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AIR WAR COLLEGE

AIR UNIVERSITY

A SEARCH FOR WARRIORSTHE EFFECTS OF TECHNOLOGY ON THE AIR FORCE ETHOS

by

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Preface

An evolutionary phenomena since WW II has been the rapid adaptation of technology to warfare. Push-button warfare is not a new idea but one becoming increasingly practical with the rapid advancement in cybernetics and physical science. One wonders in such an environment if the traditional concept of warrior, especially for a service as technology oriented as the Air Force, is in fact an anachronism. If so, is this a good or bad thing? This paper attempts to answer that question. Its origins are from the USAF Air War College Course on Technology and the Air Force sponsored under a grant from the Defense Advanced Research Project Agency. Specifically, DARPA proposed answers to the questions involved in "Transitioning New Technology to Service Use." This paper's focus will be on those who would employ these technologies in the art of war. Much of what is presented arose from discussions within the Technologies class and for this I am much indebted to my classmates. Many of those who were involved in Air Force projects such as New World Vistas and Air Force 2025 will recognize similar threads. Little thought is original under the sun, but it is my hope to focus the reader on a topic of great importance to the culture that will define all airmen of the future. I am also indebted to Lt. Col. Jim Riggins of HQ AF/XOC (CHECKMATE) for taking time from his busy schedule to review evolving concepts of the future Command and Control of Air Forces. Also of great help was Maj. David Gerber of the School of Advanced Aerospace Studies. Beyond this, the thoughts and admitted prejudices are those of the author.

Abstract

The Air Force is changing. It has recently defined its mission as the defense of the United States through the control and exploitation of Air and *Space*. Indicative of this expanse into space is the establishment of a school to train all new Air Force officers in a common grounding of what it means to be an airman. This fundamental raison d'être centers on the mission of strategic strike at the enemy's heart. This mission will occur through the air and space medium. Airmen bring special expertise to those mediums. Whereas the Air Force combat mission formerly centered on pilots in manned combat aircraft, the Air Force has now expanded its definition of "operators" to any military or civilian member who is experienced in the employment and doctrine of air and space power. This re-embrace of the strategic strike mission into an expanded air and space environment acknowledges the concept that defined the Air Force as a separate service. This renaissance was prompted by an "identity crisis" fomented with the Soviet Union's collapse and competition for scarce resources among the services as they increasingly duplicated each other's capabilities. Technology will further de-emphasize the role of the Air Force combat pilot as the strike mission moves into space.

Yet one must wonder how quickly the Air Force will move into new technologies that will fundamentally change its warrior ethos. Societal, institution, and budgetary constraints will likely produce gradual change. The resultant danger lies in a creeping incrementalism that will destroy the Air Forces warrior culture, a culture critical to the

effective combat employment of Air Force military power regardless of the means used. This paper concludes with recommendations on how to train future Air Force officers to maintain the Air Force warrior culture.

Chapter 1

The Changing Air Force: A Brave New World

One cubic centimetre of soma cures ten gloomy.

—Aldous Huxley
Brave New World

Change In The Air

Global Engagement

Following the 1996 Fall CORONA[1] the Air Force released its new vision statement *Global Engagement: A Vision for the 21st Century*. In it the Air Force mission is defined as the defense of America "through control and exploitation of air and space"[2] accomplished by focusing on the core competencies outlined in Table 1.

Table 1. USAF Core Competencies

1. Air and Space Superiority
2. Global Attack
3. Rapid Global Mobility
4. Precision Engagement
5. Information Superiority
6. Agile Combat Support

Global Engagement notes that the USAF is "Transitioning from an *air* force into an *air and space* force on an evolutionary path to a *space and air force*."[3] This "vision" Gen

Ronald R. Fogleman, Chief of Staff USAF, noted "is based on the premise that only air and space power provide the nation the ability to find and hit strategic centers of gravity *directly*, as well as the ability to operate at operational and tactical levels of war." This is an ability, Gen. Fogleman emphasized, absolutely essential to maintain in the 21st Century.[4]

The level of commitment to this vision is apparent in the recently published HQ USAF Long Range Plan. Unlike past long range planning efforts, this one enjoyed the full support of the Chief of Staff and Secretary of the Air Force, Sheila E. Widnall. Also significant is the directive nature of this long range plan. While the plan's contents are secret, one may glean an inside tip from a recent senior Air Force officer's comment: "Buy Space."

Air and Space Basic School

Other initiatives followed the fall CORONA. One of the most noteworthy is the establishment of an Air and Space Basic Course.[5] Many, especially members of the Army and Marine Corps, have noted a lack of cohesiveness in their Air Force counterparts due to the specialization Air Force members train and organize around. This stovepiping inhibits the evolving of a broad Air Force or, as it is sometimes referred to, a "blue suit" identity. In the Air Force fliers are fliers, and maintenance, maintenance and never the twain shall meet. The same could be said about pilots in general and almost any other specialty in the Air Force. Even among pilots, the Air Force specializes with notable elitism exhibited among various groups depending on whether that pilot flies fighters, bombers, or transport aircraft. The Basic School will attempt to redress this

"problem" by building a common starting point for all Air Force officers before they start specialization.[6]

The Marines run such a school for all of their new officers in Quantico, Virginia. All future lawyers and pilots and maintenance officers go through the same infantry course that those destined for the infantry attend. In so doing, a bonding and esprit de corps is built such that, as a senior marine remarked to the author, "I know that any Marine would die for me and me for him." Whether the Air Force can build the same sort of camaraderie is an issue debated later. Nonetheless, this effort is another indicator of a change of direction in the Air Force and its culture.

Non-Rated Flying Unit Commanders

Perhaps as significant as the new Basic School was the announcement that a non-rated (not a pilot or navigator) officer would assume command of a flying squadron at Tinker Air Force Base in Oklahoma. A recent survey at the Air War College polled students on attitudes about command of and qualifications for command of flying wings by non-rated individuals. Gen Fogleman stated that the possibility of non-rated flying commands will increase in the future.

New Doctrine Center

Magnifying the Air Force's new mission statement and a renewed focus on building a common "blue suiter" mentality was the establishment of a new doctrine command at Maxwell AFB. The Air Force will consolidate the development of doctrine as well as the people who work on it under one office. The intent is to both improve doctrine development and its understanding and use throughout the Air Force. The senior Air

Force leadership obviously feels doctrine has assumed a new level of importance to the Air Force institution. But one wonders "why?" in a service that has so long survived with rather ambivalent regard for its doctrine.

The New-Found Love For Doctrine

Uncertain Threat

As Morris Janowitz has argued "dogmatic doctrine is a typical organizational reflex reaction to future uncertainty."[7] The Air Force is looking for something to hold onto while the world freefalls. Doctrine was not critical with a well defined threat and a clear mission. With the threat (the former Soviet Union) gone, all uniformed services, and the USAF in particular, are looking for a structure—as opposed to a threat—to provide them a raison d'être.

Limited Resources and Duplicated Missions

These raison d'être are important as the resources available for defense are dwindling and increasingly difficult for the military to justify. Further exacerbating the drain on Air Force resources are duplication of its abilities by its sister services. The Army seeks an enhanced ability for "deep" fires in an area the Air Force has traditionally viewed as its own, while the Marines continue to promote their model as the pinnacle of air-land coordination of the close battle. The Navy promotes the concept of "Forward from the Sea" emphasizing both the vulnerability of adversaries and accessibility from the littoral waters of the world. Many ask the question "what unique ability does the Air Force bring?"

Back To The Future: Re-Embracing Strategic Strike

One of the foremost authors in offering such a unique raison d'être is Carl Builder of RAND Corporation. In his book, *The Icarus Syndrome,* he suggests the Air Force re-embrace the unique mission that led to its establishment as a separate service: Direct Strategic Strike. This rationale builds on three hypothesis:

1. The U.S. will require the ability to strike adversaries directly and promptly to meet its national security objectives in the 21st Century.
2. Such an ability must occur through the air and/or space medium.
3. Airmen bring a unique perspective, and therefore optimized ability, due to their focus on operating in those mediums.

In his book, Builder documents how the Air Force lost its sense of identity by forgetting its birth from the strategic strike mission and instead embraced the means of air combat, the manned combat aircraft. Consequently, in re-embracing the strategic strike mission, Builder argued, the Air Force should de-emphasize the role of pilots in the Air Force.[8] Such an approach would create more organizational cohesiveness while defining a unique niche for the Air Force as an institution.

Apparently Builder and others had a great impact on the Air Force senior leadership.[9] As a result, one sees a new Air and Basic School to make all officers feel part of a common Air Force corps. This is why one will see non-rated officers in charge of flying units. This is why the Air Force is expanding the definition of "operators"—a term traditionally reserved for aircrews—to include "any military or civilian member who is experienced in the employment and doctrine of air and space power."[10] This de-emphasis of the pilot's role in the Air Force is magnified by the Air Force's vision of future technology.

Technology Is Moving Man Out Of The Cockpit

New World Vistas And Air Force 2025

In late 1994 the General Fogleman and Secretary Widnall directed two far looking studies. The first, called *New World Vistas*, tasked the USAF Scientific Advisory Board (SAB) to "search for the most advanced air and space ideas and project them into the future." Completed in December 1995, it marked the 50th Anniversary of the first SAB study—*Toward New Horizons*. [11]

The second study was called *Air Force 2025: America's Vigilant Edge* or just *2025* for short. Students and faculty from the Air University's Air War College and Air Command and Staff College, scientists and technologists from the Air Force Institute of Technology; Air Force Academy and AFROTC cadets from around the country; and selected academic and business leaders in the civilian community, conducted this study at Air University over a 10 month period. Their efforts produced 41 individual papers totaling more than 3,300 pages of text.

Both studies were remarkable for not only their breadth (*New World Vistas* covered 14 Volumes and 2000 pages in addition to the *Air Force 2025* material) but also for the diverse palette of technologies suggested as areas the Air Force should pursue. Tables 1 and 2 contrast the capabilities and six high leverage technologies sought as the "investment to ensure the United States' continued air and space dominance in the future."[12]

Table 2. 2025 And New World Vistas Capabilities

Air Force 2025 High Leverage Capabilities	New World Vistas Primary Capabilities
Global Surveillance, Reconnaissance, Target System	Global Awareness
Global Information Management System Reconnaissance Unmanned Air Vehicle	Dynamic Planning and Execution Control
Global Area Strike System	Projection of Lethal and Sublethal Power
Space High Energy Laser Solar High Energy Laser Piloted Single Stage Space Plane	Space Operations
Attack Microbots	
Sanctuary Base	Global Mobility in War and Peace
Uninhabited Combat Air Vehicle (UCAV)	People

Table 3. 2025 High Leverage Technologies

Data Fusion	Advanced Materials
Power Systems	High Energy Propellants
Micromechanical Devices	High Performance Computing

One factor is most striking in the *2025* capabilities list: none of the weapons systems are manned with the exception of the single stage space plane. In fact, *2025* highlights five trends for the future, the first of which is "humans will move from being more 'in the cockpit' to being more 'in the loop.'"[13]

How Soon?

Vision aside, there exist daunting obstacles to any great change in the systems one sees in today's Air Force.

Societal Restrictions

As Robert O'Connell observes throughout his book *Of Arms and Men*, weapons and the doctrine that guides their use are a product of the society they serve. The Phalanx,

apparently first developed in the Sumerian City State of Erech around 4000 BC, was a cooperative effort requiring willing participants. It arose from a city-state, such as Erech, where the government evolved by the consent and participation of its populace. Thus, historical records show Erech's leader, Gilgamesh, asked for approval from his men before leading them into combat.[14]

O'Connell traces similar links between societies and their weapons of war throughout history. Such relationships often inhibited the development of military system. The Phalanx was still in use by the Greeks 2000 years after Gilgamesh. The Romans did little to improve over the Spanish short sword for centuries. Neither society saw a need to change.

In 1139 the Ecumenical Lateran Council banned the use of the crossbow in combat against other Christians as essentially an "unfair" means of war (Muslims were okay).[15]The use of firearms, though gunpowder had been known for centuries, was slow to evolve because such use was widely viewed as dishonorable. Those who captured firearm bearers would have their arms hacked off; an effective, if brutal, early form of gun control.

In fact, the whole concept of standoff weapons has been acrimonious throughout the history of warfare. The use of archers in combat, though archery had existed for thousands of years, was slow to evolve in Sumeria. O'Connell postulates the archer's arrival in combat was an adaptation of a dictatorial society. The combatants—unlike the volunteers of Erech—were ordered into combat. Less sure of their motivation, their masters equipped them with arrows that allowed long range combat and thus relative safety.[16]

Other inhibitions on weapons development exist. As John Nef points out, much of the inhibition on weapons development was simply because men thought it was evil, and so do many today.[17]

Nor should we think that only peace-loving Westerners think this way. The Chinese after developing and using the crossbow for combat, essentially abandoned it, retrenching into a closed world while attempting to devolve to a lost past.[18] Though having invented the gunpowder and the gun independently (and probably before the West) in the 14th century, they lagged the West almost until today in firearms manufacture and design.[19]

As Houston Smith points out, Chinese culture has held the military profession, and the tools of their trade, in low esteem since the days of Confucius.[20] Indeed, we may be seeing again the leading edge of a similar trend in the United States, as evidenced by the Quadrennial Defense Review and other budgetary assaults on the Defense Department in the United States.

Even while the Europeans were using banned weapons against the Muslims, the Muslims were in no rush to develop similar capabilities. The Turks employed a slave army, the Janissaries, to carry their guns, a weapon considered beneath a Turkish soldier's dignity.[21] Eventually the Ottomans would embrace this weapon, mainly to fight Christians, but the Arabs despised them for doing so. The Mumluk tribe was offended by firearms almost to the point of extinction as they strove to remain a society of equestrian warriors.[22] The Arabs, perhaps more than any ethnic group, display this almost suicidal deference to honor, the latest example being Saddam Hussein's (lack of) use of his Air Force in the Gulf war (treating it more like a mantle trophy) and his attempts to insult the U.S. into an "honorable" ground war of bloody attrition.[23]

Even today, attempts at the militarization of space, current treaties aside, is likely to meet with tremendous objections based on historical precedence and a notion that the heavens somehow remain pure.

Budgetary Pressures

It was not so much moral objections to weapons that stagnated weapons advancement in 18th Century England, but economics. Adam Smith's "The Wealth of Nations" and other treatises preached the power of the free market and that the military—being an unproductive industry—provided nothing of worth. Smith would only grudgingly acknowledge the need to maintain a minimal military force for defense and would certainly not direct funds for weapons modernization.[24]

The current domestic U.S. focus on economic issues as the primary determinant of world stability mirrors similar feelings in Great Britain around the turn of the century. This in-turn had a great influence on weapons cost, the resultant weapons choices England made, and the strategies the weapons dictated.[25]

Countering arguments of an apparent worldwide rush to embrace high technology weaponry (see for example Jeff Barnett's *Future War*)[26], detractors point arms purchases are mostly a factor of the major arms producers (France, US, Russia, UK) selling off excess inventory. Whether world demand alone can or would sustain new investment in high-tech weapons is highly uncertain.

USAF programmatic also make it difficult for one to see where any major investments in radically different programs will occur in the near future.

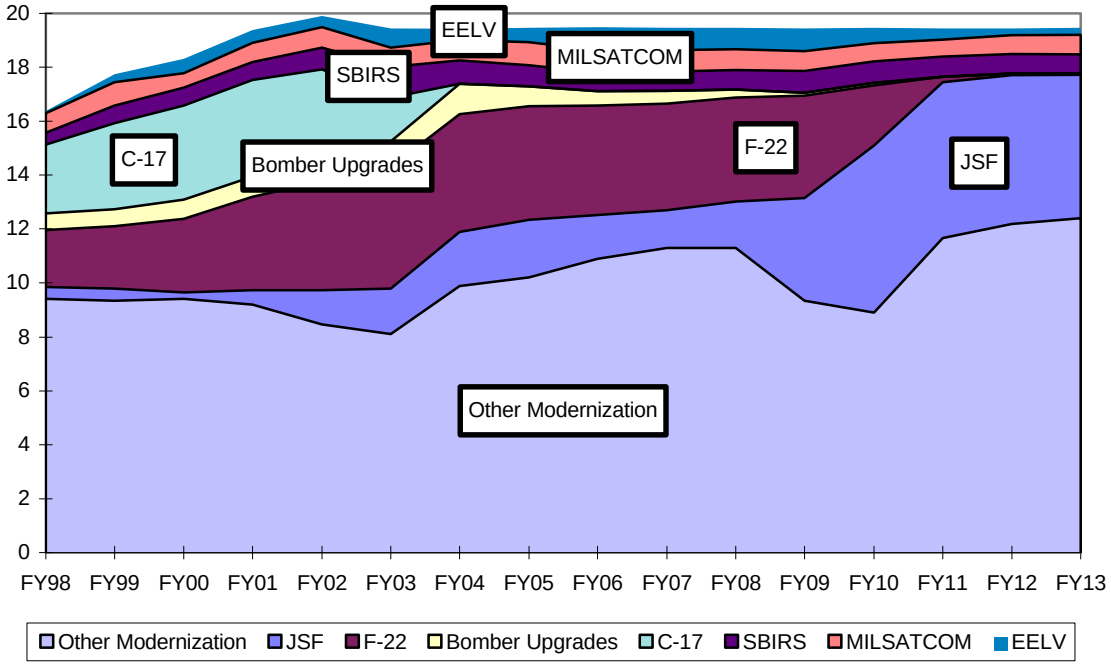

Figure 1. USAF Out-year Procurement through FY2013

As Figure 1 shows, the "wedge" (funding authorization) for the F-22 builds as the C-17 buy finishes, and remains on a relatively constant plane from FY02 until FY08 when the JSF becomes a big ticket item. "Noise" level funding occurs for the Evolved Expendable Launch Vehicle (EELV)[27], MILSATCOM, the Space Based Infrared Sensor (SBIR) (a system primarily designed for detecting theater and ICBM launches), and conventional bomber upgrades.

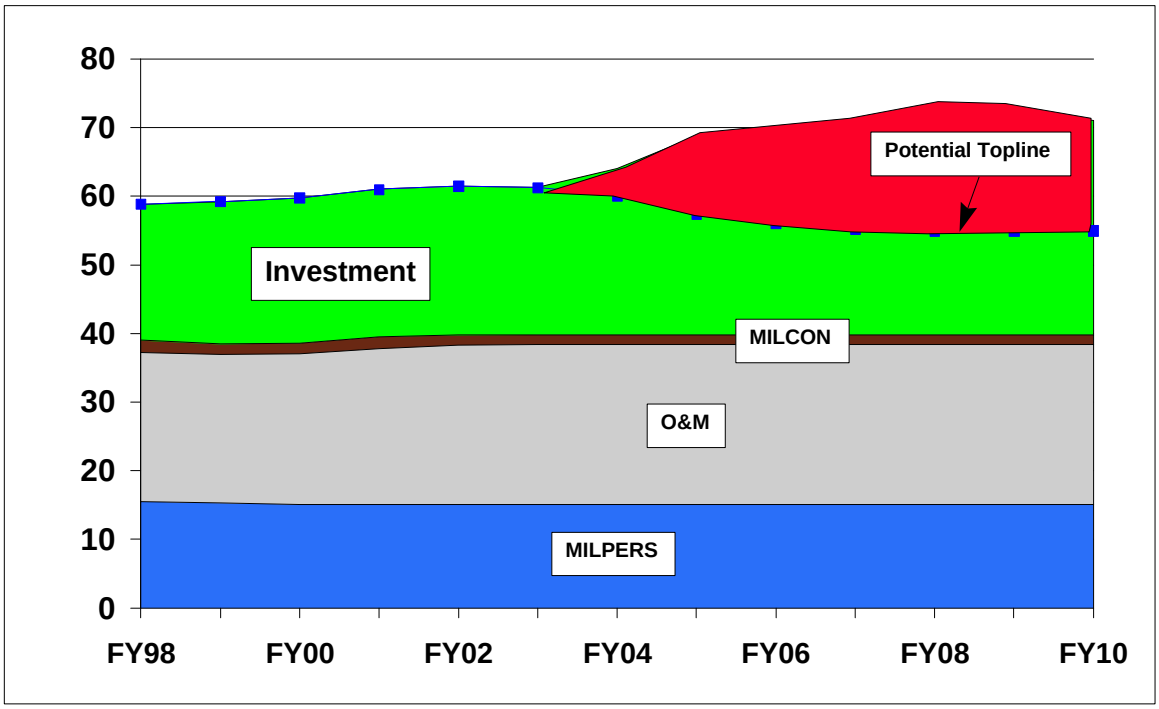

Figure 2. DOD Outyear Shortfalls

With just these Air Force programs contributing, the outyears as shown in Figure 2 still have a potential DOD modernization deficit of $16 billion. Though a recent senior military programmer called this amount "chump change" compared to the size of the total DOD budget, one still does not see room for major new programs without the demise or significant downsizing of others. Some feel the Air Force will build on commercial developments, but military applications of commercial technology will likely require significant outlays which will require offsets. Whether the Air Force will take cuts in major acquisition programs—and make no mistake, such offsets would have to come "out of (Air Force) hide"—is dependent on the degree of risk the senior Air Force leadership is willing to take.

Institutional Bias

Traditionally, such leadership is unwilling to sacrifice proven methods for high risk technology. Military leaders are quite conservative. This leaves one wondering whether any significant changes will occur in the short run for the USAF outside of the realms of doctrine, PME, and research. Indicatively, the recent Strategic Force 96 gaming scenario run at the USAF Wargaming Center at Maxwell AFB, fielded a force in 2006 remarkably unchanged from the force we have today and still quite similar to the forces used during the Gulf War in 1991.

Also, absent external pressure, changes in military organizations are typically incremental; however, such pressures may come. As one observer noted "with projected budgets, there is no realistic prospect that the Air Force will be able to wield true global power in the foreseeable future—except by using space."[28]

Alternative Future

Alternatively, such external pressure may force the Air Force down quite a different path. Today's environment may be recorded by future historians as the beginning of a general moratorium on weapons development, the beginning of a long Pax Americus. What we are witnessing now, ironically, may only be the last reverberations of a bell rung in Sarejevo in 1914. Military people are usually slow to see such opportunities.

> The military mind is indeed a menace. Old-fashioned futurity that sees only men fighting and dying in smoke and fire; hears nothing more civilized than a cannonade; scents nothing but the stink of battle-wounds and blood.

But, Inevitable?

Despite inhibition, however, time "cures" all ills, including sentimentality. The Parthian and Mongol archers dispelled any sentimentality that harked back to the sword and pike. Once the first arquebussiers (gun bearers) broke the initial firearms inhibitions in the 15th century other armies followed suite in a mild form of weapons escalation. But such changes in the methods of war occurred in fits and spurts. In fact, what is remarkable is the rather long stretches with virtually no weapons development as seen in Europe from the mid 17th century to the mid 19th century. Conversely, as notable are the rapid developments in weapons capabilities, once external pressures motivated the users (e.g. in the early 17th century during the Thirty Years War).

Most likely, some aspects of *2025* and *New World Vistas* will come about, but slowly. No current threat looms to move this train. Some technologies will not work. Some are too radical to even explore. We will discover others feasible but too expensive.

Regardless of the degree, however, the Air Force has set out on a different path. The recent speeches of General Fogleman, Secretary Widnall, and many other senior USAF leaders clearly show the USAF is planning to move more into space and pursue emerging technologies. The future will only determine whether we walk or run along a path that will change the ethos of the United States Air Force.

How soon we arrive, of course, is a variable. It may be 20 years, or it may be 50. Before we arrive into this brave new world of Major Regional Contingencies (MRC), Military Operations Other Than War (MOOTW), and Peace Keeping Operations/Peace Enforcement Operations (PKO/PEO), (i.e. a whole bunch of uncertainty) with a good dose of technology "soma" to cure all the world's "gloomy"* , it would be useful for the

reader to look at the path we just left, not so much to avoid future mistakes, mind you; but to check one's baggage before one continues, lest one forget what he brought with him and what he picked up on his new way, to know what to keep and dispose of once he arrives.

Notes

[1] A biennial gathering of all Air Force four-star generals, generally to discuss and act on corporate level decisions.

[2] *Global Engagement: A Vision for the 21st Century Air Force* (Washington DC: Headquarters USAF, November 1996.)

[3] *Global Engagement*, 7.

[4] Gen Ronald R. Fogleman, Chief of Staff, US Air Force, address, Air Force Association, Los Angeles CA, 18 October 1996.

[5] *Global Engagement*, 19.

[6] Lt. Gen Michael D. McGinty, AF/DP, quoted by Julie Bird in "The Chief's Vision." Air Force Times, 2 December 1996, 12.

[7] Morris Janowitz, *The Professional Soldier: A Social and Political Portrait,* The Free Press of Glencoe, 1961, 24.

[8] Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force*, New Brunswick, CT.: Transaction Publishers, 1994, 214-215, and 228-229.

[9] For example Dr. Rebecca Grant, also of RAND, whose recommendations apparently heavily influenced Air Force leadership in their establishment of the new Air Force doctrine center at Maxwell AFB.

[10] *Global Engagement*, 19.

[11] *New World Vistas; Air and Space Power for the 21st Century* (Summary Volume.) Washington DC: USAF Scientific Advisory Board, December 1995.

[12] *Air Force 2025: America's Vigilant Edge.* CD-ROM. Maxwell AFB, AL: Air University Press, 1996, "Qwiklook," 1.

[13] *2025*, 2.

[14] Robert L. O'Connell, *Of Arms and Men: A History of War, Weapons, and Aggression*. New York: Oxford University Press, 1989, 35-38.

[15] Ibid., 95-96.

[16] Ibid., 48.

[17] John U. Nef, *War and Human Progress: an Essay on the Rise of Industrial Civilization*, Cambridge, MA.: Harvard University Press, 1950, 124.

[18] Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict From 1500 to 2000,* New York: Random House, 1987, 7.

[19] William H. McNeill, *The Pursuit of Power: Technology, Armed Force, and Society since AD 1000,* Chicago: The University of Chicago Press, 1982, 81.

Notes

[20] Huston Smith, *The World's Religions: Our Great Wisdom Traditions*, San Francisco: Harper, 1991, 179-180.

[21] O'Connell, 126.

[22] David Ayalon, *Islam and the Abode of War: Military Slaves and Islamic Adversaries*,. Brookfield, VT.: VARIORUM, 1994, Chap XIII, 35-36.

[23] In fact Hussein showed in his war with Iran that the Iraqi Air Force, while impressive in numbers and technology, was a show piece, meant more for prestige than combat effectiveness. Hussein repeated this trend in the Gulf War.

[24] Kennedy, 152.

[25] Jon Tetsuro Sumida, *In Defense of Naval Supremacy: Finance, Technology and British Naval Policy, 1889-1914*, Boston: UNWIN HYMAN, 1989, 329.

[26] Jeffrey R. Barnett, *Future War: An Assessment of Aerospace Campaigns in 2010*, Maxwell AFB, AL.: Air University Press, January 1996.

[27] The EELV is designed to be a relatively low cost to orbit launch vehicle.

[28] Daniel Goure, CSIS, quoted by William Matthew's in "Air Force Redefines Itself for the Future," Air Force Times, 6 Jan 97, 12.

[*] "Soma" was a cure-all drug the government gave the citizens of Aldous Huxley's *Brave New World* to solve their problems (the "gloomys.") In so doing the government sought the dissolution of any dissident thought.

Chapter 2

Knights Of The Air: Historical Underpinnings Of The Air Force Warrior Culture

All history is bunk.

¾ Aldous Huxley

The Nature Of Conflict: Predatory Vs. Intraspecific Aggression

Predatory: A Struggle For Survival

Why do men go to war? Are there enduring characteristics of those who fight these wars, characteristics that make some winners and others losers? Anthropologist trace much of our aggressive behavior to survival. Man is a predator. We soon learned that cooperative behavior enhanced the hunt's success. Many scientist today attribute much of the behavior we exhibit—a smile, our tone of voice, the way we look at another; all that is perceived as friendly—as overt signs meant to encourage cooperative behavior.[1] Nothing exhibited the benefits of this cooperative behavior more than the hunt. As such it served not only as an act of nourishment, but an act which bonded men (and often women) together. The opponent was an object needed for survival (the animal hunted) or a threat (someone who had possession of resources you needed or threatened your resources).

Intraspecific: Genetic survival

But man also demonstrated another type of aggressive behavior. This behavior was a competition for procreation. Here body language, gestures, and posturing exhibited altogether different intentions, none cooperative. This Intraspecific (meaning literally "within the species") aggression has attributes different than predatory behavior. Typically, intraspecific type aggression among animals is not to the death. Its purpose is to show superiority. Often the intended "victim" is not the other male, but the female watching. Another aspect of intraspecific aggression is its ritualistic nature. Many animals follow a very predictable and set pattern in preparation for the culminating intraspecific struggle. The means of their combat is often more decorative than functional, with the "weapon" used mostly for intimidation and show. Since the combat is intraspecific, the weapons by default are symmetrical, leading to differentiation based on skill, strength, and cunning. Rarely do most predators use their predatory weapons (fangs and claws) to any degree of significant injury in intraspecific combat.

Blurred Lines: Predatory And Intraspecific Human Conflict

Lest the reader think this paper is turning into anthropology 101, much recent research promotes the idea that a large part of human behavior is attributable to these kinds of instinctual motivations, perhaps even more than reasoned thought. Even today such ritualistic combat occurs in primitive tribes.[2] Though disconcerting to those who seek the end of conflict by focusing on humanism, these theories stand-up to scrutiny and offer a rationale to what, especially in hindsight, seems a baffling record of human behavior.

That written record is relatively recent. Around 4000 BC, in the area known as Mesopotamia (an area we seem to continuously revisit), arose the first civilization with a recorded language: the Sumerians. Gilgamesh of Erech, mentioned earlier, was the first recorded "hero" figure of that civilization. Relief's from this era show warfare had evolved into complex forms as exhibited by the emergence of the Phalanx.[3]

The advantages of the Phalanx were obvious. To use modern principles of combat[4], it allowed one to mass "firepower," it was ideally suited to bring force to bear on an enemy (the offensive), it allowed one to secure one's force with overlapping coverage of shield and pike, and, by keeping one's troops tight-bound in the rush of combat, leaders were able to maintain effective control (unity) of this impressive machine.

Yet here one sees a curious development. The leader was out in front, not inside, the Phalanx. He carried in his hand a short range weapon, not the "power projecting" pike. Gilgamesh's favorite killing tool was a battle-ax named the "Might of Heroism." Undoubtedly such an arrangement had operational advantages—perhaps a clearer view of the battle and thus better command for the leader. But Gilgamesh's role was not simply to guide the Phalanx. He was also the most adorned of the warriors and he was the most vulnerable. His role was to lead, to intimidate the enemy, and to inspire his men. What better marriage is there of the predatory pack, on the hunt for resources, following the lone warrior—the heroic intraspecific warrior—who would lead his men to victory and glory? [5]

As different as predatory and intraspecific warfare are, they seem to have this common thread: the ideal of individual combat. In human predatory actions, while group behavior was useful for herding and tiring the prey, it was still necessary for someone to

pick up the spear, and with some great degree of personal risk, move in to close proximity for the final kill.[6] Even in this century, the Intuit Indians of the Arctic regions executed such techniques in killing bears, forcing the beast to rear on his haunches in attack while the hunter propped a long spear underneath the bear's belly for him to fall and impale himself.[7]

Similarly, men came to admire the lone warrior of intraspecific combat, the one who fought out front paired with an equally matched adversary. "Something remained to remind antagonists that males of the same species most naturally settled disputes in pairs" and that "warfare preserved the intraspecific role of the female as prize and object of the combat."[8] This is why we see Gilgamesh in front of the Phalanx. It is why we have the Biblical stories of David and the mythology of Beowulf. It is a universal sentiment seen from Asia to Africa to the Americas.[9]

The highest expression of this sentiment is likely Homer's *Iliad*. Of such impact was this epic poem, it shaped an entire civilization. The Iliad speaks of honor and its role in guiding the lives of men. The Achaians had gone to war in the name of honor, to avenge the theft of Menelaos' wife by the adulterous Paris. As O'Connell notes, this Homeric concept of war is fundamentally one of intraspecific combat.[10] By taking Menelaos' wife, Paris declares himself the better man. Menelaos is insulted; his esteem in front of his peers is lowered. Thus begins a nine year war and a saga of intricate complexity that even today has little match in illuminating the nature of man. Its influence on Western society can be traced from Achilleus to Rambo.

The Romans adopted these values by taking the "Homeric ethic to its logical extreme." Picking up the pieces following the middle ages, renaissance scholars revisited

the lost classics and renewed the doctrine and thoughts of the Greeks and Romans. These reborn ideals can be seen in the knights and their form of warfare in the middle ages.

Of these ideals none was more defining of warriors to the Greeks than honor. Honor is a measure of self worth relative to others. As such it is dependent on the perceptions of others. It is the child of self esteem and self doubt.[11] Hence it was important to display honorable characteristics in front of peers less they think you weak.

The Greeks understood this. An affront to honor was an affront to one's worth and demanded redress else the insult alone made it so. This redress was the Greek form of Justice. In fact, one may argue that seeking honor is the root of many sentiments such as camaraderie (acceptance in a peer group), esprit de corps (self esteem as a member of such a group), and courage (unwillingness to show fear in front of peers) that men manifest in battle. Even the ancient Chinese, as anti-militaristic Confucianist, saw honor, or its euphemistic cousin, Justice, as a key motivator in war.

> People ready to fight to the death is justice. What make justice possible to carry out is its awesome dignity. Therefore when people are united by culture and equalized by martial training, they are called sure winners. When awesome dignity and justice are both exercised, this is called supreme strength[12]

During the middle ages the ritual of intraspecific combat ascended to new heights with codes of honor and ritualistic combat most apparent in tournaments where knights would, in a recurring form, match their individual skills. It was also during this time, much as a result of cruelty from the reformation and the wars of religious conflict, that the first codified laws of war were written by Hugo Grotius in 1583.

Honor And Its Bounds On War

Grotius' *De jure belli et pacis* (On the Rights of War and Peace) was significant in its "insistence that legal principles exist in the human reason, independent of any actual worldly authority, political or religious, yet binding in the world."[13] Before this point, Christian Europe had come to accept war as an evil but unavoidable condition of life and a direct descendant of original sin. Thus, once the Church split with the reformation, there was no absolute authority to turn for grievance. Grotius sought to keep this anarchy in check by appealing to a universal "natural law." This secular humanism was a natural outgrowth of intraspecific conflict whose forms and rituals resolved conflict without great devastation. Grotius brought a rational reason, appealing to this "natural law," a law beyond ideology, for restraint on the battlefield. This restraint would affect society's choices of weapons and doctrine for some time to come.

Not that the horror of war was always kept in check. The inhumanity of the Thirty Years War and the wide devastation as the Levee en Masse grew warfare to new horrific scales punctuated the evolution of conflict. Yet time and again, men came back to a sense of honor, something above the predator, that led to constraint on the battlefield.

1914 was another time that the controls on conflict had become unbalanced. The technology of war had gotten out of synchronization with its doctrine. Thus heavy artillery and automatic weapons stalemated long fronts in a grueling meat-grinder of linear warfare that saw 600,000 British and Germans killed in the Battle of Somme and 500,000 Frenchmen and Germans *each* at Verdun[14]. Like their predecessors at Agincourt, unable to adapt to a new technology (at Agincourt the French against the English Longbow), slaughter made the rivers run red. Yet "from this hell there arose a

weapon of such chivalric proportions that it would provide a counterpoint to the entire struggle and in so doing so illustrate the durability and regenerative powers of the warrior code in even the most adverse circumstances."[15] Thus the aircraft, evolved by the bloody combat of the trenches, offered a way to bypass the ground stalemate and end the war without the huge sacrifice in human flesh.

Knights Of The Air

It is perhaps most telling to note the reaction of the ground troops to these new day knights. Rather than anguishing in bitter resentment of the clean air war from the bottom of trenches, they looked up to airmen as their heroes.[16] Like the men of the Phalanx, the infantry saw these air warriors as potential champions that exhibited some of the "humanity" lost in the trenches below. The metaphor for heaven and hell was almost burlesque, but inspiring. The foot soldier also realized this image was not just Vaudeville. In the last three months of the war the RAF alone lost almost 3000 aircraft.[17] It was deadly glory.

Today, the U.S. Marines, more than the other services, recognize the importance of honor in forming warriors. Marines culminate their basic training with a 54 hour ordeal known as the Crucible. Deprived of sleep, they run through a rigorous set of exercises and obstacles as a team. Here the goal is to bond. If one fails they all fail. They succeed together. Having succeeded with the Crucible, Marines form a store of trust, built on mutual honor, that, as related earlier in this paper, they are willing to die for each other. Thus, the act of bonding forms a cohesive unit that exhibits the best characteristics of the predatory pack.

This type of bonding is best mimicked in USAF fighter units. Forming paired elements and depending on a wingman and other flight members for mutual support in combat requires bonds of trust that only life threatening situations can engender. The glue is honor, one's sense of self worth among peers. Pilots measure this worth through daily training that grades individual prowess in specific combat related skills such as bombing accuracy and gunnery scores.

But no event is a more obvious measure of individual skill than "kill ratios" formed against each other and adversaries from dissimilar units in activities often described as "Top Gun" events. Of these activities, none is more revered than the ability to win in a one-on-one competition against a peer, at short range, with the aircraft's close-in weapon, its gun. Aces' interviews from all wars talk of the combat they most sought: individual combat in single seat aircraft.[18] From Gilgamesh to the young F-15 Lieutenant, little has changed. The opportunity to prove yourself superior to an adversary at the closest possible range—whether it is with the "Might of Heroism" or a 20 mm Gattling gun—is the highest measure of honor. It is this honor that spurs the warrior to the greatest sacrifice in combat, for the warrior would rather die than live without honor.

The Air Force Warrior

These examples help illustrate what seems obvious. The emotions tied to the warrior-hero are fundamental to man, and in large part define what he is. In all cultures, whether Greek, Chinese, or Inca*, the lone warrior is admired. As Professor C.D.C. Reeves points out, Homer understood this fundamental truth and noted the characteristics of these warriors.

> A warrior hero Ajax, Hector, Achilleus has to be willing and able to fight in hand to-hand combat day after day. He has to be able physically and psychologically to plunge a sword or spear into the body of another human being and to risk having a sword or spear plunged into his own. He has to be brutal and to risk brutality. At the same time, he must be gentle to his friends and allies, able to join with them in group activities both military and peaceful.[19]

This honor is the source of a host of sentiments we associate with the military: gallantry, chivalry, integrity, and glory among others. These sentiments, so important to the individual, often come at a great cost though to his family and country. As Abraham Lincoln noted when debating against the U.S. involvement in the Mexican War, "military glory—the attractive rainbow that rises in showers of blood" has dazed men beyond the point of rationality throughout history.

But the concept of honor, so central to the warrior, was also critical to the fighting effectiveness of the individual and the units of which they were part. Further, the sense of inspiration and legitimacy these warriors gave to those who survived the war was important in maintaining their sense of group esteem without which the group (nation) disintegrated. Societies have always needed their heroes.

One wonders who will be the heroes of tomorrow. As the Air Force moves into the 21st Century, as we see technology and doctrine moving man from the cockpit to a place in the loop of combat employment, who will be the Air Force warriors and how will they impact the society they serve? The next Chapter explores these issues and what roles those who would be the warriors may assume.

Notes

[1] For a general review , along with many of the counter-arguments against the biological determinism of war see Doyne Dawson, *The Origins of Western Warfare:*

Notes

Militarism and Morality in the Ancient World. Boulder, CO.: Westview Press, 1996. Specifically Chapter One, "Primitive Warfare" , 13-31.

[2] Rick Fields, *The Code of the Warrior: In History, Myth, and Everyday Life*, New York: Harper Perennial, 1991, 24.

[3] The Phalanx was a wedge of men armed with interlocking long shields on their left arms and pikes (long spears) on their right. The pikes were of such length that men several rows back could have their spears project forward of the first row of combatants. This produced an overlapping effect such that the Phalanx presented a hedgehog array of sharpened points to an adversary's force. So impregnable was this formation, that even ancient cavalry was unable to defeat it. Indeed the Phalanx remained essentially unchanged two thousand years later when use by the Greeks against the Romans.

[4] *FM 100-5: Operations*, Washington DC: Headquarters, Department of the Army, June 1993, 2-4 - 2-6.

[5] O'Connell, 35-36.

[6] O'Connell, 23.

[7] Of minor passing interest is the current debate to eliminate, and this is no joke, spear hunting, in the State of Alabama, currently legal. Its advocates see it as the only true form to match wits and courage with their prey. Its opponents see it as atavistic barbarism.

[8] O'Connell, 35.

[9] Ibid., 46.

[10] Ibid., 46.

[11] Janowitz, 228-231.

[12] *The Book of Leadership and Strategy: The Lessons of the Chinese Masters.* Cleary, Thomas, trans. Boston: SHAMBHALA, 1992, 69-70.

[13] Nef, 141.

[14] O'Connell, 254-255.

[15] Ibid., 243.

[16] Ibid., 262.

[17] Air Vice Marshal Tony Mason, *Air Power: A Centennial Appraisal*. Washington DC: Brassey's, 1994, 18

[18] O'Connell, 262.

[*] Though the methods of warfare, what was acceptable and not, has varied widely.

[19] C.D.C. Reeves, "The Anger of Achilleus," Lecture Notes, 1.

Chapter 3

Changing Of The Guard

Wars

IN the old wars drum of hoofs and the beat of shod feet In the new wars hum of motors and the tread of rubber tires. In the wars to come silent wheels and whirr of rods not yet dreamed out in the heads of men. In the old wars clutches of short swords and jabs into faces with spears In the new wars long range guns and smashed walls, guns running a spit of metal and men falling in tens and twenties In the wars to come new silent deaths, new silent hurlers not yet dreamed out in the heads of men. In the old wars kings quarreling and thousands of men following In the new wars kings quarreling and millions of men following. In the wars to come kings kicked under the dust and millions of men following great causes not yet dreamed out in the heads of men.

Carl Sandburg

The Good Life

For some time to come the Air Force will likely have manned combat aircraft. The Air Force image will remain fighters and bombers engaged in combat with the enemy. Just as the horse came to symbolize Army resistance to technology and its ties to an agrarian, aristocratic heritage[1] so will the aircraft exist beyond its rational life in the Air Force. But its day will end.

The Air Force will move eventually to a world in which manned combat aircraft go the way of the buffalo and Unmanned Combat Vehicles (UCVs) will take their place. Less clear is the evolution of weapons in space.

As we have shown, men eventually will adopt weapons systems despite any particular moral or fiscal misgivings. But there have been rather extended periods in which moratoria have occurred on weapons development for 1)moral purposes 2)lack of interest or 3) economic factors. As O'Connell argues "the key to stability [in weapons development] seems to lie more in the fact that arms were so bound up with ritual and culture—not just biology and tradition but economic and political reality—that fundamental changes often implied a restructuring of society itself."[2] So strong are these cultural inhibitions that only the breakdown or looming destruction of a civilization will remove the inhibition. As a S.L.A. Marshall noted, "the character of a society determines finally the choice of weapons in war."[3]

Space may be such an arena. Just because we can weaponize space does not mean that we will. We have a long tradition of not putting weapons in space, even defensive ones. It will cost a lot of money and there is no compelling near-term threat to justify the cost. Even the argument for rapid, responsive, strategic strike is unlikely to sway a society comfortable with the thought of no weapons in the "last frontier." Likely, the only way the U.S. will weaponize space is in response to an adversary's counterspace systems (i.e. a defensive response).

Such an adversary will occur sometime in the future but it could literally be hundreds of years. If and when the weaponization of space does occur, it is likely air and space systems will be robotic or datalinked. Even more so than terrestrial systems, the cost

associated with maintaining men in a space environment would add enormous complexity and expense to such platforms. Not until we venture out of this solar system are we likely to carry weapons with men into space.

Undoubtedly we will improve intelligence, surveillance, and reconnaissance (ISR) space capabilities. We will become heavily dependent on these systems and as such must see to their security (though we are likely to resort to passive means of defense in space). Ironically, establishing the space superiority mission will entail atmospheric attacks on enemy launch and control facilities, which is a supporting role from the medium most threatened by space itself.

More weapons systems will involve standoff delivery as adversaries develop effective counters to current stealth technologies. We will have to address societal concerns about the use of standoff weapons. As Paul McNeil notes "to kill impersonally and at a distance.. [is] profoundly repugnant to the contemporary consciousness."[4] We will increase use of small, microrobotics in a strange mixture of the old quality vs. quantity argument, and quite simply overwhelm defenses with hordes of micromonsters. Directed energy systems will find limited but increasing use. The main problem will be obtaining line of sight to the target (again, assuming inhibitions on weaponizing space.) Atmospheric systems will still have to deal with attenuation and enemy defenses.

Weapons and the situation at hand determine strategy.[5] Tomorrow's weapons will depend on decisions made today. No one knows what situations future combatants will face, but they will have to fight with what today's decision makers give them. If these weapons meet the demands of tomorrow, it will be due mostly to the ingenuity of those

who employ them. Men have been and will remain the key component of effective military employment.

Nonetheless, one can see technological trends that will change the ethos of the Air Force. Most prominently is the removal of man from weapons systems. We will do this. How could we not? It will cost less. It will remove our men from harms way. Advances in cybernetics and artificial intelligence will provide sufficient resolution to provide the "human in the loop" with the required information for using the weapons system. Is it so much different for an F-22 pilot to look at his Situation Display and launch and leave a missile at an adversary a 50 miles away versus doing the same from the back of a van?

Our operators of the future will include those who employ UCAVs and remote ISR systems. In a final payback to their fighter brethren, transport pilots will remain as the only occupants of aircraft cockpits because we are unlikely to entrust the life of humans totally to robotic systems. Even these will likely be reserve pilots or possibly civilians contracted to haul troops and equipment much as we contract civilians to move equipment by sea today.

Without manned aircraft we will not need a lot of land consuming runways and will close many Air Force bases and their attending support structures. We will contract non-deployable functions. We will convert healthcare to a common Federal HMO system. Most Air Force functions can be performed easily from office buildings in metropolitan centers so we will lease office space in cities. Telecommuting will be a viable means for many people to work for the Air Force. We will conduct training "on-line" using advanced video-conferencing techniques and virtual reality. Women will become a larger part of the force.

Members of the military will be less distinctive. We will have fewer forward facilities relying more on power projection capabilities from the CONUS. Contrary to calls for centralized execution,[6] we will disperse operators to avoid decapitation. Linked together in a distributed network—a military version of the Internet—smart "Agents" will aid them in going on-line and getting the information they need to employ their systems.

Organizational structures will be almost flat. Tied directly into decision makers, operators will get mission guidance directly on-line. Visual communications will be critical. "Operational command in the field must be direct and personal, by means of visits to subordinate HQ, where orders are given verbally."[7] This will be as true in the future as it was in 1945, except on 2025 we will due it virtually.*

Accompanied in real time with a mission paradigm formulated in conjunction with a smart "Agent" by the decision maker, these mission type orders[8] will give operators general guidelines on mission accomplishment. The detailed operations they develop will be compared against the paradigm for points of unfeasibility and possible non-compliance with NCA restrictions. Resolved decision points will flow back over the net for mission execution permission which, when received, is executed and monitored by operators. In a reversal of Command and Control schema since the time of Napoleon,[9] though distributed and redundant, little autonomy is left to the operator as fear for independent actions escalating beyond mission parameters is greater than the fear that a mission may not be accomplished. Individual missions will be "expendable."

Command, control, communications, computers, and intelligence (C4I) structures will remain flexible and adaptable allowing robust, hi-tempo, operations while isolated,

high visibility crisis, are executed at the NCA level with intervening layers of "command" acting only as systems monitors.

No longer driven by the overseas "must rotate" engine, military members can homestead, or move to locations of their desire, and do the majority of their work on-line. The term "citizen soldier" takes on new meaning as two-thirds of Air Force combatants are members of the National Guard. Drill exercises will occur twice a year at centralized locations to get face time with commanders and to go through the requisite group bonding exercises.

The sanitary nature of weapons will make their use more palatable to decision makers. With no friendly casualties and few enemy civilian casualties, strikes are seen as surgical, quick, and efficient. The "CNN factor" becomes no factor as strikes occur in real time and are conceived, planned, and executed before CNN is on scene. Precision is of such high degree there is little to report except mission success when CNN arrives. "Soma" is abundant and cheap. We are held in awe. The world is good.

The Best Laid Plans Gang AFT AGLA

But a different world could evolve.…As Lt. Col. Donald Baucom pointed out, it is a myth to believe that technology will provide a cheap, humane way to wage war.[10] Those weaker than us do not like us telling them what to do. They do not play by the rules. When threatened, they respond by taking American lives. Our transnational, free wheeling society has made our cybernetic borders porous. Military nets are secure but not the civilian sectors that support them. Even worse, threats directed towards the civilian sector generate unprecedented calls for protection. After all, why does the

military exist except to defend a nation's resources? Our information warfare airmen are strained to the hilt trying to build firewalls, defuse cybertime bombs, and killing bugs. But the bugs are not only electronic.

Advances in genetic engineering have allowed adversaries to develop mutations of fungus and parasites for which our food crops have no defenses. Agro-terrorism may supplant narcotics as the nations number one security concern. In a truly horrific evolution, adversaries may threaten human genetic warfare by inserting dominant gene structures that over a few generations will naturally select characteristics of the enemy's like.

True to the adage "no good thing lasts," a peer competitor arises which is a participatory socialist government that seeks to establish regional hegemony. They pour vast sums of money into basic and advanced research that produces a robust spacelift program, advances in directed energy, and basic energy research. The ubiquity of the Internet shortens their research efforts by a factor of four and they rapidly approach the U.S. in some areas, even surpassing the U.S. in many new technologies. They do not have to resort to blights and bugs. They have high precision hypersonic weapons with three meter precision as well as conventionally armed and MIRV'd ICBMs. They have shown a reasonable ability to target our decentralized execution cells. If things really get hot, they still have several hundred nuclear warheads on mobile, low signature launchers.

Worse still, liberal immigration and the WFTA (World Free Trade Agreement) make it easy for any nationality to travel openly around the US. The few airbases we have are fixed and therefore targetable.

Focusing on a heightened cultural dichotomy in the distribution of wealth (still mostly in the hands of Anglos and the New Asians) advocates successfully lobby for social programs that vastly redistribute personal income. America's focus turns inward. Support for global engagement as a military foreign policy is weak.

It has been a period of incremental, but in total great, change. The Global Strike capability outlined in *Global Engagement* constituted a "mutation of the art of war with which soldiers psychology [did] not easily keep up."[11] But some of the soldiers of 2025 adapted: those that had warriors; those on the winning side of the war that happened that year.

Notes

[1] Janowitz, 25.

[2] O'Connell, 39.

[3] S.L.A. Marshall, *Men Against Fire*. New York: William Morrow & Company, 1947, 19.

[4] M'cNeil, vii.

[5] O'Connell, 301.

[6] See for example Barnett in *Future War*, and Maj. Gen AK Zaporozhchenko in *Scientific-Technical Progress and the Revolution in Military Affairs (A Soviet View)*, Moscow: Military Publishing House of the Ministry of Defense of the USSR, 1973. Translated and published under auspices of the USAF, Washington DC: U.S. Government Printing Office, 168.

[7] Field-Marshal B.L. Montgomery, *High Command in War*, Germany: Printing and Stationery Services, 21 Army Group, June 1945, 26.

[*] Such as with holographic projections, thus allowing one vitally important non-verbal feedback.

[8] For structure of such orders see Straight, Lt Col Michael Straight's, "Commander's Intent: An Aerospace Tool for Command and Control?" Air Power Journal, vol. X, no. 1, (Spring 1996): 36-49.

[9] Martin van Creveld, *Command in War*. Cambridge, MA.: Harvard University Press, 1985, 97.

[10] Lt Col Donald R. Baucom, "Technological War: Reality and the American Myth" Air University Review, vol. 32 (September-October 1981): 57.

[11] M'cNeil, 382.

Chapter 4

In Search Of Warriors

Fiddle Dee Dee, War, War, War. This war talk is spoiling all the fun I get so bored I could just scream. Scarlet O'Hare

—Margaret Mitchell

The Need For Warriors

Gilgamesh would likely find the *2025* world unappealing. What glory is there in fighting an unseen enemy? What honor accrues from executing a command line prompt? Scarlet, on the other hand would sneer at such notions. "Fighting is like champagne. It goes to the heads of cowards as quickly as of heroes. Any fool can be brave on a battlefield when it's be brave or else be killed."[1]

Much fighting is foolishness, but the time to debate that is before and after. Given that wars will occur, one cannot help but feel we are losing something of value, a value which in the past meant victory or defeat. In 1984 Lt. Col. Donald Baucom worried that, given the Air Force's penchant for technology, it would become dominated by technocrats. This fear did not come to fruition.[2] Why? Because in the interim we had a war which reasserted the primacy of the warrior. Some observers make the same prediction of technological dominance today.[3]

But the world and the nature of conflict still will demand warriors. In the post-cold war era, the United States is engaged in more conflicts, not less. The relative calm of nuclear stalemate has been shattered by the din of alley cats fighting for the world's scraps. We need our warriors in this fight and technology is an important, but secondary, concern. Like it or not, Engagement and Enlargement has kept us engaged. Once engaged, we have not been able to divorce ourselves from the intraspecific aspects of fighting and the warriors such fighting demands; however, we still must ask: Can we? Should we?

Can We Fight Wars Without Warriors?

We can perhaps, but not for any great length of time. We can take men out of the cockpit. We can build sanctuary bases. We can make faceless those who launch the weapons that "target anything that moves on the surface of the earth."[4] Adversaries, however, will respond to this capability. They will shield and deceive. They will develop things we cannot detect. They will fight us with what we cannot attack. We cannot achieve perfect vision.

As the 18th century German Chief of Staff Scharnhorst said "one has to give the `fog' its room to move, because one is unable to eliminate it totally and the mere attempt to reduce it to a minimum normally leads into the contrary effect of maximizing it."[5] Certainty will not be in the domain of man. Fog in war will remain and we will need warriors who are able to respond in this fog.

In addition, future adversaries will be more circumspect and prepared than, for example, Saddam Hussein. The weak will respond asymmetrically.[6] They will devise the means and doctrines that we do not anticipate to neutralize or counter our technology.

The strong will respond symmetrically. They may or may not take men out of the cockpit. Such a move is more a reflection of societal values than anything else (we are casualty intolerant, other cultures are not). A peer will match our capabilities but not necessarily mimic our means. How would we respond to a heavily dispersed, sovereign based, nuclear shielded, adversary? Whether responding to the strong or weak we will need warriors capable of making the sacrifices such combat demands.

Should We Fight Wars Without Warriors?

The second question, should we divorce ourselves from such notions as "warriors" and "honor" is more perplexing. Heroic figures have led nations into great bloodshed. This is why Confucianism rejected the military figure as heroic. As John Keegan observed, "all societies which achieved escape from the constrictions of heroism did so by separating the hero from the rest of society and according equal or superior prestige to functions more creative than his—those of the judge, scholar, diplomat, politician, and merchant."[7]

Yet historical examples, where intraspecific bounds were ignored, where heroes were unimportant and military leaders were little more than paid employees of the state or anachronisms, are troubling. Its rejection of militarism did not solve China's problems of defense. Thus they had to absorb, not repel the Mongol invasions and for two hundred

years they lay prone, as if languishing in the desert, while the buzzards of imperialism picked at their live extruded intestines.

In WWI, heroes were not ignored, but consumed with the digging of the trenches of Verdun. The war became very much as a predatory conflict with wholesale slaughter, poison gas, unrestricted U-boat warfare, and the alienation of an entire generation of Europeans. This alienation only acted as a springboard of pacifism and resentment that launched Europe into an even more horrific war 20 years later.

We could have "won" in Vietnam if, as Gen. LeMay suggested, we had bombed Hanoi "into the stone age"[8], but at what cost? Once bound in a war whose goals for the U.S. were "honor," the U.S. could only win by "honorable" means, and this demanded a price in heroic sacrifice the American people would not pay. The honor at stake was the President's, not the American people's. That war's lack of heroes and honor has much to do with the angst we still feel over Vietnam today.

The possession of a vastly superior, asymmetric force, does not mean that a nation can employ it. It may not work against the intended adversary or the bounds society places on its use may prohibit its applications. The indiscriminate use of force would have the United States regarded with the dregs of histories barbarians, a fate we will not knowingly seek.

Perhaps we have moved beyond heroic wars as Luttwak suggests,[9] but wars will exist nonetheless and it is in those wars that the theater of intraspecific combat best directs the play of battle. What prey would prefer the anarchy of the hunt? Predator, yes, but we do not see the U.S. as predator. Should we preclude intraspecific warfare? Warfare yes, but if any war, let men fight with honor less we destroy all with unbridled profanity. Men are

not just "information processing components" whose function one may allocate between "carbon and silicon."[10] Men are judging, moral, creatures, whose best and worst attributes in combat are represented by the warrior. In what Professor Jim Toner refers to as "Gallant Atavism,"[11] maintaining these ideals of integrity and honor are critical to the health of the Air Force, and the society we serve, today and tomorrow.

Who Will Be The Air Force Warriors?

Accepting these premises, that we both desire and must have warriors for future conflicts, who will be the warriors of *Air Force 2025*? Gen. Fogleman described the "operator" mentioned earlier. The operator concept would lump together combat planners and supporters as well as those who are engaged in direct combat. While admirable in its goal of making the Air Force more homogenous, the fact is, only a small percentage of Air Force members would still engage directly in combat. Combat will demand different skills and abilities for those who do engage. They will be warriors and we would do well in carefully choosing them, training them, and ensuring that they know they are warriors.

This pool of warriors will expand, however, beyond the realm of pilots. Technology will not isolate the warrior from the battlefield. The battlefield will come to them. No foe would want, and no peer competitor will allow, an adversary's combatants free sanctuary throughout a conflict. Whether under two miles of granite in Colorado or over the skies of Southwest Asia, determined opponents will seek and find those who would kill them and try to kill them first. How? Who knows. But it will happen.

Warrior Characteristics

What characteristics will these warriors need? The same ones they have always needed, save perhaps the same degree of physical prowess:[12] namely courage, physical and mental, intelligence, ingenuity, creativity, and adaptability to stress. Lt. Col. Baucom would add "purpose above self."[13] But most of all they need a sense of Honor "as long a there are dangerous and irksome tasks to be done."[14]

Can The Air Force Have Warriors Without Aircraft?

The demise of the manned combat aircraft as the warriors vehicle is likely to cause great turmoil in the Air Force ethos. The Air Forces of the world arose out of Flanders Field. They provided the world something visible, something pure and good, to hold onto while the earth crumbled beneath them. In a future war, what metaphor would likely rise out of the mire that may result from unrestricted warfare?

Space vehicles perhaps, but likely not as previously discussed. In any event, it was not the "means," as Builder discussed, that defined the Air Force. It was men, courageous men, who first fought in Spads and Fokkers and later in Flying Fortresses, Lightnings, and Focke Wolfs over the skies of Europe and the Pacific. In their tradition followed Jabara, McConnell, Richie, and Feinstein. But since then whom? The most notable hero of war, ground or air, for America since Vietnam was a pilot shot down over Bosnia. Why? Because of his personal courage in the face of overwhelming odds. One should see this as an affirmation that the vehicles of air combat have, as always have the instruments of war, been but a means for man to show what is best and worst in his character. War is wasteful and stupid. Avoid it. If we fight it though, fight nobly.

How Do We Train Our New Warriors?

Given the Air Force will need warriors for their future force, how should the Air Force train them? How do you promote the physical and mental courage needed for combat in those who operate in increasingly benign environments?

First, one must ensure that the future warriors are grounded (no pun intended) with their past. Here the USAF has a greater problem than the other services. The Air Force is a service born of technology. Its focus has been on machines. The connection one needs to make for future warriors is with past combatants. When the Commandant of the Marine Corps visited the Air War College, he did not talk about programs. He talked about courage… period. The Air Force needs the stories of courage from all walks of life, not just a couple of Aces in each war or the Medal of Honor winners. Air Force members should study those whose courage, ingenuity, and resourcefulness carried the day.

Heroic image will be important both for self esteem, motivation in combat, and to make the Air Force an accepted institution of the society we serve. As a senior Marine general remarked tongue in cheek "you don't just want to haul around Army guys do you?. How could you tell your mom that?" This is not to denigrate the airlift mission, but it is not the defining "heroic" mission of the USAF. Little wonder AMC has surfaced a proposal to provide its pilots with incentives—preferential hiring with the airlines—to stave off mid-career separations. Their mission, apparently, is not enough to keep them in.

Those who would demonstrate the characteristics of the warrior are not likely to pursue an unheroic profession. If all we need are technicians to monitor systems, if these individuals are never in harms way, why not just contract these missions out? In this

sense the term “operator” makes sense. Whether contracted or not though, the citizens whom we serve would likely become ambivalent about “technicians” regardless of the skill levels required or their military status. Without this public esteem, if the “operator’s” motivation is not honor, it must be something else, such as money. But money will not engender the sacrifice demanded of war. Again, the Air Force needs warriors, not mercenaries.

Our past should give future warriors a unique sense of self, the knowledge that he is something different and special, especially in a future world where his routine life outside of his profession will become more like his civilian counterparts. If his job is like a civilian job, Morris Janowitz points out, he will simply become a civilian. The Air Force cannot hold its most “creative talents without the binding force of service traditions, professional identifications, and honor.”[15]

We should train our future warriors in hand-to-hand combat and the use of firearms. They should walk the grounds of Gettysburg, Manassas, and Bull Run, not to learn the methods, but to understand the stresses and the process soldiers used to solve problems. This would in turn help our future airmen understand better the unique advantages the perspective from the air brings to the battlefield. Perhaps in the future Air Force members could fight in a virtual Gettysburg or Verdun.

The Air Force is still going to fight air battles. Every officer should go up on a Basic Fighter’s Maneuvers sortie. Everyone should go up on a Special Operations Low Level drop. Every combatant should get a leather jacket.

There should be a lot of leather jackets because the Air Force should strive to make all Air Force officers and airmen warriors. The Air Force should civilianize the noncombatant force.

If we evolve to a CONUS employable Air Force, noncombatants can be civilians. In the interim, as we evolve from a CONUS based expeditionary force to a CONUS employable force, we should train all those who would deploy as combatants. Most of this training is in place. The difference in the future would be degree and priority of combat skills as compared to training in an individual's primary AFSC. As an example, we deploy accounting and finance personnel to theater. Most of this function can be conducted from CONUS and should migrate to civilians who do so. We will need a few people with skills in theater to handle contracting and ensure the financial interfaces are working. With automation and administrative streamlining, these individuals need not be accounting and finance specialist, but they could be part of a force, for example, that performs air base defense on a rotational schedule.

Along this same vein, we should train individuals with more diverse skills and less specialization. Not only would we break down organizational stovepiping, we could streamline the force required for deployment and enhance our force adaptability to unseen circumstances. Why can not a personnel specialist "turn" a fighter or man a Stinger? It is a matter of the skills required and the training received. Use technology to minimize required skills and maximize training.

Once operational, these warriors should train under realistic combat conditions. This means deploying as they would to fighting locations, something that should be easier not harder in the world of *Air Force 2025*.

Simulations should occur against an independent, human, Red Force that does not look like any particular adversary. An important skill for the future is adaptability when faced with a new situation, not reacting to prescripted events. One wants to develop processes not specific skills. As previously cited from Scharnhorst and as noted by Lomov, to prepare men for the dynamic battlefield of tomorrow

> The situation in which the personnel is trained should not be repeated often or turned into mere routine. Otherwise the men will not develop a psychological readiness for actions under a state of tenseness, but rather the rigid stereotypes of simple responses which will not provide the proper mastery of the situation. Routine actions did not develop in the men the ability to orient themselves quickly, to find independent decision, and to change the character of actions in accord with a change in the situation.

These truths were observed by S.L.A. Marshal as well: "Our training methods are conditioned by the ideal of automatic response. At the same time, our observation of the battlefield's reality makes clear to us that we need men who can think through their situation and steel themselves for action according to the situation."[16]

In this light, doctrine needs to be a flexible and adaptive instrument to serve military actions. As Ornduff points out, Scharnhorst evolved such a system that led to the future Panzer leaders of WW II. It was Scharnhorst who created an environment in which soldiers were encouraged to be innovative and 'think outside the lines.' Moreover, his reforms were especially significant because they were not a formalized doctrine but constantly evolved, based on changes in technology, doctrine, geopolitics, and anything else that might affect the employment of military power."[17]

This is our future world. It could be peace for two hundred years, or it could be Armageddon. There are no formulas, no guarantees, no certainty. There never has been.

Wait, watch, and prepare carefully. Prepare so when their time comes, one can respond to the unknown for as S.L.A. Marshall noted "improvisation is the natural order of warfare. The perfect formulas will continue to be found only on charts."[18]

Notes

[1] Margaret Mitchell, character Ashley Wilkes speaking in *Gone with the Wind*, vol. 2, pt. 4, ch. 31, 1936.

[2] Lt Col Donald R. Baucom, "The Professional Soldier and the Warrior Spirit" Strategic Review, (Fall 1985): 57.

[3] Col(s) Bruce Carmichael, et al, in 2025 "Strikestar 2025," p24.

[4] *Global Engagement*, 1.

[5] Scharnhorst as quoted by Oberstleutnant Peter F. Hauser, and Lt Col John Rawls, C., and Maj. John C. Ornduff, "Lessons from the Kriegsakademie: A Reflection of the Present? A Road Map for the Future?" Air Power Journal, Special Edition, vol. X, SE (1996): 65.

[6] O'Connell, 7.

[7] John Keegan, *The Mask of Command*. Harrisonburg, VA.: RR Donnelley & Sons, 1987, 313.

[8] Remark attributed to Curtis LeMay.

[9] Edward N. Luttwak, "Toward Post-Heroic Warfare" Foreign Affairs, vol.74. no. 3. (May/June 1995): 109-122.

[10] Martin C. Libicki and Richard Szafranski, "'… Or Go Down in Flame?' Toward an Air Power Manifesto for the Twenty-first Century" Air Power Journal, vol. X, no. 3 (Fall 1996): 71.

[11] James H. Toner, "Gallant Atavism: The Military Ethic in an age of Nihilism." Air Power Journal, vol. X, no. 2 (Summer 1996): 13-22.

[12] A note on the role of women. In the future world, if physical prowess is a secondary concern, other characteristics take on added importance. Some would argue that the general superior ability of females, as shown in recent research, to assimilate information in parallel fashion (as opposed to men who approach problems in serial fashion) is superior in many types of problem solving scenarios. Psychologist have known for quite some time, for example, that the characteristic that most defines success in dynamic air-to-air combat is creativity. It is beyond the scope of this paper to delve more deeply into whether the Air Force should actively recruit more women, but the Air Force should explore this issue.

[13] Baucom, "The Professional Soldier and the Warrior Spirit," 62.

[14] Janowitz, 35.

[15] Janowitz, 15.

[16] Marshall, 40.

[17] "Lessons from the Kriegsakademie," 61-62.

[18] Marshall, 20.

Chapter 5

Conclusion

Those who have read *Air Force 2025*, *New World Vistas*, and other future looking studies will see many similar strains in this paper's forecasts. The student of military history will find the review of technology and war familiar. In reviewing both, this paper has attempted to draw the past and future together and point out places where one needs to step carefully.

The changes we will see in the Air Force over the next several years will be gradual and evolutionary despite, not because of, the rapid march of technology. Unless China or Russia make a radical shift, there is not enough "threat" out there to move military technological change quickly. This creeping technology advance could sneak up on the Air Force because, though slow, technology is moving the Air Force along a very different path. This path will remove men from combat aircraft. This path will move more and more resources into space. To some, it may appear to remove man from combat.

This belief could get the Air Force structure out of balance between what Morris Janowitz described as a needed mix of warriors, managers, and bureaucrats.[1] Again, today, many would want the Air Force to embrace technology and move beyond archaic notions of a warrior class tied to manned combat aircraft. What this paper has attempted

to show is that while we may move man out the cockpit, man will still face man in combat. Such men need to be warriors regardless of their means of combat.

With grim regularity, past conflicts have stunted similar trends of technocrat dominance in the Air Force. While we were peaked and ready for the type of war we fought in the Gulf, we were woefully unprepared for the type of conflict fought in Vietnam. Prognosticate as much as we want, no man knows the future. If we are successful in future conflicts it will not be because we bought space based lasers instead of the F-22. It will be because the men who fought the war were better than their enemy in the doctrine, strategy, tactics, skill, and courage with which they fought. If those future conflicts retain the U.S. as the world's premier power, it will be because these men fought with the honor that befits a great nation of moral people. If we are any less than this, we will not prevail. If we are any less than this, we do not deserve to prevail.

Notes

[1] Janowitz, 21.

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