STRATEGY RESEARCH PROJECT

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A TIME FOR CHANGE--NEW AIR FORCE DOCTRINE FOR THE 21st CENTURY

BY

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ABSTRACT

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ABSTRACT: This paper exams the need for new Air Force doctrine as we approach the 21st century. The impetus behind this change is the rapidly changing world around us. The paper begins by first looking at *why* a change to doctrine is needed. Next, the paper exams *what* change to doctrine is required to ensure the Air Force of the 21st century remains the world's premier Air Force. Finally, the paper discusses *how* this change to doctrine must take place.

The purpose for this needed change is an underlining theme throughout the paper. A change that will provide the foundation and intellectual and practical framework for how the Air Force must organize, train, and equip their forces. A change that will ensure the best employment of air and space power in joint and coalition operations to prevent, deter, and defeat (fight and win) the future unknown, unpredictable, and unseen threats to our U.S. national security.

In examining *why* a change is needed, we discover that technology has raced ahead of current doctrine. We also find that threats to our future security environment will be unpredictable, unknown, and unseen thus demanding a change to our current doctrine. Lastly, we learn how senior Air Force leadership has created an environment that solicits, rewards, and promotes this needed change to doctrine.

In examining *what* capability this change in doctrine will create, we discover that the Air Force of the 21st century must become a capability-based force that is able to quickly react across the full spectrum of potential conflict.

In examining *how* this change in doctrine must occur, the paper defines and discusses the concept of Revolution in Military affairs (RMA).

In conclusion, the paper suggests the time for change is upon us. It advocates the responsibility of all airman (male and female) to "get involved" and help develop, debate, advocate, and institutionalize new doctrine and better ways for air and space power to serve the nation and the Joint Force Commander (JFC). Our beacon into the 21st century is new airpower doctrine--a doctrine that reflects a vision of what can be in the future.

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A Time for change --

New Air Force Doctrine for the 21st Century

Introduction

Change in the world around us requires change in the Air Force.
-Global Engagement: A Vision for the 21st Century Air Force

Is our current Air Force doctrine bankrupt? Is it time for a major overhaul to our doctrine? Or, is a minor tune-up sufficient? Any organization that fails to make internal change at a rate greater than that change going on around them is doomed for failure. Likewise, any organization that only learns from its past mistakes is shortsighted. The great success of the application of air and space power during the Gulf War has sparked a healthy, spirited, and much needed debate on the future application of air and space power. At the center of that debate is the question of air and space doctrine--is a change needed? My answer to that question is an unequivocal yes!

This paper will focus on the need for new Air Force doctrine--our so called engine for change. A change that will provide the foundation and the intellectual and practical framework for *how* we must organize, train, and equip our forces. A change that will ensure the best employment of air and space power in joint and coalition operations to prevent, deter, and defeat (fight and win) the future *unknown, unpredictable,* and *unseen* threats to our U.S. National Security Strategy (NSS).

To better understand this need for new Air Force doctrine, I will begin by answering three very important questions. First, "Why do we need to make a change at all?" To answer this question, I will discuss three key areas: (1) how technology has finally caught-up with doctrine, (2) how the threats to our security environment are rapidly changing, and (3) how our current internal Air Force environment is right for change. To answer our second question, "What must the Air Force be capable of doing in the 21st century?", we will look at our current NSS. What it is, how it is formulated, its interrelationship with our National Military Strategy (NMS) and the ongoing Quadrennial Defense Review (QDR), and learn how this strategy will drive the Air Force to become a full spectrum capability-based force in the 21st century. In answering our final question, "How must our doctrine change?", we will explore our vehicle for change. Here, we will define and discuss the concept of Revolution in Military Affairs (RMA) and see how doctrinal innovation is the predominant and key factor in achieving a successful RMA. In closing, I will advocate the responsibility that all airman (male and female) have to understand, debate, develop, and institutionalize new doctrine on *how* air and space power can best be employed in the 21st century. I will conclude by offering some final thoughts on what I think the future might hold (as food for thought) as we all begin our journey into the next century.

Section 1

Why do we need to change our doctrine?

> Still the questions recurs 'can we do better?' The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise with the occasion. As our case is so new, we must think anew, and act anew.
>
> -Abraham Lincoln

The answer is simple--we must change. But, to understand why we must change, I will first show how technology has caught-up with our current doctrine. Next, I will highlight the significant changes in our security environment and, will conclude by showing how the current Air Force environment is ready to cultivate this needed change.

Technology has finally caught-up with our current aerospace doctrine.

Unfortunately, early airpower theorists such as Douhet, Mitchell, and Trenchard never saw the fulfillment of their dreams. General Fogleman, Air Force Chief of Staff, agrees adding, "our very early airpower visionaries clearly allowed their concepts to race ahead of technology. Therefore, we found ourselves in a position where there were a lot of unfulfilled promises and false expectations relative to what airpower could and could not do. This generated legitimate skepticism among our comrades-in-arms."[1]

In addition to this skepticism, Air Force strategy of strategic bombing, utilizing nuclear weapons, began to blur our vision of airpower doctrine. A review of our current doctrine history will help illustrate this point. Prior to the Gulf War, "...there were two basic groups of airman. The first--smaller and less

influential--held to the views of early pioneers in their belief that air power was best applied in a comprehensive, unitary way to achieve strategic results. The second--much more dominant--had come to think of air power in its tactical applications as a supportive element of a larger surface (land or maritime) campaign."[2] This second group developed and grew out of our post-World War II policy of containment and strategy of deterrence, utilizing nuclear weapons and strategic bombers. It was here that Air Force senior leaders first began to cloud their understanding and application of airpower doctrine. Carl Builder believes the real problem lay with the senior officers themselves, who failed to comprehend and articulate a unifying vision of airpower and the profession of arms (e.g. airpower theory).[3]

Dr. Metz would explain this as a band-width problem. A problem that arises when "a military force is so focused on one particular type of opponent that it can be defeated by a different kind."[4] Our first wake-up call that might have lifted this cloud of confusion was Korea. Our second wake-up call was Vietnam. However, these alarms were never heard or simply ignored. Instead, our senior leaders defined these wars as "limited" wars that only demonstrated the limits of our strategic strategy of nuclear deterrence. In fact, "some of the best and brightest in Washington eagerly embraced the Vietnam War as a test of US ability to master a limited war in the nuclear age."[5] The result of this thinking was increased emphasis in conventional airpower capabilities and the

revitalization of tactical airpower.[6] Consequently, airpower doctrine and strategy began focusing on its contribution at the operational and tactical levels of war. Ironically, even today, airman from the "tactical" and "strategic" schools of thought continue their debate over the proper uses of airpower--something our doctrine "answered the mail" on over 50 years ago.

General Fogleman believes, "Tactical Airpower became the primary driver in developing warfighting doctrine and strategy."[7] He concludes, "The doctrine of Airland Battle blinded us to the fact that Airland Battle was a subset of airpower doctrine and not the doctrine."[8] Edward Mann in his book, Thunder and Lightning: Desert Storm and the Airpower Debates, suggests that "...(we had) struck a devil's bargain with our civilian masters and sister services. We denied the concepts upon which we had painfully forged our independence, in order to retain what we really loved: the air-breathing flying machines that set us free from the bounds of earth."[9] Additionally, our sister services have never really believed that airpower could play a decisive role in modern warfare. For example, the Joint Army-Navy Board, in 1941, concluded that, "it should be recognized as an almost invariable rule that only land armies can finally win wars."[10]--a belief captured in Airland Battle doctrine[11] and a belief that still persists today--even at the Army War College.

Fortunately, the "right" military and civilian senior leaders listened to the small minority of "strategic" airpower believers prior to Desert Storm and, as

the saying goes, the rest is history. The world saw, for the first time, the true potential of the application of air and space power (at the strategic, operational and tactical levels of war) in what history will most surely record as the most successful air campaign ever waged. In short, the 20th century has seen modern warfare progress from an Army of cavalry soldiers mounted on horses to supersonic stealth fighters capable of dropping Precision Guided Munitions (PGM) directly on an enemy's strategic centers of gravity.

In less than a century, airpower has fundamentally changed the nature of war--how it is fought, where it is fought, and by whom it is fought.[12] The explanation is quite simple--ever since the first flight of man, technology has been driven and shaped by airpower doctrine. As a result, airpower grew from a simple observation platform to a platform capable of dropping bombs on enemy targets. Through the years, technology has opened doors for airpower to increase its range and payload, to increase its survivability, to increase its speed and responsiveness, to increase its ability to do its mission day or night, in good weather or bad, and to increase its accuracy and ability to destroy enemy targets. In sum, "Air power has passed through its childhood and adolescence, and the wars of the past decades, especially in the Persian Gulf, have shown it has now reached maturity."[13]

Lt. Gen. "Buster" Glosson, of Desert Storm Air Campaign fame[14], writes, "A number of pivotal lessons came from Operation Desert Storm, but few were

as important to our profession as the potential of stealth and precision guided weapons. Airpower advocates have long dreamed of a day when the weapon, platform, and willingness to use them properly would come together to make airpower a decisive force. Today, those dreams are reality."[15] In the past, we planned how many aircraft it would take to destroy one target. But, today we are planning on how many targets can one aircraft destroy. Technology has truly allowed airpower to reach full maturity. However, as a result, our current doctrine is now lagging behind advances in technology and is one reason why our doctrine must change.

The interrelationship of technology and doctrine is an essential, but extremely complex part of a military revolution.[16] Our challenge today is we find ourselves at a crossroads and we must choose which path to follow. Is it the rapidly changing path of technology or the less traveled path of critical, creative, and innovative thinking that can lead us to formulate new doctrine. A new doctrine that can perhaps drive and shape technology well into the next century. The Center for Strategic and International Studies (CSIS), in their report on the military revolution, concludes that "decisions on doctrine ...become a precondition and guidance for integrating the research and development of new technologies."[17] I agree and therefore, choose the less traveled path.

But, technology alone is not the only reason why our doctrine must change. Another reason we must change our doctrine is to adapt to the rapidly changing and unpredictable threats to our security environment.

Our current international security environment is changing at an incredible pace.

The post-Cold War era coupled with an increase in global dependence and our acceleration into the Information age has resulted in an emerging security environment quite different from our past. The rate of change can no longer be measured in years or months. Today, we find change occurring at an exponential rate that is now measured in minutes and seconds. Only one superpower remains standing. Future threats will be from the proliferation of missiles and Weapons of Mass Destruction (WMD), unconventional warfare (terrorism), the uncontrolled transfer of advanced and dual-use technology, and Information warfare.

In Samuel P. Huntington's new book, The Clash of Civilizations and the remaking of World Order, he proposes that the wars of politics and ideology have given way to a war of cultures. "World politics," he writes, "is being reconfigured along cultural and civilizational lines. In this world the most pervasive, important and dangerous conflicts will not be between social classes, rich and poor, or other economically defined groups, but between peoples belonging to different cultural entities."[18] Additionally, our emerging

multipolar world reflects an increase in the number of democracies and a noted shift in policy from exploitation to development in third world countries.

From a U.S. military perspective, the world as we know it, is undergoing a great transformation. "It is a world where clear distinctions between threats to our nation's security from beyond our borders and challenges to our security from within our borders are being blurred; where the separation between international problems and domestic ones is evaporating; and where the line between domestic and foreign policy is eroding."[19] Retiring Senator Sam Nunn of Georgia has labeled the spread of weapons of mass destruction combined with terrorism as our number one national security threat.[20] Former CIA Director Deutch has stated that the threat of "Cyber-based attacks" could, within ten years, be second only to threats from weapons of mass destruction (WMD). Believing this to be true, the President signed an Executive Order (JUL 96) on Critical Infrastructure Protection, which defined cyber attacks, identified the types of infrastructure to be protected, and created an Infrastructure Protection Task Force.[21]

On the domestic front, the Russian military threat to our homeland has been replaced by violent new threats to public security (like the bombing in Oklahoma city and the suspected serial bombings in Atlanta), terrorism, drug use, proliferation of hand guns, and an increase in violent crimes. These growing domestic threats will slowly erode individual rights to privacy in

exchange for improved public safety standards and will result in one of two things: (1) it will take resources away from Defense, or (2) it will increase the role of the Military in dealing with these type of threats. Or perhaps a combination of the two.

Guidance on the application of the military instrument of power is found in our National Military Strategy (NMS)--our bridge to supporting our National Security Strategy (NSS). Turning to the NMS for guidance we read, "In surveying the international environment, the national security strategy as articulated by the President recognizes four principal dangers which our military, in combination with our other elements of national power, must address: regional instability, the proliferation of weapons of mass destruction, transnational dangers, and the dangers to democracy and reform in the former Soviet Union, Eastern Europe, and elsewhere."[22]

Unfortunately, I find this guidance somewhat lacking. Other principle dangers that I would also include are the proliferation of missiles, the uncontrolled transfer of advanced and dual-use technologies, and Information warfare. A few examples will support my added areas of concern.

During the House National Security Committee hearing on the FY98 Defense Budget, 12 February 1997, General Shalikashvili[23] was asked, "If an ICBM was launched at an American city, do we today--I've asked you this every year--do we have the ability to stop a single ICBM coming into the United

States of America?" General Shalikashvili's response, "We do not have that capability."[24] In fact, we have no such capability to stop an air or sea launched cruise missile either. Is it any wonder why rogue states such as Iran, Iraq, and North Korea are procuring such a capability in mass quantities? The proliferation of advanced and dual-use technologies, like stealth (low observable) and commercial Global Positioning System (GPS), combined with the ICBM/missile example above, could cause the Air Force to totally rethink its operational concepts and organization of forces to ensure air dominance (superiority) in the future.

Concerning the impact of future Information warfare, consider the following example:

> In 1995, a 28-year-old Russian biochemistry graduate student in St. Petersburg, Vladimir Levin, used sophisticated computer codes more than 40 times to break into New York Citicorp's computerized cash-management system. He transferred more than $12 million to banks around the world and had access to Citicorp's daily transfer of $500 billion. Only the cooperation of the FBI, Russian police, and law enforcement agencies on four continents prevented a catastrophe and eventually resulted in Levin's arrest. Levin's "cybercaper" underscores the vulnerability of sensitive economic (and by analogy, defense) systems to computer hackers operating from terminals located anywhere in the world. An attack on any economy or defense structure conceivably could be initiated by any foreign government or hostile threat.[25]

"Unlike the threats associated with nuclear weapons during the Cold War--where control was tight and exercised by governments--information weapons (the computer virus, intrusion into sensitive systems) can be used by any hacker with the competency to enter a government, corporate, or individual net."[26]

In summary, consider the following scenario. A hostile threat, utilizing Information Warfare, is successful at shutting down our nuclear force's command, control, and communications. Next, we detect multiple ICBM's (from Russia) heading towards the United States. What do we do? Perhaps more to the point--"what can we do"? Recall, General Shalikashvili's answer above--"we do not have that (defense) capability." Furthermore, by taking away our ability to respond in-kind, our strategy of deterrence (the existence of a credible threat of unacceptable counteraction) has been defeated. In the current era of emphasized force protection--we, the military, *failed to protect* our people. Further, the Air Force failed in its primary mission of maintaining air superiority (dominance) over the skies of our great country. Far fetched? Perhaps, but certainly something to consider.

"It is impossible to list all the contingencies and possibilities that may arise in assessing future threats to American security. In the long run, almost anything is possible."[27] But in the short run, I do believe "These threats to our security have no respect for boundaries and it is clear that American security in the 21st Century will be determined by the success of our response to forces that operate within as well as beyond our borders."[28] As a result, our doctrine must change to ensure this country's Air Force remains the strongest and most capable Air Force in the world.

Having an appreciation for the *unknown, unpredictable*, and *unseen* threats to our future security environment and possessing the latest technology are a great start, but it is not enough. Something is still missing before an organizational change to air and space doctrine can occur. That missing link is an internal environment capable of soliciting and rewarding such a change.

Our current environment is setting the stage for change.

"Clausewitz outlined over 150 years ago: Do everything necessary to select for, encourage, and support military genius. If combatants are to emerge unscathed from the relentless struggle with the unforeseen imposed by battle Clausewitz wrote,"[29]

> two qualities are indispensable: first, an intellect that, even in the darkest hour, retains some glimmerings of the inner light which leads to truth; and second, the courage to follow this faint light wherever it may lead. The first of these qualities is described by the French term, coup d'oeil; the second is determination.[30]

Is cultivating military genius the right approach? Absolutely! The 'friction" of war must always be considered. Military genius can bridge the gap between pure theory and the actual experiences of war. This whole process must start with our number resource--our people.

Although much debate will continue on the proper force structure needed as we enter the next century, everyone agrees on one theme--people are our most important asset. Our new Secretary of Defense recently said, "I think everyone can agree that we have all of the sophisticated equipment in the world but it won't do us much good as a fighting force if we don't have qualified

people to operate the systems."[31] While this is true, a much bigger concern of "how" do we best operate these new systems is the key to our future success. Fortunately, the Air Force believes that "People are at the heart of the Air Force's military capability, and people will continue to be the most important element of the Air Force's success in capitalizing on change."[32]

Additionally, "Emphasis on creating an Air Force environment that fosters responsiveness and innovation, and rewards adaptability and agility will be crucial as we move into the early part of the next century."[33] A few examples will help demonstrate the Air Force's commitment to *make this happen.*

As a starting place, in an effort to broaden Air Force Officers' knowledge of airpower and the Air Force's role in warfare, General Fogleman is launching a professional reading program.[34] Such a program will help establish a solid foundation of air and space knowledge and will further enhance learning during intermediate and senior service school studies and participation.[35]

Turning to the future, General Fogleman, commissioned a team to look toward tomorrow. With an eye on technology and strategic planning, the team's mission is to chart a course to where the Air Force wants to be in the year 2025.[36] From a historical perspective it is interesting to note that "This effort to look toward the future is reminiscent of what the architect of U.S. airpower--Gen. Henry "Hap" Arnold, commander of the Army Air Forces--did

with a similar commission half a century ago."[37] Predictions such as supersonic flight, target-seeking missiles, air refueling, and improvements in aerodynamics, propulsion, electronic, and communication systems are just a few examples, found in this August 1945 report, all of which are a reality today.[38]

Another example of doing things right is the Air Force's concept of innovative battlelabs.[39] Air Force vice Chief of Staff, General Thomas S. Moorman Jr. explains, "This concept reflects our resolve to stimulate and develop new and better ways of employing air and space power. This is where we will send our out-of-the-box thinkers, the folks who know how to get things done and know how to leverage small dollars."[40] Not to be confused with existing research laboratories, General Moorman points out, "Battlelabs are fundamentally different. They are places where we develop new ideas. It is not a technology place, but a place where we look at new ways of employing equipment and new ways of thinking about a particular discipline."[41]

Compare this current Air Force environment with the Army's environment following World War I.

> While stationed at Camp Meade, Maryland both Dwight Eisenhower and George Patton began writing articles for military journals describing their experiments utilizing new doctrine for the employment of tanks. Eisenhower recalls, "Then I was called before the Chief of Infantry, ...I was told that my ideas were not only wrong but dangerous and that henceforth I would keep them to myself. Particularly, I was not to publish anything incompatible with solid infantry doctrine. If I did, I would be hauled before a court-martial.[42]

Obviously, such an environment is not healthy. It can only discourage the innovative new thinking required to create and institutionalize doctrinal change.

Clausewitz writes, "in the art of war experience counts for more than any number of abstract truths."[43] Michael Howard in his book, Clausewitz, elaborates on this point.

> One could only learn how to conduct war, said Clausewitz, by learning, and learning *from,* what had already been done; by studying war not in the abstract but in the reality. Only thus could a truly comprehensive theory of war be developed; one that would make it possible not only to understand (as with painting or architecture) what the great masters had achieved, but to appreciate how their achievements came to be creative and not imitative acts, unique in themselves but enlarging the scope of expression available to their successors.[44]

"As Air Force members, we have a responsibility to understand, develop and advocate new ways that air and space power can serve the nation and the Joint Force Commander. Our ideas and doctrine must be as creative and flexible as the instrument itself."[45]

The stage for change is now set. Technology has raced ahead of our current doctrine, unpredictable, unknowable, and unseen threats to our future security environment demands a change to our current doctrine, and our internal Air Force environment is ready to promote this change. With the stage set, let us now examine *what* change is needed.

Section 2

What must the Air Force be capable of doing in the 21st century?

> The skillful leader subdues the enemy's troops without any fighting; he captures their cities without laying siege to them; he overthrows their kingdom without lengthy operations in the field.
>
> -Sun Tzu, *The Art of War,* 6th century B.C.

To best answer this question, we must start from the top. We must first understand what our NSS is, how it is derived, and the interrelationship it has with our NMS and the ongoing QDR. Understanding this, we can then see how the Air Force is being driven to become a full spectrum *capability-based* force--ready to deal with the *unknown, unpredictable*, and *unseen* threats of the 21st century.

"For all the transformation the world will undergo in the next 30 years, fundamental U.S. national security objectives will remain largely as they have been for the past 220 years: to ensure our survival as a nation, secure the lives and property of our citizens, and protect our vital national interests."[46] Protecting our nation's survival and vital interests is what the military services are all about. Our NSS calls upon the military instrument of power to do just that.

Unfortunately, the traditional concept of national security is changing. A new world order is being established and the cry for American leadership can be heard around the globe. Consequently, our action (or inaction) as a global leader will be instrumental in the shaping of this new world. Most people agree

that our national security interests must go beyond the basic defense of our homeland. But, how far?

Likewise, not all American interests are equally important. Some type of priority must be established. For example, "slowing the spread of nuclear weapons is more important to American security than stopping starvation in Somalia."[47] Nevertheless, the tendency to expand and cover the world goes far beyond our limited national resources as well as the will of the people.

Finally, "the Federal Government does not have a right to risk the lives of American troops on causes unrelated to serving the national interest. Supporting humanitarian causes abroad should be seen as an act of charity, and not as fulfilling some fundamental goal of American strategy or purpose. It is something Americans may choose to do, not something they must do."[48] The answer must lie somewhere in-between. But, dealing with an abstraction, like national security, can make precise definition of our national strategy very difficult.

How is are NSS determined? Is it threat driven like our Cold War strategy of containment of Russia? Is it technology driven like our strategy of "mutual assured destruction", "massive retaliation", or "flexible response"? Is it economically driven by the constraint of our national budget? Or, is it politically determined based upon clearly defined national security interests? I submit the answer to these questions are unknown and exceed the scope of

this paper. Therefore, accepting our current NSS as it is, let us look at the interrelationship of our NSS to our NMS and the ongoing Quadrennial Defense Review (QDR).

Our current NMS is based on a national strategy and military capability of fighting two near-simultaneous major regional conflicts (MRCs). However, current thinking, inside the beltway, suggests that such a scenario may no longer be valid. If this is true, then what are we doing to update our strategy? At Congress' direction, "the Pentagon has launched its third post-Cold war review of defense policy and the forces needed to carry it out. It is called the Quadrennial Defense Review (QDR), and it comes atop the 'Base Force' study conducted under Gen. Colin Powell, when he was chairman of the Joint Chiefs of Staff, and the 'bottom-up review' of force requirements under then-Defense Secretary Les Aspin."[49]

However, if Clausewitz is right about war being an extension of politics then our civilian political leadership should tell us what are interests are--not the other way around. I think Zbigniew Brzezinski, President Carter's national security advisor, has got the big picture. He believes that, "Once the political leadership, not the Pentagon, decides how many wars the American military should be able to fight at once, it is the task of the presidential leadership to say to the country, 'this is what we need over the next decade or so. It will cost

roughly so much.' And then congress can decide whether the country is prepared to pay for it."[50]

In the final analysis, it appears as though the process for determining our national security strategy is broken (or at least temporarily derailed). So, where do we go from here? And, how do we answer the question of what the Air Force must be capable of doing in the 21st century?

Perhaps, as a starting point, we can return to the QDR process and reflect on Deputy Defense Secretary John White's recent comments concerning the QDR. "The only sacred cow is a strong defense."[51] Are we to conclude from this that our military instrument of power should only focus on America's fundamental and enduring national security goals[52] in the next century? If true, then let us review the threats to our national security in the 21st century.

Earlier in this paper I attempted to predict what the future threat will be and when this future threat will begin to challenge our U.S. vital interests. However, my conclusion, simply stated, was that the threat of the 21st century would be unknown, unpredictable, and unseen, and, in truth, almost anything is possible. Additionally, we discovered that threats to our national security interests will expand beyond the traditional nation-state enemy to include non-state actors with cultural and religious differences. In any case, enemies of the next millennium have come to realize that the U.S. possess' the technology and capability to detect, track, and destroy any known target in near real time, day

or night. As a result, future enemies to the U.S. will strive to be *unknown* as well as *unseen* to avoid the immediate and lethal response from the ever watching eyes and ears of the U.S. military of the 21st century.

Countering such threats will not be easy. It will require a lot of hard work and innovative thinking, development of new doctrine, reorganization, and a full spectrum of military capability--agile enough to keep pace with a rapidly changing threat. Joint Vision 2010[53] calls for the "capability to dominate an opponent across the range of military operations"--Full Spectrum Dominance.[54] From an Air Force perspective, such a concept "...depends on the inherent strengths of modern air and space power--speed, global range, stealth, flexibility, precision, lethality, global/theater situational awareness and strategic perspective."[55] The *unknown* and *unseen* threats of the 21st century will demand that our Air Force be *capability based*--across the full spectrum of conflict. Our future task is to leverage these "strengths" as we figure out the best way to counter threats in non-traditional environments, in the shadow of WMD, through power projection, in all corners of the globe, and to be able to do so immediately, when directed by the National Command Authority (NCA).[56]

Understanding *why* Air Force doctrine needs to be changed and *what* the Air Force must be able to do in the 21st century is important, but equally important is *how* we plan to make this change. What is to be our vehicle for

change? To examine *how* we plan to make this change, we need to define and discuss Revolution in Military affairs (RMA).

Section 3

How do we plan to change our Air Force doctrine?

> We should carefully study the lessons which were learned in past wars at the cost of blood and which have been bequeathed to us....We must put conclusions thus reached to the test of our own experiences and absorb what is useful, reject what is useless and add what is specifically our own.
>
> -Mao Tse-tung, On the Protracted War

If doctrine is the *engine* for change, then Revolution in Military affairs (RMA) is the *vehicle* for change. RMA is an important concept that must be fully understood before its full realization can be appreciated. Simply defined, RMA is "a major change in the nature of warfare, brought about by the innovative application of new technologies which, combined with dramatic changes in military doctrine and operational and organizational concepts, fundamentally alters the character and conduct of war.[57]

Dr. Steven Metz believes the concept of RMA "is moving rapidly toward maturation." He writes,

> ...it has entered the mainstream of thinking both in the uniformed services and in the Office of the Secretary of Defense. The core assumption is that there have been times throughout history when some combination of new technology, new organizations, and new concepts allowed a rapid and radical increase in the effectiveness of military units. For American defense planners, this holds the promise that if they can understand the RMA currently underway, they can build a future military that is both smaller and more effective than the existing one.[58]

A classic historical example from World War II should prove helpful.

> In the early morning hours of the 15th of May 1940, Prime Minister Churchill received an urgent telephone call from French Premier Reynaud. 'We are beaten,' Reynaud said in distressed English, 'we have lost the battle.' It had only been five days since the German army launched a broad offensive into France and the Low Countries. 'Surely it can't have happened so soon.' Churchill replied, incredulous at the rapidity of the defeat. Six weeks later, France formally surrendered.[59]

The German's innovative operational exploitation of new technologies (the tank, airplane and radio), which was common to both sides, was termed *Blitzkrieg* and resulted in a fundamental change in the character and conduct of warfare. This new operational concept and resulting new organizational structure resulted in the defeat of an enemy with qualitatively comparable and numerically superior forces. "The speed, surprise, and deception, combined with superior tactical and operational performance, gave the Germans a degree of relative operational superiority to which the Allies failed to adapt in time."[60]

The concept of RMA is not new. In fact, "the theory of the military-technical revolution was articulated by Soviet Marshal N.V. Ogarkov in the early 1980's. He asserts that we are currently experiencing a scientific revolution that is at least the magnitude of the nineteenth-century industrial revolution."[61] Turning to our latest conflict, Dr. Jablonsky writes,

> The most enthusiastic response to the revolutionary aspects of the Gulf conflict has come from Alvin and Heidi Toffler who see it as ushering in what they term Third Wave warfare. The First, or agrarian wave, was launched by the agriculture revolution 10,000 years ago; the Second, or industrial wave, in the last 300 years by a combination of the Newtonian and Industrial Revolutions. The Third, or post-industrial wave, coexists with the other two waves, creating a trisected world, in which the First Wave sector supplies agricultural and mineral resources and the Second Wave cheap labor for mass production, while the Third Wave rises rapidly to dominance based on the creation and exploitation of knowledge.[62]

While most scholars agree that the Gulf War was not a total RMA, many have used the Gulf War experiences to suggest the many future possibilities of a fully developed RMA.

How we will be organized and how we will operate is the question we must think hard about as technology accelerates us into the Information Age. John Keegan in his book, A History of Warfare, suggests that the dawning of the Information age will fundamentally change the conduct of warfare--just as the industrial age did a century and a half ago.[63] General Gordon R. Sullivan believes "it is happening now."[64]

However, new doctrine must flow from new theory. And the contribution a theorist can make to the practical conduct of war can best be explained in the words of Clausewitz.

> Theory will have fulfilled its main task when it is used to analyze the constituent elements of war, to distinguish precisely what at first sight seems fused, to explain in full the properties of the means employed and to show their probable effects, to define clearly the nature of the ends in view and to illuminate all phases of warfare in a thorough critical inquiry. Theory then becomes a guide to anyone who wants to learn about war from books; it will light his way, ease his progress, train his judgment, and help him avoid pitfalls.[65]

Understanding the linkage between theory, doctrine, and operational and organizational concepts is key to understanding the concept of RMA. It is a dynamic linkage and common thread that ties people, technology, and ideas together. Edward Mann writes, "Surely, more is involved than better tactics and technologies. What about personalities and individual genius? Perhaps. History reveals again and again, however, that despite the fact that

personalities and genius are important and play a role in success and failure, truly great achievements require personalities of vision and intellect who exploit sound tactics and technologies to execute great concepts and theories."[66]

The benefits of a successful RMA are numerous. A few examples include:

- It can spark innovative and forward thinking.
- It can establish a framework for technology acquisition and force reorganization.
- It can preserve our military superiority/delay the emergence of a peer competitor.
- It can rejuvenate the political utility of military power.
- It can augment deterrence and bridge the gap between military show of force and conventional military intervention.
- It can diffuse a crisis before it expands.[67]

Likewise, the risks of a successful RMA must be considered. A few examples include:

- It may counter the wrong threat.
- It may not increase our effectiveness against our most likely or most dangerous future threat.
- It could spark an arms race--forcing others to seek countermeasures.
- It could cause an overreliance on the military element of national power.
- It can increase problems with friends/alliances.
- It can increase U.S. unilateral use of force.[68]

In the final analysis, "Fundamental change of any kind is difficult, even frightening; those who unleash revolution never know exactly where it will take them."[69] Fortunately, our senior Air Force leaders are willing to accept this risk. In fact, they've created an environment that will reward such a revolution.

History suggests three common preconditions before full realization of an RMA: technological development, doctrinal innovation, and organizational

adaptation.[70] I believe these three preconditions exist today. Further, I believe doctrinal innovation is the predominant factor and is therefore, our guiding light into the 21st Century. As we begin our journey into the 21st century, our new doctrine must drive technological development just as it did 50 years ago. Additionally, our current Air Force environment is setting the stage for organizational adaptation.

Conclusion

The stage for change is set. Our current doctrine is lagging behind advancing technologies. Our future security environment will be challenged by an *unpredictable, unknown*, and *unseen* threat. Such a challenge will demand a change to our current doctrine. Additionally, the Air Force has created an environment that will reward and cultivate innovative new thinking and change--the key ingredients needed to develop and institutionalize doctrinal change.

What must the Air Force be capable of doing in the 21st century? In the words of Sun Tzu, "*Invincibility lies in the defence; the possibility of victory in the attack*". The American people expect future wars to be quick and decisive, with minimum U.S. casualties. They also expect the U.S. military to use our technological superiority (stealth and PGM's) to overwhelm the enemy and, oh by the way, they want to watch it all happen on CNN tonight. A final point is

that the element of time has dramatically changed. Our response time to global crisis must be immediate--that translates into a military force that is ready today. The luxury of time to "mobilize our forces" is rapidly disappearing. Future wars will be "come as you are" and "ready or not" wars and the American people expect a quick and decisive victory.

The paradigm that the outcome of war can only be decided when surface forces meet in direct confrontation (attrition warfare) must be broken. Airpower's demonstrated capability in Dessert Storm showed the world how in-direct (parallel or asymmetric) war can be a decisive as well as winning strategy. As Sun Tzu suggests, "*the main objective should be victory, without a land battle*".

Clearly, the nature and conduct of warfare has changed forever. The revolutionary application of knowledge and information technologies is *how* we will ensure we remain the world's most respected air and space force well into the 21st century. To achieve this end, "We must push aerospace power thinking into the future now--as far ahead of current technologies as it was in 1930."[71] Today, Air Force battlelabs go beyond just giving RMA visionaries a voice--it gives them the tools (resources) to test their theories and innovative ideas on potential future applications of air and space power.

Strategic thinkers of the 21st Century should perhaps begin where Clausewitz concluded--with his depiction of war as a

> "remarkable trinity composed of primordial violence, hatred and enmity, which are to be regarded as a blind natural force; of the play of chance and probability within which the creative spirit is free to roam; and of its element of subordination as an instrument of policy, which makes it subject to reason alone. The first of these three aspects mainly concerns the people; the second the commander and his army; the third the government..."[72]

As we move forward into the 21st century we must realize that there are no "time-outs". The game we are playing is a very serious one--it involves the lives of our sons and daughters and ultimately the survival of our nation. Simply said, we cannot afford to get it wrong. Yet, history reflects we never get it exactly right. "As Michael Howard points out, in times of peace all armies will be wrong; successful armies are those that are not too badly wrong. And in time of war, successful armies are those which can adjust quickly."[73] General Sullivan, in his book, Envisioning Future Warfare, concludes, "strategic common sense dictates that optimizing a force in peacetime entails significant risk; some 'redundancy' and 'insurance' must remain."[74]

An understanding of history can help light the path into the 21st century. Edward Mann says it best--"The future appears as darkness to the ignorant, but history provides a torch that can pierce that darkness, however imperfectly. But that torch must be lit with ideas of what might be. The Mitchells, Arnolds, and Georges kept the torch burning for over 75 years. It is time for our generation of airpower theorists to light the path of the future."[75]

The time for change is upon us. The Air Force, as an organizational entity, demands change to survive our transformation into the Information age and guarantee our success into the 21st century. Our Desert Storm experience has "fueled our tank" for the journey into the future. Additionally, our *engine* for change (doctrine) is already running--ready to accelerate our innovative thinking and concept development into the 21st century. Finally, our *vehicle* for change, the RMA, (which was built by our technological innovation) is ready for everyone to join-in on our journey into the next century. A *vehicle* that is big enough for every airman to come along. We must not leave anyone behind. Our profession demands no less.

We all have a responsibility to "get involved" and help develop, debate, advocate, and institutionalize new doctrine and better ways for air and space power to serve the nation and the Joint Force Commander. Our beacon into the 21st century is new airpower doctrine--a doctrine that reflects a vision of what can be in the future.

Final Thoughts

As we begin our journey into the next century, I would like to offer some of my thoughts on what the future might hold. My purpose here is to provide some "food for thought" and perhaps generate some debate among all airman as we move ahead into the 21st century. As I told each and every member of my squadron years ago, if we don't do it, it won't get done.

That said, I believe any or all of the following possibilities exist:

- Our Strategy will shift from defense to offense.
- Our Strategy will shift from limited war to total war.
- Our Strategy will shift from escalation warfare to full force warfare.
- Our Strategy will shift from containment to one that helps shape the strategic landscape.
- Our Strategy will utilize quick, decisive, and devastating forces designed to induce shock and strategic paralysis.

- Our Forces will shift from threat based to capability based.
- Our Forces will be smaller-but, more lethal and more capable.
- Our Forces will shift from adaptability to agility.
- Our Forces will shift from a mobilization based force to one that is readiness based.

- Our Enemy will shift from predictable, known, and seen to unpredictable, unknown, and unseen.
- Our Enemy will shift from a traditional nation-state threat to a non-traditional non-state threat.
- Our Enemy will increase the use of Information Warfare.
- Our Enemy will utilize advancing technologies

- Application of military power will shift from direct combat (attrition warfare) and indirect combat (maneuver warfare) to Multi-directional combat (asymmetric warfare).
- Application of military power will shift from force projection (deployments) to power projection (from within the CONUS)

- Nuclear weapons will become obsolete
- Use of non-lethal weapons will increase
- Information dominance will become the "force multiplier" of 21st century warfare.

Air and space power can be an effective, efficient, and decisive strategic instrument of national power. It can help shape future strategic landscapes and can influence the perceptions and actions of emerging threatening powers. But, our success in 21st century warfare will depend upon what we do today.

Our task is to develop, advocate, and institutionalize new doctrine. A new doctrine that will tell us how we must organize, train, and equip our forces in the 21st century. Together, we can *make it happen.*

END NOTES

[1]Ronald R. Fogleman, "Aerospace Doctrine: More than Just a Theory." Airpower Journal 10 (Summer 1996), 40-41.

[2]Richard T. Reynolds, Heart of the Storm: The Genesis of the Air Campaign against Irag, (Maxwell Air Force Base: Air University Press, 1995), xi.

[3] 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, N.J.: Transaction Publishers, 1994), xv-xviii.

[4] Steven Metz and James Kievit, "Strategy and The Revolution in Military Affairs: From Theory to Policy." (Strategic Studies Institute. Carlisle Barracks: USAWC Publication, 1996), p. 29.

[5]Early on in the war Secretary of Defense Robert McNamara remarked that the "greatest contribution Vietnam is making--rightly or wrongly is beside the point--is that it is developing an ability in the United States to fight a limited war, to go to war without the necessity of arousing the public ire." Quoted in Norman Podhoretz, Why We Were In Vietnam (New York: Simon and Schuster, 1982), 80.

[6] Tactical airpower is defined as supporting the close battle--either directly in the form of close air support or indirectly in the form of interdiction.

[7]Fogleman, 41.

[8]Ibid.

[9] Edward C. Mann III, Col, USAF, Thunder and Lightning: Desert Storm and the Airpower Debates (Maxwell Air Force Base: Air University Press, 1995), 186.

[10]Robert Frank Futrell, Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, Vol. 1, 1907-1960 (Maxwell Air Force Base: Air University Press, December 1989), 112.

[11] Airpower is considered an integrated but *subordinate* element of the AirLand team.

[12]Phillip S. Meilinger, 10 Propositions Regarding Air Power (School of Advanced Airpower Studies: Air Force History and Museums Program, 1995), 67.

[13]Ibid., 68.

[14] During the Gulf War, he was director of campaign plans and commander of the 14th Air Division (Provisional).

[15]Buster C. Glosson, "Impact on Precision Weapons on Combat Operations",(Lessons learned from Operation Desert Storm), Airpower Journal 7 (Summer 1993) 4-5.

[16]David Jablonsky, The Owl of Minerva Flies at Twilight: Doctrinal Change and Continuity and the Revolution in Military Affairs (Strategic Studies Institute: U.S. Army War College Publication, 1994), 12.

[17]Michael Mazarr, et.al., The Military Technical Revolution. A Structural Framework, (Washington DC: CSIS, March 1993), 22.

[18]Samuel P. Huntington, The Clash of Civilizations and the Remaking of World Order (New York: Simon and Schuster, 1996)

[19]The White house, A National Security Strategy of Engagement and Enlargement (Washington D.C.: The White House, 1996), 1-2.

[20]Charles S. Robb, "Rebuilding a Consensus on Defense." Parameters 26 (Winter 1996-97): 10.

[21]John J. Madigan III, "From the Editor: Warfare in an Information Age..." Parameters 26 (Winter 1996-97): 3.

[22]John M. Shalikashvili, National Military Strategy of the United States of America (A Strategy of Flexible and Selective Engagement). (Washington: US Joint Chiefs of Staff, 1995), 2.

[23] General Shalikashvili is the current Chairman of the Joint Chiefs of Staff (CJCS), scheduled to retire in September 1997. His replacement has yet to be announced.

[24]Congress, Committee on National Security, Hearing: FY98 Defense Budget, 105th Congress, 12 February 1997. Reported in Air Force News Service (AFNS), 14 FEB 97 p 4-5.

[25]Timothy L. Thomas, "Deterring Information Warfare: A New Strategic Challenge", Parameters 4 (Winter 1996-97), 81. Also, William M. Carley and Timothy L. O'Brien, "How Citicorp System Was Raided and Funds Moved Around World," The Wall Street Journal, 12 September 1995, p. 1.

[26]Ibid., 87-88.

[27]Kim R. Holmes, A Safe and Prosperous America: A U.S. Foreign and Defense Policy Blueprint (Washington D.C.: The Heritage Foundation (second edition), June 1994), 8.

[28]The White House, i.

[29]Barry D. Watts, The Foundations of U.S. Air Doctrine: The Problem of Friction in War (Maxwell Air Force Base: Air University Press, December 1984), 117.

[30]Carl Clausewitz, On War Trans. and ed. Michael Howard and Peter Parot.)Princeton: Princeton University Press, 1976), 102.

[31]Cheryl L. Toner, "Secretary of Defense cites priorities during first base visit." (Air Force News Service (AFNS), 3 March 1997, p. 1.

[32]Department of the Air Force, Global Engagement: A Vision for the 21st Century Air Force (Washington D.C.: U.S. Department of the Air Force, 1997), 19.

[33]Ibid.

[34] This new reading program includes four categories of books: classic war fighting, airpower, leadership and space. Additionally, three reading lists for officers was established: a basic list for captains, an intermediate list for majors and lieutenant colonels and an advanced list for colonels and general officers.

[35]Julie Bird, "Hit The Books" Air Force Times, 10 February 1997, pp. 12-13.

[36]Anne M. Bazzell, "Air Force team of yesterday saw today's technology breakthroughs" Air Force News Service, 20 February 1997, p. 7.

[37]Ibid.

[38]Ibid., 8.

[39]The Air Force is committed to a vigorous program of experimenting, testing, exercising and evaluating new operational concepts and systems for air and space power. It will provide additional emphasis in six areas of ongoing activity in Air Force centers of excellence. To be accomplished with a series of focused battle laboratories for space, air expeditionary forces, battle management, force protection, information warfare and unmanned aerial vehicles. For more detailed explanation see: Global Engagement: A Vision for the 21st Century Air Force (Washington D.C.: U.S. Department of the Air Force, 1997.

[40]Air Force News Service, "Vice Chief of Staff highlights innovative battlelabs." Air Force News, 20 February 1997, p. 8.

[41]Ibid., 10.

[42]Dwight D. Eisenhower, At Ease: Stories I tell to friends (New York: Doubleday, 1967), 173.

[43]Clausewitz, 164.

[44]Michael Howard, Clausewitz (Oxford: Oxford University Press, 1976), 30.

[45]Department of the Air Force, (Global Engagement), 13.

[46]Ibid., 5.

[47]Holmes, 7.

[48]Ibid.

[49]George C. Wilson, "What Kind of Force does the U.S. Need?", Air Force Times, 10 March 1997, p. 54.

[50]Ibid.

[51]Article, "White Says Force Cuts a Real Possibility in QDR." Defense Daily, 5 March 1997), p. 341.

[52] Fundamental and enduring national goals include: (1) protect and defend the territorial integrity of the U.S; (2) preserve and defend the liberty, democracy, and economic system of the U.S. from foreign threats; and (3) promote the long-term material prosperity of the American people.

[53] Joint Vision 2010 is the conceptual template for how America's Armed Forces will channel the vitality and innovation of our people and leverage technological opportunities to achieve new levels of effectiveness in joint warfighting.

[54] John M. Shalikashvili, Joint Vision 2010 (Washington: US Joint Chiefs of Staff, 1996), p. 1.

[55]Department of the Air Force, (Global Engagement), 7.

[56]Ibid.

[57]Jane E. Gibish, "Revolution in Military Affairs, a selected bibliography." Quoted from Program for Joint Education (PJE): Academic Year 1996. U.S. Army War College, Carlisle Barracks, PA.

[58]Steven Metz, The Revolution in Military Affairs: Orthodoxy and Beyond, p. 23, Quote from World View: The 1997 Strategic Assessment from the Strategic Studies Institute, U.S. Army war College, 1997.

[59]Winston S. Churchill, Their Finest Hour (Boston: Houghton Mifflin, 1949), p.2. Also see James R. FitzSimonds and Jan M. van Tol. "Revolutions in Military Affairs." Joint Force Quarterly (Spring 1994), p. 24.

[60]James R. FitzSimonds and Jan M. van Tol. "Revolutions in Military Affairs." JFQ: Joint Force Quarterly, no. 4 (Spring 1994), pp. 24-25.

[61]Edward C. Mann III, Col, USAF, Thunder and Lightning: Desert Storm and the Airpower Debates, (Maxwell AFB: Air University Press), 2.

[62]Alvin and Heidi Toffler, War and Anti-War Survival at the Dawn of the 21st Century, (New York: Little, Brown & Company, 1993), 22.

[63]John Keegan, A History of Warfare, (New York: Alfred A. Knopf, 1993), 386-92.

[64]Gordan R. Sullivan, and James M. Dubic, Envisioning Future Warfare (Fort Leavenworth: U.S. Army Command and General Staff College Press, 1995), 43.

[65]Clausewitz, 141.

[66]Mann, 12.

[67]Metz, 6.

[68]Ibid., 20-21.

[69] Ibid., 6.

[70]Fitzsimonds, 25-26.

[71]Mann, 194.

[72]Clausewitz, 89.

[73]Sullivan, 55.

[74]Ibid.

[75]Mann, 7.

BIBLIOGRAPHY

Atkinson, Rick. Crusade: The Untold Story of the Gulf War. Boston: Houghton Mifflin Co., 1993.

Barnett, Jeffery R. Future War: An Assessment of Aerospace Campaigns in 2010. Maxwell Air Force Base: Air University Press, 1996.

Bird, Julie. "Hit the Books." Air Force Times, 10 February 1997, pp. 12-13.

Builder, Carl H. The Icarus Syndrome: The Role of Air Power Theory in the Evolution and fate of the U.S. Air Force. New Brunswick, N.J.: Transaction Publishers, 1994.

Cerami, Joseph R. "Presidential Decisionmaking and Vietnam: Lessons for Strategists." Parameters 26 (Winter 1996-97): 66-80.

Clausewitz, Carl. On War. Trans. and ed. Michael Howard and Peter Parot. Princeton: Princeton University Press, 1976.

Eisenhower, Dwight D. At Ease: Stories I tell to Friends. New York: Doubleday, 1967.

Fogleman, Ronald R. "Aerospace Doctrine: More than just a Theory." Airpower Journal. 10 (Summer 1996): 40-47.

Futrell, Robert Frank. Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, Vol I, 1907-1960. Maxwell Air Force Base: Air University Press, December 1989.

Glosson, Buster C. "Impact of Precision Weapons on Air Combat Operations." (Lessons Learned from Operation desert Storm) Airpower Journal. 7 (Summer 1993): 4-10.

Greenfield, Kent Roberts. American Strategy in World War II. Malabar, Florida: Krieger Publishing Company, 1982.

Holmes, Kim R. A Safe and Prosperous America: A U.S. Foreign and Defense Policy Blueprint. Washington D.C.: The Heritage Foundation (Second Edition), 1994.

Howard, Michael. Clausewitz. Oxford: Oxford University Press, 1983.

Huntington, Samuel P. The Clash of Civilizations and the Remaking of World Order. New York: Simon and Schuster, 1996.

Jablonsky, David. The Owl of the Minerva Flies At Twilight: Doctrinal Change and Continuity and the Revolution in Military Affairs. Strategic Studies Institute. Carlisle Barracks: USAWC Publication, 1994.

_____. Why is Strategy Difficult? Strategic Studies Institute. Carlisle Barracks: USAWC Publication, 1995.

Mann, Edward C., III. Thunder and Lightning: Desert Storm and the Airpower Debates. Maxwell Air Force Base, Alabama: Air University Press, 1995.

Mazarr, Michael, et. al. The Military Technical revolution. A Structural Framework. Washington D.C.: CSIS, March 1993.

Meilinger, Phillip S. 10 Propositions Regarding Air Power. School of Advanced Airpower Studies: Air Force History and Museums Program, 1995.

Podhoretz, Norman. Why We Were in Vietnam. New York: Simon and Schuster, 1982.

Record, Jeffrey. "Vietnam in Retrospect: Could We Have Won?" Parameters 26 (Winter 1996-97): 51-65.

Reynolds, Richard T. Heart of the Storm: The Genesis of the Air Campaign Against Iraq. Maxwell Air Force Base, Alabama: Air University Press, 1995.

Robb, Charles S. "Rebuilding a Consensus on Defense." Parameters 26 (Winter 1996-97): 4-12.

Shalikashvili, John M. Joint Vision 2010. Washington: US Joint Chiefs of Staff, 1996.

_____. National Military Strategy of the United States of America. (A Strategy of Flexible and Selective Engagement). Washington: US Joint Chiefs of Staff, 1995.

Strayer, Ralph C., and Belasco, James A. Flight of the Buffalo. New York: Warner Books Inc., 1993.

Sullivan, Gordon R., and James M. Dubik. Land Warfare in the 21st Century. Carlisle Barracks: U.S. Army War College, Strategic Studies Institute, February 1993.

The White House. A National Security Strategy of Engagement and Enlargement. Washington D.C.: The White House, 1996.

Thomas, Timothy L. "Deterring Information Warfare: A New Strategic Challenge." Parameters 26 (Winter 1996-97): 81-91.

Toffler, Alvin, and Heidi Toffler. War and Anti-War: Survival at the Dawn of the 21st Century. Boston: Little, Brown, 1993.

U.S. Department of the Air Force. Global Engagement: A Vision for the 21st Century Air Force. Washington D.C.: U.S. Department of the Air Force, 1997.

U.S. Department of the Air Force. Basic Aerospace Doctrine of the United States Air Force. Washington D.C.: U.S. Department of the Air Force, March 1992.

Warden, John A., III. The Air Campaign. Washington: National Defense University Press, 1989.

Weigley, Russell. The American Way of War. Bloomington: Indiana University Press, 1977.