

Book Essay

Airpower Writings of John Andreas Olsen

Dr. John Olsen is a Royal Norwegian Air Force colonel who has served as an educator, teaching at the Norwegian and Swedish National Defence Colleges; an operator, as deputy commander of the NATO advisory team in Sarajevo; and a strategist—as military advisor to the Norwegian Embassy in Berlin and currently the Norwegian Ministry of Defence. He earned a PhD from De Montfort University in Leicester, England, and more importantly, is a student of airpower who thinks deeply and writes eloquently on its role in modern war. This essay looks at five of his most important books.

The first Gulf War, Desert Storm, was one of the most tactically decisive victories in modern history. It is easy to forget that in 1990 Saddam Hussein's Iraq was considered a very formidable opponent. It had the world's fourth-largest army, battle hardened after an eight-year war with Iran. That army, and the Iraqi air force as well, were provided modern equipment by the Soviets, French, and others. It enjoyed interior lines of communication and supply. The "trackless desert" was seen as a natural defense barrier, making it difficult for coalition forces to locate precise targets and causing difficulties for Western equipment based there. The Iraqis had weapons of mass destruction (WMD)—which they had already used against Iran—and a reliable delivery system (Scud missiles). These weapons, as well as many other facilities, were protected by concrete bunkers several feet thick or buried underground. The US-led coalition was broad and sizable, but many saw this as a limitation—how could these various national forces meld their disparate equipment, doctrine, and command and control procedures to form a coherent and effective striking force?

Yet, the campaign to liberate Kuwait was remarkably rapid, overwhelming, and relatively bloodless. We all must remember this war, because it revealed strengths and weaknesses of modern military power that overturned long-held beliefs and pointed to a new future.

Strategic Air Power in Desert Storm (London: Frank Cass, 2003), was Olsen's first book and examined the Gulf War in depth. Although not addressing all aspects of the air war against Saddam Hussein, it covers one aspect too little known or understood.

GEN Norman Schwarzkopf was the US commander in the Middle East when Hussein's forces invaded Kuwait in August 1990. Pres. George H. W. Bush announced that such aggression would not be allowed to stand, and Schwarzkopf began planning for Kuwait's liberation. He was, however, unimpressed by his staff's efforts, so he turned in an unexpected direction for help. Schwarzkopf called the Air Force chief of staff and asked for an air plan that would serve coalition interests better than a bloody, frontal ground assault. This was a controversial move by Schwarzkopf: procedure dictated that a combatant commander needing assistance call the Joint Staff.

Instead, the chief turned to his plans directorate, where an obscure colonel by the name of John Warden was tasked to draw up a strategic air plan. Warden gathered together a group of subordinates and other Air Staff personnel to produce a plan promising great results at low cost. The plan was dubbed "Instant Thunder" in a direct rejection of the infamous Vietnam-era air campaign of gradual escalation termed "Rolling Thunder."

Instant Thunder called for a massive and near-simultaneous attack on Iraqi centers of gravity—its leadership, communications, transportation, electrical power, and the production and storage facilities of its WMD. The plan was given to Schwarzkopf, who was delighted; he directed Warden to brief his air commander, Lt Gen Chuck Horner. Horner recognized the value of the plan but also some of its flaws. Instant Thunder implied that a concerted attack on Iraqi centers of gravity would be so devastating as to make a ground offensive unnecessary. Schwarzkopf and Horner rejected such optimistic thinking. Instead, they directed an air campaign to isolate Saddam's regime and fatally cripple its fielded forces. Indeed, Schwarzkopf insisted that airpower reduce Iraq's frontline divisions below 50 percent before a ground offensive would even begin.

The Instant Thunder planning cell in Washington did not welcome these changes but fell in line. Olsen notes that only 2 percent of the coalition's air effort was directed at the leadership targets that Warden and his Instant Thunder planners thought so important. Nonetheless, Olsen contends these strikes were disproportionately effective, because Saddam was largely cut off from his military forces and unable to direct them effectively. The result was reminiscent of what military theorist J. F. C. Fuller once termed "brain warfare"—the spinal cord of the enemy army was severed, leaving the appendages still alive but twitching spasmodically and devoid of central direction.

The main value of the Instant Thunder strategic air campaign, according to Olsen, was to reframe the debate on war strategy. Instead of a plan focusing on a bloody ground assault (early projections feared more than

20,000 coalition casualties), the air campaign destroyed the bulk of the Iraqi army before a major ground offensive even began. US Central Command (CENTCOM) intelligence estimated the air campaign had reduced all Iraqi frontline divisions to below 50 percent before G-day in late February, and this assessment was confirmed by the CIA. In other words, the Iraqi army was, by definition, “combat ineffective” before major ground operations even began.

Olsen’s second book was a biography of the air planner who played the major role described above: *John Warden and the Renaissance of American Air Power* (Washington: Potomac Press, 2007). The term *renaissance* in Olsen’s title bears some explanation.

The advent of nuclear weapons had a profound psychological effect on military and civilian populations worldwide, not the least of which were airmen themselves—the keepers and deliverers of the new weapons. Despite the Korean War that saw the United States and Soviet Union refrain from their use, military planners nonetheless planned for a major war in Central Europe against the Soviet Union—a war that presumed the use of nuclear weapons. Consequently, during the early Cold War era, air planners envisioned war largely at the high end of the conflict spectrum. Because war had never occurred between nuclear powers, the plans they drafted had a high theoretical content—as was the case before World War II when major strategic air operations had yet to be extensively conducted. The result in the 1930s—and for the three decades following World War II—was air doctrine based on little historical experience, because such history had not yet occurred. Thinking the unthinkable was dominated by civilian academics adept at the ethereal and theoretical discourse comprising nuclear strategy. On the other hand, the tactical air battle remained crucial. Fighter pilots, although increasingly tasked to deliver nuclear weapons during the 1950s and ’60s, still saw their main function as gaining and then maintaining air superiority. More specifically, they envisioned the air battle as the supreme test of piloting skill.

The result was a peculiar situation where airpower thought gravitated toward the two extremes: nuclear war as imagined by eggheads vs. the tactical air battle craved by the fighter pilots. The area in between—conventional strategic warfare—was largely ignored.

Olsen argues that John Warden, beginning during his days as a cadet, taught himself the principles of grand strategy and strategic airpower. While a graduate student at Texas Tech University (political science) and then the National War College, he continued to focus his studies. His thesis for the latter was published as *The Air Campaign: Planning for Combat* (Washington: National Defense University Press, 1988) and outlined

Warden's ideas on the importance of strategic conventional air operations. The book proved controversial. Although in retrospect his emphasis on air superiority and air interdiction are hardly unusual, he also noted there were times when the ground scheme of maneuver could be used to support the dominant air campaign. To many, this was heretical thinking. It is a measure of how profoundly war has changed over the past two decades that Warden's basic concepts are now accepted as a starting point for joint doctrine.

Warden's career as a fighter pilot in Vietnam and then as an F-15 wing commander in Germany are well covered, but the heart of the book centers on the events of 1990–91 when, from an office in the basement of the Pentagon, Warden devised the Instant Thunder air campaign plan. Olsen notes that the plan was limited. It promised results too extravagant—what if Saddam Hussein did not surrender after his infrastructure was reduced to rubble? Nonetheless, Warden's vision of a strategic air campaign that would avoid the bloody land battle advocated by ground officers was to become the winning option adopted by Schwarzkopf.

Not everyone was pleased with Warden's role in steering the coalition away from a ground-based slugfest. The other services and the Joint Staff were irritated that Schwarzkopf had bypassed normal channels. Within the Air Force itself, some at Tactical Air Command were similarly vexed by being shunted aside.

Desert Storm was of course an incredible success—although, as is often the case, military decisiveness does not always translate into political victory. Yet, instead of being hailed as a hero and promoted to brigadier general, Warden was ignored. Indeed, he never even received a medal for his efforts. Upon leaving the Pentagon, he served in the White House as an advisor to the vice president for a year and then moved to Maxwell AFB to become commandant of Air Command and Staff College (ACSC). Despite occupying that general officer's billet for three years, he was never promoted.

Warden seemed unfazed by the slights. He turned the ACSC curriculum upside down, redirecting the faculty to teach airpower at the broadest level, while also understanding the dynamics and mechanics of actually writing an air campaign. There were dissenters on the faculty and others around the academic circle who resented and feared the forward-thinking radical at ACSC.

What was Warden's lasting impact? Olsen argues it was limited. Like most academic institutions, the old guard professors were able to outwait him. Moreover, and this is important to bear in mind, not all of Warden's ideas were good ones. Yet, 20 years after his tenure at ACSC, concepts such as parallel warfare, effects-based operations, and the need to think strategically are common currency within the Air Force.

Olsen does an excellent and balanced job of portraying an unconventional airman. At times charming and engaged while at other times distracted and preoccupied, Warden inspired both devoted advocates and bitter enemies throughout his career. As Olsen perceptively notes, Warden's greatest strengths—his aggressiveness, bureaucratic fearlessness, creativity, and disregard for rank that made him often bypass recalcitrant superiors—were at the same time his greatest weaknesses that frequently found him in hot water.

A History of Air Warfare is an edited work (Washington: Potomac Books, 2010) and arguably one of Olsen's best. He calls upon 15 authors—he also writes one chapter himself—to trace the history of air warfare from World War I to the present, with a look into the future. Nearly all the essays are excellent. John Morrow notes that the airplane transitioned in a remarkably short time from its initial use as a reconnaissance asset in World War I to conducting most of the combat functions exercised today: air superiority, close air support, air interdiction, strategic bombing, and airlift. Its initial function, reconnaissance, had unintended consequences: aircraft severely limited the chances of achieving strategic surprise along the static western front—planes could watch the flow of supplies and personnel that indicated an imminent offensive.

Ground commanders pretended to scoff at the capabilities of the new weapon but were eager to exploit its vertical strike capabilities to assist their own operations. This insistent focus on the tactical nature of airpower would remain for the next century. It should be no surprise, therefore, that it was Britain's Royal Naval Air Service that first theorized—and then experimented—with strategic airpower. Navies have long seen themselves as strategic weapons with global concerns, and it seemed natural that maritime strategists would first explore the use of strategic bombing to attack an enemy's vital centers and disrupt its economy. Such operations were, however, severely limited in their effectiveness due to the rudimentary nature of air technology.

That would change in World War II. Although interwar theorists would speculate on the decisive nature of strategic bombing and how it would revolutionize war, effective technology—the aircraft, engines, bombs, and electronic/intelligence apparatus—was not yet available. Richard Overy also points out that none of the belligerents entered the war intending to conduct “terror bombing” or to target civilians. Prewar doctrine in Britain, Germany, and the United States specifically proscribed such tactics. Yet, technology was not yet available in 1940 to carry out the precision daylight campaign envisioned before the war. Both Germany and Britain retreated to the relative safety of night operations—something for which

they were neither technically nor doctrinally prepared. These problems were eventually overcome, and the United States and Britain instituted a combined bomber offensive that had a devastating effect on Germany's industry and its military capability. Once again, it was probably not by chance that the two great sea powers turned to another form, albeit more direct, of strategic warfare; whereas Germany, France, and the Soviet Union, traditional land powers, saw the airplane as a tactical weapon designed to assist armies in the pursuit of their battlefield goals. Strategic airpower was not very effective before 1944—and it must be remembered that fully 70 percent of all bombs dropped on German targets occurred after D-day—but then again, Allied ground and sea operations had not been all that successful against Germany up until then either.

Rich Muller notes in an excellent essay that in the Pacific, the tyranny of distance made strategic air operations virtually impossible until late 1944. But then, such an air campaign began in earnest using B-29s based in the Mariana Islands. The war ended with the atomic strikes.

Alan Stephens recounts the role of airpower in the Korean War. This war was unexpected and unplanned. Neither the US Army's occupation forces in Japan nor the US Air Force, whose primary mission in the Pacific was air defense, was trained or equipped to conduct conventional war on the Korean Peninsula. Airpower saved the soldiers from being pushed off the peninsula at Pusan, but political constraints prevented its use against the real sources of North Korean power—China and the Soviet Union. Yet, the battle for air superiority over North Korea was crucial to preventing the defeat of the vastly outnumbered United Nations forces once China intervened in October 1950. UN aircraft had largely destroyed the North Korean air arm, but the massive influx of Soviet-made jet fighters into China—and thence into Korea—threatened to reverse the fortunes of the war. The MiG-15 was an excellent aircraft and superior to anything but the F-86. Although heavily outnumbered, the F-86s would venture daily into "MiG Alley" in northwest Korea to engage the MiGs based across the Yalu River in China. Air superiority was crucial. The Chinese repeatedly attempted to build air bases in North Korea to harry and interdict UN ground forces further south. UN aircraft denied these bases by maintaining air superiority above them.

The Vietnam War cast a pall over the US military for two decades. Despite vastly superior technology and manpower, the United States and its allies were never able to defeat North Vietnam. Wayne Thompson, the most authoritative historian of airpower in Vietnam, writes a masterful chapter on the military, political, and technical problems facing the United States. The interdiction campaign termed Rolling Thunder was so encumbered

with political constraints—down even to tactical details—that it was doomed from the start. There is an old adage that superior tactics cannot overcome strategic folly, and this was proven in the skies over North Vietnam. Moreover, airmen themselves were partly to blame for not better anticipating major and prolonged *conventional* air operations. World War III against the Soviet Union and its satellites was the dominant paradigm—in all the services—and airmen, soldiers, and sailors were unprepared to fight an insurgency on the ground or a highly constrained war of attrition in the air. The debate will never end as to whether a more enlightened political and military strategy could have been effective at keeping South Vietnam free.

The chapter by Shmuel Gordon on the Arab-Israeli wars between 1967 and 1982 is one of the most interesting in the book—perhaps because most Americans are unfamiliar with the details of those wars. During the first part of that period the United States was engaged in Vietnam, and the trauma of that disaster overshadowed military thought in this country. That was regrettable, because the operations of the Israeli Air Force (IAF) had much to inform. Gordon reviews the key strategic issues that have confronted Israel since its birth in 1948: lack of strategic depth, a small population, and lack of natural resources, but an abundance of enemies. Consequently, the basis of national security, as articulated by its first prime minister David Ben-Gurion, was that Israel must maintain air superiority over the region.

Gordon argues that this insistence on maintaining air superiority by focusing on a technically first-rate air force piloted by outstanding personnel has resulted in great success. In the Six-Day War of 1967 the IAF was outnumbered 3:1 in aircraft, but on the morning of 5 June it struck Egyptian, Syrian, and Jordanian airfields by surprise, destroying 402 aircraft at a loss to themselves of 28 planes. Over the next several days, 56 more Arab aircraft were shot down in air-to-air combat at a loss of 18 IAF planes. During the two-year war of attrition that followed, the Egyptians were reinforced by the Soviets, particularly with surface-to-air missile (SAM) batteries. These SAMs pushed back the operating area of the IAF, essentially denying it air superiority over the Suez Canal. Even so, when the forces did meet in air combat, the IAF enjoyed an 18:1 kill ratio.

The Yom Kippur War of 1973 caught Israel by surprise. It was a close-run conflict, and the plight of the Israeli ground forces necessitated a concentration on close air support rather than air superiority. The superiority campaign then made a tactical blunder that resulted in heavy losses: the IAF, with a doctrine that had hardened into dogma, focused on Arab airfields rather than on the more deadly—and more vulnerable—SAM sites

near the front. This decision “delayed gaining air superiority over the Egyptian front for at least two weeks” (p. 145). In other words, the IAF saw its main threat as coming from the air—other fighters—when in reality the danger came from ground-based air defenses. This was a mistake repeated by other air forces.

Itai Brun completes the story of the IAF by examining the Second Lebanon War of 2006. Hezbollah, based in Lebanon and backed by Syria and Iran, kidnapped two Israeli soldiers. Military operations were launched to retrieve the soldiers, punish Hezbollah, and destroy its base in southern Lebanon. Israeli leaders decided to rely heavily on the IAF to limit casualties—on both sides. The IAF’s task was to destroy the long-range and medium-range rockets that threatened Israel. This air campaign was successful—few such rockets were fired against Israel during the conflict. Short-range rockets were another matter. These weapons were too numerous and too small to locate and target. On the other hand, Syria’s air force played virtually no role in the campaign, probably because in the Bekaa Valley operation of 1982 the Syrians had lost 87 aircraft to the IAF’s zero.

After three weeks, the Israeli Defence Force began to employ ground troops to establish a six-kilometer buffer zone along the border. Rockets continued to rain down on Israel, and 84 soldiers were killed. Suffering heavy casualties, the Israeli army withdrew, and Hezbollah—intact and still maintaining a large inventory of rockets—claimed victory.

There are also excellent chapters covering the Falklands War (Lawrence Freedman) and those detailing the overwhelming airpower victories in Desert Storm (John Olsen), Bosnia (Rob Owen), Kosovo (Tony Mason), Operation Enduring Freedom (Ben Lambeth), and Operation Iraqi Freedom (Wick Murray). These operations will be discussed more below. The final chapter is a superior overview by Dick Hallion. The former Air Force historian outlines the history of air warfare from 1911 to the present with some peeks into the future. He traces how airpower was crucial in World War I, decisive during World War II, and dominant over the past two decades. Airpower has evolved continuously and rapidly over the past century, and one of the keys to this revolutionary impact has been precision weaponry. Precision-guided munitions (PGM) have permitted parallel warfare and true effects-based operations (EBO). Destruction is rarely a worthwhile goal in air warfare; rather, the intent is to deny options to the enemy. PGMs allow this, but EBO has been resisted by the ground services that see it as a threat to their own model of Clausewitzian, attrition-based warfare. Hallion sums the issue eloquently: “EBO is more than an air war concept: it is intrinsically ‘common sense,’ essential to the efficient employ-

ment of all forms of combat power and particularly suited to the capabilities of joint and combined force air (and space) power” (p. 386).

Global Air Power (Washington: Potomac Books, 2011) was intended as a companion volume to the previous work. Also edited by Olsen, it contains nine chapters that briefly cover the histories of the world’s major air forces: the US (Dick Hallion), UK (Tony Mason), Russian (Sanu Kainikara), Israeli (Itai Brun), Chinese (Xiaoming Zhang), Indian (Jasjit Singh), and three regional overviews of the Pacific Rim (Alan Stephens), Latin America (Jim Corum), and Europe (Christian Anrig). Due to this historical narrative approach, there is some redundancy with the *Air Warfare* volume, but even so, each chapter is a model of concise style and clarity.

Kainikara argues that because of its long tradition as a continental land power, Soviet airpower was largely tied to the army, so tactical aviation received the bulk of funds and doctrinal focus. The advent of nuclear weapons changed this focus, but aside from a projected holocaust, doctrine and force structure remained fixed on the land battle. This evolved with the Gulf War of 1991 when Russian leaders were astounded by the rapid victory of the coalition and the dominant role of airpower. Strategic conventional operations were indeed possible, and for the first time, Russian airpower “cast off its shackles and was allowed to develop as an independent force” (p. 215).

Singh’s chapter on the Indian Air Force notes its contradictory influences from the UK’s Royal Air Force with its tradition of strategic airpower versus the land-oriented Soviet model. At the same time, India finds itself wedged between nuclear adversaries—China and Pakistan. This, combined with persistent budget concerns, has resulted in a stretched air arm that must prepare for both offensive and defensive operations that could occur in a two-front war.

Since the Korean War, China’s air arm has been characterized by its great size and poor quality. It had a great deal of metal on the ramp, but that metal was obsolescent and flown by pilots with mediocre skills. Most of its aircraft were single-seat fighters designed as defensive interceptors. As with other countries, the shock of Desert Storm woke Chinese leaders to the fact that its air force was largely useless against a modern power. Today, numbers have been cut dramatically, but quality has increased. New-generation aircraft are proliferating. More importantly, training has increased—although not yet to Western levels—and technical support has improved. Precision weapons, modern ISR aircraft, and, most importantly perhaps, airlifters and air refuelers have entered the inventory. If it is China’s goal to become a world power with the ability to project its airpower over

great distances, then it has begun taking steps over the past two decades to achieve that aim.

Throughout the Cold War era, the air forces of Europe lay in America's shadow. The US Air Force dominated NATO, and Europe had but a meager air refueling, strategic airlift, or ISR capability. Because of NATO's oft-stated defensive posture vis-à-vis the Warsaw Pact, the alliance had a large number of fighter aircraft focused on air defense. Once again, Desert Storm, which occurred immediately after the collapse of the Soviet empire, signaled great change.

The defensive posture of most European nations began to shift to a more offensive mind-set. In this regard, the Balkan Wars were decisive. Even Germany, whose constitution seemed to prohibit involvement in such operations, redefined itself and took part. The size and capabilities of the US air forces meant that Europe had to adapt to fit into coalition operations. PGMs were essential, as were standardized doctrines and command and control lash ups. Because most European countries could not afford "full service" air arms, they have banded together to develop and procure aircraft to be used by all—AWACS and ISR assets, as well as the A-400 airlifter and the new Boeing tankers. Several NATO nations participated in operations in Afghanistan and Iraq, and new members—Poland and the Czech Republic—labored to upgrade and standardize their air forces to become useful partners.

The concluding essay by Lt Gen Dave Deptula (USAF, retired) is excellent. Deptula has long been recognized as one of the most forward thinking and capable airmen in the West. He begins by noting that we now live in an "aeronautical era" in which commercial, civil, and military aviation are preeminent. Thousands of aircraft carrying passengers and high-value cargo are in the air over the globe at any one time. More importantly, airpower now dominates war.

Deptula argues that airpower has been revolutionized in three areas: At the micro level, computing, sensing, and data compression have made formerly single-mission aircraft now able to perform multiple tasks. At the meso (operational) level, airpower has moved from being linked to massive land forces toward greater cooperation with special operations forces, producing disproportionately great effects at low cost and risk. And at the macro level, strategic airlifters, tankers, and global ISR and communications platforms linked by satellites have shrunk the world while also placing great leverage in the hands of the nations, or coalitions, which possess such global power-projection forces.

Controversially, Deptula also argues that air and space technology is evolving so quickly that strategy based on a historical perspective is becoming almost

dangerous. The focus must be forward. He argues instead for strategies based on trends and threats to chart the future. He concludes that success or failure will be determined by “how well a nation can seamlessly integrate airpower across permissive, contested, and denied environments, rapidly synchronizing multiple aerospace missions and functions across the domains of air, land, sea, space, and cyberspace ahead of both competitors and adversaries” (p. 415).

Air Commanders (Washington: Potomac Books, 2013) consists of biographical sketches of US Air Force combat commanders. All are of high quality: some written by established historians (Wick Murray, Alan Stephens, Rich Davis, Dick Hallion, Jim Corum, Rich Muller, Rebecca Grant, and Tom Keaney); others by newcomers (Case Cunningham, Mark Bucknam, Steve Randolph, and Jim Kiras).

The air commanders chosen fall into three groups: World War II and the Cold War; Korea and Vietnam; and Desert Storm to the present. This last was an inspired choice. Most Americans will not have heard of the airmen who led the astoundingly successful air campaigns of Desert Storm (Chuck Horner), Deliberate Force (Mike Ryan), the air war over Serbia (Mike Short), and operations in Afghanistan and Iraq after 9/11 (“Buzz” Moseley). These generals should be remembered.

The sketches of Carl Spaatz, George Kenney, Curtis LeMay, and Otto Weyland are excellent. All except the latter have been much written about and are familiar. The addition of George Stratemeyer—the air commander during the first year of the Korean War—is an anomaly in that 1950 was a near-run thing, and Stratemeyer’s performance was not exceptional. After suffering a heart attack in May 1951, he retired. William Tunner is another unusual but sounder choice. Tunner was an expert airlifter who commanded the “Hump” operation over the Himalayas during World War II, the Berlin airlift, and the airlift of men and supplies to Korea. Too often these essential power-projection air forces are ignored.

The additions of Generals Horner, Ryan, Short, and Moseley are particularly appropriate. In all five of their air campaigns, it was the combination of stealth aircraft and precision weapons—laser-guided and then GPS-guided bombs—combined with ubiquitous ISR and nearly instantaneous command and control, which brought airpower to a pinnacle of success. These air campaigns teamed with special operations forces and indigenous troops—Bosnians, Kosovars, the Northern Alliance, and Kurds—achieved alliance goals with an amazingly small loss of life—on both sides. Conventional US ground forces, when they were even used, confronted enemies largely defeated.

Drawing conclusions regarding the combat leadership of these airmen is difficult, but the first lesson is that they were outstanding pilots and tacticians. William Momyer, who commanded Seventh Air Force during much of the Vietnam War, is considered one of the greatest air tacticians in US history. He was also an ace in World War II, as was John Vogt, Seventh Air Force commander at the end of that war. It would seem that piloting skills were essential in giving airmen the credibility to rise in rank and become air strategists. Second, most of those discussed took a deep interest in the use of intelligence. Although surface warfare is also dependent on sound intelligence, air operations have taken this essentiality to a new level. Because precision weapons with three-meter accuracy can now hit a specific window in a building hundreds of miles deep in enemy territory, it is essential to identify the correct window.

These airmen also had an unusually sound grasp of the political environment in which they operated, a necessity in the politically charged milieus found in the “small wars” that have been the US lot since Vietnam. When every bomb dropped can have major political significance, air commanders must be acutely aware of consequences and implications. Finally, it is apparent there is no single, successful leadership style: Spaatz was shy and taciturn; Kenney outgoing and friendly; Momyer cerebral; and Short was gruff and irascible. Successful leadership style is defined by success.

Taken together, these five works by John Olsen are an outstanding overview of airpower past, present, and future. Olsen and his contributors introduce and explain several ideas that bear emphasis.

From the very beginning, airpower was recognized as a revolutionary weapon that could transform war. Operating in the third dimension, it took a surprisingly short time for aircraft to move from an interesting tactical adjunct of surface battle to a decisive factor in war. Even so, in an age where everything happens with such numbing rapidity compared to previous centuries, airpower—and space power—has sometimes moved more slowly than airmen wanted. The two decades between the world wars saw much theorizing and speculation regarding how technologies not yet invented would revolutionize war. The opening years of World War II demonstrated that aeronautical science was not moving as quickly as airmen had prophesied. And yet, the war with Japan did indeed end with the atomic bombs delivered by B-29s, avoiding a bloody invasion of the home islands that would have cost millions of lives—both Allied and Japanese.

Air and space power are dominated by technology—a notion that has often produced ridicule from the other services who speak derisively of airmen’s “toys” and who contend that battle today is little different than

that experienced by the hoplite armies of the ancient Greeks. This is a silly belief. Yes, fog, friction, fear, thirst, and anxiety are still present in war, but war is not always bloody and violent—as blockade, embargo, and cyber attack illustrate—nor is it always dominated by fear and fatigue. The use of remotely piloted aircraft (RPA) has fundamentally altered the dynamic of combat: aircraft striking targets in Pakistan are controlled by technicians sitting in hangers in Nevada half a globe away. And drones can be very brave indeed.

The use of military force is shaped by technology, budgets, domestic politics, and the geopolitical situation. Instant worldwide communications and information transfer have made military operations subject to intense scrutiny, and this scrutiny falls most heavily on the West. Actions must be seen as politically reasonable—diplomacy must be exhausted before force is sanctioned. When force is applied, it must be measured and discriminant. Collateral damage must be held to a minimum. For domestic political reasons, the “wars of choice” now fought by the West must incur low cost—both in blood and treasure—and those costs should be kept to a minimum even among adversaries. Precision weapons *must* be used to limit damage and death. Decisive victory is still sought, but it cannot be *too* decisive and result in large numbers of enemy dead or unnecessarily excessive physical destruction.

If low cost, low risk, and low collateral damage are the standards measuring success or failure, then air and space power are the obvious solutions. Only a handful of manned aircraft have been lost in combat by the West over the past two decades. In several cases—Bosnia, Kosovo, Libya, and in the initial stages of Operation Enduring Freedom in Afghanistan—conventional ground troops were not even employed. When they were finally introduced, often for occupation duty, the enemy was already defeated. It is a disturbing fact that the vast majority of casualties sustained by the United States and its allies in OEF and OIF occurred after large numbers of conventional ground troops were introduced for occupation duties and counterinsurgency for which they were neither trained nor equipped.

Olsen’s books also touch upon the issue of coercion versus denial. This is an old issue that has generated much debate. Coercion involves a targeting scheme that strikes or threatens what the enemy holds valuable. The intent is to change its behavior. A denial strategy targets an enemy’s military forces or their support structure—the intent is to destroy the ability to continue the war. In essence, coercion targets the enemy’s will, while denial focuses on its capability. Both targeting schemes have been used successfully in war, and they have also failed. In truth, the dichotomy is more imagined than real. Virtually every targeting scheme contains

elements of both coercion and denial, and it is usually impossible to separate them: the destruction of an armament factory or transportation system or the death of a national leader affects *both* the enemy's will and capability. Every situation and every enemy is different, and it is futile to attempt to focus on one target set—leadership, fielded forces, the power grid—and assume it will be the crucial target in any situation. War is not that determinable.

This realization tends to support the claim noted by Deptula: airmen must look to the future rather than the past to determine how to employ their chosen weapon. As a historian, that notion grinds my gears, but in truth, the lessons of history have often been vague, contradictory, or simply wrong. The lessons learned process enshrined in our joint doctrine is a useful intellectual exercise, as long as we always remember that no two situations will ever be the same. Moreover, as World War I and its aftermath proved: lessons learned are not necessarily *correct* lessons learned.

These books show that the introduction of PGMs, stealth technology, and real-time ISR and command and control capabilities have revolutionized war, and even the most obtuse observers recognize how air and space power have changed the conflict environment, at all levels. Interestingly, one major theme continues to appear in all five of the books regardless of the author actually writing each individual chapter. That truism concerns the essential nature of air superiority. All the services recognize this unalterable fact, even if they disagree on how such superiority is to be gained and maintained. In fact, even the basic definition of air superiority is not clearly understood.

There are two aspects to air superiority. First, we are able to prevent the enemy's air forces from attacking our vital centers and fielded forces. This is the aspect understood by everyone. The second is, if an enemy is not attacking us from the air, then we assume we have achieved air superiority. That is not the case. Superiority also includes our ability to strike the enemy's vital centers, sources of supply, or fielded forces at the time and place of our choosing—an important distinction. US joint doctrine is predicated on operating under a curtain of air superiority—and in fact, today we strive for air supremacy. It is questionable if our joint force would know how to operate if that supremacy were lost—we have not had to fight without it since early in World War II. Today, the joint force is absolutely dependent on the unfettered air missions of close air support, air interdiction, ISR, and airlift. If we lose air superiority, those other crucial air missions are difficult or impossible to conduct. If that happens, the joint force is lost. Note, however, that this dual concept of air superiority is a peculiarly US and Western notion. The Vietcong and al-Qaeda never enjoyed air

superiority, and yet they fought extremely well and often successfully against US forces that controlled the air above them.

We also must recognize that the major threat facing our continued enjoyment of air superiority comes from the ground. Since World War II, more than 95 percent of US combat air losses have resulted from anti-aircraft artillery, SAMs, or ground attack by special forces. In fact, since Vietnam, the USAF has not lost a single aircraft in air-to-air combat, even though some of our opponents—Iraq, Serbia, and Libya—possessed modern air arms. However, as SAMs proliferate and become increasingly capable, even our stealth assets might be at risk. Olsen notes the danger of ground-based air defenses, which will increase in the years ahead. What are we doing to address this threat?

Olsen and most of his authors are advocates of airpower. They have studied air operations since their inception, while also looking into the future. They have concluded that air and space forces have been increasingly successful in achieving political and military goals, while doing so at low cost and low risk. There are limitations and weaknesses for these forces, but over the past century the inherent strengths of airpower—its ubiquity, speed, range, and flexibility—have grown stronger; while its weaknesses—cost, the constraints of weather or darkness, its transitory nature, and its inability to hold ground—have grown ever weaker. Radar, infrared, and GPS have done much to eliminate the problems of weather and darkness; air refueling, satellites, and RPAs allow near-continuous air and space operations, and as experiences in Iraq and Afghanistan have demonstrated, occupying ground is often the worst thing we can do if we truly wish to achieve our goals at the lowest cost in blood and treasure.

Col John Olsen is one of the dominant voices in airpower history and operations in the world today. His books should be required reading for everyone in uniform.

Phillip S. Meilinger, PhD
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