even Air Force missions, would be the most efficient way to organize for the entire spectrum of future warfare and able to best support the Department of Defense operations.[44]

By 1966, the Strategic Air Command, once arguably the dominant organization within the Department of Defense, struggled to maintain that status within the intellectual

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[43] Hughes, 4; Townsend, “Small Task Force,” 2, 55-57.
[44] Paul V. Greenwade, Jr., “Is There a Need for an Air Refueling Command?” 1966, TAWC, MSFRIC, 25-28, 30-31, 37.

sphere of AWC students. Whereas many of its own members sought an expanded role in Vietnam and future conventional wars, there was a growing pushback on some of the core beliefs that made SAC the dominant force of the past two decades. The concept that highly centralized organization was the best formula for success on the battlefield had been contested both by arguments against the model's implementation in TAC and against the assertion that it should retain refueling aircraft that were proving valuable beyond its own mission. The bomber's role in limited warfare also suggested that the strategic and tactical nomenclature itself was in error, as revealed by Marr's confusing terminology where tactical bomber wings could be carved out of a strategic command.

Aircraft Debates

The second debate that revealed intellectual turmoil within the intellectual community in 1965 and 1966 was over wide disagreements about what type of aircraft would best equip the future Air Force. There were several avenues espoused depending on which mission or technology an officer deemed most important. At the highest level of Air Force leadership, there were concerns that the future of all manned aircraft was under threat by budget cuts and advancing technology. In April 1965, McConnell countered anyone arguing against manned aircraft by listing the many technical achievements from the titanium skin that helped the YF-12 interceptor (early version of the SR-71) reach Mach 3 to defend wide swaths of US territory against Soviet bombers to the initial designs of the OV-10 to control air strikes in Vietnam.[45] Aside from revealing a concern about

[45] John P. McConnell, "The Continuing Need for a Flying Air Force," *AF&SD* 48, no. 4 (April 1965): 52-61.

attacks against the future of manned aircraft altogether, McConnell also demonstrated that there were a wide range of avenues for the future of aircraft development. It was between these high versus low technology solutions that officers disagreed about the proper direction of the force.

One direction that many officers believed to be in the best interest of the force was to press for the most advanced technological options available, regardless of where on the spectrum of war the aircraft would be used. In a 2013 article, historian Steven Fino termed this pursuit of new technology "technological exuberance" and charged that the Air Force entering Vietnam was in a "trance" pursuing "sweet technologies" over existing, proven technology.[46] This high technology sentiment was evident in arguments advocating for future requirements spanning the entire spectrum of war.

Ignoring the Vietnam War altogether, several officers supported the need for a next generation bomber to fight and win in a prolonged general war between the superpowers. The Air Force's drawing board concept for this requirement was the Advanced Manned Strategic Aircraft (AMSA—later to become the B-1) intended to replace the aging fleet of B-52s and B-47s. McNamara disagreed with the need to develop a new aircraft and preferred a bomber version of the F-111, a project McNamara had already forced on the Navy and the Air Force, since it would be more cost-effective. What both the AMSA concept and the F-111 had in common, however, was that they no longer purely sought to go higher and faster to penetrate enemy defenses. Instead, both designs called for variable-

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[46] Steven A. Fino, "Breaking the Trance: The Perils of Technological Exuberance in the U.S. Air Force Entering Vietnam," *The Journal of Military History* 77, no. 3 (April 2013): 625-55.

geometry wings to make the aircraft's operating performance more flexible. With wings positioned forward, aircraft have more lift so that they can take off with more payload and operate on shorter runways. With the wings swept back, the aircraft was capable of quicker speeds in order to 'sprint' to its target at low altitudes to penetrate enemy territory underneath an enemy's radar detection and missile defenses. This new vision of a bomber able to fly below defenses marked a departure from the XB-70 that was envisioned to fly higher and faster to go over them.

In a 1965 thesis, Lieutenant Colonel Harold Christian declared that the higher/faster mentality, epitomized by the B-70 and SR-71, represented an era that had passed now that the Soviets defended themselves with SAMs and increasingly fast interceptors. He also agreed that the FB-111 would have to serve as a stopgap capability to penetrate under modern defenses, but what was really needed was a "proper manned strategic airplane" with increased range, payload capacity, and endurance.[47] That same year five other officers, in a group thesis, agreed with "General Lemay, General Power, General McConnell and other leading experts in military aviation, that the United States has a valid requirement for a new manned bomber for the 1970's." Further, they noted that the AMSA was the most appropriate aircraft and that this system must contribute to a mixed force of manned and unmanned systems because relying on a single delivery system

[47] Harold W. Christian, Jr., "The Manned Bomber in the 1970's," 1965, TAWC, MSFRIC, 27, 32, 60-61.

was dangerous as any one system could fall victim to a technological breakthrough and leave America vulnerable to a nuclear attack.[48]

Realizing the vulnerability of fixed cites to the ICBM threat and the need to defend allies around the world, Lieutenant Colonel Theodore Adams advocated for a new vision for Air Defense Command. His idea was for a mobile defensive team of F-111 interceptors, refuellers, and the next generation of long-range airborne warning and control system (AWACS) aircraft.[49] The new AWACS radar in development could now 'see' overland; the EC-121, its predecessor, could not filter radar returns from the ground. With this capability Adams proposed that the Air Force cease building "soft radar monuments" to enhance the aging and expansive Semi-autonomous Ground Environment command and control infrastructure. Instead, his mobile defensive team could quickly disperse to survive a nuclear attack and since each component was an airborne platform, it could quickly deploy wherever it was needed. Adams proposed the AWACS be fit with the same fire control system and missiles as the interceptor to attack its own targets, revealing his faith in early missile technology. The KC-135 refuellers would double as cargo aircraft to provide the package with an organic deployment capability. To Adams, the proposed system would be able to range thousands of miles, kill anything flying high or low from "Mach .5 to Mach 3" and "dictate the battle zone" because of its inherent flexibility.[50] It

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[48] James M. Campbell et al.,"Is There a Requirement for a Manned Bomber in the 70s?" 1965, TAWC, MSFRIC, 77, 82-83.
[49] Adams used the term Airborne Warning and Control System, or AWAC, which I have corrected to the later acronym AWACS; Theodore R. Adams, "Role of Zone of Interior Air Defense Units in World-Wide Contingency Operations," 1965, TAWC, MSFRIC.
[50] Adams, 19-20, 28-35, 53-54.

would also depend heavily on advanced technology working exquisitely, such as the first generation air-to-air missiles and an interceptor able to fight within such wide flight parameters.

Speed did remain an important variable for some in the design of future aircraft. In July 1965, Edward Ulsamer described future technological changes in an article entitled, "The Coming Revolution in Aeronautics." Among the various exciting areas for R&D, he was enthusiastic about the future of the federally funded Supersonic Transport (SST) that would revolutionize aviation by allowing sustained supersonic travel. However, he agreed with congressional opposition to McNamara's decision not to pursue a supersonic bomber calling it "potentially dangerous" and "ridiculous" that the United States would build a fleet of SSTs while allowing the bomber fleet to remain subsonic and, therefore, technologically obsolescent.[51] Adams had compared the immediately available fighters for the interceptor role, the F-111 and the YF-12. Before selecting the F-111 due to its ease of operations, Adams had favored the YF-12 as the "answer to the interceptor pilot's dream" due to its speed and thus its ability to defend a larger swath of airspace.[52]

Another high technology solution, this time for limited war, was to build vertical takeoff and landing (VTOL) aircraft to better support ground forces.[53] In the fall of 1965, Major Phillip Neale surveyed the current slate of V/STOL programs underway including the X-19 light utility, the XC-142 transport, the VJ-101C fighter, and the P-1127 (future

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[51] Edward E. Ulsamer, "The Coming Revolution in Aeronautics," *AF&SD* 48, no. 7 (July 1965): 79.
[52] Adams, "Air Defense Units," 34-35.
[53] McConnell, "Continuing Need," 52-61; Ulsamer, "Coming Revolution," 72-79.

AV-8 Harrier) fighter. He noted the broad support for this technology to perform multiple roles in the future that had received both civilian and military funding and interest from several foreign militaries as well. Neale likened any opposition against VTOL technology to Orville Wright's castigation of helicopter designs at beginning of the aviation age. He proclaimed that "despite a rather hesitant start, the VTOL era has begun." Although criticism of this technology would continue, he predicted it would dissipate with "decreasing frequency and authority" as the technology proved itself.[54] Ten officers, including several soldiers and marines, wrote a group thesis in 1966 that proposed the Air Force continue research towards VTOL aircraft designed for airlift and fighter bombers that would allow tactical airmen to land near the battle and better integrate with the ground forces they supported. At the same time, they proposed lesser technological solutions, such as the OV-10, should be developed and operated by all the services.[55]

For limited war, one trend was to support the services' affinity for high-end multi-purpose jet fighters, epitomized by the F-105, that in theory could effectively fight in all levels of war with a single aircraft. In 1965, Lieutenant Colonel Harry Drake agreed with Townsend and Hughes' belief in the superiority of jets and urged the continued production of aircraft that could perform in a variety of roles across the spectrum of war. He reasoned the military needed to recognize escalation as a new principle of war because modern wars would be limited and political restrictions necessary. Warfare was now about managing

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[54] Philip E. Neale, "The VTOL Flight-Test Challenge," *AUR* 16, no. 6 (September-October 1965): 22.
[55] R. D. Bianchi et al., "A Study of Army and Air Force Roles and Missions in Protracted, Limited, Non-Nuclear War," 1966, TAWC, MSFRIC, 21-24.

the risk of nuclear war while simultaneously achieving objectives in limited wars. To be prepared, Drake argued the USAF must be equipped with a multipurpose jet fighter to automatically respond if a war spiraled up from a low-level insurgency to a conventional or even nuclear conflict. He made his point clear by writing: "better we bomb a foot bridge with an F-105 than be found wanting when the 'foot bridge' war escalates and we find ourselves ready to meet it with a 1941 vintage piston engine aircraft."[56]

Early experience from the Vietnam War began to cast doubt on the "technological exuberance" of the day. Lieutenant Colonel Richard Ransbottom, who completed his February 1965 thesis before US fighters had tangled with North Vietnamese MiGs, passionately argued the Air Force needed guns on its fighters, specifically the F-102, the F-106, and the F-4. The gun was the only weapon that could be employed across the entire maneuvering envelope as it had no minimum range, nor did it have G-load limits, which were a major hindrance of first-generation air-to-air missiles. Perhaps the most egregious violation was to deploy F-102 interceptors to maintain air superiority over South Vietnam against MiGs. These aircraft were built for the high speed, high altitude targeting of Soviet bombers with 0.3 kiloton nuclear warhead rockets. They lacked the maneuverability required to dog fight with a MiG. Due to the rules of engagement, F-102s were unlikely to use its air-to-air armament before getting close enough to visually identify it first. Ransbottom indicted the United States Air Force for its choice of an interceptor in South Vietnam to defend against fighters that indicated "the lack of understanding of, or a failure

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[56] Harry Drake, "Strategic Employment of Air Power in a Limited War," 1965, TAWC, MSFRIC, 49.

to recognize, the close air-to-air maneuvering combat" that would be necessary and showed how much the United States Air Force had "forgotten the lessons learned in World War II and Korea."[57]

Contrary to the technologists' hopes for quickly altering technology, Lieutenant Colonel D. M. Sharp believed that technological obsolescence was a misnomer. His argument was best summarized with the statement: "to be unmodern does not necessarily render a weapon obsolescent."[58] This tactical warrior realized that the wide spectrum of war also called for a wide spectrum of aircraft. He did not negate the fact that technology was progressing, but those castigating the use of "WWII era" propeller based fighters essentially ignored the usefulness of a platform that could fly slow enough to better visually acquire ground targets and the benefits of endurance to remain overhead for prolonged periods. Sharp believed that "tactical deterrence was possible," but that in addition to technological and economic superiority, it required the ability to fight effectively in limited wars which would better "demonstrate national determination and military strength without waving nuclear weapons in the face of the world."[59]

In the 1966 class, at least two others agreed with Sharp by calling for a simpler aircraft designed specifically to fight against guerrillas. Lieutenant Colonel Foster Warren framed the problem of choosing how to prepare for the future as noting that the "foot soldier is almost inevitable," that "he will need to be supported both logistically and tactically," and flatly stating that "the Air Force wants this responsibility," as opposed to

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[57] Richard O. Ransbottom, "Guns for Fighters," 1965, TAWC, MSFRIC, 32-34.
[58] D. M. Sharp, "Weapons System Obsolescence," 1965, TAWC, MSFRIC, 2, 66.
[59] Sharp, 70-72.

abandoning the task to the Army. Warren also noted the "present cycle of events" clearly forecasted decreasing numbers of manned bombers and interceptors since threatening "mass destruction was no longer a suitable way of imposing one's will." He advocated "immediate development" of aircraft designed for the role of "non-nuclear" ground support.[60]

Lieutenant Colonel Joseph Price called it "patently ridiculous" that the policy of the USAF was to chase down insurgents across the world and provide assistance to ground units by using multi-million dollar fighter jets. To Price, the use of F-105s, F-4s, and B-52s in South Vietnam was wasteful and showed just how much the USAF was "behind the power curve" on fighting guerrillas. Instead, the service should pursue a "family" of rugged and flexible aircraft based on the OV-10A. This light aircraft could better aid troops in Southeast Asia. It was also simple to fly and maintain. This simplicity would make it easier to proliferate amongst American allies in need. Because of these reasons, it was far preferable to fielding advanced jets, some future V/STOL aircraft, or the future F-X fighter. Finally, Price agreed with Warren that if the USAF did not get serious about pursing this technology, it would "abdicate its responsibility to the Army" and eventually lose the mission altogether.[61]

The multiple positions over various aircraft and performance parameters expose two separate categories of disagreement among Air Force officers. The first was whether

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[60] Foster G. Warren, "Are Present Day Sophisticated Aircraft Ideally Suited for Small Wars?" 1966, TAWC, MSFRIC, 29-32.
[61] Joseph L. Price, "Requirement for a Counterinsurgency Aircraft," 1966, TAWC, MSFRIC, 22, 53, 59-60.

advanced technology could provide an answer for future wars. Whether AMSA bombers for continued deterrence or V/STOL aircraft to better support ground forces, the dominant belief was that technology promised to enhance existing Air Force capabilities and meet political objectives. On the other side, some officers called for low technology solutions to optimize the fight against guerrillas. The second category of disagreement was over what type of war the Air Force should think about in the first place. Some officers ignored the Vietnam War altogether and clung to theorizing about an abstract general war. The current war attracted much attention, but most of the officers arguing in the aircraft debate couched their recommendations by pointing for the need to prepare for future limited wars after Vietnam was stable. The wide variance of opinion on what aircraft to prioritize suggests that the intellectual community was at a crossroads and demonstrated a lack of unity among these officers about the best aircraft for the future Air Force.

Continued Support for Nuclear Weapons

The third topic of discussion was a reactionary call to return the Air Force to a reliance on nuclear weapons. Most theses and articles dealing both with the Vietnam War and limited warfare focused on the use of conventional ordnance. This suggests that intellectually, officers had begun to de-emphasize the use of tactical nuclear weapons within a limited war. This third group emphasized that this move towards conventional operations was logically flawed and the nation should return to its reliance on nuclear weapons, both tactical and strategic.

One faculty member at the Air University, Colonel Albert Sights, revisited the 1958 CASF deployment to Lebanon in a summer 1965 article for the *AUR.* In it, he re-

emphasized earlier assessments of the failed interservice coordination as well as the piecemeal deployments in forces. Unlike the earlier assessments, he added the lack of training with conventional weapons as an additional "major handicap." Had combat occurred, it was most likely that these were the only kind of weapons that would have been authorized instead of the low-yield nuclear bombs that had supposedly deterred the conflict from escalating further. He still rated the deployment a success, but since political leadership would not countenance using the weapons the airmen had trained with, the action called into question the original conception of the CASF. With reliance on conventional ordnance, the tactical fighter force construct would have to grow in size to meet its mission.[62] Sights' addition of this "major handicap" to the "lessons of Lebanon" combined with the bulk of intellectual thought contending with the conventional weaponry in Vietnam suggests the recognition that limited wars would increasingly be defined by the types of weaponry used.

There were a small number of theses that directly countered the dominance of conventional weapons over the conversation and examined the need for and use of tactical nuclear weapons. Lieutenant Colonel Kenneth Green was the sole AWC student in the class of 1965 to write about the use of tactical nuclear weapons in limited wars. Expressing his frustration, Green emphasized, "<u>The basic strategy of war is, and always will be, to win</u>." He charged the Air Force had "failed to explore" all the options provided by nuclear weapons of various sizes; nor had the service effectively "enunciated a

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[62] Albert P. Sights, "Lessons of Lebanon," *AUR* 16, no. 5 (July-August 1965): 40-43.

doctrine" for their use in limited war.[63] Seeing a zero-sum conflict between communism and freedom, Green believed the use of tactical nuclear weapons would compel the nation's enemies to submit. To attain support for these weapons' use, the public needed education to understand the nuance between high-yield and low-yield nuclear warheads. With this information, the public would realize that low yield detonations, contained on the battlefield, would not escalate into the type of scenario depicted in the press and popular fiction. Then, the military could use these weapons to make short order of any war. Revealing a parochial side, Green proclaimed, "the tactical application of nuclear weapons in limited war . . . rightfully belongs to the Strategic Air Command."[64] In this view, SAC's massive airpower capabilities would both meet the nation's sole political objective to win and produce cost savings by avoiding a buildup of tactical fighters, deployments to crises around the world, and the need to expend vast amounts of general purpose bombs.

Tactical nuclear weapons were seldom confronted directed and was generally a secondary topic addressed in the context of other arguments. During the 1966 AWC class, however, Lieutenant Colonel Robert Wright and eight other officers responded to a suggested area of study from the USAF Plans and Operations office about whether tactical nuclear weapons should be used in light of the administration's policy of graduated escalation.[65] Each thesis argued that tactical nuclear weapons should be used to some extent in a limited war. These authors echoed Green's 1965 thesis in one respect; they all

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[63] Kenneth J. Green, "The Utilization of Nuclear Weapons and Strategic Air Power in Limited War," 1965, TAWC, MSFRIC, 83.
[64] Green, 81.
[65] Robert K. Wright, "The Employment of Tactical Nuclear Weapons in Limited War," 1966, TAWC, MSFRIC, 1.

believed that the restrictions on using tactical nuclear weapons stemmed from an "unwritten law" of a rising nuclear taboo that they blamed on misinformation from the press, academia, and popular culture. The public simply did not understand that using small yield weapons would not trigger a wider "nuclear holocaust."[66] One of the nine officers, Lieutenant Colonel Dewey Weiford, understood the "high emotionalism" of the subject and found the fear of escalation unreasonable concluding: "Unquestionably, after two decades of propaganda, the world is indeed jumpy at the thought of using nuclear weapons under any circumstances, but there is no basis in fact to presuppose that the employment of tactical nuclear weapons on military targets will lead to all-out war."[67]

The differences between the authors stemmed from how confident they were predicting the effectiveness of tactical nuclear weapons and when they should be used. Colonel Garland Ashley and five other officers co-authored "The Case for Nuclear Weapons in Limited War." This paper began with a list of commonly shared beliefs among the authors. They claimed the most important shared assumption was that substituting "manpower for firepower" was "militarily incorrect and morally wrong."[68] From a strategic and political view, they reasoned that ceding the nation's technological advantage in firepower to fight the enemy's preferred guerrilla methods degraded

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[66] Garland O. Ashley et al., "The Case for Nuclear Weapons in Limited War," 1966, TAWC, MSFRIC, 33-34; Weiford, "Employment of Nuclear," 85; Green, "Utilization of Nuclear," 81; Wright, "Employment," 40; Robert C. Tomlinson, "Political Restraints on the Use of Tactical Nuclear Weapons," 1966, TAWC, MSFRIC, 59-61.
[67] Dewey N. Weiford, Jr., "Employment of Nuclear Weapons in Limited Wars," 1966, TAWC, MSFRIC, 12, 85. One author defined a tactical nuclear warhead as having an upper yield of two kilotons. As a point of comparison, the bombs that destroyed Hiroshima and Nagasaki were fifteen and twenty kilotons, respectively.
[68] Ashley et al., "Case for Nuclear," 2.

American sovereignty by bending to foreign influence. At the operational and tactical level, they charged that the United States government had failed to protect its citizenry, which included those in uniform. Also, the government had a "duty to authorize the use of its most efficient and effective weapons to achieve its political objectives where such use would conserve the expenditure of its military forces."[69]

"The Case for Nuclear Weapons in Limited War" addressed two common arguments against the use of nuclear weapons in the Vietnam War: fears of escalation and charges of immorality. First, they held that escalation would be driven not by the technology employed but based on political objectives sought by the superpowers involved. To them, no nation would rationally "risk devastation of its homeland" over a war that was, by definition, fought for a "limited political objective."[70] Chaplain William Boardmen most likely wrote the chapter countering the immorality of using these weapons based on its religious emphasis and its theological overtones. He charged that including "religious-moral" argumentation to inhibit the use of nuclear firepower was a "non-sequitur" that did not follow religious teachings or the "general understanding of the Judeo-Christian tradition." Instead, the real immorality lay in limiting the amount of force applied and fighting on the enemy's terms which would do nothing but prolong the war.[71]

The remaining three 1966 theses on tactical nuclear weapons did not contain the same level of zeal and moral certainty, but they all advocated the use of low-yield bombs at some level. For Lieutenant Colonel Robert Wright, their use should remain national

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[69] Ashley, 32.
[70] Ashley, 3, 53-60.
[71] Ashley, 52.

policy in the defense of Europe, but their utility would be more limited in a guerrilla war such as Vietnam. Only massed enemy troops, insurgent base areas, supplies depots, or key terrain choke points along the Ho Chi Minh trail would make worthwhile targets. If this were to be the case, either missile or artillery delivery would be preferred over B-52s because of the bombers' time delay required to launch and transit to the scene, potentially missing the target. According to Wright, the real disadvantage of using tactical nuclear weapons was the expected "automatic castigation" of the United States by the international community.[72] Weiford admitted that the "gravity" of an escalation to a general war almost caused him to denounce their use altogether. However, his final conclusion was, "the United States cannot afford to deprive itself of weapons systems so clearly superior and so uniquely suited to imaginative employment in limited wars."[73]

Lieutenant Colonel Robert Tomlinson, a fighter turned tactical reconnaissance pilot, recommended that "our nation's leaders maintain the conventional warfare 'graduated response' option" as long as possible and should only use nuclear weapons against Chinese ground forces should they intervene.[74] This was the policy that so far had proven effective in deterring a Russian invasion of Western Europe and thus should be extended to Southeast Asia. Agreeing with Wright and Weiford, Tomlinson ceded to the reality of public opinion that, "the smallest nuclear weapon packs an enormous political charge out of all proportion to its destructive" ability to explain why some limitations on

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[72] Wright, "Employment," 34-40.
[73] Weiford, "Employment of Nuclear," 83.
[74] Tomlinson, "Political Restraints," 59-61.

their use were necessary in contrast to the Garland thesis that stressed the need to reduce inhibitions on the use of nuclear firepower.[75]

There was a divergence between the majority of students who chose not to write about tactical nuclear weapons and a minority who enthusiastically supported their use. This divergence may indicate that intellectually, the support for low-yield nuclear bombs still had its adherents but this support was no longer dominant, especially among tactical warriors. As the nation contended with a second limited war in Asia, there were increasing numbers of officers that followed national policy and strayed further away from faith in a strategy based on massive retaliation.

As many officers focused on the needs of the war and projected that most future wars be limited, other officers continued the repetitive refrain that strategic deterrence was more important and could not be taken for granted. They were adamant that accepting the notion of a limited war was inherently a flawed strategic decision. In February 1965, retired Major General Dale Smith opined that the term massive retaliation was a term "discredited, butchered, and buried by its detractors." To avoid eliciting an emotional response he opted for the term "determined retaliation," which was the same concept. To demonstrate his supposedly superior logic, he told a parable of two ranchers vying over pastureland. One ranch had enjoyed security by threatening to reply with overwhelming force against any trespass. After deciding to rely on "persuasion," however, the neighboring rancher had begun encroaching on the other leading to increased violence. The lesson to be learned was, "flexible response tactics could give us victory, but in the

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[75] Tomlinson, 36.

meantime, there will have been a long-drawn-out small war with a rising tide of hate on each side." This could be avoided, Dale argued, by realizing that flexible response was not driven by logic but by fear of nuclear weapons, communist plots to limit American "superior nuclear strength," and a "desire to perpetuate traditional surface strategies."[76] That spring, John Loonsbrock of the *AF&SD* agreed with Smith that pursuing limited war capability was an unsound strategy, but discarded any pretense of avoiding emotion. He projected that tactical forces then under development, the F-111, V/STOL aircraft, and the C-5 to transport them would eventually prove technically feasible, but that they were all products of a poor strategic vision that turned the nuclear threshold into a "nuclear stumbling block." Incredulously, Loonsbrock informed his readers that many people "honestly" believe that nuclear weapons, even tactical, should only be used under the most dire of circumstances.[77] These two authors described a "national dilemma" between two choices: prolonged attrition or avoiding war altogether. The limited route, chosen by political leaders and a growing number of Air Force officers, was both wrong and dangerous.[78]

Smith and Loonsbrock were hardly alone in these beliefs. Lieutenant Colonel Richard Heller, a future bomb wing commander and SAC's chief target planner, maintained that US nuclear policy was akin to a "Maginot Line" of missiles. "We seem, with almost a Holy Grail fervor, to be seeking a 'stability' by getting a neat balance of

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[76] Dale O. Smith, "In My Opinion: Flexible Response vs. Determined Retaliation," *AUR* 15, no. 2 (January-February 1965): 69-71.
[77] John F. Loonsbrock, "The Margin of Deterrence," *AF&SD* 48, no. 4 (April 1965): 42-43.
[78] Loonsbrock, 44.

forces," Heller contended.[79] The fear was that the quest for stability and a balanced budget would continue to reduce investment in future offensive and defensive strategic weaponry as well as the centralized command and control systems required to wield them.[80] Herman Wolk, a historian employed at SAC, explained in *AF&SD* that deterrence had to be "maintained" and it must remain "dynamic—based on technological advance, not technological stalemate."[81] Also writing for *AF&SD,* James Straubel further argued the future of technology would result in spacecraft that could takeoff, reach orbit, operate in space, and then return and land.[82] These aircraft could be used to extend the threat of manned nuclear delivery platforms into space where they would be as difficult to intercept as ICBMs. In 1966, Lieutenant Colonel John Campbell warned: "if strategic decisions are based too heavily on economic constraints . . . then we will lapse into a 'Maginot Line' strategy and suffer at the hands of the communists."[83] Lieutenant Colonel John Mock warned that high altitude nuclear detonation effects, or electrical-magnetic pulses, had not been "weighed appropriately" in offensive and defensive plans and this "neglect . . . could

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[79] Richard F. Heller, Jr., "Nuclear Deterrence Yesterday, Today, and Tomorrow," 1965, TAWC, MSFRIC, 58-59.
[80] Heller, 60; Douglas C. Frederickson, "Is the USAF Command and Control System Completely Responsive to the Requirements of the National Military Command System?" 1965, TAWC, MSFRIC; Elwyn G. McKinney, "Strategic Forces: A Unified Command?" 1965, TAWC, MSFRIC.
[81] Herman S. Wolk, "The Myth of Détente: We Can Win Without Trying," *AF&SD* 48, no. 6 (June 1965): 56.
[82] James H. Straubel, "Airpower's Past is Prologue," *AF&SD* 48, no. 9 (September 1965): 10.
[83] John R. Campbell, "An Analysis of U.S. Military Strategy under Mutual Deterrence," 1966, TAWC, MSFRIC, 51.

lead to serious consequences."[84] For these technologists, the future of deterrence was linked to the future of high technology and the focus on relatively minor, unimportant limited wars came at the expense of preparedness for needed nuclear warfare technology.

In contrast to the escalating conventional war in Vietnam, some officers had urged that nuclear weapons return to center stage. In one stream of thought, tactical nuclear weapons could end the war in short order along with any future communist-inspired conflicts. For the larger Cold War, the belief was that Vietnam was a distraction and that America was ceding its position of nuclear and technological superiority.

The Strained Relationship Between Strategy and Technology

The most ardent claims of the technologists had begun to decline in popularity and credibility. It was not that the technological change was a fluke or that American spaceflight would not become routine in the future, but engineering and economic hurdles combined to make their dreams of manned space operations or dramatic technological breakthroughs less promising. Even seemingly simple goals proved difficult. The officer charged with developing charts for future manned lunar landings began an *AUR* article exclaiming, "mapping the moon is not the easiest thing on earth!"[85] The final topic of debate was between ardent technologists and a group that began to challenge their assertions.

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[84] John E. Mock, "High-Altitude Nuclear Effects," *AUR* 17, no. 2 (January-February 1966): 31.
[85] John G. Eriksen, "Lunar Charting," *AUR* 16, no. 4 (May-June 1965): 77-90.

The faith in the need for technological superiority was still clearly evident in two technologists' search for the next "ultimate weapon." Both 1965 theses expressed the penultimate goal was to remove the threat of nuclear holocaust altogether. Lieutenant Colonel William Miller argued for the promise of a laser-armed space vehicle that had a "graduated capability for stunning, burning, killing, or disintegrating" that would replace the ICBM paired with a thermonuclear warhead as the most capable weapon in history. Miller postulated that an additional "beauty" of the laser was the lack of worldwide and American "preconceived notions" that would restrict military options.[86] This type of weapon could defend against missiles, bombers, and other military forces while simultaneously attacking the surface at whatever intensity required by combat across the spectrum of war. Lieutenant Colonel Benjamin Neff's criteria for an ultimate weapon included the ability to change an adversary's behavior, to be developed with existing technology, be acceptable to world opinion, and most importantly would avoid a nuclear war. He believed these criteria meant the next weapons should avoid military force and assist economic or psychosocial warfare. The most lucrative options, according to Neff, were weather control or some version of a biological, chemical, or radiological weapon. It seems dubious that this would meet his own criteria of being acceptable to world opinion, but his hope was to avoid direct violence and instead "adversely affect the enemy's environment, food source, or actual population inducing them to change their values and

[86] William S. Miller, "Ultimate Weapons: An Historical Analysis," 1965, TAWC, MSFRIC, 112-14.

stop seeking to spread their ideology and focus on problems at home."[87] Lieutenant Colonel Anthony Merlo tangentially joined Neff by warning that the Soviets were improving weather control techniques and, if successful, would instigate droughts to kill American crops.[88]

Lieutenant Colonel William Wood expressed more explicitly that pursuing the technological war could spare humanity from nuclear holocaust. His "revolutionary thought" was that "the progression of weapons to space may put armed conflict so far from the earth's population that differences between nations could be resolved completely in that medium." Warfare could revert to an earlier era "thousands of years" ago when small armies "engaged in battle which physically affected no one but the immediate participants."[89] Wood hoped that futuristic technology would allow for a decisive war while sparing Earth from wanton nuclear destruction. The ultimate point of these visions was that technologists were themselves searching for a technological solution and went to logical (arguably illogical) extremes to find a way to avoid a nuclear catastrophe while still securing their democratic ideals.

In spite of the mounting difficulty for putting a military man in space, at least one officer still possessed the passion and determination to advocate for it. Acknowledging the tremendous costs and difficulties of developing materials for a lunar base, Lieutenant

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[87] Benjamin G. Neff, "The 'Ultimate' Weapon in the Cold War: A Philosophical Inquiry," 1965, TAWC, MSFRIC, 41-42, 49-60.
[88] Anthony L. Merlo, "Is Weather Modification Defense Possible?" 1966, TAWC, MSFRIC.
[89] William S. Wood, "Science and Technology: Tools of the Strategist," 1966, TAWC, MSFRIC, 57.

Colonel Richard Perez still "strongly recommended as a matter of urgent national priority that the United States take firm and immediate action to program for the development of a capability to establish bases on the moon." Perez suggested the fastest method to solve this dire need was for Congress to allow the Air Force to convert the Manned Orbital Laboratory (MOL) platform to a lunar base capsule and send it to the moon to establish an outpost.[90]

Lieutenant Colonel Daniel Zoerb, a World War II ace credited with seven kills, identified a need for more realistic appraisals for space. He charged that there was a "grievous tendency" towards utopian technological forecasts without considering military necessity, fiscal reality, or damage to Air Force credibility from sounding "uncertain trumpets."[91] Zoerb proposed a method to tie forecasts to requirements by analyzing scientifically feasible technologies with established principles of war. He limited himself to two in-depth technologies for analysis. The first, orbital nuclear weapons, was dismissed for violating several principles of war such as mass, economy of force, and simplicity. Zoerb's second proposal explored manned satellite "fire direction centers" that would monitor a nuclear war and coordinate the actions of "maneuverable reentry vehicles." The fire direction center would be maneuverable to avoid destruction from anti-satellite weapons. Zoerb assessed that this system satisfied all the principles of war minus simplicity, which he graded with a "resounding no." To his credit, the thesis did not

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[90] Richard A. Perez, "Construction Materials for a Lunar Base," 1966, TAWC, MSFRIC, 56.
[91] Daniel J. Zoerb, "Unique Military Effects from Space: An Evaluation," 1966, TAWC, MSFRIC, 79.

actually advocate for a manned space fleet, but for a framework to assess technological possibilities. Still, his fascination with technological possibilities was strongly evidenced by this battle scenario as well as his shorter musings on pulse lasers to "de-skin" vehicles leaving the atmosphere, showering Soviet May Day parades with a spectrum of ruby red lasers as a show of force, or temporarily stripping the ozone layer to cause sunburns on unsuspecting communists.[92]

As it became clear that technological war would not produce immediate results to dramatically alter a future general war, doubts arose about claims that rapidly changing technology now led national military strategy. One officer likened questioning the relationship between strategy and technology to the proverbial "chicken or the egg" argument.[93] The technologists' argument was that scientific advancements in aerospace technology would continue at the pace that had produced technological breakthroughs such as atomic bombs, thermonuclear explosions, jet engines, and ICBMs that placed the whole world at risk. However, the Vietnam War demonstrated that technology for limited warfare had lagged behind and this raised questions as to whether a faulty strategy had driven military R&D in a direction that had not prepared the service for the fight it faced.

This paradox was evident at both the highest levels of the service as reflected by subsequent 1965 *AUR* articles by General Schriever. In the first article, he summarized the results of Project FORECAST; directed by LeMay to meet the "urgent need for a

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[92] Zoerb, 60-75.
[93] Joseph T. McKinney, "What is the Optimum Relationship between Strategy and Technology," 1966, TAWC, MSFRIC, 1.

comprehensive study and analysis of the Air Force structure" for the future.[94] The project had included twenty-seven USAF organizations, the other three military branches, ten federal agencies, twenty-six universities, and ten non-profit organizations. The goal was to link political directives to future technological advances and how they could affect different levels of war, thus prioritizing strategy before technology. The committee assumed a limited war between the Soviet Union and the United States that would escalate no further than the use of tactical nuclear weapons in battles. The primary recommendations included more accurate tactical nuclear weapons, V/STOL aircraft to enhance force dispersal, and global reach supersonic transports. Space was added as a "force requirement" only to counter any potential enemy armed satellites.[95]

Despite FORECAST's emphasis on a more conventional warfare on Earth, Schriever penned an article introducing the following *AUR* issue that instead emphasized the importance of space warfare. He wrote, "In the years ahead, space shows every sign of becoming even more important to our national security" both in terms of national prestige and maintaining technological superiority.[96] The rest of the issue covered a wide range of space topics including NASA's manned space programs, the medical effects of long-term space travel, and highly technical, equation riddled, articles to describe various spaceflight problems. The collective point of the contributory authors, primarily from Air Force Systems Command, was that the officer corps should remain educated on progress and

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[94] Bernard Schriever, "Forecast," *AUR* 16, no. 3 (March-April 1965): 2.
[95] Michael H. Gorn, *Harnessing the Genie: Science and Technology Forecasting for the Air Force, 1944-1986* (Washington DC: Office of Air Force History, 1988), 6; Schriever, "Forecast," 7, 12.
[96] Bernard Schriever, "The Space Challenge," *AUR* 16, no. 4 (May-June 1965): 3-4.

specifics of space technology that they believed was the future of warfare. The different emphases between the fully articulated, multi-agency research report that intentionally linked technology to a national strategy and the technologists' desire to push advanced technology needed in space illustrates the contrast between the two perspectives of whether strategy or technology should lead.

The most ardent technologists obviously argued that the very nature of modern war was to pursue and produce weaponry at a faster pace. Therefore, strategic military thought should merely follow whatever possibilities scientists uncovered. "Technology was the key to national power," as bomber pilot Lieutenant Colonel Theodore Severn put it in his 1965 thesis. Severn rhetorically asked, "Who is to say that the last great war is not now underway?" His view was that the technological war was also a limited war, "limited to scientific studies, laboratories, test beds and ideas for the future."[97] Thus, to a purist technological warrior, national strategy should exclusively follow the exploits that science and technology produced.

Several authors disagreed with the claim that technology led strategy. One example was Lieutenant Colonel Joseph McKinney who believed that the proposition that technology could lead strategy sounded "reasonable." After all, every successful American strategy since 1945 had depended on nuclear technology and the threat it represented.[98] However, the voices of the scientific community via think tanks, industry, universities, and within the service had not always been prescient in determining the next

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[97] Theodore Severn, "The Effect of Advancing Technology on National Strategy," 1965, TAWC, MSFRIC, 4, 59.
[98] McKinney, "Optimum Relationship," 8-9.

breakthrough or whether a technological achievement would have the promised impact. Because of this, McKinney concluded that "there is no easy dichotomy between strategy and technology and their influence on the other." The recommendations of his paper centered on improving communication within the institution between researchers and operators so that the two perspectives could better inform one another. One example was to hold inter-command briefings so that operational commands could communicate "what do we need" while researchers could educate users on "what do we have to offer."[99]

Five officers co-authored a 1966 thesis that agreed with McKinney's nuanced interpretation of the relationship between strategy and technology. During lectures to the AWC class of 1966, the Secretary of the Air Force lectured that the service's strategy had to flow from "changes in hardware." At later briefings, several generals had opined that the opposite was true; namely that hardware must be designed to meet the requirements posed by strategic goals. This basic difference prompted their research into the relationship. They concluded the relationship between strategy and technology "has not been that of leader and follower, but rather the relationship between two partners in a three-legged race." Furthermore, "there must be close and rapid cooperation between the two if they are to win." These officers borrowed two concepts, "technological push" and "technological pull," from Dr. Thomas K. Glennan who was NASA's first director. Programs such as the Dyna-Soar or the B-70 were clear examples of technology "pushing" the state of the art and thus taking the lead by changing the strategic environment. They recommended projects like these be "reasonably funded, solidly based and far-reaching" to

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[99] McKinney, 49, 55.

the extent that scientists, who were not omnipotent, could foresee technical possibilities and help strengthen the nation's technological base. On the other hand, strategic requirements would continually "pull" the scientific community and R&D funds towards existing and immediate problems, like the ones encountered in Vietnam. Each force affected the course of technological development, but interestingly the authors noted that as the technologists' R&D programs were increasingly subjected to rigor and cuts, those driving military strategy were not being held to the same scrutiny.[100]

Comments made by Secretary Brown and General McConnell at a 1966 AFA luncheon indicated the intellectual struggle that was occurring among strategic warriors. McConnell proposed three main lessons from history since WWII. They were the importance of technological superiority, the need to maintain nuclear superiority, and now the need to gain a limited war capacity.[101] This view of history indicated that the service's top uniformed leader still held technological and nuclear *superiority* as the most important facet of maintaining the nation's security. Ignoring the lack of a nuclear exchange, McConnell argued that the past two decades proved there was "no such thing as a permanent 'nuclear stalemate.'"[102] Brown agreed with McConnell that the first priority for the service was "to continue maintaining strategic superiority over any potential enemy or combination of enemies." At the same time, the Secretary admitted past strategic mistakes

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[100] Jack N. Butts, et al., "Are Trends in Science and Technology in Effective Consonance with Trends in Military Strategic Thinking," 1966, TAWC, MSFRIC, 1, 38, 61-66.
[101] John P. McConnell, "Airpower Lessons—In Vietnam and Before," *AF&SD* 49, no. 5 (May 1966): 47-50.
[102] McConnell, 48.

within the Air Force: "During the early and mid-1950s, most of us failed to recognize the effects that would result from the replacement of our strategic monopoly by the more limited advantage of strategic superiority."[103] The irony of these remarks was that these two men, espousing technologist and strategic warrior intellectual arguments, were failing to learn the implications of moving from a period of nuclear superiority to one of parity.

To their credit, neither Brown or McConnell ignored the immediate need to enhance limited war capacity made more urgent by the Vietnam War. Brown once again noted that, so far, the lesson of SEA was that airpower could not win the conflict, but without it South Vietnam would fall. He stressed the urgent technological development the Air Force would need to pursue, if they were not already under development. The envisioned programs included V/STOL airlift, improved munitions, modernized avionics, and a "family of aircraft" built specifically to accomplish counterair, close support, interdiction, and reconnaissance missions.[104] McConnell marveled at airmen's ability to adapt and quickly develop limited war techniques. He praised B-52 crews' contributions to countering guerrilla warfare and was especially fond of the new AC-47 Spooky gunship, which had been converted from a WWII air transport into a lethal close air support platform.[105] However, both of the service's top leaders stressed the need for continued nuclear superiority and in essence were holding on to a strategic situation that for all intents and purposes had already passed.

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[103] Harold Brown, "USAF's Foreseeable Future," *AF&SD* 49, no. 5 (May 1966): 43-44.
[104] Brown, 45-46.
[105] McConnell, "Airpower Lessons," 49.

Against this continued commitment to strategic and technological superiority, there was obviously a strong intellectual interest among the officer corps from the beginning of the escalation in Vietnam concerning limited war. Going forward, some favored technological advancement via V/STOL-type aircraft or through continued pursuit of high-performance jet fighters to support ground forces. Other preferred low technology solutions that used more easily developed and proliferated aircraft. At the same time, several versions of the technologically advanced F-111 were under development while the service had begun debating the design of the forthcoming F-X air superiority fighter. In August 1966, the service decided to proceed with the A-X dedicated to close support after concluding the Navy's A-7 would not meet long term needs.[106] The air war over North Vietnam was also underway but the students mostly discussed it peripherally. Over the next several years, attention would shift and a dedicated effort would be made to learn from that experience.

Frustration within the Air Force continued to mount between the various schools of thought. Lieutenant Colonel George Robinson lambasted the officer corps with the admonition that, **"**an outright upgrading in the intellectual ability and judgement of the military leaders at all levels is required." Instead of the Air Force's preference for a technical education, Robinson insisted that the focus on the technical development was only one requirement for strategic military leadership. The other requirement was the necessity of linking military strategy with foreign and economic policy in an ever more

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[106] Kenneth P. Werrel, *Chasing the Silver Bullet: U.S. Air Force Weapons Development from Vietnam to Desert Storm* (Washington DC: Smithsonian Books, 2003), 106.

complicated world. Hardware was truly essential to win battles, but "judgement and education" from more diverse fields were required "to inform both the strategy and hardware in both peace and war." He finished by claiming with exasperation that, "I, for one, am tired of winning 'military' wars and losing 'political' wars."[107]

[107] George A. Robinson, "The Role of the Military in National Security Policy Formation," 1965, TAWC, MSFRIC, 7-8, 66.

CHAPTER IV

AN UNLIMITED WAR ON LIMITED WAR, 1967-1968

On 2 January 1967, USAF F-4 air-to-air pilots flew into North Vietnam to conduct Operation BOLO. The operation was a ruse designed to make the North Vietnamese Air Force believe they were attacking a normal F-105 strike force when in fact they flew into a trap. The result was seven of the enemy's 117 MiGs destroyed for no USAF losses and a reduced air threat for the first several months of 1967.[1] Both at the time and since, this attack has been exalted in Air Force lore. In July of that year, the famed Brigadier General Robin Olds, who led BOLO, retold the story in an article titled "How I Got My First MiG." With typical fighter pilot bravado, he recounted the difficulty of coordinating such a large strike force, the hectic radio chatter during the fight, and about the exaltation after the mission and how the "best reward of all" was the "broad smile on General [William] Momyer's face."[2] This begs the question, why did a one-time ruse, with relatively meager results, produce such a storied Air Force tale and excitement?

Perhaps the reason for the lore was the real need for Operation BOLO in the first place had far less to do with killing airborne MiGs than the fact that those aircraft were off limits to attack while parked on the ground. Colonel Jack Broughton served as an F-105 pilot from 1966 through 1967 and a quote from his memoir, *Thud Ridge*, written just after his tour exemplified pilots' frustration with leadership and how the war was fought: "I

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[1] Wayne Thompson, *To Hanoi and Back: The US Air Force and North Vietnam, 1966-1973* (Washington DC: Smithsonian Institution Press, 2000), 52-56.
[2] Robin Olds, "How I Got My First MiG," *Air Force & Space Digest* [hereafter *AF&SD*] 50, no. 7 (July 1967): 38-49.

shudder to think of the worthless loss of people and machines this ironclad party line of stupid and inflexible tactical ignorance has caused."[3] Although more acerbic than most, there have been many fighter pilots whose memoirs about this period of ROLLING THUNDER reflect a seething frustration with the methods used, or more pertinently not used, to bomb North Vietnam.[4] At the same time, Air Force Chief of Staff General John P. McConnell assessed the progress of the Vietnam War in May 1967 and stated, "I am convinced that the mounting pressure of 'strategic persuasion' will ultimately prove a major factor in making the communists amenable to negotiations."[5] By this period, it was obvious that there was a growing dissonance between how mid-level officers and leadership perceived the war.

This chapter will show that many Air Force officers actively sought to learn from the Vietnam War and to influence the service to emphasize conventional capabilities over nuclear warfare. In 1967, Air University began a major institutional program to document the war and any lessons for airpower doctrine. The program involved scores of students during the next two years. Their observations captured how mid-level officers understood various aspects of war. Some reached optimistic conclusions about specific contributions

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[3] Jack Broughton, *Thud Ridge* (New York: Bantam Books, 1985), 18.
[4] Frederick C. Blesse, *"Check Six:"A Fighter Pilot Looks Back* (New York: Ivy Books, 1987); Kenneth Bell, *100 Missions North* (Washington DC: Brassey's, 1993); Tom Clancy and Chuck Horner, *Every Man a Tiger: The Gulf War Air Campaign* (New York: Berkley Books, 1999); Ed Rasimus, *When Thunder Rolled: An F-105 Pilot over North Vietnam* (New York: Ballantine Books, 2003); Robin Olds, Christina Olds, and Ed Rasimus, *Fighter Pilot: The Memoirs of Legendary Ace Robin Olds* (New York: St. Martin's Griffin, 2010).
[5] John P. McConnell, "What the Air Force is Learning from Vietnam," *AF&SD* 50, no. 5 (May 1967): 45.

of airpower to the effort. However, many more show that the officers were already highly critical of the service's efforts on a variety of subjects. Contributing to the dialogue on both Vietnam and conventional war, Air Force Systems Command (AFSC) began a major effort to orient the Air Force's technological focus to combating limited war. Finally, when the students presented their ideas to senior leaders, the dissonance between the two groups suggested that the mid-level officer corps resembled, not in intensity but in content, the sharp disagreements between the public statements made by Broughton and McConnell.

CORONA HARVEST Initial Steps

Operation CORONA HARVEST was a service-wide program to learn from the Vietnam War. The coordinating unit for the program was the Aerospace Studies Institute (ASI) located at Air University (AU). Although ASI was the central point for collecting lessons, the program was centrally managed by high-ranking Air Force leadership through quarterly steering committee meetings.[6] It officially began on 16 October 1966 under the direction of Vice Chief of Staff of the Air Force (VCSAF) General Bruce Holloway. He hoped to establish the same evaluation function for tactical airpower in the Vietnam War as the United States Strategic Bombing Survey had for World War II. Holloway was a fighter pilot through and through and had served as one of General Claire Chennault's famed 'Flying Tigers' in the China-Burmese-India theater during the early days of WWII. During that war, he became a fighter ace and was credited with downing thirteen Japanese

[6] The program was first named LOYAL LOOK, but quickly changed to CORONA HARVEST in spring 1967.

aircraft. His selection by McConnell was part of the chief of staff's efforts to reunify the Air Force over the growing divide between bomber and fighter pilots and, in the words of one historian, "gave the fighter community intimate access to McConnell."[7] Holloway tasked Brigadier General Richard Yudkin, the Air Force Director of Doctrine Development, to find out how the assessment teams for WWII and the Korean War had been organized and what efforts the Air Force was currently taking to learn from the Vietnam War. The answers were that previous assessments had concentrated teams of experts to write summary reports and that to date, nobody had decided how the "total Air Force should be trying to learn" from the experience in Southeast Asia (SEA).[8]

The closest existing program concentrating on Air Force learning from the Vietnam War was the Contemporary Historical Evaluation of Current Operations (CHECO) program. CHECO was run by Air Force civilian historians and military officers assigned to Pacific Air Forces or in Saigon. From 1962 through 1975, these personnel coordinated the research and drafting of 254 research reports covering a wide array of topics from periodic histories of ROLLING THUNDER bombings to individual papers on weapon enhancements.[9]

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[7] Mike Worden, *Rise of the Fighter Generals: The Problem of Air Force Leadership, 1945-1982* (Maxwell AFB, AL: Air University Press, 1998), 171.
[8] Richard A. Yudkin, Memorandum, 17 October 1966, Air Force Historical Research Agency [hereafter AFHRA].
[9] For a complete listing of available reports, see Secretary of the Air Force Southeast Asia Declassification and Review Team, *Research Guide to Contemporary Historical examination of Current Operations (CHECO) Reports of Southeast Asia, 1965-1975* (Maxwell AFB, AL: AFHRA, 1992). The CHECO studies have since been declassified and are still widely cited since they were produced by officers that visited the combat theater for their research and often crafted frank conclusions for an internal military

Holloway did not believe that CHECO reports were broad enough. Whereas CHECO was decentralized with individuals documenting specific topics, CORONA HARVEST was meant to centrally control the learning efforts of the vast Air Force bureaucracy and produce overarching lessons to adjust doctrine accordingly. To provide direction for the Air Force learning process, Holloway tasked Air University on 23 November 1966 to lead the evaluation of the Air Force's conduct and airpower generally in SEA. He directed the AU Commander Lieutenant General John Carpenter, "in view of the potentially significant influence of this effort on concepts and doctrine, and therefore on our future posture, I desire that you assure that this task be recognized among your higher priority responsibilities." To further clarify the mission of the project, he also provided five objectives for the program:

> 1) Evaluate the effectiveness of airpower in SEA.
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> 2) Identify and define airpower lessons learned in SEA.
>
> 3) Assess the validity of current USAF and joint concepts and doctrine in the light of airpower operations in SEA.
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> 4) Recommend modification to existing concepts and doctrine to ensure more effective application of airpower in supporting national policy in current and future conflicts.
>
> 5) Record the accomplishments of US airpower in SEA for historical purposes.[10]

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audience; see Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1961-1984*, vol. 2 (Maxwell AFB, AL: Air University Press, 1989), 316-17; Daniel S. Hoadley, "What Just Happened? A Historical Evaluation of Project CHECO," (master's thesis, School of Advanced Air and Space Studies, 2013).

[10] Bruce W. Holloway to John W. Carpenter, III, November 23, 1966, Memorandum, AFHRA.

In response to this direction, Carpenter tasked ASI to develop a plan for implementation. Early in 1967, several features of the program were added. First, any reports produced for the program were to be classified "TOP SECRET" and "AIR FORCE EYES ONLY;" the latter now a defunct classification reflecting the tense interservice rivalry and the perceived need to safeguard any potentially negative observations or conclusions that could damage the youngest service's reputation. Another feature was to incorporate the student body as an available workforce to begin the project. However, AU officers raised the concern that it would be difficult to integrate the existing Air War College (AWC) curriculum with the intense study of current events and that there would be limited access to information. Holloway dismissed this concern and a minutes taker noted that the VCSAF "explained that he was pleased" with the concept as briefed and believed the study of current events would prove to be a "valuable input" to the officers' studies and the AWC generally.[11]

ASI finalized their initial plan of implementation in June 1967. They recognized the difficulty of the enormous task presented to them. First and foremost, there were already various studies and reports that had been completed and were "likely to have a far-reaching effect" on the Air Force. However, these documents were scattered throughout the bureaucracy of the service. The task of CORONA HARVEST, as the plan's drafters saw it, was to "review, correlate, and evaluate this mass of data, fill in any gaps that may exist, and then determine and document the lessons learned from air operations in Southeast Asia." Even if that task was completed, they warned that truly final assessments

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[11] LOYAL LOOK Steering Committee Minutes, March 28, 1967, AFHRA, 2-3.

would not be possible "until access to enemy information is obtained after the conflict is over."[12] Of course, full access to North Vietnamese documentation and interpretation of airpower's effectiveness never became available, which foreshadowed the problems that these airmen would have finalizing any conclusions.

The CORONA HARVEST plan simplified the task by approaching the project in phases that were to proceed in order from preparation, to analysis, followed by evaluation, and then final reports.[13] The preparation phase was intended to gather as much source material as possible. The ultimate goal was to gather the *entire* documentation of airpower's utilization in the Vietnam War. Attaining enough information proved difficult for those charged with conducting this VCSAF directed task. The information had to first be cataloged and then made available via a computer database so that researchers throughout the Air Force could access the planned wealth of information. At a project officers' conference in July 1968, Air Force historian Robert Futrell hoped that this database would help historians and other "data retrieval experts" as the futuristic systems on *Star Trek* allowed the fictional crew to perform instant research.[14] Even in terms of research requirements, the lure of technology loomed large. Evidence of the first phase is littered throughout the archives as technicians identified any document remotely related to SEA. From articles in bound magazines in the library to memoranda and reports stored in

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[12] Air University Aerospace Studies Institute, Project CORONA HARVEST Plan, June 1, 1967, AFHRA, I 1-2.
[13] There were initially five phases but the last two were combined in 1968; Project CORONA HARVEST Plan, I 1-35.
[14] CORONA HARVEST Project Officer's Meeting Minutes, July 22-24, 1968, AFHRA, 38.

the archives, researchers marked these documents with a CORONA HARVEST stamp and hand-written identification number so that future researchers would not create duplicate database entries. The desire to capture the war did not end at stateside libraries. For example, one action item that created “considerable discussion" at a steering committee meeting was the need to capture and preserve the logs that were currently being destroyed after a period of time from the Direct Air Support Centers in South Vietnam which reassigned aircraft to priority close air support missions in Vietnam.[15]

The first phase was highly ambitious and AWC students in 1967 contributed to this effort. The second phase was to analyze the vast amount of information collected and the class of 1968 would contribute towards this end. After 1968, the Steering Committee decided that major commands such as Strategic Air Command, Tactical Air Command, and Air Force Systems Command could better analyze topics pertinent to their mission and moved away from utilizing students attending AU schools. From these command analyses, AU teams planned to assemble draft evaluation reports that were further condensed into final reports. The student classes of 1967 and 1968 participated in the first two phases, but much of the work occurred outside of the professional military education schools after 1968, including the evaluation and final reports.

AWC Students and Vietnam, 1967

Even though the initial plan was not yet finalized, the AWC class of 1967 began assisting the first phase of CORONA HARVEST. Dozens of these papers focused on just

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[15] CORONA HARVEST Steering Committee Meeting Minutes, June 19, 1967, AFHRA, 3.

capturing the complex narrative of combat in SEA and other factors affecting the war. Topics included outlining the growth of the rules of engagement, a chronology of military operations, and the effect of various nations and institutions on American policy.[16] The papers written specifically for the program disclaimed in their abstracts that they were intended to gather information and not analyze it and thus were not true research papers given their lack of an obvious thesis. Unfortunately, the utility of these narratives is questionable since the CHECO program was already recognized by the students as the best secondary source of information. Lieutenant Colonel James French credited these in-country research papers for the bulk of his information and then observed, "as a matter of fact, many of the other documents researched used the CHECO reports as their predominant source of information."[17]

While not part of the formalized program, the interest in the ongoing war and its implications for limited war was strongly evident in the topics that many other students chose to study. Out of the 255 available theses at Air University that year, seventy-six were directly related to Southeast Asia or limited warfare. Many others dealt with supporting fields faced in theater such as weather, intelligence, civil-engineering, base

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[16] Clifford E. Garrett, "A Preliminary Study of the Politically Specified Rules of Engagement for Air Operations in Southeast Asia," 1967, Thesis, Air War College [hereafter TAWC], Muir S. Fairchild Research Information Center [hereafter MSFRIC]; Ewing J. W. McKinney, "A Study of Military Operations in the Vietnamese War: From October 1960 to 20 November 1963," 1967, TAWC, MSFRIC; Harold E. Guthrie, "Military Operations in South Vietnam 1 November 1963 - 7 February 1967," 1967, TAWC, MSFRIC; Thomas M. Daye, "The Impact of Newspapers on US Policies in Vietnam," 1967, TAWC, MSFRIC; Joseph L. Jones, "The Impact of Australia on US Policy in Vietnam," 1967, TAWC, MSFRIC.

[17] James R. French, "Military Operations in Laos and Their Effect on US Policy in South Vietnam: A Case Study," 1967, TAWC, MSFRIC, v.

security and more. At the same time, the student body mostly neglected problems of fighting a general nuclear war with a mere six theses directly dedicated to that subject. There was less written on coordinated, interagency counterinsurgency (COIN) operations than in previous years. What was available concerning COIN reflected a disagreement over whether the strategy was even viable for Vietnam. Most students' research focused on conventional airpower operations; either 'in-country' support to the ground forces in South Vietnam or 'out-country' operations over Laos or North Vietnam to interdict supplies or persuade the enemy to stop supporting the southern insurgents. Embedded in their arguments, several officers began to assess the service's preparation for limited war leading up to Vietnam. Their opinions about Air Force performance in Vietnam were mixed.

There was continued disagreement between two officers over the 'hearts and minds' approach to win the conflict in South Vietnam. Lieutenant Colonel Leroy P. Brunner decried the "fetish" among COIN enthusiasts for using British Malaysian experience as *the* example of how to fight in Vietnam. He argued that the social, historical, economic, political, and perhaps greatest of all geographic differences between the nations made the two situations incongruous. Thus, blindly following of the British template "could not have been more disastrous." Keeping his prescription for producing victory generalized, Brunner argued that the "task of the American in Vietnam is to provide an umbrella [of military force] under which the process of building a nation can take place." Brunner believed that Americans should not build up nations; that task should

be left to local government.[18] In contrast, Lieutenant Colonel Robert Hardie simplified the relationship between America and a host nation fighting insurgents with the equation "Counterinsurgency=Support." The goal was to help the nation build itself via civic action. The Air Force could contribute to this through airlift of necessary supplies and medical mercy flights. Hardie believed the additional emphasis on military force that Brunner advocated was unnecessary since WWII vintage aircraft had been sufficient in suppressing insurgencies in both Algeria and Malaysia and were already employed in Vietnam.[19]

Lieutenant Colonel Ralph Gibson suggested that the Air Force should not only focus on airpower in war to win hearts and minds but should also use it as a peacetime diplomatic tool. Gibson, a Korean War ace and demonstration pilot, examined what he alleged were unexplored benefits and possibilities of tying American technological power more directly to the diplomatic element of power. His prime example was the Berlin Airlift since that single operation combined elements from the three aspects of airpower: humanitarian, deterrent, and good-will missions. Of the three missions, good-will missions were not "being fully utilized today." To improve good-will efforts, Gibson argued that the famed US aerial demonstration teams, the Air Force Thunderbirds and the Navy's Blue Angels, should rotate performing missions overseas. The previously discontinued European demonstration team, the Skyblazers, should be reinstated and a new team could

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[18] Leroy P. Brunner, "Application of the Malayan Counter-Insurgency Model to Vietnam is not Valid," 1967, TAWC, MSFRIC, 1, 44, 56.
[19] Robert L. Hardie, "Airpower in Counterinsurgency Warfare," 1967, TAWC, MSFRIC, 64-71.

prove useful to enhance America's diplomatic reach in Asia, perhaps stationed in Okinawa. Team members should not just be chosen for flying ability, but also for "pleasantness," "public appearance skills," linguistic capability, and knowledge of world affairs. While teams should still come from qualified volunteers, "outstanding Negroes, Indians, and members of other minority groups could be encouraged to apply." This diversity and general outreach would allow the US to use airpower that Gibson claimed was, and would continue to be, "an indispensable weapon of diplomacy."[20]

Regardless of whether a hearts and minds approach was proper strategy, several AWC students in 1967 argued that the actual support of ongoing ground operations was highly effective. Lieutenant Colonel James Jarrell, recently returning from a tour in Vietnam, believed that the traditional interservice squabble over control of close air support aircraft could be alleviated since "today's air and ground commanders in most cases can quickly agree" on the most important mission to support. He contended that the armed rotary wing gunship had satisfied the ground commanders' "justifiable need" to be in control of some air support and allowed better cooperation.[21] Jarrell was not entirely sanguine, however. For one, the current cooperation between the services' command and control architecture operated well because air superiority was uncontested. He feared that ground commanders were becoming too ready to rely on air strikes that would be unavailable in a future war without air superiority. He concluded that while the air support "furnished today" in South Vietnam was the "best ever" fielded, there was a still a need to

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[20] Ralph D. Gibson, "American Airpower as a Weapon of Diplomacy," 1967, TAWC, MSFRIC, 83, 94-96, 106.
[21] James R. Jarrell, III, "Tactical Air Support," 1967, TAWC, MSFRIC, 7-8.

update its capabilities technologically in terms of munitions accuracy and avionics.[22] Lieutenant Colonel Herbert Prevost, a previous Air Liaison Officer (ALO) to an Army of the Republic of Vietnam Division, reported that the Tactical Air Control System (TACS) "certainly helped prevent defeat, and may in some instances have been the major factor." He predicted that many "valuable lessons" of tactical support would "probably be forgotten at a much slower rate" than after previous wars. Of the many lessons, he posited the most significant was that the best results stemmed from extensive coordination among the service during joint operations as opposed to individual services attempting to maintain parochial spheres of influence.[23]

Lieutenant Colonel Robert Pasqualicchio agreed with Jarrell and Prevost that tactical air support had been successful but believed that the service still needed to improve for future wars. His concern was that the Air Force's dogged pursuit of a multi-purpose fighter for all levels of war was misguided and that the technology would not exist to build such an airplane anytime soon. Further, the OV-10 was too lightly armed to be the ultimate solution for countering future "wars of national liberation." Pasqualicchio argued that since a truly capable multi-role fighter was impossible, then the USAF should move towards specialized aircraft to meet its various missions. Specifically, for the ground attack role, he proposed a vertical/short takeoff and landing (V/STOL) aircraft that would mix the best attributes of the F-100 and A-1. It would have the ability to operate from minimal bases, enough speed to respond rapidly, but with the ability to loiter at slower

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[22] Jarrell, 74-78.
[23] Herbert L. Prevost, "A Study of Air Liaison Officer (ALO) Activities in Vietnam," 1967, TAWC, MSFRIC, 53-54.

speeds for high endurance. It would also be heavily armed with multiple pylons for heavy weapons and be equipped with a 20-millimeter gun.[24]

Two 1967 theses described the limitations of the air war against North Vietnam via the policy of gradualism. Lieutenant Colonel James Enos recognized that the air campaign "in no way" represented what airpower could achieve, but that the justified desire to avoid a general war directly limited the application of force. He argued that whereas the air campaign in effect denied North Vietnam as a sanctuary and exacted "a toll" on the North Vietnamese Army (NVA), the political restrictions on the bombing had hampered the effort and reduced that cost. Within the restrictions, the bombing had "made a significant contribution." However, Enos doubted that the current effort would convince Hanoi to negotiate or stop supporting the war in South Vietnam.[25] Lieutenant Colonel Charles Nedbal's thesis compared target selection efforts in Southeast Asia where politicians selected the targets in the North while military officers selected them to support the South. While he skirted directly indicting political leadership, the contrast between the two target selection cases were clear. Target selections from Washington DC had led to "heavy aircraft losses and less-than-desirable results" along with unmet objectives. However, in regions where the military selected the targets in South Vietnam, he perceived success at stopping and reversing the Viet Cong and NVA gains. To Nebdal, this meant the theory of gradualism

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[24] Robert P. Pasqualicchio, "Performance Requirements for a COIN Strike Aircraft," 1967, TAWC, MSFRIC, 37, 53-54.
[25] James W. Enos, "A Study of Air Operations in North Vietnam," 1967, TAWC, MSFRIC, 33, 36.

had "yet to be proven militarily sound" and the military should control target selections for the air war against the North.[26]

There was a wide variance in assessments of Air Force leadership and how they prepared the service for limited warfare. Six USAF lieutenant colonels studied the history of tactical aerial reconnaissance as a response to a request from AU and AFSC since little had been documented regarding its performance and implementation. Their analysis found that aerial reconnaissance was among the first requirements deployed to war, required high performance aircraft or other defense penetration capabilities, continuous coverage, a precise navigation system, and needed to be timely due to enemy mobility. These capabilities and the system to quickly develop imagery and turn it into usable intelligence were found wanting by the authors of the report. They disputed, however, that the Air Force had to "painfully relearn lessons." Instead, Air Force leaders had understood well the problems faced in earlier wars and that "budgetary limitations" along with the slow advance of technological development prevented leadership from investing in all the required capability for this mission.[27]

Lieutenant Colonel Ralph Parr was not as forgiving of service leadership for what he perceived as a lack of preparation for limited war. With the credibility of a Korean War double jet ace, Parr argued that that the service was doing a horrible job training pilots for the difficult task of air-to-air combat to gain air superiority. To buttress his own position,

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[26] Charles F. Nedbal, "A Study of Aerial Target Selection in Vietnam," 1967, TAWC, MSFRIC, 41-42.
[27] William J. Bally, Jr. et al., "History of Tactical Reconnaissance: An Analysis of Aerial Collection Capabilities," 1967, TAWC, MSFRIC, 2-3, 103.

he cited the first Fighter Symposium held at Nellis AFB in 1966 as well as comments made by senior leaders. The F-4C, which he regarded as an improvement over the existing Air Force F-105, was still only marginal for the air superiority role and the only reason why the war in SEA was not a disaster was due to the even worse MiG pilots. For Parr, Air Force leadership had known about the requirements for air-to-air combat and had failed horribly to prepare. The air superiority skill had suffered from "harsh atrophy," which included the insistence of a multi-purpose fighter by the "bomber advocates." He also credited the atrophy to what he perceived as cultural perversions encompassed by such catchphrases as "Flying Safety," "the days of the dogfight are gone forever," "the next war the enemy fighter will be destroyed long before you see him," and other visions such as "bomber deterrence."[28]

The Vietnam War received the most attention of any subject among the 1967 AWC class theses. This was partly due to a push from high level leadership. Another reason for the focus came from the fact that the war itself and frustration over the methods used to fight it were peaking. In either case, the assessments of the class were mixed. Some still believed in airpower as an instrument for diplomacy and key to winning hearts and minds while others believed it was best used to find and kill insurgents. The bombings of North Vietnam received little attention, but what it did receive showed that the officers did not have much hope for achieving stated objectives with the current strategy. Finally, assessments over the judgement of USAF leadership were mixed. But some, represented

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[28] Ralph S. Parr, "Improved Effectiveness for Air Combat Maneuvering Training A Case Study," 1967, TAWC, MSFRIC, 24-28.

by Parr, were already indicting senior leaders for their reliance on bombers, nuclear weapons, and a faith that technology had changed the face of aerial combat.

AWC Students and Vietnam, 1968

The Vietnam War and AU's CORONA HARVEST task heavily influenced the AWC class during the academic year of 1968. The increased manpower required to fight the war led to Headquarters nearly halving the class size from 1967 to 1968.[29] Of this reduced number, more than one in four students volunteered or were assigned to write analysis reports on various aspects of the ongoing war. Few of these AWC students had SEA experience, but twenty-nine of the thirty-nine officers that wrote theses for CORONA HARVEST were scheduled to deploy to the war after the conclusion of their year at Maxwell. Each of these papers were unique in that they were directed to respond to each of the five CORONA HARVEST objectives in an appendix. So, even if their topic did not directly cover certain topics, they were intentionally invited to share their assessments on the conduct of the war.[30]

As part of CORONA HARVEST, all the following papers were classified TOP SECRET and AIR FORCE EYES ONLY which limited the intended audience. Further, it was possible they would be selected to present their findings to the keenly interested VCSAF. Carpenter had decided in July 1967 that the AWC would focus on the out-country mission while the Air Command and Staff College (ACSC) would assess in-

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[29] Richard L. Davis and Frank P. Donnini, eds., *Professional Military Education for Air Force Officers: Comments and Criticisms* (Maxwell AFB, AL: Air University Press, 1991), 37.
[30] CORONA HARVEST Steering Committee Minutes, March 22, 1968, AFHRA, 2.

country operations. The amount of classified papers on such a focused topic was a unique attribute of the 1968 AWC class. Coincidentally, these papers were finalized in March 1968, which many historians have viewed as a turning point towards ending the war since President Lyndon Johnson announced he would not seek a second term and halted bombing north of the 19th Parallel.[31] While these officers did not know it at the time, they provided an analysis at the height of American involvement. They assessed that interdiction, gradualism, and counterair missions were ineffective overall. They also assessed multiple reasons why that included political restrictions, technological shortcomings, poor training, and interservice rivalry.

The primary observation of many of these papers was that the interdiction campaign's impact, or rather lack thereof, on the war in South Vietnam had not been optimized. Lieutenant Colonel Patrick Long presented a relatively optimistic opinion on the interdiction campaign's effectiveness saying that there "seems" to be evidence that the bombing had made it "more difficult and costly for the North Vietnamese to achieve their

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[31] George C. Herring, *America's Longest War: The United States and Vietnam, 1950-1975*, 5th ed. (New York: McGraw-Hill Education, 2014), 240-59; Wayne Thompson, *To Hanoi and Back: The US Air Force and North Vietnam, 1966-1973* (Washington DC: Smithsonian Institution Press, 2000), 153. Phillip B. Davidson, *Vietnam at War: The History, 1946-1975* (Novato, CA: Presidio Press, 1988), 529-31. For histories meant to correct the overreliance on March 1968 as the turning point, see Ronald H. Spector, *After Tet: The Bloodiest Year in Vietnam* (New York: The Free Press, 1993); Lewis Sorley, *A Better War: The Unexamined Victories and Final Tragedy of America's Last Years in Vietnam* (New York: Harcourt Publishing, 1999); James H. Willibanks, *Abandoning Vietnam: How America Left and South Vietnam Lost Its War* (Lawrence: University Press of Kansas, 2004); Gregory Daddis, *Withdrawal: Reassessing America's Final Years in Vietnam* (New York: Oxford University Press, 2017); Andrew J. Birtle, "PROVN, Westmoreland, and the Historians: A Reappraisal," *The Journal of Military History* 72, no. 4 (October 2008): 1213-47.

objectives."[32] At the other end of the spectrum, Lieutenant Colonel Robert Houlahan concluded that "it was an impossible task to search out and destroy" supplies once they had reached the roads and trails snaking through the jungles of Vietnam and Laos.[33] Lieutenant Colonel Cecil Crabb had just returned from serving on the Seventh Air Force staff in Saigon before attending AWC and cautioned against using metrics of tonnage dropped to indicated overall effectiveness in the interdiction campaign. Even though the amount of ordnance dropped in SEA had surpassed the tonnage dropped in WWII and the Korean War combined in the fall of 1967, Crabb asserted that this statistic did not "reflect the accurate picture of effectiveness" and that assessing the damage from the antiquated bombs employed made assessing airpower "difficult to measure."[34]

Lieutenant Colonel Louis Candelaria wrote the most explicit study and rejection of the gradualism strategy. He recognized that McConnell's "strategic persuasion" concept was a doctrinal innovation that may have been vaguely related to nuclear counterforce and countervalue targeting. This innovation simply did not match strategic bombing theory that called for a massive assault. Instead, the new doctrine merely attempted to nudge an opponent in the desired direction towards de-escalation and a negotiated settlement. Candelaria believed that he identified the problem with gradualism in that the targets hit only pertained to an interdiction campaign. He argued that this was because there was no

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[32] Patrick G. Long, "Evaluation of the F-105 Weapon System in Role of Out-Country Interdiction Southeast Asia, 1965-1967," 1968, TAWC, MSFRIC, 1.
[33] Robert F. Houlahan, "Evaluation of the F4 Weapons System in Out-Country Interdiction Operations, 1965-1967," 1968, TAWC, MSFRIC, 68.
[34] Cecil D. Crabb, Jr., "Ordnance Constraints and Limitations in Out-Country Interdiction Operations February 1965 to December 1967," 1968, TAWC, MSFRIC, 1, 39.

"meaningful guidance" on the "intent and subtleties" of persuading an enemy to submit or to negotiate. Consequently, the real effect of the bombing was a propaganda coup for the enemy since the Democratic Republic of Vietnam used the bombings to "bolster morale" and consolidate control of their nation instead of coercing them in any way.[35]

Several officers examined counterair operations and revealed mixed conclusions. Lieutenant Colonel John Fahrney saw the bombing campaign against North Vietnam as "unprecedented" and a "proving ground" for both the United States and Soviet aerial arsenals. Here was the first war where American forces had to penetrate an integrated and effectively controlled air defense system replete with the latest surface-to-air missiles (SAMs) and MiG aircraft coordinated by air defense controllers. Additionally, these forces had to contend with anti-aircraft artillery (AAA) that ranged from small arms fire to radar guided large caliber guns.[36] Fahrney believed that the American performance thus far was sufficient stating that there was "no indication that a change in tactics would have reduced this cost" in loss of aircraft. Instead, "the Air Force has proven by a combination of technology and tactics it can carry on an air campaign in a sophisticated, hostile environment." He allowed that, of course, no commander would "choose to fight in this environment," but those risks were for the political leadership to decide.[37]

Lieutenant Colonel Frank Cox tabulated the total number of F-105 and F-4 sorties and losses over North Vietnam from 1966 to 1967. When he adjusted the loss rate per

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[35] Louis Candelaria, "Psychological Considerations Affecting Target Selection in North Vietnam," 1968, TAWC, MSFRIC, 1, 109.
[36] John W. Fahrney, "U.S. Air Force Offensive Counterair Tactics over North Vietnam, February 1965 to January 1968," 1968, TAWC, MSFRIC, 5.
[37] Fahrney, 112.

1,000 sorties flown, both aircraft types' survival rate improved in 1967: seventeen percent for F-105s and twelve percent for F-4s. He argued that this decrease was a "quantitative indication of the increasing effectiveness" of the USAF's counterair campaign.[38]

To understand Cox's perspective, it is important to realize that counterair operations were not limited to dogfighting and included combatting any threat to flight operations, airborne or on the ground. Cox showed the greatest threat to attacking fighters, by far, were small arms and AAA. His statistics showed that nearly eighty percent of the total aircraft losses over North Vietnam had come from small arms and unguided, small caliber AAA. Another ten percent came from large caliber AAA of 57-millimeter or greater.[39] The new SAM threat was not nearly as effective at low altitudes and this fact had pushed American strike aircraft down to low altitudes where they were safe from missiles but where the guns could reach them. After the introduction of "Wild Weasels" in 1965, whose mission was to find and destroy SAM radars, and fighter electronic countermeasure (ECM) pods to jam fire control radars in 1966, American aircraft were able to fly at higher altitudes out of the reach of the guns.[40] According to Cox's research, the addition of the ECM jamming pods to USAF fighters produced a fifty-four percent reduction in aircraft loss rate per every 1,000 sorties. In light of the deadliness of enemy

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[38] Frank E. Cox, "The Effectiveness of USAF Counterair Targeting in North Vietnam," 1968, TAWC, MSFRIC, 44-45.
[39] Cox, 30.
[40] For a history on the Wild Weasels, see Dan Hampton, *The Hunter Killers: The Extraordinary Story of the First Wild Weasels, the Band of Maverick Aviators Who Flew the Most Dangerous Missions of the Vietnam War* (New York: William Morrow, 2015).

AAA, Cox viewed direct air-to-air combat with MiGs as relatively unimportant since they accounted for the fewest kills.

Lieutenant Colonel Lawton Magee provided a comparative perspective on counterair in his analysis of the Navy's campaign. He provided statistical data to demonstrate Air Force tactics were superior and deemed the Navy effort wasteful. For offensive counterair, naval planners allocated four to five times the sorties to flak suppression than the Air Force and allocated only two sorties for every three naval sorties for SAM suppression. For defensive counterair, Navy flights continued to fly at low altitudes so that they could avoid being seen by radar. This allowed them to avoid SAMs, but kept them exposed to enemy AAA which were more deadly. They also did not effectively use the electronic countermeasure jamming pods and thus continued to strike at low altitudes while the Air Force strike missions enjoyed more flexibility at higher altitudes. The Navy allocated nearly twice the sorties that the Air Force did to escort missions against MiGs, which he also deemed the lowest threat. To Magee, this reduction of strike sorties in favor of countering the threat meant that they were less efficient than Air Force strikes based on the reduced number of aircraft dedicated to actually striking targets.[41]

In contrast to these relatively optimistic assessments of Air Force counterair performance, Lieutenant Colonel Donald Sorlie provided an analysis that more closely resembles the critical historical interpretation of later years. Airpower had not attained air

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[41] Lawton W. Magee, "A Study of Counterair Operations Conducted by the United States Navy in North Vietnam and Laos, 1965-67," 1968, TAWC, MSFRIC, 16-17.

superiority, "on the contrary, the North Vietnamese had constantly improved." Further, the only reasonable means to reverse the situation was to attack, and then re-attack, all portions of the North Vietnamese air defenses to include airfields, MiGs on the ground, early warning radars, AAA sites, and SAM sites, along with their sources of supply. Sorlie clarified the implications of this failure for the future: "if this situation is not remedied in this conflict, it should be indelible on the minds" of those would conduct future conventional counterair operations regardless of the size of the war.[42]

The consensus of these officers writing for an Air Force only audience in 1968 was that the bombing of North Vietnam had been ineffective. Even those that argued the counterair performance was going well couched their conclusions by noting that the improvement was a trend in aircraft loss ratios, not that the Air Force had achieved superiority. Their theses did not hide that the overall number of downed aircraft continued to climb. In short, there was no ringing success to be found in ROLLING THUNDER. These officers provided a number of reasons they blamed for the failure and suggested areas in which the service needed to improve.

Air Force officers identified their service's most serious problem as the political restrictions that were placed on ROLLING THUNDER operations. In most of the responses to the CORONA HARVEST objectives in the mandated appendix, these officers argued either that there was "no question of the validity of current USAF and joint concepts and doctrine" or that existing doctrine was difficult to assess because it simply

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[42] Donald M. Sorlie, "An Analysis of the F-105 Weapons System in Out-Country Counter Air Operations," 1968, TAWC, MSFRIC, 110-13.

had not been exercised due to political direction.[43] The political restrictions that these officers cited included the restrictions of targets to be struck, allowing the North Vietnam sanctuary against ground attack, no-fly zones, and prohibitions on attacking airfields and SAM sites. The overall effect of these restrictions was to allow the North Vietnamese to concentrate defenses around the limited number of targets outside those areas. Sorlie argued that this was "the most significant lesson" of the air campaign. Aside from calls to improve weapons to destroy AAA and SAM radars, his recommendations to remediate this lesson in the future was for continuous strikes against airfields, radars networks, and most importantly the Port of Haiphong which was the primary point of embarkation for sophisticated defensive equipment, especially SAMs.[44] Houlahan joined Sorlie and represented a growing chorus of military officers by declaring that the only "fruitful method" to interdict the Ho Chi Minh Trail was to strike the source of the supplies at the port of Haiphong and the rail-lines from China.[45] At this point in the war, Cox no longer believed it feasible to conduct an effective counterair campaign due to the extensive nature of the North's defenses after years of buildup. However, a strategy where the USAF

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[43] Sorlie, "F-105 Weapons System," 112; John T. Miller, "An Analysis of Aircrew Personnel Flying Out-Country Interdiction Missions," 1968, TAWC, MSFRIC, 74; Richard E. Little, "An Analysis of the Present Tactical Fighter Weapons Systems Capabilities in SEA Out Country Interdiction Operations," 1968, TAWC, MSFRIC, 113; Cox, "USAF Counterair Targeting," 47; Houlahan, "F4 Weapon System," 72-73; Long, "Evaluation of F-105," 82; William E. Long, "Target Selection Process: Categories and Decision Levels," 1968, TAWC, MSFRIC, 85-88.
[44] Sorlie, "F-105 Weapons System," 69-70.
[45] Houlahan, F4 Weapon System," 68.

would have been allowed unrestricted targeting of air bases, radars, SAMs, and AAA "could have provided additional dividends by retarding the rate of build-up."[46]

Cox may have represented an extreme position, for not all the AWC students who participated believed that calling for an end to current political restrictions was wise or even possible. Candelaria believed that the political nature of limited warfare was here to stay and so the Air Force needed to clearly recognize and adjust to that fact. Commenting specifically about facing Asian adversaries in the future, he stated that officers needed to grasp the "limitations of airpower." He charged that those limits meant that airpower could never have the same coercive effect that ground troops or marines had. He expressed doubts more generally outside the context of Asia about the coercive effects of airpower by arguing that, "the capacity of conventional bombing to sap the will of an enemy was moot in World War II and remains moot in Vietnam." However, in a nuclear world, "political considerations" that primarily sought to avoid risking World War III would continue to dominate target selections. Candelaria predicted that future wars would not consist of trying to break the will of an opponent with overwhelming force. Instead, the USAF needed to develop "the targeting doctrine of the future" by thinking through how to employ conventional airpower to achieve political objectives. By necessity, this would include forecasting and planning around political restrictions.[47] Long agreed with this need to adapt doctrine to political reality. He concluded that the conduct of the interdiction campaign had no relation to the "the ideal USAF doctrine and the principles of

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[46] Cox, "USAF Counterair Targeting," 26-40, 46-47.
[47] Candelaria, "Psychological Considerations," 109-11.

war." While this did not necessarily negate standing concepts, it suggested "that there is a need to be more realistic" in developing future doctrine to account for restrictions while conducting what he termed, "limited interdiction."[48]

Beyond external political meddling, the most prevalent criticism about the Air Force's preparation for tactical airpower was the lack of technological investment in conventional weapons. One weakness was the inability to control missions over North Vietnam. Lieutenant Colonel Billy Minter, a veteran Aerospace Defense Command pilot, future F-105 pilot in SEA, who would retire as a full general, admitted that his interceptor experience made him biased. He determined that lack of radar command and control for pilots on strike missions was the most critical operational deficiency. Minter identified the technological "weak link" as the EC-121, which was the first-generation airborne early warning radar platform. Its poor radar detection over land masses and at low altitudes prevented the US from extending its centralized command and control architecture over North Vietnam. This limitation forced radar controllers to switch from close control to broadcast control which caused "great confusion" and indicated a "failure" of the planned system.[49] Close control meant that the radar controller had situational awareness of all flying aircraft in a given airspace and could direct specific fighters towards enemy aircraft. When situational awareness was low, controllers instead broadcasted locations of enemy or unknown aircraft to all friendly forces by referencing an aircraft's bearing and distance

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[48] Long, "Evaluation of F-105," 82-83.
[49] Billy M. Minter, "Command and Control of Counterair Operations over North Vietnam, February 1965 - December 1967," 1968, TAWC, MSFRIC, 57-59, 71-74.

from a reference point called "Bullseye," which was the codename for Hanoi.[50] This forced each pilot to listen to radio calls and then mentally determine whether or not the MiG was a threat or if it was already engaged by another friendly fighter. Sorlie agreed with Minter insofar as the EC-121 was insufficient citing the declining air-to-air kill ratio from 6:1 to a low of 1.2:1 in 1967. Despite the fact that this was still a positive kill ratio, Sorlie argued that "defense against a closely controlled MiG threat, without benefit of friendly GCI capability, has proven the postulation that aircraft kill ratio will be in favor of the side which has the GCI capability."[51]

Another technological category that several officers believed should have received more development were the armaments. Sorlie desired improved munitions for AAA sites and an upgraded missile to attack SAM radars.[52] Long's assessment of the F-105 was that its radar bomb guidance was insufficient, that it was not survivable in a heavy AAA environment, that its pilots were forced to use outdated visual bomb delivery tactics, and that the service had to resort to using vintage WWII fuses as late as August 1967.[53] Crabb cited the 1967 Fighter Symposium report and the Seventh Air Force Director of Operations to show a growing support for the need to develop a broad range of conventional munitions for a variety of missions from suppressing SAMs to accurately hitting targets. The lack of development of these needed weapons implied "a lack of foresight by national leaders . . . during the period of nuclear impetus." The problem, then, was not just the bomb shortages

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[50] Marshall L. Michel, III, *Clashes: Air Combat over North Vietnam, 1965-1972* (Annapolis, MD: Naval Institute Press, 1997), 46-51.
[51] Sorlie, "F-105 Weapons System," 68.
[52] Sorlie, 69.
[53] Long, "Evaluation of F-105," 58, 81-82.

experienced but also the "non-availability" of weapons that might have been. Further, Crabb implored the Air Force that: "Wartime requirements cannot be forgotten in the future."[54] To keep the service from forgetting, he recommended a continuous production of limited war technology and the establishment of a Joint Service Test facility modeled after the Navy's Naval Ordnance Testing Station at China Lake, California.[55]

Several of the student authors examined AFSC's R&D efforts to provide for the needs of limited war. In 1965, AFSC had established a forward deployed detachment in Saigon to interface with the Second Air Division (redesignated Seventh Air Force on 28 March 1966), to meet the immediate needs of the war. This detachment handled the SEA Operational Requirement (SEAOR) process where deployed units could designate technological requirements and staff them directly to AFSC. The long-term purpose of the detachment was to help achieve "the far-reaching result" of channeling ideas and initiatives through AFSC headquarters to enhance future limited war technology. The short-term goal was more urgent and desperately attempted to find a way to win the Vietnam War via technological adaptation. One senior Air Force officer anonymously informed *Aviation Weekly & Space Technology* magazine in January 1966: "We're looking for help from industry to provide improvements across the board in ways to win the war here. The word is 'go' on ideas. . . . Money is no problem."[56] In November 1967, the second commander of AFSC, General James Ferguson, described his command's efforts with personnel in

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[54] Crabb, "Ordnance Constraints," 2, 30.
[55] Crabb, 33-34.
[56] "Viet Field Office Aids System Command," *Aviation Week & Space Technology*, January 31, 1966, 44.

Saigon, Florida, and at AFSC headquarters as a "10,000 mile R&D front line" where the goal was to produce technology for any operational need, "not in fits and starts, but in orderly progressive fashion."[57]

Using a technologist's rhetoric, General Ferguson declared in a 1967 *AUR* article that AFSC had declared an "unlimited war on limited war." He reflected a technologists' faith that new equipment could prevail by predicting: "the real turn in the tide, not only in Vietnam but in discouraging similar situations, may well come when US technologies overcome the enemy's natural advantages with respect to terrain, tactics, and manpower." His examples of technologies under development were legion and stretched from intruder detection systems for base security all the way to the latest generation of aircraft, the F-X and A-X that would eventually become the F-15 and A-10 respectively. However, he mitigated his thesis that the command was fighting an "unlimited war" by reminding his readers that AFSC had been "charged with the responsibility of being two places at once." The Air Force's R&D command was still fighting to remain at the forefront of the technological war across the spectrum of warfare while at the same time being responsive to current needs in Vietnam.[58]

Despite all this renewed attention to limited war capability from the Air Force's top commander charged with R&D, several officers believed that the effort had yielded too

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[57] James Ferguson, "Providing the Means to Meet Aggression—At Any Level," *AF&SD* 50, no. 11 (November 1967): 93.
[58] James Ferguson, "Tactics and Technology: The Unlimited War on Limited War," *AUR* 19, no. 1 (November-December 1967): 8-18. This article was republished as James Ferguson, "Tactics and Technology for Limited War: Systems Command's Role," *AF&SD* 51, no. 4 (April 1968): 109-15.

little and too late. Crabb's paper already reflected this attitude as he mused how the interdiction campaign could have been more successful had better conventional weapons been developed earlier. Lieutenant Colonel Richard Little expressed serious doubts as to whether technology would alter the war by writing: "new and improved 'black boxes' such as those contained in the F-111" promise considerable improvement but so did the electronic systems of F-105 and F-4 upgrades. He also examined the SEAOR program and found it wanting. As of 1 December 1967, there were 162 SEAORs and another 117 major modifications to USAF equipment that would require approval through USAF Headquarters. Out of all these, only fourteen had been completed while twenty-five had been cancelled outright. He listed some of the more "significant" requirements pertinent to the effectiveness of tactical fighters that continued to be unmet which included improved night attack, improved visual weapons delivery systems, area denial mines, all-weather weapons delivery, high-speed high-altitude ordnance delivery, laser guided bombs, and an improved F-105 gunsight.[59] His disdain for technologists' promises was palpable. He called the conclusion of an R&D committee that technology would turn the tide of the war "somewhat facetious" and "probably overly optimistic."[60] While admitting that advanced technology for accurate attacks "round the clock" may well make a difference in future wars, compared to the requirements put forth by the SEAORs that were still unmet, the equipment provided for the present war was "sorely lacking."[61]

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[59] Little, "Present Tactical Fighter," 90-93.
[60] Little, 94.
[61] Little, 97; Charles P. Cecil, "An Analysis of Offensive Out-Country Night Interdiction Tactics in Southeast Asia, 1965-1967," 1968, TAWC, MSFRIC, 58.

One of the 1968 CORONA HARVEST theses reflected the technologist perspective. Lieutenant Colonel Matthew Hegerle praised Ferguson's *AUR* article for illuminating the correct path and cited speeches by Holloway and the Secretary of the Air Force Harold Brown for establishing a high priority for limited war technological development. Opposed to Little's short list of technological achievements focused on SEAORs, Hegerle stated it could be "clearly documented" that many new operational items had been fielded. For counterair operations, he listed gun pods, radar homing and warning (RHAW) gear, electronic countermeasures (ECM) pods, air-to-air missile improvements, and Identification Friend or Foe (IFF) transponder upgrades. For CAS, interdiction, reconnaissance, and rescue missions, he listed technologies such as anti-personnel bomblets, mines, air-to-ground missiles, guided bombs, aircraft armor plating, improved infrared and radar sensors, and fuel tank foam that had also been fielded.[62] However, Hegerle criticized the US political and Air Force leadership for placing strategy ahead of technology which necessitated the rapid development of technology for limited war. He contended that since WWII, there had been "extreme pressure to funnel disproportionate amount of R&D resources" based on differing strategic priorities including massive retaliation, the missile crisis, the space race, flexible response, cost-effectiveness, and finally the limited war in Vietnam. He concluded that channeling these resources based on "ever-changing policies, doctrine, and criteria does not recognize that a major portion of the Cold War may, very well, be a technological war." For Hegerle, the

[62] Matthew J. Hegerle, "Analysis and Evaluation of Research and Development Support for Out-Country Air Operations," 1968, TAWC, MSFRIC, ix.

correct long-term strategy was not to pay less attention to the current strategic impetus but instead to "pursue a vigorous and balanced R&D program devoted to maintaining our technological superiority in all sciences and disciplines."[63]

Another weakness of the Air Force preparedness repeatedly cited by these officers was the lack of effective training. This complaint was not as extensive as the condemnation of political restrictions or technology, but it was present in many of the officers' theses. Fahrney only mentioned training in relation to the MiG pilots when he argued that their training was clearly deficient to the USAF pilots.[64] Discussing why the F-105 was not successful at interdicting supplies coming from North Vietnam, Long listed a lack of training as a single factor alongside many technological problems.[65] Houlahan said that the fighter concepts taught in TAC pilot training courses "were proven unrealistic in SEA." This was especially true of visual gunnery and bomb delivery training when students were taught to fly low, slow, and on a steady glidepath to drop their bombs. These conditions simply did not match combat conditions where aircraft were highly vulnerable to AAA and were often forced to jink, or maneuver in unpredictable patterns, often negating a pilot's ability to accurately bomb a target. Houlahan lamented that this lesson had to be learned "the hard way" through the loss of many pilots. On top of that, Houlahan noted that using the AIM-7 on the F-4 without a gun showed definitive limitations of training strictly against non-maneuvering, towed decoy targets. These

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[63] Hegerle, 117-18.
[64] Fahrney, "Offensive Counterair Tactics," 109-11.
[65] Long, "Evaluation of F-105," 51.

conditions in no way represented nimble MiGs that often ambushed unsuspecting pilots.[66] Little provided five conclusions that "curtailed" effectiveness. Four of them were technological that were best summarized by his observation that the USAF employed "modern fighter aircraft without correspondingly modern weapons." The fifth conclusion, however, was the service had attempted to mobilize all of its pilots with various backgrounds (fighters, bombers, cargo, tankers, etc.) and quickly train them to perform the mission.[67]

There was one thesis that focused primarily on aircrew training and reflected similar conclusions to those scattered throughout the other officers' analyses. Lieutenant Colonel John Miller studied the effectiveness of aircrews throughout the Vietnam War escalation and found a dramatic difference between the first fighter deployments and subsequent pilot performance. At the beginning of fighter jet deployments, he declared that "there is no question" that the fighter pilots deployed were the "most qualified, best-trained pilots the Air Force has ever had." With the implementation of a no involuntary second SEA tour policy until all USAF pilots had deployed, "experience diminished as behind-the-line pilots and pilots from commands other than TAC were channeled into F-105 and F-4" initial and replacement fighter training units. Even if the pilots deployed at the beginning of the war were the best ever sent to war by the Air Force, they still were products of the limitations of their training. He conceded that the "loss of modern tactical fighters over targets defended with relatively unsophisticated weapons at the outset of

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[66] Houlahan, "F-4 Weapon System," 69.
[67] Little, "Present Tactical Fighter," 104-5.

action over North Vietnam came as a surprise."[68] Still, in this study focused on personnel training, in which the need for improvement was "indisputable," Miller argued that an accurate appraisal was complicated by political restrictions, technological limitations in conventional ordnance, and the increasing technological sophistication of the enemy defenses and could not be the definitive reason for the inability to completely interdict enemy supplies.[69]

The problem of training was not only limited to pilots deploying for combat. Lieutenant Colonel Kenneth Lidie studied the logistical and maintenance support for SEA combat operations and concluded that, in his opinion, "the most serious flaws" were managing personnel training and overall job qualifications. After three years of war, support squadron manning authorizations were still short of enough adequately skilled technicians to perform maintenance on the many systems required to run base operations. He continued, "furthermore, most replacements still lack sufficient skill to accomplish their assigned jobs without additional training." So, these replacements required on the job training programs before they could perform their jobs and added more stress to the skilled specialists who were attempting to support ongoing combat operations.[70]

One reason behind operational difficulty in Vietnam that was to gain prominence in later years, but received meager attention with these officers, was interservice rivalry. The fact that the papers were AIR FORCE EYES ONLY and thus were written in an

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[68] Miller, "Aircrew Personnel," 53-56.
[69] Miller, 74-76.
[70] Kenneth F. Lidie, "An Analysis of the Material Support for Out-Country Interdiction from February 1965 to December 1967," 1968, TAWC, MSFRIC, 51.

environment that may have helped reinforce the tension may have contributed to this. Magee's study, for instance, essentially discounted the Navy's focus on counterair tactics. Later historians would credit the Navy for recognizing the importance of counterair training which resulted in the creation of Top Gun in 1969 rather than dismissing their efforts as wasteful.[71] Lieutenant Colonel James Jordan noted how the Navy's primary assignment to Route Packages two, three, four, and six bravo (airspace assignments over North Vietnam) made perfect sense to naval officers considering they were along the coast and minimized their need for aerial refueling support. It also kept their flights within the Navy's radar coverage and allowed for better warning of enemy fighters.[72] Even so, Jordan presumed that "greater exchanges of information and experience might have saved the lives of aircrews and the costs of lost aircraft." Further, he claimed that it seemed "axiomatic" that since the two services were indeed facing the same enemy and thus a greater crossflow of threat information and successful tactics would have enhanced American efforts.[73]

By the spring of 1968, the AWC students' perceptions about the poor conduct of bombing North Vietnam and other out-country operations had begun to solidify. For one thing, McConnell had provided two objectives for bombing North Vietnam back in 1965: interdiction and strategic persuasion. Based on their 1968 analyses, these officers

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[71] Robert K. Wilcox, *Scream of Eagles: The Creation of Top Gun and the U.S. Air Victory in Vietnam* (New York: John Wiley & Sons, 1990), v; Michel, *Clashes*, 4; Wayne Thompson, *To Hanoi and Back: The US Air Force and North Vietnam, 1966-1973* (Washington DC: Smithsonian Institution Press, 2000), 288.
[72] For a description of the Route Packages, see Michel, *Clashes*, 38-39.
[73] James D. Jordan, Jr., "Navy Aircraft and Tactics in Southeast Asia Out-Country Air Interdiction Operations," 1968, TAWC, MSFRIC, 43.

perceived ROLLING THUNDER as more interdiction and less strategic persuasion. In either case, they believed that political restrictions had fatally damaged the use of airpower. These officers described the restrictions as the primary reason that two traditional missions of tactical airpower, interdiction and counterair operations, were degraded. A second major problem the officers identified was the lack of technological preparation for limited war. Current efforts were appreciated but were unlikely to turn the tide of the current war. Another critique that was strongly present but would grow stronger in the future and in historical accounts, especially for pilots and specifically for air-to-air combat, was the lack of adequate training. Finally, there were only hints towards the problem of interservice rivalry that also would be an oft cited problem over bombing of North Vietnam.

Senior Officer Evaluation

From March 22-24, 1968, the CORONA HARVEST Steering Committee gathered at Maxwell AFB to examine the first round of analysis attempted by the AWC and ASCS classes of 1968. Holloway chaired the meeting, which was also attended by ten other Air Force officials from the Pentagon included seven Major Generals. Carpenter attended for AU along with twenty-six officers from ASI, AWC, and Air Command and Staff College (ACSC) which included Pasqualicchio, Rasmussen (both 1967 AWC graduates now at ASI), Cox, Crabb, Long, and other students from AWC and ACSC.[74] Fortunately, the discussions during this meeting were transcribed. Unfortunately, presentations by the

[74] CORONA HARVEST Steering Committee Minutes, March 22, 1968, AFHRA, 1.

students themselves were omitted from the transcription and only two AWC theses were discussed, those of Lieutenant Colonel Norman Eaton and Crabb. The AWC analyses that were presented sparked "a lot of interest," but fell short of the expectations of several officers from USAF Headquarters. The intensity of the resulting discussion provides both a sense of the perceived quality of the papers and the dissonance between senior officers and the mid-career students which may have altered the future course of the program.

Eaton's presentation examined the command structure in SEA and provoked immediate disagreement between himself and the senior officers from the Pentagon. Carpenter first introduced Eaton, emphasizing that his next assignment would be a SEA deployment flying B-57s.[75] Eaton informed the committee that his thesis was that due to political constraints, he believed that "no change in the command arrangements" would result in a significant increase to airpower's capability in SEA. This proposition evoked an immediate reaction from Brigadier General George Simler, who had been the Seventh Air Force Director of Operations in Saigon before serving in the same role at Headquarters, USAF. He challenged this contention by relaying his belief that a unified air command structure would have better advocated for "approaching the problem of Haiphong" and that had all airpower been placed operationally under Momyer with no command change at all the coordinated use of airpower "would be a hell of a lot better." Major General Jack Thomas, the Air Force Intelligence Chief, criticized Eaton for essentially reiterating "common knowledge" without any "good solid impact analysis" and that he was just

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[75] Sadly, Eaton was lost over Laos on 13 January 1969 and listed as missing in action; his remains were only identified in November 2006.

engaging in the sharing of opinions without providing anything actionable. At this point, Carpenter intervened to state the student papers were just inputs and he got the feeling that Thomas was "attacking the conclusions of each student's study as if" they represented conclusions of the entire program. Eaton reiterated that his "key point" was that major changes to the command structure would not reap much in SEA because the real problem originated with strategic level political restrictions. Further, any change for the SEA command structure should be a part of re-examining the unified command structure as a whole across the globe. At this point, Holloway himself intervened with Eaton. He expressed dissatisfaction with Eaton's thesis stating that the command structure had changed with Momyer's efforts and that "we have good concrete examples" that the change was positive for airpower. Finally, Holloway expressed his desire that "we will be flexible enough in this effort to analyze" those changes and not to dismiss them. The final point captured for Eaton's uncomfortable presentation in the transcript was Carpenter reassuring Holloway that these students were just providing inputs.[76]

Crabb reiterated his thesis's conclusion that the problem of conventional ordnance was the lack of availability both in current stockpiles and what could have been available had there been more R&D for limited war before the Vietnam War. Holloway quickly engaged with Crabb and told him: "Well, I'm a little curious about your conclusion or observation, which ever it is, that there is not enough going on in the way of addressing future requirements." After asking Crabb to cite a few examples, Holloway quickly

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[76] Transcript, CORONA HARVEST Steering Committee Meeting, Mar 22, 1968, AFHRA, 4-11.

provided some himself complementing the service giving a "slam bang priority" effort to develop more accurate munitions such as the MAVERICK missile and to correct other noted deficiencies. Obviously flustered but unwilling to cede his point, Crabb responded to the VCSAF that: "What we are finally doing now, is, I am trying to recommend that we have to have lead time before we get into a war of this degree in the future." He continued, "I think . . . I am just trying to avoid the pitfalls," and then reiterated that he was "certainly aware" of USAF efforts to improve. Holloway de-escalated by pointing out that he thought the Air Force leadership was doing a much better job now and then citing another example of work to field the Standard Anti-Radiation Missile (ARM) to counter SAMs. This time, Simler intervened for Crabb noting that even now area denial weapons were non-existent and required much more research.[77] After which, Holloway quickly asked for the highlights of two other officers' papers which had not been planned as part of the formal presentation and to which there was no pressing questions from among the senior officers.

After the two AWC student presentations, the ACSC faculty and students presented their analyses of in-country operations, who did not provoke the same level of acrimony from the senior officers. Instead, almost immediately the recorded conversation turned towards addressing the problems of interservice rivalry. One blunt question posed was, were the ground forces "a satisfied customer or not?" The ACSC answer was not forthcoming and they noted that there was a real problem of getting current information given that the only sources of information were Air Force or joint commands instead of

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[77] Transcript, 11-14.

feedback directly provided by Army or Marine units. The senior officers were locked in on the issue that the Army was being dishonest about airpower. Major General Otis Moore pointed to a difference between what was printed stateside in the *Army Times* where "they make no bones about being dissatisfied with the tactical air support over there" and what was said in theater. Major General William Garland accused the Army of taking returning officers who believed the Air Force had provided "the greatest treatment" they had ever received and then "brainwashed" them in official debriefs to reverse their opinions to be critical of USAF close air support. Carpenter noted that AU was attempting to address this problem by conducting oral history interviews with joint officers that had SEA experience while attending AU schools to capture their perspectives without external influence.[78]

The problems encountered during these first two years limited the future use of student inputs. The class of 1967 showed that the narrative was already largely being captured by the CHECO program. The 1968 presentations given to senior officers had clearly shown that the student papers had given plenty of opinion, but that it was not the product the senior leaders from the Pentagon wanted. Finally, instead of assessing changes for ground support, the attention given to interservice rivalry and even entertaining a conspiracy theory suggests that interservice rivalry was a larger problem than the senior officers at the time cared to admit. Carpenter ended AU's presentation to Holloway by noting that CORONA HARVEST had learned much as a group thus far, but that the students' efforts, while important, were still "limited." He then suggested that future

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[78] Transcript, 18-20.

student studies should focus on events in SEA further back due to the constraints of gathering data on current operations. Additionally, he believed that CORONA HARVEST would have to turn more towards "additional Air Force-wide participation."[79]

Carpenter's conclusion prompted a discussion regarding the working relationships that AU had with other agencies (RAND) or Air Force programs (CHECO) that turned into a discussion of the relative importance of the goals of learning at all. Holloway informed the committee that although he could not personally dedicate much time to CORONA HARVEST, he had "a lot of enthusiasm" for it. However, it would be for naught if "you don't get people interested" as well as gain their "regard and respect." Because of this, he implored those present to advocate for the program and reiterated that he was engaging with Secretary of the Air Force Harold Brown two or three times a week about the program and was trying to get him to attend a meeting to "hook his interest." He lamented that the "Strategic Bombing Survey of World War II never had the effect it could have had." Although many "big names" were associated with that famed report, he stated, "I don't think that it received anything like the Gettysburg address did." From that statement, it seems Holloway believed that lessons from combat operations could have fundamentally transformed airpower and probably warfare. Responding to Holloway's exhortation, Carpenter advised Holloway that sometimes he did not even bring the project up for fear that the reaction would be "well, Christ, there comes Carpenter with that Goddamn CORONA HARVEST again."[80]

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[79] Transcript, 32-33.
[80] Transcript, 35-36; CORONA HARVEST Steering Committee Minutes, March 22-24, 1968, AFHRA, 3-4.

Holloway and Carpenter shared a vision for the future of the service that would be molded by the findings of the program. Their comments about the need to push CORONA HARVEST among influential USAF officials suggest that their enthusiasm was not entirely shared in the Pentagon. Future student involvement in the program declined to almost nil after 1968 and AU sought the additional Air Force support by pushing major command staffs to identify areas of study and to conduct those studies for future analysis. The minutes of the subsequent steering committee meeting on 22 July 1968 did not mention goals for the incoming AU student body. Instead, one major problem area was the mixed support that AU received from the various command staffs and a request that McConnell stress the importance to their commanders, which he agreed to do on July 31.[81] From here on, CORONA HARVEST turned in a new direction where the students and faculty of AWC and ACSC were less involved in the program and where major command staff officers were prodded to provide applicable areas for study and to research them on top of their additional duties.

[81] CORONA HARVEST Steering Committee Minutes, July 22, 1968, AFHRA, 2.

CHAPTER V

KEEPING VIETNAM IN THE COLD WAR CONTEXT, 1967-1968

The 9 July 1967 Soviet Union airshow at the Domodedovo Airport shocked many Western strategists. The Soviets unveiled a dozen new fighter aircraft models including the MiG-23 swing-wing fighter/bomber, the high speed and altitude MiG-25 interceptor, several vertical or short takeoff and landing (V/STOL) aircraft prototypes, and updated versions of existing interceptors.[1] Gary Hotz of *Aviation Week & Space Technology* predicted the airshow's impact would "reverberate" for "some time to come."[2] Indeed, several historians have noted that this airshow provided added impetus to USAF projects such as the F-X and A-X, which became the successful F-15 and A-10 aircraft in today's arsenal.[3] The shock of the Soviet Union's improved conventional aircraft was augmented by the revelations it would double its operational ICMBs to 720 missiles. These would include at least 230 SS-9s capable of launching massive thermonuclear warheads, a potential counterforce weapon against American ICBM silos. Soviet investment in defending their airspace against American nuclear strikes also increased. In addition to the MiG-25 interceptor, the USSR developed improved surface-to-air missiles (SAMs). The Soviets had claimed earlier in the decade that they had developed an anti-ballistic missile

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[1] "Russian Air Show," *Aviation Week & Space Technology*, July 17, 1967, 26-39.
[2] Robert Hotz, "Echoes from Domodedovo," *Aviation Week & Space Technology*, July 17, 1967, 21.
[3] Craig C. Hannah, *Striving for Air Superiority: The Tactical Air Command in Vietnam* (College Station: Texas A&M University Press, 2002), 108; Grant T. Hammond, *The Mind of War: John Boyd and American Security* (Washington DC: Smithsonian Books, 2001), 75; Marshall L. Michel III, "The Revolt of the Majors: How the Air Force Changed after Vietnam" (PhD diss., Auburn University, 2006), 76.

(ABM) system whose high-altitude nuclear detonations would repel a US missile attack. Some Americans asserted this system was surely operational. Although Secretary of Defense Robert McNamara assured Congress that Soviet ABM and bomber defenses were both costly and militarily ineffective, many in the Air Force intellectual community disagreed.[4]

The dissonance between McNamara and senior military leaders was also readily apparent over the efficacy of continuing to bomb North Vietnam. Confronted by a Secretary of Defense that had lost faith in bombing and a slew of generals calling for more intense bombing to include shutting down the port at Haiphong, President Johnson opted for a middle course. On 20 July 1967, LBJ authorized fifteen additional North Vietnamese targets. While he did allow for strikes on major transportation routes leaving Hanoi, all targets within the Hanoi, Haiphong, and Chinese border prohibited zones remained off limits. Over the next few months, several targets within these zones were approved, such as the Paul Doumer Bridge, but never in an all-encompassing strike as recommended by the Joint Chiefs of Staff.[5] It was becoming clear that the war would continue to be fought with political limitations and not the all-out bombing campaign desired by the military. Earl Tilford described the "conundrum" Air Force leadership faced as determining "how to defeat North Vietnam without defeating North Vietnam."[6]

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[4] Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1961-1984*, vol. 2 (Maxwell AFB, AL: Air University Press, 1989), 336-38.
[5] Wayne Thompson, *To Hanoi and Back: The US Air Force and Vietnam, 1966-1973* (Washington DC: Smithsonian Institution Press, 2000), 77.
[6] Earl H. Tilford, Jr., *Setup: What the Air Force did in Vietnam and Why* (Maxwell AFB, AL: Air University Press, 1991), 138.

There was dissonance within the Air Force intellectual community about which threat should take priority. On the one hand, allowing the communists to win in Vietnam would not only be a setback, but it would encourage similar wars elsewhere. Despite positive evaluations of airpower's performance, Air Force leadership along with the Joint Chiefs of Staff continually pressed that further escalation and less restrictions were critical for victory. Additionally, officers formulated the lessons of the war that usually pointed directly to the need for the next generation of aircraft to assure similar success in the future. On the other hand, many increasingly recognized Vietnam as a growing quagmire and charged that it was a distraction to the real threat which was the Soviet arsenal revealed by Domodedovo and their strengthening general nuclear war posture. Both technologists and strategic warriors cited the war as a drain on resources that were required to compete with and deter the Soviets. At the height of an on-going war, many officers and Air Force intellectuals continued to debate about which kind of war was most appropriate to prepare for: limited, nuclear, or technological.

Emerging Lessons of the Vietnam War

As American involvement approached its climax in 1967 and 1968, the Air Force's *Air University Review* (*AUR*) and the Air Force Association's (AFA) *Air Force & Space Digest* (*AF&SD*) remained hawkish. The AFA's 1967-1968 Statement of Policy pledged "vigorous support for the in the fulfillment of our nation's responsibility to achieve a just and honorable peace in Southeast Asia."[7] The *AF&SD* republished a letter from President

[7] "AFA's 1967-1968 Policy Resolutions and Statement of Policy," *Air Force & Space Digest* [hereafter *AF&SD*] 50, no. 5 (May 1967): 10.

Lyndon Johnson to Senator Henry Jackson in April 1967 that explained the rationale for bombing North Vietnam. Johnson reminded Jackson that Vietnam was a Soviet "war of national liberation," that the North Vietnamese were willfully violating Laotian neutrality, and that bombing North Vietnam was in response to that violation. Concerning airpower, Johnson claimed: "we never believed aerial attack on North Vietnam would, alone, end the war." However, LBJ insisted that airpower had "achieved" its three objectives; to assure the South Vietnamese people of American support, to impose a "cost" on North Vietnam for violating international agreements, and to exact a price for moving supplies south.[8] General John P. McConnell, the Air Force Chief of Staff (CSAF), voiced support for the Administration's bombing policies: "I am convinced that the mounting pressure of 'strategic persuasion' will ultimately prove a major factor in making the communists amenable to negotiations." He then offered three lessons that historians would perceive in the coming decades regarding the impact of the Vietnam War. First and foremost, that the United States' resolve had deterred future limited wars. Second, that the USAF benefited from improved tactics and equipment from the lessons of SEA which "will have greatly enhanced" USAF conventional war capability. Finally, that airpower would have proved to be a "decisive element" in limited wars.[9]

These sanguine interpretations of airpower's performance, and the success of the American effort in Vietnam, did not go unchallenged. In June 1967, the Israeli Air Force

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[8] Claude Witze, "Why We are Bombing North Vietnam: A Presidential Letter," *AF&SD* 50, no. 4 (April 1967): 6-9.
[9] John P. McConnell, "What the Air Force is Learning from Vietnam," *AF&SD* 50, no. 5 (May 1967): 44-47.

routed an alliance of Arab nations during the Six Days War. In an *AF&SD* editorial a few weeks later, Claude Witze asserted that the key to Israel's success was they allowed their pilots to fight without serious political interference while American pilots in Vietnam were "more tightly controlled than any flyers in history." Witze opined that this short war proved "that political restraints applied in the turmoil of battle, can only increase cost and diminish effectiveness."[10]

A further challenge emerged in the Stennis Subcommittee investigations on the bombing of North Vietnam, which publicly exposed sharp strategic disagreements between McNamara and senior military officers that LBJ had publicly disavowed. The major point of contention was the targeting limitations on North Vietnamese ports. McNamara testified the ports were a poor target since the insurgency's supply requirements were so small. He disputed claims the Air Force was too limited, arguing he had approved eight-five percent of the requested targets. McNamara argued there was no basis to believe that bombing, "short of one which had population as its target," would force North Vietnamese leadership to negotiate. In the *AF&SD*, Witze summarized statements of the Joint Chiefs of Staff and General William Momyer, who was the current air commander in Saigon, that contradicted McNamara's assessment.[11] To drive the point home, the *AF&SD* reprinted the congressional committee's summary report and introduced it with a quote from the

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[10] Claude Witze, "KISS in the Desert," *AF&SD* 50, no. 7 (July 1967): 8.
[11] Claude Witze, "What Kind of Air War in Vietnam?" *AF&SD* 50, no. 10 (October 1967): 42-46.

document: “It is high time, we believe, to allow the military voice to be heard in connection with the tactical details of military operations.”[12]

By 1968 there was a clear dissonance between the positive assessments of the Vietnam War from Air Force senior leadership and the intellectual community’s frustrations with the strategy of gradualism behind it. In an effort to reconcile both sides, Brigadier General Robert Ginsburgh established five “indicators” for evaluating progress: overall military effectiveness; the political alignment of the South Vietnamese population; the viability of the Republic of Vietnam government; the negative impact of bombing North Vietnam; and Hanoi’s view of America’s will to resist. He concluded that “all the indicators continue inexorably to move” against the North Vietnamese, “except US public opinion.”[13]

Discussion over progress in Vietnam merged with lessons for future Cold War conflicts. As was often the case, much of the discussion was parochial and reflected the biases and agenda of the writers. For example, Strategic Air Command’s (SAC) defenders, whose organization had been relegated to “tactical” airstrikes mostly over South Vietnam, concluded the war had proven both its importance in conventional warfare and its doctrine of massive firepower delivered by centrally controlled forces.[14] Robert Kipp, a SAC historian for the past decade, described the successful employment of manned

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[12] “Shackling the True Potential of Airpower,” *AF&SD* 50, no. 10 (October 1967): 47-54.
[13] Robert N. Ginsburgh, “The Tides of War,” *AF&SD* 51, no. 2 (February 1968): 46-51.
[14] Joseph Nazarro, “SAC: An Instrument of National Policy,” *Air University Review* [hereafter *AUR*] 19, no. 2 (January-February 1968): 2-9; Robert M. Kipp, “Counterinsurgency from 30,000 Feet: The B-52 in Vietnam,” *AUR* 19, no. 2 (January-February 1968): 10-19; Frank H. McArdle, “The KC-135 in Southeast Asia,” *AUR* 19, no. 2 (January-February 1968): 20-33.

bombers in Vietnam in an article entitled "Counterinsurgency from 30,000 Feet." In it, he heralded the wisdom of switching from a sole nuclear delivery program to conventional bombing as early as 1964. The initial B-52 strikes took out known enemy caches and staging areas that had been "virtually inviolable to attack." Once these targets were struck, he cited General William Westmoreland and other ground commanders that the bombing was still effective in two ways. First, the B-52s had a "constraining effect" on the insurgents' movement. Second, their bombing produced a psychological effect that decreased morale, "calculated ultimately to destroy the cohesion of the enemy's organization.[15] SAC's commander, General Joseph Nazarro, cited this successful carpet bombing to assert the importance of manned bombers. Reducing SAC crews' combat performance to a talking point, Nazarro's real concern was the need to maintain a strong deterrent threat with a mixed force of manned bombers and missiles. Arguing the current B-52s and FB-111s would assuredly become obsolete by 1975, he pleaded for funds to develop a next generation bomber to face future Cold War challenges, with an emphasis on deterring a future nuclear war versus winning the ongoing conventional one. He concluded: "our primary concern is not so much for today as for the continuation of this capability into the future."[16]

The fighter community's assessment was equally narrow. The first tactical warrior that sought to guide the future of the USAF was Major General Rollen Anthis, dubbed "Mr. COIN Air" per his official Air Force biography. Anthis had previously commanded

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[15] Kipp, "Counterinsurgency," 12, 18.
[16] Nazarro, "SAC," 9.

USAF forces in South Vietnam and afterwards had advised the Joint Chiefs of Staff on counterinsurgency. In a February 1967 *AUR* article, Anthis explained that the domestic struggle over Vietnam stemmed from Americans' difficulty in understanding the evolution of modern warfare. He described that warfare had rapidly proceeded through four different "generations" over the past three decades. The first three generations understood war first as large conventional battles, then limited warfare in Korea, and finally maintaining a "delicate balance of terror." Now, he argued that it was becoming "evident" that the current, and correct, understanding of modern warfare was the need to roll back communist insurgencies, which was unfortunately the most difficult to implement and understand. These wars required everyone from social aid workers to infantrymen to work in concert. He urged the continued development of "twentieth century centurions," trained for conventional warfare "but who are wise and judicious in the application of thought and action in a world that has neither war nor peace."[17]

In a contradictory April 1967 *AF&SD* article, Anthis emphasized the use of more traditional air power over winning "hearts and minds." He wrote that the "first and most important lesson" from Vietnam was that the traditional concepts of employing airpower (i.e. counterair, close air support, interdiction, strategic bombing) had been validated and were all applicable to combatting insurgents using guerrilla warfare. Further, the difficulty in training the South Vietnamese Air Force to perform these traditional roles showed that that service needed to focus on methods to improve training allies to operate as the

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[17] Rollen H. Anthis, "Twentieth Century Centurions Needed," *AUR* 18, no. 2 (January-February 1967): 15-23.

Americans did. Anthis believed that winning in Vietnam was important to stopping the spread of communism, but more importantly it was to deter "future Communist plans and efforts."[18]

Despite criticism over political controls and the overall strategic conduct of the war, tactical warriors in leadership roles remained upbeat about their performance in combat. In the fall of 1967, General G. P. Disosway, the Commander of Tactical Air Command (TAC), also lauded the "innovation, imagination, and professionalism" of TAC personnel in writing a "remarkable chapter" of USAF history. This chapter included the rapid deployment and mobility that validated the pre-war Composite Air Strike Force concept. It also showed the command's ability to innovate technologically within the five TAC R&D centers, most famously the Tactical Air Warfare Center at Eglin Air Force Base in Florida. However, he warned that this momentum should not be lost and that limited war in the 1970s and 1980s would require forces armed with the correct equipment designed for both "flexibility and survivability." According to Disosway, flexibility was getting built into the force based on SEA lessons. However, he cautioned not to take survivability for granted in future wars. South Vietnam had been a relatively benign environment for fighters while bombing the North had shown the difficulty of penetrating airspace defended well by Soviet technology.[19]

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[18] Rollen H. Anthis, "Airpower: The Paradox in Vietnam," *AF&SD* 50, no. 4 (April 1967): 34-38.
[19] G. P. Disosway, "Tactical Air Command," *AUR* 18, no. 4 (September-October 1967): 2-5.

Echoing the pleas of the SAC community, tactical warriors also concluded that the real lesson of Vietnam was the dire need for another aircraft. For several years, there had been a raging debate about the basic design of the Air Force's next fighter. Three basic proposals for the FX were that it be a maneuverable dog-fighter built primarily for air-to-air combat, a high-speed variable wing interceptor (a faster F-111), or a V/STOL multi-purpose fighter to succeed the F-105.[20] This debate closed in 1968, at least officially, with service leadership lending full support for the first design. In a spring 1968 *AUR* article, General Bruce Holloway elevated the role of air superiority to facilitate successful conventional operations by claiming there was a definitive need to reprioritize air superiority as the key for attaining all other military objectives. To Holloway, the Vietnam War had shown demonstratively that air superiority was just as much a requirement in 1968 as it had been during WWII and the Korean War. To ensure this, the correct path forward was to prioritize the FX fighter and that it must be designed purely as an air-to-air fighter. He insisted that this aircraft must have both air-to-air missiles as well as a gun. He also nested these requirements into the overall stated goals of the USAF to deter war versus fighting it. Holloway argued: "A recognized ability to win air superiority rapidly and decisively is a deterrent to conventional war, just as nuclear superiority is a deterrent to general war. Our objective is to deter both kinds of conflict. The air superiority fighter is a most important key to that goal."[21]

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[20] Kenneth P. Werrel, *Chasing the Silver Bullet: U.S. Air Force Weapons Development from Vietnam to Desert Storm* (Washington DC: Smithsonian Books, 2003), 55-76; Michel, "Revolt," 70-76.
[21] Bruce K. Holloway, "Air Superiority in Tactical Air Warfare," *AUR* 19, no. 3 (March-April 1968): 2-15.

Vietnam was also cited by Aerospace Defense Command (ADC) in their preparations for future warfare. Major General William Greenfield, a Regional Commander in ADC, argued that instead of remaining tied to defending the Continental United States from nuclear attack the command should become a mobile air superiority force to help project power around the globe. Greenfield pointed to the deployment of F-102s in 1965 to South Vietnam that had taught ADC that it would be required to deploy for future limited wars. He explained that although ADC's interceptor pilots were better trained for radar interceptions than the F-4s, they failed to make an impact due to the limiting factor of providing early warning and control over enemy territory. The technological solution was the Airborne Warning and Control System (AWACS). Greenfield predicted that with AWACS the ADC of the future would be able to "scramble to the four corners of the globe with a force that is ready to fight at the moment of its arrival" and gain air superiority for wars across the spectrum of conflict.[22]

Despite the optimistic appraisals from Johnson and McConnell, the overall thrust of the public discussion concerned the need for improvement. This need most often looped back to strategic and tactical warriors' ongoing desire to build desired aircraft designed for future wars opposed to the current one. The strategic warriors continued to cite SAC's new conventional capability to argue for the next generation of bomber for both nuclear and conventional missions. The FX, renamed the F-15 in late 1968, emerged as the result of reprioritizing the air superiority mission over concerns of aircraft survival via flying

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[22] William D. Greenfield, "Global Air Defense through Mobility," *AUR* 20, no. 1 (November-December 1968): 84-94.

high and fast or by dispersal via V/STOL technology. The basic lesson that these authors trumpeted was the need to mold the future force to deter or fight future limited wars against opponents at all levels from the Soviet Union to another nation armed with Soviet weapons.

Technologists' Concerns

While the Air Force Association clearly supported the Vietnam War, they were more concerned with the technology for future wars. Its journal, the *AF&SD*, was more pre-occupied with the state of the technological war rather than the Vietnam War. The AFA's first policy proposal for 1967-1968 professed support for the war, but later proposals downplayed Vietnam with demands for an advanced bomber to replace the antiquated B-52, the desperate need to produce the F-12 interceptor, and the need to pursue advanced R&D projects in general. According to the AFA, the primary threat driving the need for renewed investment in "strategic" capabilities was both the growing size and improving quality of the Soviet arsenal. The Association dedicated one paragraph to SEA in its 1967-1968 Statement of Policy, but the rest of the statement concerned the conduct of nuclear warfare and other technological challenges to the existing force. At the end of its Statement, the AFA recommended that the American government conduct "a sweeping reexamination and reevaluation of national strategy in the light of current and projected technology and its impact on the world balance of power."[23]

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[23] "AFA's 1967-1968 Policy Resolutions and Statement of Policy," *AF&SD* 50, no. 5 (May 1967): 10.

Colonel Richard Henry adapted his 1967 thesis from the National War College for the *AF&SD* in which he argued that there were two "fronts" in the Cold War: SEA and the "technological battle." While SEA had dominated the headlines, it had distracted from the second front which he believed was far more important. Henry cited the eighteenth-century military philosopher Maurice de Saxe to argue that winning without a battle represented a general's "acme of perfection and competence." With this observation in mind, those focused solely upon winning battles in Vietnam were missing the fact that the United States was relegating itself to a "technological plateau" while the Soviets continued to pursue advanced technology. Recognizing that the Treaty on the Peaceful Uses of Outer Space, set to take effect in October, would deny the militarization of space, Henry argued for the continued urgency of military R&D in space. Even without directly exploring weapons, the experiments afforded by a sustained military presence on a space station would advance American knowledge of surviving and operating in that medium. If the peaceful use of space ever yielded to war, the knowledge from human experiments in space would "provide the capacity to react technologically and operationally to a threat in or from space." To keep research alive, Henry urged that NASA and the USAF's manned orbital laboratory program should combine and the organizations should share their research findings with each other.[24]

The threat of losing the technological war loomed large to the AFA's editors and like-minded thinkers. In February 1967, Edgar Ulsamer published an interview with Kelly

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[24] Richard C. Henry, "Needed—One and Only One—National Manned Orbital Laboratory Program," *AF&SD* 50, no. 8 (August 1967): 59-63.

Johnson, a renowned Skunk Works engineer who designed both the U-2 and the SR-71 spy planes. Johnson's primary concern had nothing to do with the jungles of Vietnam, but that the United States was ceding the lead to the Soviet Union in the technological race. The main problem was that the US had not begun "enough advanced R&D projects in this decade." Johnson explained that even when these major programs failed to reach full production, their real benefits were to advance the technological base in terms of critical subcomponents like advanced engines and avionics. In this way, industry and USAF scientists could continually prepare the nation for the next generation of advanced weaponry.[25]

Many fears of the technologists completely ignored the Vietnam War and focused once again on competing directly with the USSR. The specific technological threats alluded to in the Statement of Policy were further enumerated in March 1967 and reflected the AFA's concern over Soviet strategic advances. In the opening editorial, *AF&SD* editor John Loonsbrock ominously concluded that the effect of possible technological gains presented within the issue was that the "security of our second-strike force now is seriously jeopardized."[26] Without a secure second-strike capability, deterrence could fail since a nuclear power could dismantle its adversaries capacity to strike back with an overwhelming attack. Mutually assured destruction would no longer be mutual or assured.

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[25] Edgar E. Ulsamer, "Kelly Johnson: A Worried Planner," *AF&SD* 50, no. 2 (February 1967): 63-65.
[26] John F. Loonsbrock, "Technology—The Great Destabilizer," *AF&SD* 50, no. 3 (March 1967): 6.

J. S. Butz wrote the feature article, "The Myth of Technological Stalemate," that predicted four imminent and "little-publicized technological breakthroughs."

Butz predicted that the technical "pendulum" was swinging from offense towards defense. The first predicted breakthrough was that nuclear warheads of sixty megatons or more detonated in the upper atmosphere emitted a hundred times the expected number of "high energy particles." This presumably meant that the Soviets were now capable of detonating these warheads and create a "protective shield" over their territory and thus negate the entire American inventory of missiles, on land or at sea. The second breakthrough was increased ICBM accuracy that enabled precise counterforce strikes on American missile silos. Third, "astounding reconnaissance systems developments" using multispectral imaging from space-based satellites would allow the Soviets to track Polaris submarines, rendering their secure status moot. The final breakthrough was not technical, but economic. The cost reductions in producing a strategic arsenal meant that nuclear weapons would proliferate and complicate the world and would require the United States to prepare to defend against multiple threats, potentially from less predictable adversaries such as the People's Republic of China.[27]

Several of these predictions seemed far-fetched even at the time and by the summer of 1967, John Loonsbrock defended against complaints from *AF&SD* readers about the journal's "technological hang-up." He responded by first asserting that the *AF&SD* did not focus solely upon advanced technology and covered many subjects. Then, he explained

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[27] J. S. Butz, Jr., "The Myth of Technological Stalemate," *AF&SD* 50, no. 3 (March 1967): 49-58.

why the editors still focused intensely on future technological advances. Loonsbrock argued that technology was fundamentally "a people-oriented phenomenon." People came up with the ideas, the research methods, the engineering, production, and how to actually use the tools produced. Once created, technology was "amoral," did not choose sides, and served to enhance human needs. Further still, technology was "very often the difference between living or dying." With this high level of importance to the future and with the stakes being life or death, Loonsbrock argued that any undue focus on technological progress was worth the extra pages dedicated to it.[28]

Space remained a primary medium that technologists believed would alter the future of mankind, even as the likelihood of militarizing space declined.[29] In July 1967, Retired General Bernard Schriever implored the *AF&SD* readership to continue striving for technological advancement and once again pointed to space as the most important avenue for it. He cautioned airmen about remaining wedded to the past, but instead to "recognize, just as we gradually came to do with the airplane, that old standards, old criteria, and old ways of doing things may no longer pertain." Recognizing that visions had gone awry earlier in the decade during the height of the space race, Schriever desired that the country take a "long view" of technological development to avoid those excesses. The American people needed to understand and come to terms with the fact that "technology today is by far the principle enabling instrument of national power." The best way to advance the state

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[28] John F. Loonsbrock, "The Technological Hang-Up," *AF&SD* 50, no. 6 (June 1967): 6.
[29] The USAF direct involvement in manned space operations was limited to the Manned Orbital Laboratory project that never launched. The project's funding was insufficient and was cancelled in 1969; David N. Spires, *Beyond Horizons: A Half Century of Air Force Space Leadership,* rev. ed. (Maxwell AFB, AL: Air University Press, 2004), 273.

of technology in the Free World, according to Schriever, was to continue the onward advance in space.[30]

Two more *AF&SD* articles in August 1967 also reflected the importance the AFA placed on technology. Edgar Ulsamer wrote about the "rebirth" of a USAF dream of the 1950s, the nuclear-powered bomber. Citing Kelly Johnson who believed that this technology had advanced far enough to begin testing first on large cargo planes, Ulsamer predicted that this capability could and should be pursued since it would "cut back the number of US bases and restrict the prepositioning of supplies."[31] Investing in a nuclear powered aircraft would then negate the large expenses required for general purpose weapons since force could be projected across unlimited distances through the air. Retired Colonel Stephen J. Saltzman believed that the rapid pace of science and technology had led to humanity opening "pandora's box" with the "pestilences" of nuclear bombs, the delicate balance of terror, and relying upon a "Maginot Line of survivable and deliverable weapons" for security. This environment had ironically led to limited wars. With the bitter experience of domestic turbulence over Vietnam, he asked whether any future president would ever again risk committing American lives where WWII and Korean War era weapons resulted in such loss of life. Saltzman urged the nation not to pursue further nuclear or conventional weapons for their own sake, but instead commit itself to "technological warfare." Instead of relying on traditional methods based on force,

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[30] Bernard A. Schriever, "Space and Our Clouded National Attitudes Toward It," *AF&SD* 50, no. 7 (July 1967): 55-57.
[31] Edgar Ulsamer, "Rebirth of Aviation's Top Challenge: The Nuclear-Powered Airplane," *AF&SD* 50, no. 8 (August 1967): 43-46.

Saltzman claimed that technology would allow the military to establish "doctrines of war" based on controlling the climate, communications systems, and opponents' minds, nervous systems, or reproductive systems.[32]

In March 1968, the monthly *AF&SD* editorial by John Loonbrock made it explicitly clear that the AFA's support had drifted farther from Vietnam and towards the technological war. He argued that the "unforeseen length and intensity of the war in Vietnam" had stressed national policy. The war had forced cuts to "needed social programs." Meanwhile, advanced technological projects such as the Supersonic Transport and space exploration were feeling the "cold breath of stretch-out." Another advanced project that held "real promise for attaining a workable world peace" was the satellite reconnaissance system that laid "moldering on the shelf." He cautioned that the Vietnam War drained resources, but it could get worse if the US committed to more "Vietnams" that would force the service into "living at the bottom of the barrel."[33]

Retired Brigadier General Henry C. Huglin, who commanded a bombardment group that firebombed Japan, exemplified the argument that the pursuit of high technology remained vital to the nation's interests. In the summer of 1968, he equated "man's greatest venture" into space with the need for America to be in the lead and win the Cold War. He bemoaned the critics of this venture and noted that Ferdinand and Isabella had also been

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[32] Stephen J. Saltzman, "Tomorrow's Strategy—Out of the Jungles and Into the Lab," *AF&SD* 50, no. 8 (August 1967): 32-37; Saltzman's argument about using technology to control a population's reproductive systems was previously posited in the *AUR*, see Harry H. Malvin, "In My Opinion: A Philosophy of NBCP Warfare," *AUR* 18, no. 2 (January-February 1967): 70-73.

[33] John F. Loonsbrock, "Living at the Bottom of the Barrel," *AF&SD* 51, no. 3 (March 1968): 9.

criticized for supporting Columbus. More troubling to Huglin than the criticism was that most of the citizenry were now "diverted only momentarily" by news of a new advance made in space. This complacency would not do since space required "tremendous scientific, engineering, physical, and financial resources." He argued that ignoring the needs and the stakes of this new race was not an option and that the United States, thrust into leading the Free World, was not rising to the occasion and instead desired to "turn back the clock to our national adolescence." Should the US shirk its leadership responsibilities, other nations with values "inimical to ours" would lead instead and "take over the world and us with it."[34]

Attitudes on Nuclear Superiority

The strategic warrior school still believed nuclear superiority would deter future wars and even allow the nation with superior nuclear forces could attain its objectives in lesser crises and limited wars. John Loonsbrock's August 1967 *AF&SD* editorial was indicative of this belief when he cited the Vietnam War only to point out that one of its "hidden prices" was to curtail spending on the strategic nuclear arsenal and thus create an expected "megatonnage gap" to exist in the near future.[35] The Vietnam War was more of a distraction as these officers and AFA editors sought to refocus the intellectual conversation back on the dangers of a Soviet strike directly on the homeland which they believed would

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[34] Henry C. Huglin, "Our Space Venture and Our Role in the World," *AUR* 19, no. 4 (May-June 1968): 13-25.
[35] John F. Loonsbrock, "The Changing Military Strategic Balance," *AF&SD* 50, no. 8 (August 1967): 6.

be catastrophic unless the nation became better prepared to limit the damage from such a war.

The longstanding need to support superiority found its voice through a number of officers and of course the AFA editorial staff. Huglin explained in a fall 1967 *AUR* article that strategic superiority was the key to American power and its ability to combat the encroachment of communism and the diminution of freedom. He defined strategic superiority broadly in terms of national will, military forces, economic strength, education, competence in R&D, dynamism in technological fields, American psychology, and alliances that "add more . . . than they detract." One of these factors was clearly superior to the others. Huglin wrote: "Central to our strategic strength and superiority are our military strength and our will to use it if necessary. Central to our military strength are our strategic offensive forces and, secondarily, our active and passive strategic defensive forces."[36]

Although it was still viewed in a secondary role to offensive capability, the need for a strong defense against Soviet nuclear forces remained an important priority. At the time, the only American ABM system under development was the US Army's Sentinel Program meant to provided limited defense for ICBM silos and some cities against a small Chinese force or an accidental Soviet launch.[37] J. S. Butz argued in November 1967 that this minimal system was insufficient and failed to check the increased numbers of Soviet

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[36] Henry C. Huglin, "Our Strategic Superiority—Why We Must Continue to Have it," *AUR* 18, no. 6 (September-October 1967): 42-49.
[37] Robert Frank Futrell, *Ideas, Concepts, and Doctrine: Basic Thinking in the United States Air Force, 1961-1984,* vol. 2 (Maxwell AFB, AL: Air University Press, 1989), 440-41.

missiles. A concern of many critics was (and is) that building a strong defense would spurn an arms race to overcome any technological advantage made. Butz scoffed at this by pointing at both the ongoing numerical growth of missiles and the quest to make them more accurate. The arms race was already well underway and "nothing short of total disarmament can stop" it. Without a "near miracle of negation" concerning arms control, Butz believed that the correct view of the "thin defense" was as an initial technological step towards a system that would eventually provide a strong missile defense to neutralize the Soviet arsenal. This capability would prove "vital to building a world safe from nuclear catastrophe."[38]

Herman Wolk, an Air Force and SAC historian, lamented that the Vietnam War had detracted from investing in nuclear superiority. His immediate concern in January 1968 was the announcement of a Soviet Fractional Orbital Bombardment System. This system could launch a nuclear payload into low earth orbit and eliminated range requirements. The implication of this was that the Soviet Union would soon be capable of launching weapons over the south pole versus the north, where the entire US early warning system was built to look, and complicating any attempts to defend against it with the Sentinel system or future Anti-Ballistic Missiles (ABM) without rebuilding the entire early warning network. With this threat as a backdrop, Wolk decried those that believed that there was nothing to be gained by further advancing a general war capability. The Vietnam War was the result of "the very real application of strategic nuclear power" that had channeled conflict away from a disastrous general war into a limited war. If that

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[38] J. S. Butz, Jr., "The Case for Defense," *AF&SD* 50, no. 11 (November 1967): 44-48.

strategic environment was to persist, Wolk believed continual investment in strategic nuclear warfare was vital. He noted a paradox that since strategic weapons had proven their utility to deter a nuclear war, the nation and its leaders had decided to reduce R&D to advance new weapons that could defend against their use or overcome Soviet defenses. He ended his article with a caution that "to a frightening degree, the survival of freedom" rested on the wisdom of the President, one man, to push for future investments in technological nuclear superiority.[39]

If there was a singular person that exemplified this school of thought, it was once again Curtis E. LeMay. In 1968, the former CSAF roared backed into public life. On 5 June 1968, his book, *America is in Danger*, was released primarily to decry the restricted budgets for strategic nuclear forces. He cautioned that the Soviet Union was "pressing ahead" to attain nuclear superiority; deterrence was "not for them." LeMay linked this "equivocal manner" of preparing for a nuclear war to the same haphazard political approach the Administration was taking towards the war in SEA. He claimed that failure in the current war was "a direct result of the bankrupt nature of our deterrent philosophy."[40] LeMay warned of the consequences of pursuing arms control in the same manner as the US had fought in Vietnam, in both instances against an enemy that he claimed had demonstrated more will pursuing their objectives and simply could not be trusted. Willfully abdicating nuclear superiority had "drained away our red military blood"

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[39] Herman S. Wolk, "Strategic Superiority and Vietnam," *AF&SD* 51, no. 1 (January 1968): 51-56.
[40] Curtis E. LeMay and Dale O. Smith, *America is in Danger* (New York: Funk and Wagnalls, 1968), vii-viii.

and left the US unprepared to prevail in a fight or achieve lesser objectives (e.g. the Cuban Missile Crisis). LeMay warned that there was not a "single day" to waste. The US must abandon deterrence based on mutually assured destruction and return to one of military superiority designed to win a nuclear war, through the air.[41]

LeMay's foreboding was strong enough to propel him into agreeing to run as George Wallace's nominee for vice president. Besides tarnishing his reputation by openly associating with the racist policies of the populist Governor of Alabama, LeMay's nonchalant views about nuclear weapons were on full display and quite possibly tanked Wallace's almost successful run for President. At a press conference soon after he was announced as Wallace's nominee, LeMay commented that there was no real difference between dying via a rusty knife in Vietnam or by a nuclear explosion. To top it off, he told the press that he would actually prefer to die from the nuclear weapon. Wallace tried to downplay LeMay's statement but the damage to his campaign had been done.[42] Further, it made it clear that the old strategic warrior did not recognize the obvious implications that fighting a nuclear war would be disastrous and that nuclear superiority had become meaningless when an adversary could destroy the nation regardless of which nation had a numerically superior force.

Colonel Donald Martin wrestled more than LeMay and other strategic warriors with whether superiority could actually win wars and achieve objectives in the nuclear era. After describing the spectrum of warfare from guerrilla tactics to a thermonuclear

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[41] LeMay, 264-265.
[42] Warren Kozak, *LeMay: The Life and Wars of General Curtis LeMay* (Washington DC: Regnery Publishing, 2009), 375-77.

exchange, he reiterated the argument that the entire spectrum exists as it does because of the threat of a general war. Further, superiority had supposedly allowed America to achieve its objectives in the international arena. The Vietnam War had created a wrinkle in this officer's understanding. For one, American superiority had completely failed to deter this limited war. Martin wrote: "If total force superiority, including unquestioned air superiority [over South Vietnam], cannot effectively elicit the desired response from our opponents, then the utility of that military superiority, of itself, would seem to be limited to deterring direct attack against the U.S. proper. . . . Such a conclusion comes hard indeed." Undeterred by the limits of superiority he had discovered, Martin ultimately concluded that "if the ultimate national objective" was to perpetuate a strategic "stalemate," nuclear superiority was the better option to do so since it would provide more firepower should that stalemate fail and a general war ensue.[43]

By the end of 1968, the war in Vietnam seemed to be subsiding. The criticism spurned by the Tet Offensive earlier that year had led LBJ to announce on March 31 that bombing north of the 20th Parallel would cease and that he would not seek re-election. On November 2 just before the election, Operation ROLLING THUNDER was halted completely without either persuading the North to stop supplying the southern insurgency or adequately halting the flow of supplies to prevent a political defeat. Attempting to understand why broad public support had collapsed over the past year, Major Philip Caine

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[43] Donald F. Martin, "Views on Aerospace Power," *AUR* 19, no. 3 (March-April 1968): 30-39.

compared the Korean and Vietnam wars to one another. There were many differences between the two. Korea had a definite beginning with a clear communist invasion, combat had resembled WWII with a clear front line, and a popular general had been sacked for defying political authority. In Vietnam, by contrast, the US had gradually increased its involvement, there were no definite battle lines, and no general had attempted to buck civilian authority. What the two wars had in common, as Caine alluded to, was that the American people withdrew their support once it became clear that the war had stalemated. For Korea, that occurred quickly. For Vietnam, it took years and the shock of an unexpected enemy offensive.[44]

At Air Force Headquarters, the new Vice Chief of Staff General John Ryan represented more continuity. Ryan had commanded a bombardment group in Italy during WWII and then risen through the ranks until he commanded SAC from 1964 through 1967. For career broadening, he commanded Pacific Air Forces from 1967 through 1968 where he earned the ire of many officers sympathetic to the actions of those flying over North Vietnam for his zealous prosecution of Colonel Jack Broughton and two majors that had strafed a Russian vessel and destroyed evidence to cover it up.[45] In September 1968, Ryan advised incoming members of the Air Staff that the Air Force positions they would be defending had to be subordinate to national policy and existed within a constant "evolving framework." He then told returning staff officers that, "the problems you handle now are,

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[44] Philip D. Caine, "The United States in Korea and Vietnam: A Study in Public Opinion," *AUR* 20, no. 1 (November-December 1968): 49-56.
[45] John T. Correll, "The Man from Thud Ridge," *Air Force Magazine* 95, no. 3 (March 2012): 64-69; Jack Broughton, *Going Downtown: The War Against Hanoi and Washington* (New York: Orion Books, 1988), 207-88.

generally speaking, the same ones you may have wrestled with five or ten years ago," only the context had changed.[46] The Air Force was turning back to normal operations pursuing the same kind of projects from before the escalation in Vietnam. Ryan would replace McConnell as the next CSAF the following the following year.

In the public arena, officers drew lessons from the Vietnam War and the changing posture of the Soviet Union. Tactical warriors cited the lack of preparation for a conventional war to call for a renewed and continuing focus on the requisite technology and techniques necessary to fight it. At the same time, many technologists and strategic warriors looked at the war and saw a growing quagmire, fought indecisively, that channeled resources away from their preferred means of making war. Even so, they believed manned bombers had once again proven themselves as vital instruments of national policy. Their worth, however, was greater than others since they provided a deterrent to keep the nation's enemies from striking the homeland. Regardless of the school of thought, most authors in the *AUR* and *AF&SD* saw the Vietnam War in terms of the need to determine lessons for the future versus serious introspection about progress, or lack thereof, being made. This was true whether the intellectual perspective was the need to prepare for the next limited war or that committing to any more 'Vietnams' would be a tragic, misguided error that would further detract from preparing for a direct encounter with the Soviet Union.

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[46] John D. Ryan, Air Force Policy Letter for Commanders, Office of the Secretary of the Air Force, October 15, 1968, MSFRIC.

CHAPTER VI

MOVING ON FROM VIETNAM, 1969-1973

By 1969, the USAF intellectual community's focus moved past the Vietnam War and once again looked to the future of war even as combat operations continued in Southeast Asia. A staunch anti-communist, Richard Nixon had campaigned on a promise to end the war and achieve "peace with honor" to extricate the nation from Vietnam.[1] Over the course of his first term, intense domestic resistance to any expansion of the war into Cambodia, Laos, and eventually North Vietnam constrained Nixon's preferred approach to bring the war to a conclusion.[2] Due to this domestic resistance and the difficulty of finding terms amenable to both the leadership of both North and South Vietnam, Nixon's support for the war diminished further and he increasingly sought an exit while preserving some American credibility versus actually pursuing peace or honor.[3]

The strategic outlook that the officer corps labored within had changed significantly. They no longer labored under the auspices of John F. Kennedy's promise that the American people would "pay any price" or "bear any burden" to support its allies against the encroachment of communism. Instead, the Nixon Doctrine articulated a foreign

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[1] George C. Herring, *America's Longest War: The United States and Vietnam, 1950-1975*, 5th ed. (New York: McGraw-Hill Education, 2014), 277-82.
[2] Terry H. Anderson, *The Movement and the Sixties: Protest in American from Greensboro to Wounded Knee* (New York: Oxford University Press, 1995), 135; John Prados, *Vietnam: The History of an Unwinnable War, 1945-1975* (Lawrence: University Press of Kansas, 2009), 538.
[3] James H. Willibanks, *Abandoning Vietnam: How America Left and South Vietnam Lost Its War* (Lawrence: University Press of Kansas, 2004); Lewis Sorley, *A Better War: The Unexamined Victories and Final Tragedy of America's Last Years in Vietnam* (New York: Harcourt Publishing, 1999); Gregory A. Daddis, *Withdrawal: Reassessing America's Final Years in Vietnam* (New York: Oxford University Press, 2017).

policy that called for US material support to allies, while avoiding avoid any large commitment of military forces. Additionally, the Nixon Administration sought to exploit the rifts between the Soviet Union and China while pursuing détente through various arms control agreements to reduce tensions between the two superpowers. Officers followed suit and wrestled with how to prepare for a world of nuclear parity with the Soviet Union and where the US would expect its allies to defend themselves.

The rhetoric from the President and the top Air Force leadership may have signaled that the war was rapidly winding down, but combat continued in Southeast Asia (SEA). The bifurcation between rhetoric and reality harmed the morale of those still fighting. David Honodel, who flew F-4s over Laos in 1971, relayed that while experts were calling the war a "strategic defensive, tactical offensive," most pilots just used expletives.[4] Reflecting internal tension among officers, John Halliday recalled that real warriors used the epithet "Lieutenant Colonel Desktop" for those present to improve their resume, who avoided combat, and who made up asinine rules to claim they had done something.[5] Ed Rasimus wrote of his differing impressions of his second tour to Korat Air Base, Thailand in 1972. On his first ROLLING THUNDER tour, gatherings celebrating pilots' end of tour flights were somber affairs to pay homage to those that had fallen. He observed that now, they devolved into gluttonous affairs with massive food fights off-base, in front of

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[4] David R. Honodel, *The Phantom Vietnam War: An F-4 Pilot's Combat Over Laos* (Denton: University of North Texas Press, 2018), 37-38, 267.
[5] John T. Halliday, *Flying Through Midnight: A Pilot's Dramatic Story of His Secret Missions Over Laos During the Vietnam War* (New York: St. Martin's Paperbacks, 2005), 75.

Thais who often subsisted on a "meager diet." He and other veterans were "appalled by the conduct" of the new breed.[6]

Within this context, this chapter will survey the eddies of Air Force thought during the 'wake' of Vietnam. First, it will show how the strategic environment had shifted. Then, it will address how the tactical warriors assessed lessons from the war with particular emphasis on how to control airpower over foreign battlefields. Third, technologists and strategic warriors both framed the Vietnam War and subsequent 'post-war' budget cuts as a catastrophe that would allow the Soviet Union to prevail in international affairs. All three groups, however, drew lessons from the war that justified further technological investment. Then, ways the Air Force did or did not learn formally will be briefly explored. Finally, the success of Operation LINEBACKER II in 1972 provided the fodder to many that airpower could have won the war in 1965. The end result was a changed intellectual climate where tactical warriors were no longer merely a junior partner.

Changed Strategic Environment

The Vietnam War faded rapidly to a memory for many in the officer corps. Retired Brigadier General Henry Huglin was reminiscing on the experience in SEA and declared in February 1969 that the United States' policy had triumphed. He perceived that the "tide of battle" had turned in America's direction. The insurgency faced defeat on military, psychological, and political fronts and with time would "likely wither away without

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[6] Ed Rasimus, *Palace Cobra: A Fighter Pilot in the Vietnam Air War* (New York: St. Martin's Paperbacks, 2006), 94.

negotiations" as had occurred in previous communist insurgencies in Greece, Malaya, and the Philippines. He then enumerated several gains from U.S. involvement. First and foremost, the world had avoided "calamitous consequences" of a more general nuclear war while simultaneously preventing the dreaded "Domino Effect" that supposedly would have lost all of SEA to communist ideology. Second, American "prestige and trustworthiness" had been amplified for supporting its commitments while the "Communists' grab for power" had been exposed. Finally, the United States had learned hard lessons about nation-building, the technology necessary for limited wars, and the need to "take in stride" sensational media reporting that stressed anecdotes such as a monk immolating himself over a broader view of strategic progress.[7]

Secretary of the Air Force Harold Brown and Chief of Staff of the Air Force (CSAF) General John P. McConnell both reflected on their tenures in office to identify what the war had taught the service as it moved into the future. Many of Brown's conclusions in spring 1969 about airpower supported the tactical warriors' view that in the future, just as in Korea and Vietnam, "the need to keep war limited in the nuclear age may often prevent the use of strategic bombing" against America's enemies. However, US fighter-bombers' "highly detailed discrimination" in targeting had raised "the cost of war" for the enemy in this new strategic environment. Looking to future requirements, he was optimistic that the weapons needed to improve USAF performance in limited war were being developed, but cautioned: "We must not gear our future planning too narrowly to our

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[7] Henry C. Huglin, "Our Gains from Success in Vietnam," *Air University Review* [hereafter *AUR]* 20, no. 2 (January-February 1969): 71-78.

experience in Vietnam."[8] McConnell also urged the service not to hew too closely to the Vietnam experience. He wrote: "I hope and pray that our science and industry will succeed in keeping us ahead in this technological race." However, he also believed that Vietnam had shown that war was no longer a Clausewitzian "continuation" of politics. By this, he meant that politicians would declare war, provide a clear objective to "win," and then get out of the military's way. Instead, combat and politics were now intertwined more than ever. McConnell now argued that nuclear weapons had made general war too dangerous to contemplate. Echoing the strategy of Flexible Response more than strategic bombing zealots, he argued that the military would no longer conduct wars "independently." Instead, he foresaw that need for a "measured and sophisticated use of military power in support of political objectives."[9]

Beyond charting the military's post-Vietnam course, the growing anti-militarism in America concerned the intellectual community and produced an impetus to defend the service's actions in the past and its plans for the future. William Leavitt charged that this anti-militarism and fear of the military-industrial complex was a "new virus of McCarthyism" that sought to scapegoat military leaders over the failures of Vietnam. He argued that while the Army and the Marine Corps were enthusiastic for the policies that led to Vietnam, the Air Force was "pressed to doff its A-bomb image" and only "reluctantly climbed on the bandwagon" of counterinsurgency. Now that counterinsurgency had failed, these same "chorus of critics" railed against Air Force officers advocating research into

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[8] Harold Brown, "Air Power in a Limited War," *AUR* 20, no. 4 (May-June 1969): 2-15.
[9] John P. McConnell, "Peace Through Military Strength," *Air Force & Space Digest* [hereafter *AF&SD]* 52, no. 5 (May 1969): 104-6.

defenses against Soviet ICBMs and bombers. Finally, he charged that the real "Dr. Strangeloves" were those that "worked the abstract computations, glamorized on paper the beauties of limited war, and peddled the nostrums of counterinsurgency."[10]

In this environment where the service should learn from Vietnam (but not too much) and where public support for high military budgets had waned, the officer corps sought to chart its course. In August 1969, General John Ryan became the seventh CSAF and described his vision for the Air Force. He believed that the service had become segmented into factions including those that emphasized strategic warfare, tactical warfare, and advanced research. Ryan stated that the service had prescribed missions and that aircraft designs should be geared toward accomplishing them. Technological research and doctrinal changes needed to focus on existing missions in both strategic and tactical forces. Put simply, both Strategic Air Command (SAC) and Tactical Air Command (TAC) required new aircraft and updated ordnance to perform their missions. While the last three Chiefs had heralded the future of spaceflight, Ryan commented that although there was much potential for space, "we have already gone far enough into this medium to realize major gains in communications." The implication was that the service would not press for new revolutionary technologies and would only pursue "nonaggressive applications" in the hope that the peaceful use of space would be "honored without exception." In conclusion, Ryan told his readers that for the immediate future "it should be not so much a question of what we will do as how we can do it best." Strategy would now lead technology.[11]

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[10] William Leavitt, "Will the Real Dr. Strangelove Please Stand Up?" *AF&SD* 52, no. 7 (July 1969): 50-54.
[11] John D. Ryan, "The Air Force's Mission," *AF&SD* 52, no. 9 (September 1969): 67-70.

Lieutenant General John Carpenter, former Commander of Air University (AU) and now the Assistant Vice Chief of Staff, established some priorities for the future in December 1969. Cautioning that any predictions outside of five years was more akin to the "business of prophesying," he nevertheless spelled out the geopolitical facts that "we believe" face the nation for the next twenty years. The Soviets would remain motivated to achieve world domination. They had achieved a preponderance of ICBMs. The USAF bomber fleet was superior and provided the US a megatonnage advantage, but Soviet defenses threatened that capability. Due to this situation, Carpenter's top three priorities in order were to modernize the strategic nuclear arsenal to assure national "survival," then be strong enough to "conduct our relations with the [existing] community of nations freely," and finally to meet a "moral imperative" to help smaller nations "to attain freedom and advancement."[12]

The strategic environment that the intellectual community faced had changed due to a variety of factors. The first was that Vietnam, whether framed as a triumph or a disaster, was winding down as rapidly as possible. The war had taught the importance of conventional warfare and reduced support for massive retaliation strategy. Second, the "nostrums" of limited war had also produced a highly unpopular war that had helped reduce the stature of the military and thus public support for it. In an era of continuing decline in the budget, the technologists' visions for militarizing space was cut short in preference of gearing the Air Force to fulfilling its given missions. Now, instead of

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[12] John W. Carpenter III, "The United States Air Force: Where We Stand Today: What's Needed for Tomorrow," *AF&SD* 52, no. 12 (December 1969): 46-50.

believing that smaller wars could always be deterred, conventional weaponry would receive more attention so that the service could better fight future wars through the air with far more emphasis on fighters.

The Future of Limited War

By 1969, the number of officers returning to AWC from the war had increased. Many focused on capturing the lessons of Vietnam regarding future wars. Colonel Robert Underwood wrote a massive 300 page summation of aerial interdiction in the war and concluded that one "transcendent lesson" was that American politicians' justifiable fear of escalation meant that the doctrine of gradualism would never work since the threat of tactical nuclear weapons was no longer credible. He contended that the actual campaigns in Korea and Vietnam were better understood as interdiction campaigns alone and that each had labored under "limitations of air power" that ultimately reduced the Air Force's ability to interdict forces and supplies proceeding to the front. Underwood cautioned that the tactics and organizational structures built to fight limited war must not be "recorded and laid to rest on forgotten library shelves."[13]

Colonel Derrell Dowdy argued in 1970 that the Vietnam War had once again proved, as WWII and Korea had, that separating airpower into tactical and strategic aircraft, and then favoring the latter, was counterproductive and had "tended to compromise" the nation's ability to fight wars. What was needed in the future was to

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[13] Roberts L. Underwood, "Air Interdiction in Southeast Asia An Overview," 1969, Thesis, Air War College [hereafter TAWC], Muir S. Fairchild Research Information Center [hereafter MSFRIC], 290-91.

exploit the "the composite strength and diversification of our airpower." The service needed to give tactical airpower a higher priority moving forward.[14]

The Vietnam War convinced tactical warriors to be vocal and express the need to invest in traditionally neglected aircraft. There were two primary categories of tactical airpower they emphasized. The first of which was the need to focus on the systems and aircraft necessary to control tactical air over a battle zone for a variety of missions, most notably close air support and interdiction. Second, some tactical warriors officers lauded senior leaders' prioritization of the air superiority mission. Both categories reflected a new consensus that aircraft had to be specialized for the missions they were tasked to perform and that a multiple use aircraft, as the F-105 was designed to be, would not suffice in future wars.

The first and primary lesson that these tactical warriors drew from their experience in Vietnam, based on the sheer amount of writing dedicated to it, was the necessity to better control air strikes in a battlefield over foreign territory. This system of control, while important in today's doctrine and operations, is mostly overlooked in the historiography of the war and in debates over Air Force procurement. The mission simply is not as sexy as air-to-air combat or strategic bombing. In both Korea and Vietnam, one of the primary complaints of the US Army was the lack of effective close air support. Much of these complaints stemmed from an inability to coordinate aircraft missions

[14] Derrell C. Dowdy, "Tactical Airpower: A Strategic Force," 1970, TAWC, MSFRIC, 1-2.

effectively. The Theater Air Control System (TACS) was the Air Force plan to improve coordination and the system that dozens of AWC students wrote their theses on.[15]

The most junior and numerous entities of the TACS were the Forward Air Controllers (FACs). Their job was to identify targets and communicate them to strike aircraft. While initially ground-based, the thick jungles of SEA quickly led leadership to place pilots in smaller propellor driven and usually unarmed aircraft such as the O-1, O-2, or later the OV-10 for better visibility. These officers were embedded with Army units to support local operations. FACs were also tasked by the Air Force to find interdiction targets, like trucks in Laos. In either case, the FACs would "talk in" aircraft to the general target area and often mark a target with smoke rockets to enable a fast moving fighter aircraft to quickly acquire the target. In more dangerous areas in Laos and later North Vietnam, these vulnerable aircraft were replaced with more survivable F-100s and F-4s. These aircraft were less efficient at finding targets due to their high speed but were far more survivable than low and slow propellor driven aircraft.

The FACs were the last link in the communication chain. FACs coordinated with Direct Air Support Centers (DASC), embedded at a corps headquarters, or through a C-130 Airborne Command and Control Center aircraft for missions and to receive strike aircraft support. Air Liaison Officers (ALOs) were also embedded with ground forces at various echelons to help integrate airpower into planning operations and to facilitate prioritizing air strikes when there were too few aircraft. Radar equipped Control and Reporting Centers

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[15] For more about this system from WWII to the Vietnam War, see William C. Momyer, *Airpower in Three Wars* (Maxwell AFB, AL: Air University Press, 2003), 277-326.

stationed throughout South Vietnam and Thailand kept tabs on all aircraft and directed them as needed. This entire structure fell under the purview of the Seventh Air Force Headquarters and the Tactical Air Control Center (the senior radar element) at Tan Son Nhut AB near Saigon.

Through much trial and error, this system had reached a point where officers assessing its efficacy were optimistic that the improved coordination would ease interservice conflict and must be captured for future conventional wars that were sure to follow. Colonel Jack Keith, a previous ALO during the Korean War and commander of a F-100 squadron in South Vietnam, was convinced the improved coordination had improved to the point that any "quibbling" among air and ground commanders was "rapidly becoming a thing of the past." According to Keith, the fighter pilots of 1969 were "true professionals and much more superior in every respect to those of the World War II era." He credited the superiority of contemporary pilots to their familiarity with the TACS as strike pilots, FACs or ALOs. Additionally, they now truly cared about supporting the "thankless" ground mission. Institutionally, the Air Force demonstrated its support for the mission by pursuing the A-10 that would be dedicated to close air support (CAS). The best way to continue the gains made in Vietnam for this vital mission was for the service to continue to pursue a "a family of tactical aircraft" optimized for individual missions, including CAS.[16] Although not as complimentary as Keith, one of his classmates, US Army Lieutenant Colonel Wallace Nickel, agreed that the USAF support for the army was

[16] Jack L. Keith, "Close Air Support: The Army's Requirements: Can the Air Force Satisfy Them?" 1969, TAWC, MSFRIC, 10, 47-50.

"extremely favorable" and that the "basic validity" of the Air Force doctrine of centralized control of their aircraft "must be granted."[17]

Although these officers were pleased with the cooperation that had led to improved airpower support of ground forces, the fear remained that the hard-won lessons that had been decisive in "winning the ground battle" would be lost. Colonel Thomas Crawford, who had served as a FAC in Korea and as a DASC Director in South Vietnam, cautioned in 1970 that the "combat forged" tactics developed in Korea had been abandoned after the armistice leaving the service without the requisite doctrine or training during the escalation in Vietnam. The service attempted to only use ground based FACs, which Crawford insisted had been a mistake. To keep from once again relearning how to control CAS aircraft in the future, he argued that Tactical Air Command (TAC) must establish a training school for FACs and ALOs that would also be responsible for maintaining doctrine along with curricula. He also maintained that the USAF must invest in light aircraft that could seat two crewmembers, one to fly and the other to observe the situation on the ground. He suggested the second crewmember could even be an Army observer that would further solidify cross service cooperation. Further, to support the Nixon Doctrine the service should invest in training and equipping allied nations' pilots and Air Forces with these hard-won methods to control air forces in support of counterinsurgent forces.[18]

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[17] Wallace E. Nickel, "Command Arrangements for the Use of Airpower in Limited War: A USA View," 1969, TAWC, MSFRIC, 47.
[18] Thomas M. Crawford, Jr., "The Airborne Forward Air Controller—Peacetime Casualty," 1970, TAWC, MSFRIC, 1-2, 37-44.

In 1970, several officers heralded the position of the Airborne FAC as the most important element of the TACS that would be essential to retain now that the war was winding down. Colonel Charles Dougherty, who commanded the famed 555th "Triple Nickel" Tactical Fighter Squadron, argued in 1970 that since WWII the FAC "has been and continues to be the bridge for the degree of professionalism in providing close air support."[19] Due to the long track history across three wars, the importance of the FAC should not receive "further question" and definitely should not be viewed as a "plum" meant for plucking in peacetime budgets.[20] Colonel Stanley Mamlock also retold the successes of FACs in jet aircraft and reasoned that since the mission had been used in Vietnam, then the Air Force should be prepared with trained pilots and adequate aircraft to perform this mission "at the outset of any future conflict."[21] Lieutenant Colonel George Wilkins pointed to their ability to call in airpower with precision, the ability to provide visual reconnaissance, and provide cover to troops under fire as a vital capability for US forces. This "FAC factor" had proven in Vietnam, as it did in Korea, to be an "indispensable" capability, worthy of preservation.[22]

Besides calls to preserve the mission capability itself, Lieutenant Colonel Royce Jorgenson suggested means to improve the system in peacetime. His solution was meant to resolve the lack of continuity since the airborne FAC had been reintroduced after

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[19] The squadron's fame derived from its success at shooting down North Vietnamese aircraft; it was a bombardment squadron during WWII and inactivated during Korea.
[20] Charles R. Dougherty, "History of the Forward Air Controller (USAF)," 1970, TAWC, MSFRIC, 5, 69.
[21] Stanley M. Mamlock, "Use of the Jet Fighter Aircraft As a Forward Air Control Vehicle in a Non-Permissive Environment," 1970, TAWC, MSFRIC, 75.
[22] George I. Wilkins, "The FAC Factor in South Vietnam," 1970, TAWC, MSFRIC, 16.

combat operations commenced in the last two wars. Jorgenson proposed an organizational change of two wings dedicated solely to close air support. These wings would not only have fighter-bombers assigned to them, but would also be embedded with existing TACS elements, such as the TACC, CRC, DASC, and other supporting groups. The commander would then fulfill the "dual role" of commanding flying operations and serve as the TACC Director, responsible to the Air Force commander for the conduct of air ongoing operations during future exercises and wars. To Jorgenson, this would provide administrative and operational continuity and control, which would lead to better standardization and ultimately performance.[23]

One officer offered a dissenting opinion in 1971 on the importance of FACs, especially arming light observation aircraft such as the OV-10. Lieutenant Colonel Stuart Kane argued that "few unique combat conditions" have ever mandated departures from "sound air doctrine" and that the combat situations Korea and Vietnam were unique. In Vietnam, many "combat hardened FACS" had "misled" commanders and staff officers to believe that large numbers of Viet Cong and NVA forces had escaped because FAC aircraft had not been armed. Kane insisted that "in reality" any escaped enemy were due to a shortage of supporting fires. These "well meaning" officers had missed the fact that most of the enemy's combat power had been kept in the North, in both Korea and Vietnam, and thus the calls to arm light aircraft for the future would create an specialized weapon that simply would not survive in in contested airspace. The other item that these armed FAC

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[23] Royce U. Jorgensen, "The Forward Air Control System: A Proposed Reorganization," 1970, TAWC, MSFRIC, 1, 22.

advocates "missed" was the second order effects that their argument would have. The items that they missed, according to Kane, dealt primarily with three effects this aircraft would have on bureaucratic debates within the Pentagon. First, an armed FAC aircraft would lend credence to the Army's call for an advanced, armed helicopter and erode the USAF's prominence in airpower. Second, an armed O-1, or a future A-X, would steal budget allocations from the F-15 and the B-1, both more important for the coming high intensity conflict. Third, this aircraft could detract from the Air Force's core organizational feature, the centralized control (by an airmen) of all airpower forces in theater.[24]

Despite Kane's dissent, the TACS became more engrained in the Air Force structure with the publication of AFR 55-33, *Tactical Air Control Parties*, on July 26, 1971. This regulation codified the basic structure for the TACS. For his 1972 thesis, Lieutenant Colonel George Monahan wrote an article length summary of the new provisions intended for Army personnel that would work with the TACS in future conflicts. He described how the regulation prescribed TACS to integrate with the Army via Tactical Air Control Parties at every Army echelon at and above the Battalion level. It also directed DASCs to continue integrating Army operations with the TACS. Since the SEA experience had "again demonstrated" the need for an airborne FAC, the regulation had also codified this requirement. Monahan concluded that the codification of these

[24] Stuart E. Kane, Jr., "The Armed FAC Controversy," 1971, TAWC, MSFRIC.

programs reflected the Air Force's contribution to "the continuous effort being made by the military services" for better integration with one another.[25]

A 1972 thesis, co-authored by three Vietnam veterans, asserted the importance of the TACS and recommended a family of specialized aircraft for the force in the future. Citing Air Force doctrine to show that close air support was a vital Air Force mission, the officers also recognized the importance of ground forces and "strongly" indorsed future Air Force efforts to "ensure their survivability." They rejected an armed Army helicopter for CAS since it would not be survivable. In fact, they believed this proposal symptomatic of the lack of trust soldiers had that airmen were serious about CAS. Their paper argued that there were two aircraft options for the mission: the proposed A-X and some version of a V/STOL fighter. They recommended the A-X since the technology was readily within reach, but to purchase some VTOL AV-8 Harriers to continue seeking "state-of-the-art" technology. The bottom line for these officers was that the Air Force was serious, as it should have been all along, about providing CAS and that only continued investment in aircraft would ensure that both the Army and the Air Force would be ready for the next war, which would most likely be another communist inspired "war for national liberation."[26]

The necessity of attaining air superiority was another main lesson emphasized by tactical warriors returning from the war. Lieutenant Colonel Charles Beaver wrote in 1970

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[25] George L. Monahan, Jr., "Tactical Air Control Parties: Ready for the Future," 1972, TAWC, MSFRIC.
[26] Lacy W. Breckenridge, Wallace D. Girling, and Roger D. Tucker, "Close Air Support: Concepts and Doctrines," 1972, TAWC, MSFRIC, 72, 76-78.

that the future tactical force should be built primarily around maneuverable, high speed fighter aircraft. He argued that the Air Force's A-7 would depend on the F-4, and later the A-X on the F-15, for protection and to "keep the skies clear" for its pilots to operate and survive. This setup would necessitate a departure from the "desire to mold all of the fighter technology into one airframe" that had been an engineering goal throughout the 1960s and had resulted in the widely criticized F-111 whose greatest drawback was in its poor air-to-air combat ability. Further, Beaver argued the development of air superiority fighters held the most promise for adapting the aircraft for alternate missions in the future. These missions could include, at a minimum, nuclear delivery, close air support, photo reconnaissance, SAM suppression, and the air defense mission. To prove his point, he pointed to examples where fighters built for air superiority had been successfully adapted. The P-51 in WWII and the F-86 in the Korean War had both been made for air-to-air combat and later successfully adapted for other missions as they became technologically obsolescent for their original mission. Beaver predicted the same course for the F-15 and the Navy's F-14.[27]

Colonel Harold Homan equated the ability to achieve air superiority with the ability to win. He warned that the US was "holding to tradition of being second best." The F-15 was not expected to be fully operational until 1975, eight years after the Russians revealed their latest fighters at Domodedovo. Because of this, the US had re-entered a "credibility gap." If the US wanted to avoid being the "weaker of two nations in a conflict," then

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[27] Charles R. Beaver, "Air Interdiction and Specialization," 1970, TAWC, MSFRIC, 11-17.

serious attention to the technology requisite for air superiority had to take precedence from now on. Homan believed that the US had been behind in terms of air superiority fighter for each war to date and that true air superiority had never been gained. This was not only due to enemy fighters, but also from intense anti-aircraft artillery that had taken an inordinate toll both in Korea and Vietnam. Only by remedying this American weakness and building the technology to gain absolute air superiority over enemy territory could victory be assured for future wars.[28]

The criticism of the strategic warriors for holding back fighter unit performance that had begun in 1965 had only intensified during the course of the war. Lieutenant Colonel Dean Elmer charged that the emphasis after Korea on delivering tactical nuclear weapons robbed TAC of air-to-air proficiency. Technologically, fighter bombers had trended towards heavy aircraft capable of penetrating at high speed and low altitude with a variety of all-weather sensors. The result was the F-111, a single design that McNamara intended for use in the USAF, USN, and USMC. By pursuing another single multi-purpose aircraft for cost-effectiveness, the Air Force ended up with an aircraft that sacrificed speed and maneuverability which limited its operational effectiveness, and ultimately cost more. At the same time, air-to-air training was curtailed to like aircraft. While the combat zone was "an excellent training arena," it proved not to be the preferred place to teach basic maneuvering that should be done in formal training. Whereas the early kill ratio from 1965-66 was good for the US, the MiG's pilots gained experience as well. Taking advantage of the more nimble Soviet aircraft, the Americans' "favorable kill ratio

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[28] Harold A. Homan, "Air Supremacy--Fact or Fiction," 1970, TAWC, MSFRIC, 10.

decreased to where it was an even standoff." Elmer concluded air combat training of the tactical fighter forces were vital so that TAC could "be an effective part of our aerospace team."[29]

The overarching strategic environment was also a concern among tactical warriors. Lieutenant Colonel William Newell, a fighter pilot with combat experience in both Korea and Vietnam, sought lessons to resolve the current "nuclear 'Mexican stand-off'" between the superpowers via the decisions that led democracies into two world wars so that: "these errors may serve as a warning to the United States today." He perceived that the Soviets were investing in their conventional forces on the continent and at sea. This problem was compounded by their large nuclear stockpile. In light of the Soviet's growing strength, he cautioned the "welfare minded voter" to remember the "'popular' Maginot Line" before insisting on further military spending cuts in the hope that ICMBs would keep them safe. Newell argued that flexible response for the country with inferior conventional forces would "only be a series of retreats following many small confrontations." In the face of this retreat, the weaker nation would not risk nuclear war and thus will "incur its own immediate national suicide."[30]

Most tactical warriors were no longer content to accept either a return to massive retaliation or the argument that air power could win wars by itself. This is evident by the high number of Air War College theses dedicated to how to perform traditional tactical air

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[29] Dean A. Elmer, "Revival of the Air Combat Maneuvering Training Program," 1972, TAWC, MSFRIC, 2, 5, 13.
[30] William E. Newell, "Mahan: A Strategy for World Power Under Nuclear Stalemate," 1971, TAWC, MSFRIC, 7-17.

functions of CAS, interdiction, and air superiority. In particular, most of the papers during the withdrawal years focused on preserving how to control air battles after fighters had deployed. Their primary reason for doing so was to help win the battle on the ground, which they believed would characterize future wars more than a thermonuclear exchange. That did not prevent other tactical warriors from envisioning a war directly against Soviet forces where air superiority could not be taken for granted. In either case, the underlying key to their arguments was the dire need for more investment, but in technology suited to conventional operations.

Technologists' Decline

The optimism that technologists had that massive scientific research would transform warfare and outpace the enemy dwindled along with reduced R&D budgets and was all but gone by 1969. Left in its place were dire warnings that the United States would lose the technological war and allow the Soviets to gain the lead. The main perceived culprits for the loss were not just Russian scientists, but also the American people who increasingly and vehemently objected to the "military-industrial complex."

Although fewer in number, some technologists were still represented in the AWC classes after the apex of the war. Colonel Jesse Green was appalled that the US had allowed the Russians to make such gains it its aircraft and missile forces. He argued that while the U.S. had more technical and scientific potential than the Soviet Union, the latter's centralized approach had allowed them to compete with and best the United States. To counter this, the U.S. required a centralized agency to better direct future development and "marshal the forces of science and technology to the cause of freedom!" He blamed

the reduced support on American domestic fears about technology. One such fear was the citizenry's preoccupation that automation via technology was a threat that would take away jobs during a period of decline. Another fear was that it would enable government surveillance and ultimately lead to authoritarianism in the future. Applying a by now standard technologist approach, Green believed that the best way to mitigate these fears was for the military to encourage further scientific education to bolster their beliefs.[31]

The technologists' desperation was fully on display with the publication of *The Strategy of Technology* in 1970. At the time, the two credited authors were political scientists Stefan Possony and J. E. Pournelle. After his retirement in 1972, General Schriever's former aid, Colonel Francis Kane, admitted to contributing to the book while on active duty. Their thesis demanded the nation organize for technological war as Schriever had argued for since the 1950s. Invoking the nation's memorialized past, the authors claimed that: "Technology is America's manifest destiny." Since technology had a "momentum of its own," the only proper national strategy was to manage its development and keep the nation well ahead of its communist competitors. Since the opponent's progress was opaque, the only option was to press full ahead at the most rapid pace possible. More funding alone would not do, however. They argued that the technological war, like all other wars, "must be conducted by a commander with a strategy." This lack of technological leadership was the root cause cited by the authors for the failing power and prestige of America and the Free World. It was why North Korea had abducted the

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[31] Jesse E. Green, "Science and Technology: Key to National Survival," 1969, TAWC, MSFRIC, 34-41, 57-61.

USS *Pueblo* without consequence; it was why the American strategic offensive forces had become inferior; and it was why the "United States was perplexed by as simple a question as whether to attempt to defend her people" against thermonuclear warheads. Even the failure in the Vietnam War stemmed from the lack of a technological strategy. Had there been one, the authors claimed that a headline for the war would have read, "Advanced New Weapons End Vietnam War."[32]

For a chance at a positive outcome with reduced funding, several officers suggested methods that the Air Force could pursue. Colonel John Schobelock believed that only by saving personnel costs by relying on the a "balanced force of Regular, Guard, and Reserve units" could the Air Force and other services preserve enough of the budget for modernization and other advanced R&D. While ROLLING THUNDER had proven the need for a new air superiority fighter, the same was true of strategic offensive and defensive systems that needed rapid modernization to stave off falling behind the Soviets. It was only that no nuclear war, thankfully, had proven the case beyond a doubt.[33] Lieutenant Colonel Donald Bass argued in 1971 for a technological officers corps to "assist in attracting, motivating, and retaining" specialized officers dedicated to maintaining the Air Force's superior technological capabilities. This technological officer corps should be treated more akin to the medical corps whose specialty were required. This categorization would allow science officers to compete with each other for promotion

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[32] Stefan T. Possony and J. E. Pournelle, *The Strategy of Technology: Winning the Decisive War* (Cambridge, MA: Cambridge University Press, 1970), xxxii, 1-18.
[33] John V. Schobelock, "Budget Reduction: A Philosophical Approach to Post-Vietnam Posture," 1970, TAWC, MSFRIC, 70-74.

versus the current system where they were forced to compete with pilots with more credibility based on their combat experience. A formalized technologist officer corps would ostensibly allow the service to maximize the use of AFSC's shrinking R&D coffers and still produce the next generation's strategy altering weapons.[34]

The war in SEA and the spread of communist insurgencies in Central America and in Africa were still cited as distractions. Colonel John Bex in his 1970 thesis called the scientific method "the real ultimate and most powerful weapon" that had proven itself to be the "fountainhead and begetter" of all human progress. Science would continue to be "indispensable" to waging warfare and improving the welfare of mankind throughout the globe. He then dismissed the war in Vietnam and other burgeoning insurgencies throughout the world since they "constitute little threat because, for reasons of history, ethnic fragmentation, and national character, . . . they are unlikely to support a high level of science or technology in the future." As far as counterinsurgency theory was concerned, Bex contended that the war had only demonstrated that terrain and the people involved sometimes negated the technology of war. For the future, Western technology should be retooled not to fight in the jungles but towards the "task of restoring sick governments and economies to health, a not impossible task."[35]

Colonel Sidney Novaresi, who had served as a C-124 defoliation squadron commander for Operation RANCH HAND, believed technology would enhance human

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[34] Donald C. Bass, "Considerations in Establishing a Technological Officer Corps," 1971, TAWC, MSFRIC, 1, 18.
[35] John E. Bex, "The American Defense Position and Factors Favorable and Unfavorable to the Development of an Optimal Defense Technology," 1970, TAWC, MSFRIC, 7-8, 12-13, 26.

society. His fundamental argument was that within the "near future," mankind would be able to control "our ecological existence." This was important to feed a rapidly growing world population and thus ensure the survival of the species and reduce human conflict over food resources. There were two problems with Novaresi's vision of progress, both stemmed from the Vietnam War. The first he identified and was the "hue and cry" emanating from some scientific circles that cited the use of some herbicides as a danger to humans. To Novaresi, this criticism was both unfounded and would slow inevitable technological progress. However, his description of defoliation operations in Vietnam did not match his assertion that ecology could be easily controlled. Although thousands of acres of thinner vegetation had been successfully and easily defoliated, the triple canopy jungles proved to be a far more difficult task. He described a process that took four missions spread over months to defoliate one section of jungle. RANCH HAND aircraft would first spray the top canopy. After several weeks, the second canopy would be sprayed. By the time the second canopy vegetation had died, the top canopy had recovered and took another mission to kill. After several more weeks, the lowest canopy would be uncovered and the final mission would kill it. Then, sunlight hit the jungle floor and germinated seeds that had probably been "dormant for centuries." The resulting "controlled" landscape had reverted to its original state to the point that it became "very difficult to distinguish between an area that had been defoliated and one that had not."[36]

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[36] Sidney S. Novaresi, "Control of Vegetation Through Herbicides," 1970, TAWC, MSFRIC, iv, 48, 54-61.

Despite the fact that the United States was due to land and walk on the moon that summer, several thinkers perceived the future of space as a competitive environment where the US could still lose dramatically. Colonel James Sullivan looked past the moon landing and predicted without another goal to rally the American people, the decline in investments for the space program and military technology would continue unabated. He pondered whether the term "peaceful exploration of space," had any "real meaning in terms of space research." Despite being the "greatest technological and industrial power in the world," the United States still had to compete for prestige with the Soviets on the world stage. Should investments continue to decline and thus allow for the USSR to "achieve something on the order of *Sputnik* once again," then the prestige of the free world and United States' power would falter.[37]

It made no sense to decrease military expenditures for space exploration to Colonel William Reisinger since the Soviets perceived peaceful American advances in the heavens as a threat anyway. After reviewing some Russian literature on space, Reisinger attempted to write his thesis as if he was attending a Soviet equivalent of AWC. As a simulated Soviet student, he concluded that the USSR was peacefully pursuing space technology while American imperialists had "subordinated space exploration to military goals." A prime example was the development of communication satellites. Instead of developing this capability and gifting it to the world, the American military used the technology to its advantage in Vietnam and to prepare for nuclear war. Simultaneously, "big business"

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[37] James F. Sullivan, "National Space Program: A Review after Ten Years," 1969, TAWC, MSFRIC, 61-63.

interests used the technology to advance capitalist imperialism and exploit the world's poor.[38]

Over a year after Neil Armstrong stepped on the moon, the technologists' frustrations about a reduced military mission in space was palpable. William Leavitt wrote an article detailing the USAF's pursuit of space technology dating back to 1946 and expressed it as years of frustration. According to Leavitt, the United States tended to constantly get in its own way. The USAF's attempts to lead in space had been frustrated by interservice missile rivalries in the 1950s, followed by the growth of NASA, and finally the cancellations of its lunar mission, the X-20 DynaSoar, and the Manned Orbital Laboratory. Despite all of these, the service had remained an important contributor by developing the first generation of near-Earth satellites for reconnaissance, communications, meteorology, and a limited human presence above the atmosphere. For the future, Leavitt predicted that the service was bound to increase its satellite operations and looked forward to the Shuttle program, but that the next generation of technology should not be limited to peaceful uses of space. Instead, in the near future, superpowers would remain "fearful of their own strength" and would continue "groping towards some sort of agreed-on standoff." To guard itself in this uncertain world, he argued that R&D could provide "counter techniques, perhaps laser weapons" or some other "exotic technology" to prevent against "spaceborne Pearl Harbors."[39]

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[38] William J. Reisinger, "A Soviet Appraisal of US Space Programs," 1969, TAWC, MSFRIC, 15-16, 26.
[39] "William Leavitt, "The Air Force and Space," *AF&SD* 53, no. 9 (September 1970): 92-100.

The urgency and frustration of those that believed the technological war would transform warfare and move it into space did not stop the reduced attention that the space program received, however. The pages of the *AF&SD* had reduced the number or articles dealing with space during this time period. Then, the February 1971 edition ignominiously, and without comment, dropped the *Space Digest* portion of the publication and reverted to the *Air Force Magazine* (*AFM*).

Strategic Warriors Contend with Nuclear Parity

The strategic warrior school was also unconcerned with the continuing war in Vietnam and remained alarmed at the deterioration of American military posture vis-à-vis parity with the Soviet Union. The July 1970 AF&SD edition was ominously titled: "WE ARE HEADING FOR SECOND PLACE: TECHNOLOGICALLY, STRATEGICALLY." The 1970 Air Force Association (AFA) Statement of Policy did not even mention the Vietnam War, and made only one reference to Soviet expansionism as proof of a subversive, worldwide intent to spread communism. What the Statement did describe was the decline of nuclear superiority towards "insufficiency," a jab at Secretary of Defense Melvin Laird's goal to limit American nuclear forces to sufficiency rather than superiority. The fact that superiority had passed on to the Soviets was a "hard fact" buttressed by intelligence observations. Further, the USSR planned to defend itself by building an anti-ballistic missile (ABM) system while the US turned a blind eye to the threat and focused inwardly on domestic policy. The one recommendation was to educate the people of the problem: "The Air Force Association urges our national leaders to disclose—fully, frankly, and publicly—the deteriorating defense posture of the United States." Then, they believed,

Americans would "sacrifice as needed in order to maintain a world environment of security, freedom, and peace."[40]

The desire to refocus from the Vietnam War and domestic crises toward direct war with the Soviet Union as well as to counter their armies in Europe was palpable. Writing in 1971, Lieutenant Colonel Robert Hall believed that congressional budget reductions following the end of the Vietnam War was going to destroy national security. The source of this blowback was not just the normal budget reductions after a war, but also stemmed from the "underlying cry" of consumerism emanating from "shopping malls." He cited Nixon that American spending on domestic programs had for the first time surpassed defense spending. Hall hoped that the Nixon Doctrine would convince allies to increase their forces, which would be necessary with the high likelihood of military force cuts overseas. But, while the Nixon Doctrine was laudable, he predicted it would not succeed if the United States military weakened further. He likened the problem of extending deterrence to allies as a "little boy with a big brother" threatening to intervene. If the big brother was not intimidating, then war would not be deterred. To Hall, there was no choice but to increase the budget to prepare for a direct war against the Soviets as the alternative was to invite war and commit national "suicide."[41]

Within the context of a strained budget that follows the drawdown of most wars, the issue of defending against a nuclear attack remained a higher priority for several

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[40] "The Air Force Association's 1970-1971 Statement of Policy," *AF&SD* 53, no. 11 (November 1970): 8.
[41] Robert E. Hall, "Security or Suicide: Dilemma of the American People," 1971, TAWC, MSFRIC.

strategic warriors than of preparing for limited wars. With McNamara gone and a new administration in, the *AF&SD* ran a series of articles in summer 1969 describing the ABM debate and advocating the Nixon administration to invest in the capability. Claude Witze could not comprehend why anyone would choose not to defend the nation and placed the "verbal orgasm staged by frustrated critics" of ABM defenses in the same category as McCarthyism.[42]

What seemed to be a meager investment in a limited ABM capability did not appease the strategic warriors since it completely ignored the need to also defend against the bomber threat. John Frisbee described the problem in the December 1970 *AF&SD* edition. Since a 100 percent effective offense or defense was unattainable, Frisbee urged that the proper mix of the two would be the most credible deterrence strategy. He believed that this was not a controversial statement before Robert McNamara. Frisbee blamed the bias of the previous Secretary of Defense for limited wars and for relying on missiles for strategic deterrence for decimating the nation's air defenses interceptors, and strategic modernization in general. Frisbee's bottom line was that the current lack of defense was from a lack of investment during the 1960s, driven by McNamara, that seriously hampered the US ability to deter nuclear war. It was a merely a question of policy to correct it and

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[42] Claude Witze, "The Fight Over the ABM: Debate or Witch Hunt," *AF&SD* 52, no. 4 (April 1969): 34-38; Claude Witze, "The ABM: Voices for and Against," *AF&SD* 52, no. 6 (June 1969): 61-67; Frederick Seitz, "We Can't Afford a Pearl Harbor in the Space Age," *AF&SD* 52, no. 6 (June 1969): 67; Albert Wohlstetter, "ABM: A Prudent Response to a Continuing Threat," *AF&SD* 52, no. 6 (June 1969): 68-70; Henry Jackson, "In the ABM Debate, Who are the Real Hawks?" *AF&SD* 52, no. 6 (June 1969): 71; Anne M. Jonas, "Penetrating the ABM Labyrinth," *AF&SD* 52, no. 6 (June 1969): 72-74; Claude Witze, "The ABM Showdown: Rationality Wins by a Single Vote," *AF&SD* 52, no. 9 (September 1969): 46-50.

that the nation could not afford to lose its "air defense capability through continued neglect."[43]

Some arguments about defending against Soviet bombers became desperate since interceptors had been drastically cut and pilots transferred to fill personnel requirements in Vietnam. Lieutenant Colonel Kenneth Merritt argued in his 1969 thesis that the influx of new equipment to the Air Defense Command (ADC) had "dwindled to a trinkle" and this lack of investment had reached "the point of ridiculous." To Merritt, the United States had completely surrendered air superiority should war, nuclear or conventional, with the USSR occur. To save money for the mission, he proposed transferring the mission to the Air National Guard to free up active duty pilots for Vietnam and to invest in defensive interceptors.[44]

Colonel Archibald Young also believed that the ANG was better suited for the mission but placed his blame internal to the organization. Writing in 1970, Young identified the real culprit for the decline as the incorrect prioritization of Air Force resources. First and foremost, the service had prioritized bloated staffs. Instead of cutting staff personnel, Young argued that the service had cut operational interceptor units. Second, he pointed to the hypocrisy of general officers, "almost to a man," bemoaning budget cuts to a room full of AWC students whose education at Maxwell could not "begin to be justified in terms of real value" to the taxpayer. In a final shot, this time aimed at

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[43] John L. Frisbee, "Air Defense: Weakest Link in the Deterrent Chain," *AF&SD* 53, no. 12 (December 1970): 35-39.
[44] Kenneth M. Merritt, Jr., "Economic Feasibility of ANG in ADC Mission," 1969, TAWC, MSFRIC, 44-48.

technologists, Young decried how ADC leadership had "indulged" in "space age" theatrics such as computers given the ability to fly airplanes for the pilots along with other grandiose technologies that simply never worked.[45]

The belief in massive retaliation still lingered among some officers. Colonel William Moore, writing in fall 1969 for the *AUR*, believed that announcing the policy of flexible response had invited disaster in SEA. He argued that "history will reveal" that by the end of the Eisenhower administration, there was a "grand strategy of a policy within a policy" where the announced strategy was massive retaliation but the actual policy was flexible response. He argued this deceptive strategy had been practiced successfully in Lebanon, Taiwan, Laos, and even South Vietnam. He believed that the reason why massive retaliation ultimately failed was because the Kennedy Administration had publicly nullified the threat of responding with nuclear weapons by announcing that the nation would instead respond flexibly to communist provocations. Moore asserted that there was "reason to believe," which he did not elaborate on, that Ho Chi Minh could have been deterred had US strategic pronouncements stayed the same.[46] Colonel Gordon Danforth argued in 1970 that the United States declare America's intent to use tactical nuclear weapons at the outset of any future limited wars. Again, this option promised to provide affordable security that would allow continued domestic investment, avoid increasing the

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[45] Archibald Young, "Is there a Future for ADC?" 1970, TAWC, MSFRIC.
[46] William C. Moore, "History, Vietnam, and the Concept of Deterrence," *AUR* 20, no. 6 (September-October 1969): 58-63.

defense budget for conventional forces, keep us from fighting in wars so limited that "we fail to do the job," and finally avoid the need to "abdicate our world position."[47]

This sanguine view of what massive retaliation could have wrought was tempered by retired Major General H. S. Hansell who sought for a better strategy that suffered from neither the "emotionalism—spawned by Vietnam—nor nostalgia" for massive retaliation. Hansell, who had commanded the XXI Bomber Command in WWII, argued that the basic need was to never accept inferiority but to invest in enough capability to attain "partial deterrence." It was not enough to have only enough missiles for "assured destruction" and the United States needed enough weapons to "at the very least regain parity." If the US government did not heed these warnings, then he foretold of events where all of America's allies would slowly succumb to the Communist spread until only "Fortress America" stood alone.[48]

In 1972, two AWC students returned to the "nostalgia" of arguments based on superiority and represented a climax of concerns over America's newfound nuclear inferiority. Lieutenant Colonel Richard Houghton intended his thesis as a warning to alert his readers of the inevitability of war with the Soviet Union should the US not invest in strategic offense and defense. He was perplexed at the debate over military spending since he found ominous similarities between the Soviet Union's buildup and Japan and Germany's efforts prior to WWII. He pondered why Americans and their allies had to "reinvent the wheel" after each generation rejected the "lessons of history." The correct

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[47] Gordon E. Danforth, "The 70's—'TAC Nuc' Era" 1970, TAWC, MSFRIC, 9-10.
[48] H. S. Hansell, "What Kind of Posture for What Kind of Commitments," *AF&SD* 53, no. 3 (March 1970): 55-59.

and ultimate lesson of the nation's previous wars, according to Houghton, was to never again "accept military inferiority."[49]

Lieutenant Neal Graham's thesis on deterrence also contended that American military superiority was lost and that increased funding was vital to keep the peace. He explained the paradox of deterrence that, "if you have it, you do not need it; but if you do not have it, you will need to use it." Contrary to pre-Vietnam arguments of strategic warriors, this military force now required strong nuclear forces, strategic and tactical, as well as robust conventional forces. Further, the United States military could be trusted with such a powerful force since the Vietnam War proved that the military would lose a war after "we were directed by our civilian leaders not to win the war."[50]

Lieutenant Colonel Lawrence McCarthy sought to lift the "Fog of Deterrence" and help reclaim the military voice in strategic thinking. He gave three reasons why nuclear weapons had made modern strategy so difficult. First, there were a "profuse" number of theorists who "appeared removed" from reality as they sat in their "towers of ivory" and reduced actual conflicts, like the 1968 "massacre in Hue" and the Soviet invasion of Czechoslovakia, to mere data points. Ironically, the second problem was the opposite of the first: the military actually needed to contend with these theorists' ideas as they had uncovered real insights into contemporary warfare. The third problem was the fundamental discovery uncovered by these civilian strategists: that the concepts of "'victory' and 'winning' now have different meanings from those of the past." Now the

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[49] Richard B. Houghton, "Warning!" 1972, TAWC, MSFRIC, 4-5, 13-14.
[50] Neal F. Graham, "Deterrence," 1972, TAWC, MSFRIC, 2, 12-13.

ultimate goal was to avoid war, but in order to do so the United States required the ability to demonstrate both the capability and willingness to prevail. Worse than that, what would deter Americans would not necessarily deter the Soviets. It was due to this observation that there was a need to abandon a cities only approach, have the capability to destroy the enemy's military, and most importantly to make sure the Soviets knew we were willing to follow through.[51]

In the wake of the geopolitical realities uncovered by growing Soviet nuclear strength and the failure of SAC to deter the Vietnam War, strategic warriors had to accept a slightly altered rationale for maintaining strong strategic forces. Those that believed an effective defense was vital to effective deterrence did so because of their belief, allied with the technologists, that it was possible and that the Soviets had already deployed an effective system. While still defending the need for a strong strategic force, they were less inclined to claim that a strong nuclear force could ensure world peace all on its own. Instead, strategic warriors had come to realize the presence of paradoxes, of the unfortunate need to listen to academics, and that "winning" a hot war outright was not an achievable objective. However, they still clung to the idea that only massive amounts of firepower to maintain parity with an enemy would ensure deterrence.

Boon or Bust for Learning?

From 1969 through 1971, the Aerospace Research Institute at AU continued to implement its CORONA HARVEST task to learn from the Vietnam War. Instead of using

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[51] Lawrence J. McCarthy, "The Fog of Deterrence," 1972, TAWC, MSFRIC, 1-15.

student officers at the Maxwell AFB schools, they instead put increasing pressure on the staffs at the major commands to analyze and evaluate the lessons they deemed most pertinent. The program lost its most enthusiastic senior leaders when General Bruce Holloway took command of SAC and Carpenter moved to be an Assistant Vice Chief of Staff of the Air Force (VCSAF) in 1968. Their replacements, General John Meyer as VCSAF and Lieutenant General Alvan Gillem as AU Commander, did not press the program with the same enthusiasm. This may have been due to less interest in the project generally or another sign of an institutional consensus that the war had peaked. The program was also increasingly becoming a burden as an additional duty on staffs that were also facing military-wide budget restrictions that led to the decision to constrict both CORONA HARVEST's mission and the personnel required to complete it.[52]

In January 1971, Meyer decided that the present mission for Project CORONA HARVEST would be "terminated" upon completion of current reports. Going forward, a "reduced program" would continue to study the on-going war, but limited to missions that had not previously been covered. These topics would cover the period after 1969, Cambodian operations not previously studied, or other missions deemed necessary by an interested major command.[53] The Pacific Air Force Command (PACAF) assumed the mission for the last phase of CORONA HARVEST and consolidated its CORONA HARVEST and Contemporary Historical Evaluation of Current Operations (CHECO)

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[52] Robert Frank Futrell, *Ideas, Concepts, and Doctrine: Basic Thinking in the United States Air Force, 1961-1984,* vol. 2 (Maxwell AFB, AL: Air University Press, 1989), 320.
[53] CORONA HARVEST Steering Committee Minutes, 8-9 January 1971, Air Force Historical Research Agency [hereafter AFHRA].

programs to maximize efficiency. PACAF would pursue the recommended topics alone while conducting Vietnamization and the logistical drawdown. However, to maximize efficiency PACAF planned their CORONA HARVEST reports to "be similar to our 'Project CHECO' reports," only changed to incorporate broader topics.[54]

In the end, the Air Force's attempt to learn via a massive distribution of effort did not in itself yield any fundamental shift in airpower doctrine. In 1973, Colonel Robert Gleason, who had led the AU CORONA HARVEST effort during its final years, delivered an "anatomy" of the airpower evaluation in his final report to the AU commander. Gillem left an enthusiastic handwritten note indicating that he wholeheartedly agreed with his conclusions and that the report must be archived. After providing a narrative of the program, which merely mentioned the 1968 AWC theses in passing, he identified some "lessons learned about developing lessons learned." He concluded that there were three "impressions that dominate all others." First, the project had failed "to stay with the specific problem" of how to actually evaluate airpower. He charged that a constant problem was conflating determinations of effectiveness with those of efficiency. His example was that even if ninety per cent of all North Vietnamese trucks were efficiently destroyed, it would still be ineffective if the supported units in the South only required ten percent of those trucks. Second, the USAF reporting system was inadequate to undertake such an ambitious program that involved all major commands. Here, Gleason blamed the inability of the Air Force to quickly gather all the pertinent information about the war.

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[54] Lieutenant General John Lavelle to USAF Headquarters, Project CORONA HARVEST Planning Memorandum, 22 February 1971, AFHRA.

Finally, the "relationship and quality of the lessons learned and recommendations" left something to be desired. Here, he blamed the Steering Committee and USAF Headquarters for micromanaging the content of the reports. Leadership had become too involved with developing lessons instead of waiting for the experts to provide a report so that Generals and their staffs could develop actionable recommendations.[55] Gleason did not mention a warning from the original CORONA HARVEST plan. That was that the wealth of information needed to actually determine the effectiveness of airpower was held by the North Vietnamese and the Viet Cong, entirely out of reach of officers distilling lessons.

Even though CORONA HARVEST failed to directly influence the basic doctrine of the Air Force, that did not mean that the Vietnam War experience itself did not. On 8 September 1971 the Air Force released a new Basic Doctrine manual, the first update since 1964, that reflected the changing realities of warfare. At the time, officers stationed at the Pentagon wrote doctrine and they had remained involved in the CORONA HARVEST program.[56] The new doctrine stressed much less reliance on nuclear weapons than previous versions. It did this in two distinct ways. First, the deterrence of a general nuclear war no longer officially rested on the need to maintain a superior number of warheads. Instead, the service incorporated a key tenet of assured destruction advocates

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[55] Robert L. Gleason, "The Anatomy of an Airpower Evaluation," End of Mission Report, July 1973, AFHRA, 26-31.

[56] Brigadier General Richard Yudkin, who researched the Air Force learning efforts for General Bruce Holloway in 1966, had led the doctrine development office and wanted responsibility for CORONA HARVEST in his department versus at Air University; Richard A. Yudkin, Memorandum, 17 October 1966, AFHRA.

that: "Sufficiency of forces is fundamental to deterrence." The authors of the new manual defined sufficiency as the need for forces capable of an "assured destruction and damage limitation capability." This concession meant that the service had at least officially accepted and incorporated the theory of Assured Destruction, which had been anathema to strategic warriors for over a decade. Although, the need for defense was still heralded and defining what was really "sufficient" remained debatable. The second way that this new doctrine limited nuclear weapons was to separate them into their own categories of warfare. Previously, at least doctrinally, limited war included the use of tactical nuclear weapons against fielded forces on the battlefield. Now, since general and limited war was "too broadly defined," Air Force planners put a clear delineation between types of "operations" based on the weapons involved. On one side was conventional and special operations where war could proceed without using the bomb. On the other was "low-intensity" and "high-intensity" nuclear operations.[57] The belief that nuclear weapons were a main component of a fighter pilot's arsenal was drastically reduced by late 1971.

The USAF did not produce a comprehensive report that summed up the official lessons for doctrine. Instead, there were a series of thirteen CORONA HARVEST executive summary reports that covered the narrative of the war along with broad treatment of personnel policies, logistics, reconnaissance, R&D, as well as reports focusing specifically on strike operations over South Vietnam and all other "out-county" operations. The CSAF ordered these reports printed and distributed to "interested Command and Air

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[57] Department of the Air Force, *Air Force Manual 1-1, USAF Basic Doctrine*, September 8, 1971, 1-4.

Staff agencies for review, use and implementation" as deemed pertinent. He stripped the AIR FORCE EYES ONLY classification, but any distribution of the reports had to be approved by the Air Staff. Much of the reports are still technically classified.[58] After all the reports were completed in 1975, the Air Force closed out the CORONA HARVEST program by bringing General William Momyer out of retirement to coordinate 320 recommendations for improvement within the bureaucracy. The action items covered all manner of detailed lessons ranging from personnel policies for future combat deployments to improving procedures for distributing classified information.[59] Thus, the grandiose vision behind the project devolved into staff actions which probably were important, but did not have the impact that Holloway had hoped for in 1966.

However, the war did have an impact institutionally. The new revision of Air Force basic doctrine and especially the increased investment in tactical, or conventional, capabilities proved this. This increased investment was a de facto acknowledgement that strategic bombers, or missiles, would not prevent future wars and that a policy resting on solely on nuclear superiority was bunk. The rhetoric now focused on maintaining strategic force for deterrence of general wars alone. The problem this created was that without an official report, the Air Force had no definitive, official narrative of the war.

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[58] Department of the Air Force, CORONA HARVEST Final Reports, Memorandum, AFHRA.
[59] Department of the Air Force, CORONA HARVEST Progress Report, June 7, 1976, Staff Summary Sheet, AFHRA.

The LINEBACKER Narrative

The final bombing campaigns in 1972 have dominated the air force narrative about the Vietnam War, in part because they provide the service with an explanation of how the war could have, or should have been won. In spring 1972 the North Vietnamese launched a large conventional invasion. In response, President Nixon ordered the U.S. Air Force to rapidly double the number of F-4s and B-52s in SEA. He also doubled the number of carriers from two to four, adding another two in July. This extra firepower reinforced the beleaguered Army of South Vietnam and halted the advance of the North Vietnamese Army. He also ordered the mining of the Port of Haiphong on 9 May followed the next day with renewed bombing of North Vietnam in Operation LINEBACKER on 10 May. The President removed many of the restrictions the Air Force had complained about since 1965, although B-52s were not allowed north of the twentieth parallel. Nixon and Secretary of State Henry Kissinger soon became irate with Air Force leaders, believing they were not striking sufficiently hard. For their part, pilots labored against effective defenses, maintaining a high operations tempo, and the monsoon season. After initially brokering a deal leading Kissinger to proclaim that "peace is at hand," the North Vietnamese reneged in November 1972. Nixon then ordered Operation LINEBACKER II that resulted in an eleven-day blitz of B-52s, along with supporting strike fighters, on targets within previously restricted areas around Hanoi and Haiphong.[60] This pressure,

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[60] Karl J. Eschmann, *Linebacker: The Untold Story of the Air Raids Over North Vietnam* (New York: Ivy Books, 1989); Stephen P. Randolph, *Powerful and Brutal Weapons: Nixon, Kissinger, and the Easter Offensive* (Cambridge, MA: Harvard University Press. 2007); Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York: The Free Press, 1989), 155-202.

combined with additional concessions such as allowing North Vietnamese troops to remain in the South, broke the impasse and led to the Paris Accords in January 1973 and the US extrication from the war. Nixon also had to threaten Prime Minister Nguyen Van Thieu to accept the terms regardless of the precarious situation it created for an independent South Vietnam. Having betrayed his ally, Nixon declared that he had achieved "peace with honor."[61]

Early in 1973, *AFM* editor John Frisbee was the most vocal in pronouncing that the two LINEBACKER operations had "vindicated" airpower proponents. In January, he wrote that 1972 had "special significance" since both airpower critics and supporters were giving credit to the air offensives for halting the invasion of South Vietnam. Now that Vietnam was no longer the top policy concern of the Air Force, it was time for an "objective evaluation" to begin. Since that may take years, he made clear that the conduct of the war from 1965 through 1969 had been a mistake and that Vietnamization should have been the policy from the beginning.[62] In the February editorial, Frisbee more triumphally declared that LINEBACKER II had once again proven its worth. For those that still "scoffed" at the concept of the manned bomber, the successful missions provided proof that the B-1 was a necessary follow-on bomber and that even it domestic critics did not understand this, it was a "sure bet" that the Soviets had.[63]

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[61] Herring, *America's Longest War*, 310-320.
[62] John L. Frisbee, "Vietnam: Something to Remember," *Air Force Magazine [hereafter AFM]* 56, no. 1 (January 1973): 2.
[63] John L. Frisbee, "The B-52: Phoenix That Never Was," *AFM* 56, no. 2 (February 1973): 4.

In his March editorial, Frisbee most clearly stated that airpower's "vindication" came during the final nine months of an eleven-year war. He claimed that any "objective evaluation" must concede airpower's effectiveness and that the opponents of gradualism were right all along. The "great lesson" of the Vietnam War was the need for the "early and proper use of airpower" while the supported nation provided the manpower to manage their own country. Had this strategic formula been followed in 1965, "the US could have had both victory in Southeast Asia and the Great Society at home without inflation and for a fraction of what Vietnam has cost in blood and treasure."[64]

The 1973 editions of the *AUR* contrast with the early triumphalism in *AFM*. There were no articles written on the LINEBACKER operations until the November-December edition. In the last two months, General George Eade, who was the Deputy Commander of European Command, took a more balanced approach. Eade outlined four lessons Vietnam should teach when the leadership of the nation had to impose restrictions but could not use nuclear weapons. First, using airpower "massively . . . and rapidly" would "presumably" lead to a victory faster. Second, in the future decisions-makers must balance "political constraints and force limitations" so that the objectives could be met. At the same time, the military "can-do" culture had exacerbated this problem and worked at "cross-purposes" since officers were attempting to accomplish a mission they knew could not be met. Finally, advances in technology would continue to progress allowing for the increased ability of airpower to achieve military objectives. LINEBACKER II "should provide convincing lessons" that this was true and further the WWII US Strategic Bombing

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[64] John L. Frisbee, "Not With a Whimper, But a Bang," *AFM* 56, no. 3 (March 1973): 4-5.

Survey's admonition that "no nation can long endure the swift, accurate, concentrated application of air power and still hope to achieve any measure of victory."[65]

Coming so soon after the LINEBACKER II campaign, the 1973 AWC students' response was muted. The simplistic LINEBACKER narrative did find support with many veterans of the air war over North Vietnam, however. A thesis that exemplified this came from Colonel James Kasler who was a three-time recipient of the Air Force Cross for Valor and a prisoner of war from 6 August 1966 through 4 March 1973. Kasler was enrolled in AWC the same year as his release and in his thesis retold his role planning and conducting the first strike against the Hanoi oil storage complex in 1966. He described those that fought in Vietnam as the most "dedicated and experienced airmen" he had ever worked with but made clear his disdain for the political restrictions placed on the warriors. After recounting two of his missions over North Vietnam, included the one when he was shot down, he made his final point clear. Those strikes had not stopped the flow of fuel. Speaking for many, he believed that the only successful means to win that war and successfully interdict the supplies flowing south and convince the North's leaders to stop sending them was to strike hard without restrictions: "Had the port been closed and the fighter bombers and B-52s used in 1966 in conjunction with the strategic targets struck, as they subsequently were, America may very well have avoided many of the agonizing war years that followed."[66]

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[65] George J. Eade, "Reflections on Air Power in the Vietnam War," *AUR* 25, no. 1 (November-December 1973): 2-9.
[66] James H. Kasler, "The Hanoi POL Strike," 1974, TAWC, MSFRIC, 20.

During the final four years of the Vietnam War, the officer corps had already moved past it and began treating the war largely as a historical memory. For tactical warriors, the war had confirmed their beliefs in the need for a strong fighter force. The desire for an air superiority fighter, to aid in projecting power versus defending the homeland, had become ingrained into most Airmen's psyche and had become the service's top priority, right beside designing a new bomber. The focus on air superiority and the success of LINEBACKER II after the war concealed that one of the greatest lessons airmen took away was the need to effectively control airpower over foreign battlefields. Either way, most tactical airmen now rejected the concept of a single fighter design and preferred a family of aircraft capable of performing missions with conventional firepower across a wide spectrum of conflict. Despite the mantra of 'no more Vietnams,' many now expected the next war to resemble Vietnam more than the imagined wars where tactical nuclear weapons would be exchanged for a quick victory. The promise that nuclear weapons were an easy solution to deter wars had diminished.

The other two schools learned entirely different lessons from the war. For the technologists and the strategic warriors, the conflict had put a severe strain on preparing for their visions of war. Out of the two groups, the strain may have hurt the technologists more. The reliance on civilian scientists to help guide the future of the force declined during the Vietnam War and their presence at large planning conventions (e.g. Project FORECAST) diminished along with the institutional weight of these boards' influence in

the service.[67] The CSAF, General Ryan, had openly disparaged the technologists' proclamations that strategy should follow technological progress. This freed money for future investments into missions the Air Force already had: air superiority, close air support, command and control, mobility, and strategic bombing. Judging by their repeated warnings, the strategic warriors were certainly not comfortable. They blamed the Vietnam War and McNamara for allowing the United States to slip from nuclear superiority to what they believed was "inferiority." Further, they feared the "post-war" budget decline would prove incredibly dangerous for national security and even for survival. However, the altered strategic situation had forced them to realize that nuclear superiority was no longer attainable and that they needed to grapple with the consequences of nuclear parity.

The lack of a final report hindered a comprehensive set of lessons for the intellectual community to read, decipher, and debate. What took its place was the narrative of the "Christmas Bombings" that seemingly brought a measure of victory to the US, until that collapsed along with the Republic of Vietnam less than two years later. However, that did not mean that institutional learning had not occurred. The danger is that the noise about LINEBACKER II had obscured the evidence of a fundamental shift in Air Force thinking.

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[67] Michael H. Gorn, *Harnessing the Genie: Science and Technology Forecasting for the Air Force, 1944-1986* (Washington DC: Office of Air Force History, 1988), 131.

CHAPTER VII

CONCLUSION

The US Air Force intellectually analyzed the Vietnam War through three preexisting schools of thought about the nature of future wars. Through the curricular papers written by field grade officers attending the Air War College (AWC) and two publications with a distinct Air Force perspective, this dissertation has demonstrated the existence of these conceptual schools. As Brian Linn argued in his intellectual history of the US Army, schools of military thought are not "mutually exclusive" and often interact with each other.[1] In the Air Force, there were times when supporters of each paradigm allied closely with one another and sometimes became difficult to distinguish. In other periods, they all but declared war on one another. The interplay and progression of these three groups occurred visibly during the Vietnam War as each co-opted the experience to advocate for their own vision of how to best prepare for the future.

The three schools of thought can be seen both during the Vietnam War and I believe can still be distilled from today's debates within the service. In the remainder of this conclusion, the schools will first be reviewed. Their interplay and relative prioritization between 1960 and 1973 will then be summarized. Next, I will suggest some programs, debates, events, and organizational changes where these intellectual interactions and debates can be found from 1973 until the present. Finally, I will offer what I believe

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[1] Brian McAllister Linn, *The Echo of Battle: The Army's Way of War* (Cambridge, MA: Harvard University Press, 2007), 5.

are five important implications for the future study of Air Force thinking as well as planning for the future service.

The first school I term the *strategic warriors.* These officers believed fully in the promise of airpower that could deter future wars or deliver victory through airpower alone. The trouble that WWII bombing campaigns had in achieving a quick victory were apparently solved via the massive firepower of nuclear weapons. Strategic warriors preferred bombers, but begrudgingly accepted missile technology once proven effective. A corollary to their beliefs was the necessity to defend against a direct Soviet nuclear attack to ensure deterrence or prevail should a war occur.

The *technologists* were the second group. They believed that rapid technological development had altered the nature of war. Their conceptualization of war was to vigorously pursue advances in scientific knowledge and technology. They believed the space race had opened an entire new venue to fight the Cold War by militarizing space with manned systems in orbit and eventually on the moon. They were also interested in scientific experiments that would allow the US to secure national objectives through the control of rival populations, regional climates, and even the earth's ecology.

The third group, the *tactical warriors,* were primarily fighter pilots who believed that the consequences of a general nuclear war would be mutual suicide. Because of this, the US would actually fight in continuous limited wars below the threshold of total war. In such limited wars, the rapid mobility of fighters to support battlefield objectives would be essential to national security. Once these forces had arrived, the tactical warriors believed that they would have to effectively integrate with the US Army so that airpower could have a maximum effect on the battlefield.

Within the USAF intellectual community, America's efforts to halt the spread of communism in Southeast Asia (SEA) between 1960 and 1964 remained one of many peripheral interests. The strategic warriors and their focus on thermonuclear war was dominant. Led by General Curtis LeMay, the Chief of Staff of the Air Force (CSAF), they sought to spread their vision of how the Air Force should be run throughout the service. In a near second place, the technologists urged the nation to invest in technology to win in the future battlefield which they predicted would occur in space. In the wings, the tactical warriors co-opted the rhetoric of the strategic warriors and focused on the ability to rapidly deploy nuclear armed fighters across the world. They also enthusiastically led the USAF's nascent contribution to the counterinsurgency thinking during a period when interest in the topic reached "fever pitch."[2] However, the tactical warriors' views remained intellectually marginalized behind thermonuclear and technological warfare.

During the most intense period of the Vietnam War from 1965 through 1968, tension rose between the three paradigms. The tactical warriors flew the bulk of the missions in SEA and under the most dangerous conditions. They complained about the conditions they faced. They argued that Strategic Air Command's (SAC) model of intense centralization, recently forced upon the Tactical Air Command (TAC), had hampered their flexibility to operate effectively. They decried that the tactical share of the budget had been minimized and produced a multi-purpose fighter, the F-105, with limited conventional ordnance that left them ill-prepared for war. Meanwhile, the technologists

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[2] Andrew J. Birtle, *U.S. Army Counterinsurgency and Contingency Operations Doctrine, 1942-1976* (Washington DC: Center of Military History, 2006), 5.

had mortgaged their influence by researching and funding possible weapons that they even admitted may not ever benefit American defense. Thus, in the mid-1960s AWC students examined whether technology really could lead strategy and found the assertion unconvincing. Meanwhile, the flawed application of counterinsurgency reduced its appeal dramatically as the American involvement escalated towards conventional war and dominated the character of the war, at least through American eyes.[3]

Seeing a limited war expand before them, SAC officers focused on converting their bomber fleet from a pure focus on nuclear warfare to contribute to conventional operations. With this transition, they now returned to an earlier (arguably disproven) promise of airpower that long-range bombers with conventional ordnance alone could win wars. Now, they also claimed the ability to deter limited wars with conventionally armed bombers if America made its will to use them clear. Meanwhile, technologists at the Air Force Systems Command (AFSC) were ordered to increase the investment in limited warfare and conventional ordnance which their commander called "an unlimited war on limited war." This categorization remained disingenuous, as they still pursued advanced technology for space, improved ICBMs, and basic research.

As the war grew longer and the complaints both domestic and internal to the Air Force grew more bitter, the tactical warrior paradigm for future warfare ascended. By the end of the war, if they were not the dominant voice in the officer corps, then they vied with

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[3] James S. Corum and Wray R. Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists* (Lawrence: University Press of Kansas, 2003), 264-74.

strategic warriors for the spot.[4] Officers now wrote copiously about specific needs of limited wars in terms of prioritizing air superiority and requisite technology and training for limited war. One of the main lessons that had already been learned in Korea, and has received little attention in the historiography, was that the Air Force must preserve and constantly improve its Tactical Air Control System to manage airpower on the battlefield. Another lesson of tactical warriors was the need for a family of aircraft built for a specific purpose versus one multi-purpose fighter. Meanwhile, the strategic warriors began to contemplate the implications of nuclear parity. In this regard, they trailed by at least five years the dreaded McNamara "Whiz Kids" who had supported Mutually Assured Destruction. Technologists suffered the most as their vision for war was curtailed both by Chief of Staff John Ryan and the political leaders' decision not to militarize space.

Another point of disagreement between the schools was the nature of the bombing campaign against North Vietnam. Some emphasized the primary mission was to convince the North to stop supporting the Viet Cong. Other students, especially those that studied it closely, tended to view the bombing of North Vietnam primarily as an interdiction campaign. To them, the argument was less about convincing the North to stop supporting the Viet Cong but how to reduce the flow of supplies. They split on those who looked to airpower to win the war quickly and those who took a more practical view of how to interdict an enemy supply line. Either way, the answer was the same: mine the Haiphong

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[4] Mike Worden, *The Rise of the Fighter Generals: The Problem of Air Force Leadership, 1945-1982* (Maxwell AFB, AL: Air University Press, 1998), 211-17.

Harbor and strike transportation hubs within the restricted and prohibited airspace surrounding Hanoi.

Regardless of their conceptual school, officers were almost universal for their calls for more money to ensure that the United States, it allies, and Western democracy would survive. This suggests that determining how to win the ongoing war was not nearly as intellectually important to many of these officers than what the Vietnam War could teach about future warfare. International competition between the West and the Soviets meant that competition and warfare had become incessant and the only real question was what form it would take. The dire need to be prepared for the next war drove each school to characterize the on-going combat operations to support new bombers, a new family of tactical aircraft, or for more research in a bid to protect the nation. When funds fell short of officers' expectations, they continually blamed errant civilian strategists or the American public's ignorance for placing the nation and its freedom at risk.

From the end of the Vietnam War until the fall of the Soviet Union, these schools' debates manifested in several ways. The tactical warriors accrued increased funding and stature within the service with the acquisition of numerous, updated aircraft: the F-15C Eagle, F-16 Fighting Falcon, F-15E Strike Eagle, A-10 Thunderbolt, E-3 AWACS, and the E-8 JSTARS. The catalyst for change was not a small group of officers led by Colonel John Boyd, but the struggles of the Air Force to meet political and military objectives with existing equipment in Vietnam. Additionally, TAC and the US Army's Training and Doctrine Command liaised to develop a doctrine where the two services could work closely together to counter future wars picking up where Strike Command had left off. Air

Force support for the resulting Air Land Battle doctrine was mixed, but the attention it received further suggests the growing influence of tactical warriors.[5]

The technologists' enjoyed renewed support during President Ronald Reagan's tenure in the 1980s. His Strategic Defense Initiative (SDI), known colloquially as "Star Wars," allowed military scientists and industry to pursue technology intended to avert nuclear holocaust. This program was more controversial than earlier debates about an ABM "thin defense" at the beginning of Nixon's first term. In 1982, the Air Force established Space Command as a major command of the same level as SAC, TAC, and AFSC. This suggests there was an increasing interest and importance placed on space and its requisite technology within the Air Force.[6] At the same time, technological research continued in aviation and allowed advancements in radar evading stealth technology, conventional munitions' precision, and communications for command and control.

As long as the Cold War continued, the strategic warriors held on to their organizational power at SAC. They continued to advocate for the next generation bomber. A quarter of a century after the B-70 Valkyrie was cancelled, this group received the long-advocated bomber, the B-1 Lancer, in 1986. This aircraft could fly faster and lower than

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[5] Donald J. Mzorek, *The US Air Force after Vietnam: Postwar Challenges and Potential for Responses* (Maxwell AFB, AL: Air University Press, 1988), 22-30; Harold R. Winton, "An Ambivalent Partnership: US Army and Air Force Perspectives on Air-Ground Operations, 1973-90," in *The Paths of Heaven: The Evolution of Airpower Theory*, Phillip S. Meilinger, ed. (Maxwell AFB, AL: Air University Press, 1997), 399-441; James A. Machos, "TACAIR Support for AirLand Battle," *Air University Review* 35, no. 4 (May-June 1984): 16-24.

[6] Bernard C. Nalty, ed., *Winged Shield, Winged Sword: A History of the United States Air Force, 1950-1997*, vol. 2 (Washington DC: Air Force History and Museums Program, 1997), 546.

the B-52, making it more capable to penetrate enemy airspace. The B-1 began as the Advanced Manned Strategic Aircraft concept in 1964 and required decades of advocacy to procure. It was even cancelled twice. The duration of this program reflects the endurance of intellectual visions in the service. As the B-1 was still in production, the next generation bomber, the B-2 Spirit, was already in the design phase and intended to make use of still highly classified stealth technology.

Always in the background, the narrative of the Vietnam War and specifically the perceived success of the LINEBACKER II campaign lingered. Historian Raymond Leonard argued that for the first decade after the fall of South Vietnam in 1975, the narrative that LINEBACKER II proved that airpower could have won the war earlier went mostly unchallenged. However, he charted Air Force officers challenging this narrative with a chorus of articles in the *Air University Review* that culminated with Mark Clodfelter's *The Limits of Airpower* and Earl Tilford's *Setup* that once again complicated the narrative that a massive amount of airpower would have won the war if it had been applied sooner.[7] Clodfelter and Tilford, both Air Force officers, actually exemplified the intellectual diversity that stemmed from within the officers corps.

World events largely interrupted this debate when the Berlin Wall fell signaling the coming end of the Cold War and the spectacular demonstrations of airpower in 1991 against Saddam Hussein's Iraqi regime during Operation DESERT STORM. The former event caused Francis Fukuyama to declare that liberal democracy had triumphed over

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[7] Raymond W. Leonard, "Linebacker II and US Air Force Doctrine," *The Journal of Military History* 58, no. 2 (Apr 1994): 267-303.

communism and that history had reached its logical end.[8] The latter event provided airpower enthusiasts with more fodder to claim that America had shaken the Vietnam syndrome and that airpower had been proven capable of enforcing the new world order with the United States as the last global superpower standing.[9]

In the wake of these events, the Air Force once again changed dramatically. The rigid terminology that categorized missions and aircraft as strategic or tactical was gone. General Chuck Horner, the Air Force Commander during DESERT STORM wrote in his memoir, "you have to be specific when talking about war. But unfortunately many are lost in the heady sense of destiny . . . so they use powerful-seeming words like 'strategic' when they don't really know what they are talking about."[10] In 1992, the Air Force reorganized by merging SAC and TAC into one organization, Air Combat Command. Signaling further the rise of the tactical warriors, the new organization's headquarters was the old TAC building at Langley AFB and has been led exclusively by fighter pilots ever since. Before DESERT STORM began, the CSAF, General Michael Dugan, was fired in part for suggesting that airpower could win on its own. The next year, the Air Force doctrinally distanced itself further from strategic bombing theory.[11]

In the post-Cold War era, the extreme position of strategic warriors that pressed for funds to prevail in a nuclear war were largely discredited. The new B-2 was capped at just

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[8] Francis Fukuyama, *The End of History and the Last Man* (New York: The Free Press, 1992).
[9] Richard P. Hallion, *Storm over Iraq: Air Power and the Gulf War* (Washington DC: Smithsonian Institution Press, 1991).
[10] Tom Clancy and Chuck Horner, *Every Man a Tiger: The Gulf War Air Campaign* (New York: Berkley Books, 1999), 252.
[11] Leonard, "Linebacker II," 298-99.

over twenty aircraft instead of the 132 planned. At the same time, the push for an advanced fighter remained vibrant and produced the F-22 Raptor a decade later. However, the promise of airpower to win cheaply and quickly remained alive due to the results of the air campaign against Iraq that tested the new concepts proposed by Colonel John Warden. His basic idea was, and remains, that airpower can induce "strategic paralysis" on an enemy by attacking the enemy's leadership, the innermost of his famous "five rings" of an enemy state.[12] During the rest of the 1990s and early 2000s, national leaders looked to the promise of airpower, now delivered primarily by fighters, as a cheap option to win wars.[13]

The technologists survived but also suffered in the 1992 reorganization. With no great power to technologically compete with, AFSC and Air Force Logistics Command merged into the Air Force Material Command that still serves as the command to procure and sustain Air Force aircraft and technology today. However, the technologists also viewed the end of the Cold War as a vindication of their vision. At an Air Force space symposium in September 1995, Cold War veterans reveled in America's victory. Donald Baucom, a retired officer and one-time editor of the *Air University Review*, proclaimed that General Bernard Schriever's declaration of technological war in 1961 proved that he was

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[12] John A. Warden III, *The Air Campaign: Planning for Combat* (Washington DC: National Defense University Press, 1988); John A. Warden III, "The Enemy as a System," *Airpower Journal* 9, no. 1 (Spring 1995): 40-55; John A. Warden III, "The Airpower Profession," in *Airpower Applied*, John Andreas Olsen, ed. (Annapolis, MD: Naval Institute Press, 2017), 342-63.

[13] William A. Sayers, "Operation Allied Force," *Air Force Magazine* [hereafter *AFM*] 102, no. 5 (May 2019): 56-59; Stephen D. Wrage, ed., *Immaculate Warfare: Participants Reflect on the Air Campaigns over Kosovo and Afghanistan* (Westport, CT: Praeger Publishers, 2003); Frederick W. Kagan, *Finding the Target: The Transformation of American Military Policy* (New York: Encounter Books, 2006), 176-98.

"squarely in a major stream of American strategic thought."[14] One theme of the symposium was that SDI was the culmination of technological war and had exhausted the Soviet Union. Of course, this argument ignored the fact that technologists had not argued to pursue economic exhaustion as a strategy and were generally more afraid of the weakness of the American system compared to the regimented, centralized Soviet system.

The aftermath of the 11 September 2001 terrorist attacks and the subsequent invasions of Afghanistan and Iraq challenged the faith in the efficacy of airpower. Successful use of advanced weapons during the initial campaigns made the nation and its leaders overly optimistic and masked the technology's impotence at preventing the growth of insurgencies in both countries.[15] Once again, Air Force leaders continued to argue that the service had to prepare for a future war between great powers at the height of limited wars, which now specifically meant prioritizing the purchase of the full planned complement of 339 F-22s.

At the same time, the lack of emphasis on nuclear forces since the fall of SAC had led to rot within that segment of the Air Force. On 29 August 2007, a B-52 crew flew a routine mission over American airspace. Unknown to the crew or anyone else, the jet was armed with six nuclear warheads that remained on the aircraft, undetected for thirty-six hours without required armed guards. Then in March 2008, Taiwanese officials realized

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[14] Donald R. Baucom, "The Formative Years: Technology and America's Cold War Strategy," in *The US Air Force in Space: 1945 to the 21st Century*, R. Cargill Hall and Jacob Neufeld, eds. (Washington DC: USAF History and Museums Program, 1998), 53.
[15] Andrew J. Bacevich, *The New American Militarism: How Americans are Seduced by War*, updated ed. (New York: Oxford University Press, 2013); Kaplan, *Finding the Target*, 287-359.

that helicopter batteries the US had sent them eighteen months prior were actually nuclear fuses for Minuteman warheads. Secretary of the Air Force Michael Wynne and CSAF General T. Michael Moseley both technically resigned in the wake of these events. However, it was widely reported that Secretary of Defense Robert Gates had "fired" them.[16] While Gates always claimed the firings were due to the mishaps, others have insisted his dissatisfaction with the USAF's acquisitions priorities for the F-22 and other expensive programs versus arming for the current wars was the real impetus behind his decision.[17] As a result of these incidents, the service once again opened a major command, Air Force Global Strike Command, in January 2009 to rebuild a credible nuclear deterrent. The F-22 program also ended in 2009 with a total of 187 aircraft built, slightly over half of the original planned force.

Soon after these events, the Obama Administration attempted to steer American foreign policy back to great power competition, most notably with the "pivot" to the Pacific announced in 2011. Due to the continuing civil wars across the Middle East, the pivot to great power competition was never completed. For the next decade up to the present, the nation has once again found itself mired in a complex war in a distant region while attempting to compete with two great powers, China and Russia. In this strategic environment, the three distinct voices of Air Force intellectual thought can still be heard.

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[16] Jonathan Karl, Brian Ross, and Len Tepper, "Top Air Force Officials Fired," *ABC News*, June 5, 2008; Kristin Roberts, "Air Force Leadership Fired over Nuclear Issue," *Reuters*, June 5, 2008; Thom Shanker, "2 Top Leaders of the Air Force Pushed Out After Inquiry," *New York Times*, June 6, 2008.

[17] Robert M. Gates, *Duty:Memoir of a Secretary at War* (New York: Alfred K. Knopf Publishing, 2014); John A. Tirpak, "Gates Versus the Air Force," *AFM* 97, no. 3 (March 2014): 55-57.

The technologists once again point to rapid technological development and space exploitation, led by the Space Force, as the wave propelling future warfare.[18] The Air Force published its *Science and Technology Strategy* in April 2019. Instead of remaining tied to building technology merely to enhance "operational effectiveness," the strategy claims three objectives: developing transformational "strategic" capabilities; reforming how science and technology is led and managed; and expanding the "scientific and technical enterprise."[19] Retired Lieutenant General Steven Kwast has even resurrected the argument for lunar bases since China may get there first and build moon lasers to attack "virtually any target in seconds."[20]

The concerns of the strategic warriors about being able to prevail in a nuclear conflict have also seen a recent rise. Retired Lieutenant General Dave Deptula, a protégé of Colonel John Warden and current dean of the Air Force Association's Mitchel Institute, has warned that the United States must prioritize funding both its current small bomber fleet as well as procuring the B-21 Raider, a large stealth bomber to replace the B-2.[21] Furthermore, the Air Force's nuclear force has received an influx of funds to upgrade what is portrayed as a vital mission performed with extremely antiquated tools.[22] Al Mauroni,

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[18] Matthew Donovan, "Unleashing the Power of Space: The Case for a Separate Space Force," *War on the Rocks*, August 1, 2019; Dave Deptula, "Setting Up the Space Force for Success," *Forbes*, May 18, 2020.
[19] Department of the Air Force, *Science and Technology Strategy*, April 2019, iii-iv.
[20] Steve Kwast, "The Real Stakes in the New Space Race," *War on the Rocks*, August 19, 2019; Steve Kwast, "Where the Space Force Must Go," *Politico*, January 17, 2020.
[21] Dave Deptula, "Hands Off, Budgeteers! DoD Must Fund our Small Bomber Fleet," *Breaking Defense*, September 24, 2019.
[22] John A. Tirpak, "The End of Nuclear 'Kick the Can,'" *AFM* 103, no. 2 (February 2020): 12-13; Aaron Mehta and Jeff Martin, "Decades Late, the B-52 is Getting a New Nuclear

the Director of the Air Force Center for Strategic Deterrence Studies at Maxwell AFB, has warned that Air Force officers' study of war is too focused on conventional operations and must once again ponder the problems of a limited nuclear war.[23]

The tactical warriors' voices now seem more muted, but they are still present. The debate over whether the A-10 should remain in the inventory has continued for decades. The aircraft has prominent supporters in Congress, but among mid-level officers as well. Responding to Deptula's claim that the A-10 cannot survive in a highly defended modern airspace such as Syria, retired Lieutenant Colonel Brian Boeding quipped that a "quick check" of his personal log book showed 152.6 combat hours over Syria. Many of his friends had more and would also attest to the continuing need for the A-10.[24] At the same time, the F-35 is touted by its pilots as more capable of performing a wide range of tasks in the ongoing complicated wars in the Middle East. This included everything from strafing Islamic State positions to identifying enemy surface-to-air missile systems from "really far away" for immediate or future targeting should the order come.[25] Whether with high technology or low, the tactical warriors have a continuing mission and continue to advocate for the tools to perform it.

The enduring diversity of thought within the Air Force leads to five implications for historians' research as well as officers charting the service's future. The first is to

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Weapon," *Defense News*, September 15, 2019; Valerie Insinna, "The US Nuclear Forces' Dr. Strangelove-Era Messaging System Finally Got Rid of Its Floppy Disks," *C4ISR Net*, October 17, 2019.

[23] Al Mauroni, "Tearing Down the Nuclear Firewall," *War on the Rocks*, October 15, 2019.

[24] Brian Boeding, "A-10: Hey Air Force, There's More to Survival than Hiding," *Breaking Defense*, June 26, 2020.

[25] Brian W. Everstine, "Combat Proven," *AFM* 103, no. 9 (September 2020): 56-59.

understand that the USAF is not intellectually monolithic. Senior officers do not speak for the entire service. However hierarchal the military is; the officer corps is drawn from American society composed of people who, in the main, are fiercely individualistic. No matter who is in charge, some segment of the officer corps will have vehement objections to procurement decisions while others will praise senior officers for holding to what they believe is the correct prioritization.

The second implication for scholars is that world events affect intellectual change, which in turn foreshadows organizational change. With the lag time in developing new aircraft and reaching bureaucratic consensus, change can occur relatively quickly especially in a crisis. The tactical warriors went from a marginalized position in 1960 to competing for the dominant position in a short five years based both on the Soviets' proclaimed intent to keep wars limited, the Flexible Response strategy, as well as the escalation of conflict in Vietnam. As political strategies become in vogue (massive retaliation, flexible response, the Nixon Doctrine) and changing world events (war, technological breakthroughs, altered strategic situations) occur, officers advocating a hitherto marginalized vision will attempt to capitalize on events to press forward their agenda. Simultaneously, others will argue that the current policy or crisis distracts from the 'real' threat that lies in the future.

Yet another implication is that Air Force officers do not, as Carl Builder claimed, uniformly "worship at the altar of technology."[26] The fact that airmen have to consider

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[26] Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: Johns Hopkins University Press, 1989), 19.

technology as a central pillar of airpower does not equate to religious fanaticism. However, there is a hardy intellectual strain among Air Force officers that does herald the pursuit of high technology as the best recourse to attain political objectives for the United States. Persistent visions of militarizing space and developing foolproof defenses against ballistic missiles best represent this strain but does not capture the full vision alone. The belief in inevitable technological progress to transform war will persist despite past failures, such as the capacity of an enemy to adapt and overcome the most advanced technology available, as the Viet Cong and the North Vietnamese proved to be possible.

This leads to the fourth implication that instraservice rivalry can be just as distracting a problem as interservice rivalry. From 1960 through 1973, the main debates between the military services revolved around the budget and was amplified by the Vietnam War. If the Air Force was not adequately investing in supporting the Army, then the Army wanted its own airpower element to support itself in combat. This tension escalated until at one point General Curtis LeMay challenged his counterpart, Army Chief of Staff Harold K. Johnson to a person aerial duel between himself in an F-105 and Johnson in a UH-1 Huey to see which aircraft (and officer) would survive.[27] Within the Air Force, debates of aircraft and their roles also hampered readiness for war. These disagreements kept consensus for the next generation fighter from forming until 1968 when the F-X, designed for air superiority first, became a service priority backed by top leadership. Competition between the Navy and the Air Force for budget dollars led to the

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[27] Charles J. Gross, *American Military Aviation: The Indispensable Arm* (College Station: Texas A&M University Press, 2002), 201.

Navy carving out their own airspace for independent air operations and a more general argument over whether a single service should control the air battle.[28] The AIR FORCE EYES ONLY classification during CORONA HARVEST stemmed from this competition to look good or at least not look bad. Assessments of the Navy's counterair efforts in 1968 reports were negative. This meant, in part, that the Air Force missed an opportunity to emphasize air-to-air combat during the lull between 1968 and 1972, which has been lamented ever since.[29] The Air Force commander in Saigon also never had complete control of all the Air Force aircraft in theater. SAC bombers and tankers deployed to SEA at all times reported directly to SAC Headquarters or their representatives in Saigon. Aircraft stationed in Thailand to bomb the North still technically reported to PACAF through their command in the Philippines.[30] Parochialism was not just a problem between branches but clearly manifested itself among groups of Air Force officers.

The final implication is that the study of history should help guide an intellectual balance to prepare for future wars. History, in its proper context, serves as a better guide than abstract warnings of worst-case scenarios. Paying more attention to Korea rather than the prospect of thermonuclear war may have better prepared the US Air Force for limited

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[28] Wayne Thompson, *To Hanoi and Back: The US Air Force and North Vietnam, 1966-1973* (Washington DC: Smithsonian Institution Press, 2000), 15-19.
[29] Michael E. Weaver, "Missed Opportunities before Top Gun and Red Flag," *Airpower History* 60, no. 4 (Winter 2013): 18-31; Robert K. Wilcox, *Scream of Eagles: The Creation of Top Gun and the U.S. Air Victory in Vietnam* (New York: John Wiley & Sons, 1990), v; Marshall L. Michel, III, *Clashes: Air Combat over North Vietnam, 1965-1972* (Annapolis, MD: Naval Institute Press, 1997), 4.
[30] John Schlight, *The War in South Vietnam: The Years of the Offensive, 1965-1968* (Washington DC: The Office of Air Force History, 1988), 10-11, 49.

warfare in Vietnam. Nuclear deterrence as the *sine qua non* of Air Force doctrine during the early stages of the Cold War proved to be excessive. This focus did, however, serve to build an effective deterrent force and provide it with credibility. Finally, history also teaches that the United States will most likely face an insurgency in the future. It would be unwise to abandon the study of it as the Air Force looks to the future.

In a time of renewed interest in great power competition, American national security policy will remain as broad as it was during the Vietnam War. The officer corps must not prioritize any one paradigm but seek a balanced approach. This means that the nuclear enterprise must be sufficient enough to deter, not to win. Wars fought directly between great powers will remain unlikely while conflict and competition below the threshold of nuclear war will be more likely. At the same time, new technology will arise, and these must be incorporated into existing doctrine, but pursuing it will never replace strategy. Warfare will remain diverse and the Air Force officer corps would do well to meet it with its own diversity.

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