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AIR COMMAND AND STAFF COLLEGE  
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**Back to the Basics**  
**An Aviation Solution**  
**to Counterinsurgent Warfare**

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## **Foreword**

Welcome to another in our series called “The Wright Flyer Papers.” The Air Command and Staff College (ACSC) is pleased to publish our best student research projects each academic year. Our research program is designed to encourage our students to explore topics and issues aimed at advancing the application of air and space power and understanding the profession of arms. To that end, this series reflects our desire to perpetuate the intellectual spirit of early military aviation pioneers who availed themselves of time, here at Maxwell, to reflect solid research, innovative thought, and lucid preparation. Put another way, we think they are worth your time to read.

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RANDAL D. FULLHART  
Brigadier General, USAF  
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## ***Preface***

When I embarked on this “voyage of discovery” at the start of my academic endeavors for Air University, I had no idea of the amount of information available with regard to using airpower in fighting “small wars.” In terms of the use—or misuse—of aircraft in counterinsurgency, I found fascinating the emphasis placed on overwhelming the insurgent with technology and mass. Today’s Air Force can deliver maximum violence upon the enemy with minimal effort, provided it can find him. A complex battlespace populated by a non-complex enemy, counterinsurgency makes many Air Force people uncomfortable since the ability to leverage technology in the air war is part of the very fabric of our service.

In this paper, I seek to demonstrate that the methods of using airpower to take the fight to the enemy and protect our ground forces during small wars need not involve the most advanced aircraft available. This “low-tech” approach does not suggest using lesser technology per se but proposes a different look for the types of aircraft that can perform a specific mission and for their manner of employment—that of protecting ground forces while combating the elusive insurgent. These same aircraft can prove invaluable in training an indigenous force to take the fight forward. By looking to relatively inexpensive, off-the-shelf aircraft, the Air Force can protect its ground-based charges and cement a relationship with embattled nations by helping them help themselves.

I could not have completed this study without the guidance and support of Dr. William Dean and his class of “small warriors.” His mentorship and their advice enabled me to make the leap from an academic interest in counterinsurgency to a real application of what the Air Force can bring to the fight. Finally, I extend my eternal gratitude to my wife, who now knows more about airpower than she ever wanted to.

## ***Abstract***

This study focuses on the current global war on terrorism as a conflict against insurgents who attack US power through asymmetric means. Of late, these individuals have selected as a primary target the military and civilian convoy operations in Iraq and, to some extent, Afghanistan. By examining past examples of the use of airpower in counterinsurgent warfare, this study sheds light on the United States' current failings in both equipment and doctrine as it wages this type of war. The French used low-technology aircraft—World War II-vintage A-1 and T-6 fighters—in Algeria to attack insurgent forces and defend ground troops. Well adapted to the environment as well as effectively deployed and employed, these aircraft helped contain and defeat the insurgents. In Vietnam, the United States employed A-1s and T-28s—aircraft with a proven track record in this type of war and ideally suited to training the South Vietnamese air force. The United States should rethink its inventory of aircraft devoted to counterinsurgent war by considering possible replacements for the A-1. It should also reevaluate the manner of employing these assets by locating them with the ground forces they support.

# **Back to the Basics**

## **An Aviation Solution to Counterinsurgent Warfare**

*If there is one attitude more dangerous than to assume that a future war will be just like the last one, it is to assume that it will be so utterly different that we can ignore all of the lessons of the last one.*

—Royal Air Force Marshal Sir John Slessor

As the leading crusader in a global war on terrorism, the United States finds itself arrayed against an enemy who wishes to fight on his own terms by using asymmetric means—those of the insurgent. He has at his disposal weapons and tactics that have changed little in the past 50 years. Although the US Department of Defense currently seeks to transform the US military into a lighter, leaner force capable of fighting the enemy on any terrain with twenty-first-century technology, we must still look to history as a guide for this transformation. As Pres. John F. Kennedy stated in 1962, “This is another type of war, new in its intensity, ancient in its origins—war by guerrillas, subversives, insurgents, assassins . . . war by ambush instead of combat . . . seeking victory by eroding and exhausting the enemy instead of engaging him.”<sup>1</sup>

In Iraq today, the conflict has shifted from a mobile force-on-force campaign to an active insurgency. When we fight an enemy who relies on insurgent tactics, mobility becomes a crucial element of success. As we have seen demonstrated time and again, the protection of advances and lines of communications is critical when dealing with an enemy who chooses not to engage in direct action but utilizes harassment and ambush. Assets in the US Air Force inventory, however, lack the ability to support ground forces adequately in the prosecution of a counterinsurgent campaign. This paper discusses the nature of this type of fight, both past and present, and then analyzes two historical case studies to demonstrate that although this problem is not new, counterinsurgent forces have successfully handled it by using a distinctive type of airpower. Specifically, instead of fast, expensive turbojets,

we need reliable, propeller-driven aircraft designed to work in the environment favored by the insurgent.

## **The Nature of the Fight: An Analysis of Guerrilla War**

*Guerrilla warfare is a form of operations above all things to be avoided.*

—Col C. E. Callwell

In the quest for a decisive battle that defeats the enemy on the field using the strategy of annihilation, commanders have always remained wary of that most deplorable form of combat—the “small war” against an insurgent army. Theorists from Sun Tzu to Carl von Clausewitz have recognized this situation as a real concern that generals should not discount. This paper treats small wars, insurgencies, low intensity conflicts, and guerrilla warfare as essentially similar in terms of tactics, though at times ideologically different in goals and final outcomes. Oftentimes, we cannot separate politics from small wars since the former represents the reason for the fight or the force that drives the insurgent to resist. Nevertheless, this paper attempts to divorce political or ideological motives from the technical aspect of this kind of war; although such motives may differ throughout history, the manner of fighting these wars remains the same.

Insurgent armies have perennially used guerrilla tactics to wage small wars on their own terms and turf. N. I. Klonis observes that by using such methods, adversaries avoid “direct confrontation with the enemy main forces . . . where operations are conducted in enemy controlled territory by relatively small forces which strike the enemy where he may be relatively weak or where the guerrillas can obtain a temporary superiority over a localized enemy force.”<sup>2</sup> Put simply, the guerrilla or insurgent army avoids direct confrontation by attacking the opposing force on its flanks or through its long line of communications. The mujahideen who fought the Soviet army in Afghanistan illustrate this principle. Because the Afghan fighters could not compete with the overwhelming Soviet arsenal during this campaign, they resorted to attacks against supply lines, using the few passable roads

in the country. Consequently, the Soviets put much effort into using aircraft to protect their convoys—primary targets of the mujahideen.<sup>3</sup>

### **The Insurgent: Past and Present**

Throughout history, insurgencies and small wars have existed as background noise to competition or conflict between great powers.<sup>4</sup> The Soviets in the Afghanistan war used technology—airpower in the form of helicopter gunships—to battle insurgent forces bent on attacking their bases and supply lines. This strategy proved largely successful until the United States “donated” advanced surface-to-air missiles to the mujahideen, effectively negating the Soviet advantage.<sup>5</sup> Similarly, Vietcong guerrilla fighters received much Soviet assistance, both weapons and training, in their fight against the United States in South Vietnam. Both conflicts saw insurgents use a strategy to which the greater powers had to adapt—that of avoiding direct confrontation. As Clausewitz put it, “[Insurgents] are meant to operate just outside the theater of war—where the invader will not appear in strength—in order to deny him these areas altogether.”<sup>6</sup> The link between past examples of small wars and those of today lies in the details.

Regardless of ideological or political aims, insurgents function similarly and require the same resources to continue their struggles. They try to postpone decisive action until they have a decided advantage or until the opponent becomes exhausted by the effort. They require not only a safe location from which to train and project power but also logistic or financial support. Furthermore, insurgents must have the ability to melt into the terrain or population to effect their disengagement from the enemy so they can fight another day. They also benefit from their flexibility, both in the form of tactics and the absence of ethical or legal restraints.<sup>7</sup> Some commentators liken today’s war on terror to a counterinsurgency since “contemporary terrorism is a lineal descendant of the type of low-intensity conflict seen in the Third World over the past 50 years.”<sup>8</sup>

### **Enduring Principles for Fighting Small Wars**

With operations in both Afghanistan and Iraq shifting from major combat operations to stabilization and transi-

tion to democratic rule, the United States again finds itself facing an insurgent force that relies on terror tactics and a strategy of exhaustion to further its goal of thwarting Western influence in the region. This situation resembles the US experience in Vietnam: in 1962, following major combat operations, the United States found itself “organizationally, doctrinally, conceptually, and psychologically unprepared for [this type of] war.”<sup>9</sup> At the operational and tactical levels, counterinsurgency has changed little in the past 50 years. We still find that “tactics favor the regular troops, while strategy favors the enemy.”<sup>10</sup>

As the British and French colonial armies, US expeditionary forces, and a host of others learned the hard way, an army facing guerrilla forces must maintain a presence in foreign terrain and confront an enemy who attacks weak points when he chooses. The regular army’s bases of operation and lines of communications are vulnerable to attack from bands of insurgents who specialize in this type of work and who can disappear at will. We find an answer to this dilemma within Clausewitz’s work: “The [army’s] only answer to military actions is the sending out of frequent escorts as protection for his convoys, and as guards on all of his stopping places, bridges, defiles, and the rest.”<sup>11</sup> The counterinsurgent force—extremely hampered by its supply lines—fights an enemy who has little need for such lines and often supplies himself from what he can take from both regular forces and the population.

In all cases of this type of war, the regular army achieves victory when it can pursue relentlessly and deny the insurgent rest, recuperation, and supply. The “tradition within the US military has been to develop an impressive understanding and the skills at counterinsurgency when engaged in such an operation, and then let the expertise atrophy afterwards.”<sup>12</sup> The war on terror has all of the classic characteristics of an insurgency. The US military must face asymmetric violence, ambiguity, and an enemy with no ethical or moral constraints. Insurgents use improvised explosives to attack convoys and demoralize the regular army with hit-and-run rocket or mortar attacks. Like T. E. Lawrence’s indirect approach to insurgent warfare, the goal becomes cutting lines of supply and demoralizing rather than attacking directly.<sup>13</sup> To counter this method of operating, the United States must look to past examples of tactics

and technology to relearn what it has forgotten. Airpower is a powerful tool, but technology is no panacea in the small-war arena. Linking the past with the present in this regard will only help the United States capitalize on airpower in fighting small wars.

### **The Iraqi Insurgency: Implications for Airpower**

*To attempt to restrain such a mob by a foreign force is to attempt to restrain the explosion of a mine when the powder has already been ignited: it is far better to await the explosion and afterward fill up the crater than to try to prevent it and perish in the attempt.*

—Henri Jomini

Since the end of major combat operations in May 2003, the United States has been fighting an insurgent force within Iraq. Of the 120,000 troops who remain in the country to help rebuild and pave the way for democracy, many are dedicated to security concerns that arise from an active insurgency. Both in rural and urban settings, the insurgent force fights much like past guerrillas have fought—through asymmetric tactics that emphasize a strategy of exhaustion. Today, this campaign continues against enemies who use nontraditional tactics and asymmetric/asynchronous strategies designed to inflict damage on the counterinsurgent's fielded forces and national will by exploiting ethical constraints, an obsession with a declared end state, and a "better state of peace."<sup>14</sup>

The current insurgent force most favors the asymmetric means of convoy attack. Like the mujahideen in Afghanistan, Iraqi insurgents pose the greatest danger to US troops not from direct confrontation but from ambush on the roads of Iraq. In fact, John Pike, executive director for the Web site *GlobalSecurity.org*, notes in an interview with the *Atlantic Monthly* that "this is a war of convoy ambushes and car bombs."<sup>15</sup> More than 20,000 soldiers and private contractors operate convoys that bring fuel, food, and water into Iraq from Kuwait—all of them primary targets for the insurgent. Exact numbers of US troop casualties remain classified, but more than 65 private contractors have been killed in convoy ambushes since July 2003, leading the Army and Air

Force to train more than 1,000 soldiers in convoy security.<sup>16</sup> This situation has led US military leadership to shift emphasis from overland supply efforts to an aviation solution. Although 85 percent of troop supplies still travel around Iraq by road, US Transportation Command has tried to pick up the remainder by using intratheater-airlift assets, thereby taking Army trucks “off the roads in the deadly Sunni Triangle section of Iraq.”<sup>17</sup> Similar to the Soviets’ experience in Afghanistan, convoy security has become a primary concern for US armed forces.

### **Air Support for the Counterinsurgent Army**

Even as far back as the late nineteenth century, the security of troops on the march had become a priority during conflict with guerrillas. Colonel Callwell’s *Small Wars: Their Principles and Practice* discusses an insurgent attack on a column of troops: “The tendency of the enemy in these campaigns even in the heat of action [is] to avoid decisive collision with the front of the regular troops but to work against the flanks and rear.”<sup>18</sup> In Iraq, for instance, this observation still holds true: insurgents use asymmetric means, explosive devices, or concealed rocket attack to engage and harass columns of troops on the move. As noted in US Army Field Manual 3-90, *Tactics*, the purpose of a convoy is to reach its destination—not to engage the enemy in a movement to contact.<sup>19</sup> Similarly, the US Marine Corps’ *Small Wars Manual* observes that since the flanks and rear of a convoy are especially vulnerable to irregular forces, it must “ensure itself from an attack from every direction.”<sup>20</sup> Examples of types of support include reconnaissance patrols and air cover to free the convoy from contact or prevent it.

### **Aircraft in Use Today**

US and coalition forces in Iraq employ a variety of aircraft. High-tech, multirole jet aircraft such as the F-16, F-15C/E, and F/A-18 as well as the venerable A-10 and Vietnam-era AC-130 provide close air support (CAS) and a host of other air-support functions to ground troops. Alongside these platforms, helicopter gunships play an important role in securing the movement of troops and materiel within the country. However, each weapon system has its drawbacks.

Because few of the high-speed fighters are forward deployed, they must orbit in preplanned locations, awaiting missions from ground commanders. The A-10 is forward deployed to Iraq at several locations but has relatively short loiter capability over a convoy or fixed location; furthermore, we must use many of these aircraft to provide necessary coverage during refueling. The A-10 is designed to provide CAS and convoy escort, but its slow speed, vulnerability to ground fire, and few numbers limit the aircraft to nighttime-only missions of high priority. Helicopter gunships handle much of the work in covering troop or supply movement, but, again, their slowness and vulnerability to ground fire do not make them ideal platforms in this environment. All of these aircraft share a common characteristic: they are multi-role platforms used for a variety of missions. One study produced during the Vietnam era notes that “the Close Air Support/Interdiction mission has become so specialized that the all purpose approach leaves much to be desired, producing instead the jack-of-all-trades, master-of-none machine.”<sup>21</sup>

### **New Direction Needed**

Both the Army and Marine Corps recognize that air support plays a valuable role in convoy protection and force movement in the counterinsurgent’s home terrain. In Iraq most of the requests for air support from ground-force commanders are for preplanned raids, reconnaissance of pipelines and suspected enemy safe houses, and truck convoys.<sup>22</sup> For example, in one 30-day period, insurgents conducted more than 2,300 attacks on military and civilian convoys.<sup>23</sup> Furthermore, convoy attacks accounted for more than 20 percent of the 32 deaths in the 3d Armored Cavalry Regiment during its last deployment—the second-leading cause of death in the unit.<sup>24</sup> Such violence on the part of the insurgents has prompted the Army to reduce the number of convoys since the attacks have increased. Consequently, the Air Force carries a larger portion of the logistics-resupply load on tactical and strategic airlift because the roads remain quite dangerous for military and civilian convoy activity.<sup>25</sup> None of this insurgent activity is either new or unique in this type of war. Past examples of the use of airpower have yielded good results in supporting ground forces.

Only air assets designed to provide troop and convoy security offer a solution to this problem. The A-10, AC-130, and helicopter gunship promise much-needed assistance, but their own operational flaws restrict their availability when our forces need them. Earlier conflicts indicate the success of matching the weapon with the task. The United States faces an enemy who avoids US strengths by utilizing lesser technology and asymmetric tactics. Only by turning to a propeller-driven CAS platform that can support the Army in its current mission will our country gain the upper hand.

## **Case Studies in Counterinsurgency**

*To learn something new, read an old book!*

—Anonymous

Forgetting history dooms us to repeating it. That said, we would do well to look to two historical examples of the use of low-tech aircraft in small wars. In both cases, politics and world opinion defined the eventual outcome of each war. As stated previously, one cannot separate politics from insurgency because it serves as a primary motivating factor for both sides and often defines the war, but the manner in which the combatants fought these wars holds valuable lessons for the student of airpower application in conflicts such as these.

Fighting in Algeria from 1958 to 1962, the French enjoyed much success, thanks to the application of airpower. Although the Algerians still won their independence, one can argue that this was a foregone conclusion at the outset of the war and that political factors—not military defeat—forced the French government to acquiesce to the Algerian nationalists. Fighting in Vietnam from 1962 to 1966, the United States responded to the initial insurgency with a successful application of airpower. Only when the North Vietnamese gained sponsorship from other powers in terms of weapons and training and sought conventional war did the United States have to reevaluate its involvement and pull out.

### **The French in Algeria**

Part of France since the mid-1800s, Algeria was home to over a million European settlers—Colons—by the end of World

War II, amongst a population of over nine million Arabs.<sup>26</sup> In the aftermath of the war, nationalistic fervor led to the creation of the Front de la Libération Nationale (FLN) in 1954 and its armed wing—the Armée de Libération Nationale (ALN). In 1958 tensions among the French government, the Colons, and the FLN came to a head, placing the military squarely in the middle. With a rising insurgency and a need by military professionals to redeem themselves from their recent defeat in Indochina, Charles de Gaulle rose to power with the understanding that Algeria would remain French.<sup>27</sup> To defeat this insurgency, Gen Maurice Challe of the French air force assumed command of French forces in Algeria with a goal of conducting a mobile campaign to purge the wilayas (ALN territorial segments) by destroying ALN forces without occupying territory.<sup>28</sup> General Challe envisioned a ground campaign that used airpower extensively to provide mobility and fire support.

**Aircraft Types and Tactics.** The end of World War II saw a French air force strapped for manning, funds, and airframes. In 1946, without the means to create a conventional strategic air force, France had to rely on equipment “donated” by the United States or left over from the German occupiers.<sup>29</sup> This situation produced a force heavily linked to its ground component with significant joint-arms doctrine and few assets outside of propeller-driven aircraft and first-generation helicopters. One study observed that “without the benefit of exotic hardware, or perhaps because of a lack of it, an effective counter-guerrilla Air Force was in being by 1959.”<sup>30</sup>

French air force strategy in support of counterinsurgency operations emphasized four major systems: command and control; intelligence, surveillance, and reconnaissance; logistics support and troop delivery; and firepower in direct support of ground operations, with each of these interdependent systems based on the utilization of available assets.<sup>31</sup> By 1959 the T-6G Harvard had become the workhorse for the French air force in Algeria, over 240 of them conducting operations in the country. Donated by the United States as surplus, these aircraft came equipped with three .30-caliber guns and pylons for carrying a variety of weapons. These converted trainers primarily conducted air cover for convoy operations and armed reconnaissance of roads and railways.<sup>32</sup> Because they had reached the end of their life span by 1960 and because of increasing ALN capabilities in

antiaircraft artillery, the French had to switch to the A4D Skyraider. In addition to relying heavily on propeller-driven aircraft to support ground operations, the French used helicopters extensively in Algeria, including duty as fire-support platforms.<sup>33</sup>

**Employment and Doctrine.** As stated previously, because the war in Algeria differed from earlier French experiences in World War II, it required a different approach to the use of airpower. After suffering a bitter defeat in Indochina, the French sought to put those lessons to good use. As Lieutenant General Enzanno of the French air force's 2d Tactical Air Command stated, "Obviously, the role of the Air Force in Algeria was very different from its traditional role in conventional warfare; instead of powerful concentrations of force and maneuvers conducted at very high levels of command, the Algerian War called for dispersion of forces at low levels of command."<sup>34</sup>

To accomplish this feat, the French exercised operational control of the armed forces through three unified commands consisting of three army corps and three tactical air commands, each controlled by a joint operations center (JOC) responsible for a specific zone in Algeria.<sup>35</sup> The overall commander received information about operations within each of these zones, but the JOCs managed the day-to-day operational mission of each force, thus allowing for decentralized execution of operations in a fluid battlespace.

Of primary concern to the ground force was air cover for convoy operations as well as force movement and fire support. Convoy-escort aircraft would often stage from rough forward-operating fields, or even roadways, to support the column or conduct reconnaissance ahead of the force, using firepower as necessary.<sup>36</sup> Helicopter assets provided logistics and fire support, covered by slow-moving T-6 or A-4 aircraft. Mobile command posts facilitated close coordination between the army and air force during planned or contingency operations; these posts reported to the area JOC to keep the overall command structure informed and to "lease" additional assets as required.<sup>37</sup> Thanks to the particular organizational structure of the armed forces, the air force could react quickly, often within 30 minutes or less, to support the army against a highly mobile enemy who knew the terrain.

**Summary of Operations.** Although the French granted Algerians their independence in 1962, the military side of the war proved successful and validated the French counterinsurgency effort with respect to air integration. The use of “low technology” aircraft, coupled with the first use of helicopter gunships, gave the French army a decided advantage against the ALN. Through the adaptation of new technology in helicopter gunships, the use of rugged fixed-wing aircraft, and close coordination with the ground component, the French demonstrated the key importance of airpower to counterinsurgent operations. According to one study conducted soon after the war, “counterinsurgency is by nature a ground effort . . . but in this instance it was a ground effort in which airpower was the equalizer.”<sup>38</sup>

### **The US Experience in Vietnam**

Following the French defeat at Dien Bien Phu in 1954, Vietnam split into a Communist north and non-Communist south. By 1959 Communist leader Ho Chi Minh was ready to “liberate the south and re-unify the country.”<sup>39</sup> The ensuing campaign took the form of an armed struggle between insurgent Communist forces—the Vietcong—and the fledgling military of the south. The United States had established a presence in the country as early as 1950 to aid the French during their struggle. When President Kennedy came to office in 1960, he pledged to assist any nation in a struggle against Communist aggression by supplying aid and, in South Vietnam as in other places, military advisers.

The insurgency in the south had worsened by late 1960, with assassinations and terror campaigns conducted by the Vietcong destabilizing the already weak and corrupt US-sponsored government. Although US military advisers had provided training and some aircraft (initial deliveries of Navy AD6 aircraft began in 1958), the main challenge to Saigon came not from regular armies but guerrillas.<sup>40</sup> In response, President Kennedy’s counterinsurgency plan for Vietnam, developed in late 1960, sought to increase US involvement with more troops and Airmen to perform such missions as aerial reconnaissance and airlift, neither of which the South Vietnamese air force (VNAF) could conduct.<sup>41</sup> This move, part

of the president's overall counterinsurgency strategy, led to the introduction of the Farmgate group.

**The Guerrilla War and Airpower.** As part of the counterinsurgency strategy sponsored by the Kennedy administration, the Farmgate project originated at Eglin AFB, Florida, to “train the Vietnamese in counterinsurgency and develop/confirm tactics and techniques for counterinsurgency operations” using aircraft primarily.<sup>42</sup> The training advisers from Farmgate deployed to Southeast Asia with a contingent of T-28s and B-26s to conduct CAS and armed reconnaissance operations. In 1961 the VNAF's inventory consisted of Navy AD6s (redesignated A-1s) and F-8Fs, with a small contingent of L-19 spotter aircraft and helicopters—all of them in fair to poor condition.<sup>43</sup> Farmgate sought to develop this force into one capable of defeating the insurgents within the confines of South Vietnam by training pilots and flying operational missions with them.

Many of the missions conducted by the US advisers alongside their VNAF brethren ranged from CAS of US “irregular forces and advisors and their indigenous South Vietnamese forces” to aerial resupply and convoy or helicopter escort. “Their tactics call for operations from simple airstrips in remote areas with low and slow flying aircraft. They train to perform low-level bombing and reconnaissance missions to flush out fleeing and concealed targets in the jungle, to air drop or land troops, and conduct psychological warfare.”<sup>44</sup> Given the rough terrain and limited forces involved at the outset of the war, the aircraft in use proved themselves quite capable of performing the counterinsurgent mission. While the remainder of the conventional US Air Force developed new jet aircraft and focused on a nuclear-delivery mission, the Farmgate advisers and the VNAF continued a campaign of aerial counterinsurgency against an enemy who was becoming increasingly adept at his craft and more competent at defeating aerial threats.

**Aircraft and Outcomes of the Vietnam War.** The T-28 and A-1 aircraft proved themselves reliable machines in this environment, with excellent rough-field capabilities and ease of flight. Long loiter times, the ability to carry a variety of stores, and .30-caliber guns made these tough aircraft indispensable during the close-in fighting that characterized the war. The North Vietnamese had respectable anti-aircraft capability as early as 1953, but the United States and VNAF did not become

concerned with losses inflicted by the north on their aircraft until 1963, at which time they withdrew the T-28 from service.<sup>45</sup> This move left the VNAF with the A-1 as its primary fighter for performing a multitude of roles in a rapidly escalating conflict. Attacks by insurgents against US forces in 1963 led Pres. Lyndon B. Johnson to authorize direct attacks against the north, ushering in a new phase of the war.<sup>46</sup>



USAF photo

#### **A-1E Skyraiders over South Vietnam, 1965**

In January 1964, the Joint Chiefs of Staff ordered the initiation of “bolder actions” in response to the deteriorating political and military state of affairs in South Vietnam, effectively taking the war away from the South Vietnamese. In August 1964, following attacks against the USS *Turner Joy* and USS *Maddox* in the Gulf of Tonkin, President Johnson signed a resolution to move additional Army and Air Force personnel and equipment into Southeast Asia, including frontline fighters like the F-102, F-100, and F-105.<sup>47</sup> This action offered relief to the Farmgate crews, whose equipment was wearing out and whose time in the air had more than doubled from the previous year. From that point on, the Air Force used the A-1 in a support role as an excellent escort asset for search-and-recovery missions and to provide CAS in areas of South Vietnam where the threat was not so high. The political situation became dire in 1965, prompting John-

son to increase US commitment in South Vietnam yet again by ordering a massive bombing campaign (Rolling Thunder) to “stave off communist victory,” thus ending the counterinsurgency effort and airpower’s role in it.<sup>48</sup>

As we have seen, the French in Algeria developed their tactics from experiences in Indochina, using readily available aircraft rather than limited numbers of strategic (high-tech) aircraft. Similarly, the United States used its experience in aiding the French in Indochina to prepare for counterinsurgent operations against the Communists; like France, it favored lower-tech aircraft, leaving the jets at home until 1964–65, when escalation made the war more conventional. Both countries entered these wars fighting a guerrilla army and modified their approach to warfare accordingly. Both realized early on that airpower in support of ground operations would prove decisive. Examining the types and roles of the aircraft that they used presents us with a wealth of knowledge that we may find invaluable for today’s counterinsurgency operations.

## **Airpower and Fighting a Modern Counterinsurgency**

*He who understands how to use both large and small forces  
will be victorious.*

—Sun Tzu

Modern warfare, both conventional and irregular, has featured the aircraft as a primary tool for the ground force. From aerial reconnaissance to logistics support to fire support, the aircraft has often made the difference between military defeat and victory. Yet, few wars have been waged without “boots on the ground.” Small wars are no different. Advances in aircraft engines, avionics, and firepower have revolutionized the conduct of war. Nevertheless, the ground commander still must move forces from one point on the battlefield to another. Both rotary- and fixed-wing aircraft often aid the ground-force commander in protecting convoys as well as providing fire support and reconnaissance when needed. The case studies illustrate the necessity of air support in defeating insurgent factions. France and the United States used similar types of support and aircraft—with good reason. These tough aircraft, driven

by reciprocating engines, supported forces on the move with economy, durability, and skill.

Now we turn to the specific missions required of these aircraft and the type of technology and doctrine that makes a viable counterinsurgent air platform. Even while the US Air Force awaits its new, expensive multirole fighters—the F-22A Raptor and F-35 Joint Strike Fighter—operations today and for the foreseeable future call for a different platform: an aircraft designed to fight the small war. As Frank Jones, professor and former staff officer for the secretary of defense, observes, “Even superpowers can lose asymmetric wars. . . . The ideal response to such conflicts requires preparing for engagements despite technological advantages.”<sup>49</sup>

### **The Low-Tech Aviation Solution**

Militaries have sought an aviation solution to counterinsurgent warfare for decades. The Marines used air cover and escort extensively in Nicaragua in the 1920s and 1930s, and the basic concept has not changed: “flying overhead, covering aircraft reconnoiter ahead of the ground forces and prevent ambushes as well as provide air-delivered ordnance on short notice.”<sup>50</sup> Commenting on how best to conduct such missions in small wars, James Corum and Wray Johnson point out that “in many cases a low-tech approach has proven to be a highly useful and cost-effective means of employing airpower in counterinsurgency and counterterrorism operations.”<sup>51</sup> The aircraft that figured most prominently in these two conflicts, as well as others, was the A-1 Skyraider.

Many studies discussed the type of aircraft that should replace the A-1 during and after the Vietnam War. After all, this World War II-vintage aircraft seemed out of place in the new jet-age Air Force.<sup>52</sup> But the A-1 did have its strong points. In both Vietnam and Algeria, the A-1 flew interdiction and CAS: “The A-1 had by far its greatest value in the unconventional warfare being conducted in Vietnam. It was the large load carrying capability together with its unique loiter capability that could be best utilized in the relatively safe anti-aircraft environment.”<sup>53</sup>

Furthermore, its relatively low cost offered an appealing alternative to the questionable economy of using jet aircraft to attack low-value ground targets.<sup>54</sup> A tough aircraft able to

absorb ground fire and continue its mission, the A-1 could land in outlying, rough airstrips—as the French did time and again during their campaign. Finally, the aircraft’s low speed not only gave it excellent observation characteristics but also prevented the A-1 from “outrunning” its charges, whether helicopters or ground convoys. Along these same lines, aircraft flying this type of mission needed to fly low and slowly since “aerial reconnaissance and surveillance of the guerrilla operating area is most effective when conducted at low altitude (below 1500’) and at low speed (under 125 knots).”<sup>55</sup> Given these features and unique employment concepts, the A-1 and its low-technology brethren made a name for themselves in small wars.

### **The New Skyraider**

France and the United States used low-tech aircraft out of necessity in their small wars, realizing that the answer to this type of conflict lay not in expensive jet aircraft but in easily operated, maintained, and replaced airframes that served multiple roles on and off the battlefield. For the French, the plentiful T-6s and A4Ds (A-1s) presented an economically sound choice to outfit their post-World War II air force, whose jet aircraft would defend against possible Soviet advances in Europe. Very in tune to the type of conflict in which they engaged, the French used these assets quite effectively. Recognizing the T-28 and A-1 as effective, cheap fire-support platforms useful in training an indigenous VNAF to defend itself, the Americans favored them over newer, frontline jet fighters. As one study put it, “The A-1 is sophisticated in another way; it is designed to match its operating environment as a classroom for pilots of friendly, underdeveloped nations, could carry lots of different bombs, and had a short take-off and landing capability.”<sup>56</sup>

From the Philippines to Malaya to Algeria to Vietnam, low-technology-based aircraft proved their worth in conflicts in which the counterinsurgent engaged a guerrilla enemy with less than a total military or political effort. Today, the United States has high stakes, politically and militarily, in the war on terror and gives priority to protection of its troops. Yet, US assets that would typically protect them from the air are not designed to do so in this type of environment. Indeed, “more and more emphasis [was] placed on massive, complex weapon

systems, leaving much to be desired in the aircraft especially designed to meet the needs of future limited conflicts.”<sup>57</sup>

Such aircraft should have the following characteristics: (1) off-the-shelf technology, (2) long range and loiter capability, (3) short takeoff and landing (STOL) capability, (4) ability to operate from austere airfields, (5) diverse weapons-carrying capability, (6) good navigation and fire-control systems, (7) good pilot visibility, (8) speed and maneuverability at low-to-medium altitudes, and (9) ability to absorb ground fire with a high degree of survivability. Of especial importance, the aircraft should be inexpensive and suited to the type of support expected of it. As a corollary, it should lend itself well to training pilots from “lesser-developed” nations that will eventually assume responsibility for internal security against insurgent factions once the United States ends its involvement and these countries become self-governing.

With regard to *off-the-shelf technology*, the French went to war in Algeria using readily available aircraft since their limited jet inventory was engaged in Europe. For a nation trying to come out from under the financial effects of a major war, these cheap platforms proved more than adequate. The United States was similarly justified in supplying Farmgate with surplus machinery that suited the nature of the war, both militarily and politically. Today, the costs of developing and producing high-tech aircraft with stealth and speed have become onerous to the US treasury. When the United States fights small wars, it needs to keep costs low—in terms of both life and treasure—in order to maintain public support. By adapting an aircraft already in production or by making it specifically suited to the intended low-tech task, an aviation solution will find its way to the battlefield quickly and in suitable numbers.

*Long range/loiter capability, STOL, and rough-field operating characteristics* also became important factors in Algeria and Vietnam with regard to terrain and the nature of the conflicts. The desert and jungle environments, coupled with a need for immediate support to troops on the move, required that these aircraft be readily available to the ground commander and be sufficiently rugged since they would often stage at forward locations, bereft of the high-tech support equipment needed by newer jet aircraft and served only by short, rough “runways.” Like the French aircraft in Algeria,

the new Skyraiders need to stage close to the convoy or force they will protect so they can provide rapid response and continuous cover.

The aircraft mentioned in both case studies reflected World War II design. However, as the conflict in Southeast Asia became more intense, the manufacturers enhanced their *weapons-carrying* capability and delivery systems. Rocket pods, bomb racks, and infrared tracking devices improved the CAS proficiency of the A-1 as the war progressed. Today, engineers can modify an aircraft of commercial or military design with sophisticated *navigation and fire control* so it can deliver anything from munitions guided by the global positioning system to heavy cannon fire or cluster munitions with relative ease. In this sense, low tech does not necessarily apply to avionics and weapons.

Timely response to an insurgent attack depends upon the aircraft's ability to maneuver away from threats and permit *good pilot visibility* of the often small, fleeting insurgent target. Jet aircraft can respond to any situation quickly but often cannot "see" the target in jungle or restrictive terrain. According to one study, although the threat environment of Vietnam proved too great for aircraft such as the A-1 to operate close to regular units, it could escort rescue forces effectively because it was fast (more so than helicopters) but not so fast that it would outrun the forces it escorted or prevent the pilot from seeing enemy forces in the jungle.<sup>58</sup> Thus, *speed and maneuverability* can only aid a propeller-driven aircraft in defense missions.

Just as the counterinsurgent theater of operations has matured since the end of the Vietnam War, so must aircraft that use current defensive technology. As Gen Eugene M. Zuckert, former secretary of the Air Force, stated with regard to the A-1, "[Its] effectiveness was apparent in the counterinsurgent environment while the problem was not air superiority but an elusive enemy."<sup>59</sup> Unlike the US experience in the latter half of the Vietnam War, the United States now usually enjoys air superiority in areas where insurgents operate. The problem in Vietnam lay in the proliferation of man-portable missiles and light arms. Today's defensive measures can more than meet the challenge presented by this threat; in fact, propeller-driven aircraft have smaller heat signatures for the type of infrared homing mis-

siles that insurgents might employ. In addition, avionics solutions can update the natural defenses of such aircraft to allow them to become more *survivable* in this type of environment. Hence, an aircraft such as the newly fielded T-6 Texan II, or something similar, might be a good start.



USAF photo

#### **T-6A Texan II**

Raytheon Aircraft Corporation has rejuvenated the T-6's heritage in its latest aircraft design for the US Undergraduate Pilot Training program. Although a detailed analysis of aircraft performance and design lies beyond the scope of this paper, this aircraft offers a good example of the type of off-the-shelf platform that could undergo modification to perform today's counterinsurgent mission. Its performance resembles that of the A-1 in terms of maneuverability, speed (maximum of 320 miles per hour [mph]), and range (900 miles without external tanks).<sup>60</sup> Both the A-1 and T-6A boast excellent pilot visibility and ease of handling. Employment as a combat platform would require modifications, but the aircraft's basic performance makes it a viable alternative to the fast-moving, expensive jet aircraft that now dominate our inventory. As James Donovan notes, the "A-1's adaptability to operations in underdeveloped areas was the primary reason it was used rather than faster, more modern jet aircraft."<sup>61</sup>

#### **Doctrine for Employment**

One can liken aviation support in small wars to artillery in Callwell's era because its "primary duty . . . in warfare is

to ensure that it is on hand and well to the front.”<sup>62</sup> That is, propeller-driven aircraft or any aircraft capable of serving as a slow, stable fire-support or reconnaissance platform must be immediately available for usually violent but short-lived guerrilla engagements. The French in Algeria made use of forward-operating locations, often along the route of march, to rearm and refuel their aircraft so that a convoy would always have access to some form of on-hand air support.<sup>63</sup>

The tactical air control system employed by the French assured that their air assets stayed in proximity to and worked closely with the units they supported. The tactical air command maintained centralized control to some extent, but execution remained extremely decentralized, allowing the ground commander to adjust to mission needs and keep aviation support on hand. Similarly, in Vietnam the VNAF and US JOC maintained overall situational awareness of the battlespace. However, this primitive system, combined with the slow cruising speed of the T-28 and A-1, forced us to adopt more proactive air-cover schemes to facilitate immediate response to the needs of the ground-force commander.<sup>64</sup> Because the United States had built a system too unwieldy to handle a rapidly changing environment, as the air war got larger and more air assets poured into the theater, the system broke down.

### **Putting It All Together**

As we have seen previously, the aircraft type alone does not dictate the successful use of airpower in counterinsurgencies. Ground commanders must have access to the asset where and when they need it. Jerome Klingaman comments that

the history of aircraft operations in counter guerrilla warfare . . . suggests the following considerations and recommendations. . . . Given a reasonable STOL capability, light armed surveillance aircraft should be attached to and deploy with small ground combat units. Fixed-base operations from large built-up facilities outside the combat area should be avoided. Aircraft should be immediately available to the ground force commander as assigned or attached resources of the counter guerrilla attack or reconnaissance unit. When the unit moves, the aircraft moves with it.<sup>65</sup>

Although this passage refers to reconnaissance aircraft, the principle holds true for close-support aircraft as well. The French tied air operations directly to the ground commander by working fire-support issues directly through a JOC, but they went one step farther by placing those assets

directly with the units they supported, allowing for close coordination of movement and fires.

The struggle to stabilize nations riddled with insurgent or terrorist factions will occupy US armed forces for the foreseeable future. To protect our ground forces on the move, either traveling in convoys or conducting direct attack, we must return to simpler times with regard to aviation support assets. Fast-moving jet aircraft operating at high altitudes and awaiting support requests are not as immediately responsive to the ground commander as relatively slow propeller aircraft operating at lower altitudes and working immediately over the column, ready to provide intelligence or fires on command. Missions that take up so much of the air components' time today in Iraq involve reconnaissance/surveillance of thoroughfares and pipelines and spending time in the "CAS stack" waiting for on-call fire missions.<sup>66</sup> To use these assets, the ground commander must call back to a centralized control center.

With regard to operations against insurgents, we must loosen the focus on centralized control of air assets. Having stacks of jet aircraft orbiting in a central location offers some form of flexibility. However, this solution is an expensive way to utilize frontline aircraft that may or may not have the loiter time and responsiveness to press the attack when the enemy ambushes a convoy. Regular, face-to-face contact between pilots and the troops they support is invaluable and can work only when the two are colocated and part of the same "fight." When fighting enemies who "[prowl] about waiting for their opportunity to pounce upon small parties,"<sup>67</sup> we must have aircraft waiting for them.

## **Summary**

*The employment of aviation in small wars is characterized by the operation of many small units, two or three plane patrols, over a wide area.*

—US Marine Corps, *Small Wars Manual*, 1940

There is nothing new about supporting the ground force in a dangerous guerrilla environment. Many people have written on the subject and continue to do so because of the current global war on terrorism. Insurgents, few in number,

fight with asymmetric weapons. Often, this type of fight is merely a nuisance to a larger, more heavily armed force, but to a convoy trying to reach its destination and avoid enemy contact, it becomes something entirely different. As the 3d Armored Cavalry Regiment learned in Iraq, “Much of the combat [now] hits rear-echelon soldiers rather than front-line troops. . . . Supply experts and truck drivers, who expected to be comparably safe, [are] more likely to face attack than more heavily armored soldiers in tanks and trenches.”<sup>68</sup> Air support from a force tailored for this type of combat in terms of both equipment and doctrine will prove decisive in the war we wage today.

### Notes

(All notes appear in shortened form. For full details, see the appropriate entry in the bibliography.)

1. Yarborough, “Counterinsurgency,” 103–4.
2. Klonis, *Guerrilla Warfare*, 5.
3. Russian General Staff, *Soviet-Afghan War*, 306–7. This war was fought between Soviet regulars aided by the Afghan National Army as well as religiously and nationalistically motivated rebels for nearly a decade. The terrain and nature of the war led the Soviets to adopt a garrison strategy—a departure from their traditional form of mobile combat. The principal forms of fighting adopted by the Soviets included the raid, block and sweep, ambush, and actions connected with convoy escort or security since the mujahideen did not engage in groups of more than five to 20 fighters and avoided direct confrontation.
4. Metz and Millen, *Insurgency and Counterinsurgency*, 1.
5. Yousaf, *Bear Trap*, 178–81.
6. Clausewitz, *On War*, 481.
7. Metz and Millen, *Insurgency and Counterinsurgency*, 6.
8. Danilowicz, “Fish out of Water,” 5.
9. Metz and Millen, *Insurgency and Counterinsurgency*, 10.
10. Callwell, *Small Wars*, 91.
11. Clausewitz, *On War*, 481.
12. Metz and Millen, *Insurgency and Counterinsurgency*, 22.
13. Lawrence, “Guerrilla Warfare,” 883.
14. Jones, “Army SOF in Afghanistan,” 18.
15. Bryce, “Gas Pains,” 34–35.
16. *Ibid.*, 35.
17. Gen John W. Handy as quoted in Hebert, “Headwinds for the Air Force,” 53.
18. Callwell, *Small Wars*, 475.
19. US Army Field Manual (FM) 3-90, *Tactics*, E-38.
20. US Marine Corps, *Small Wars Manual*, 228.

21. Bliesener et al., "New and Unique Demands," 29.
22. Graham, "Over Iraq."
23. Glanz and Shanker, "Iraq Study."
24. Roeder, "US Soldiers, Iraqis Changed," 1, sec. A.
25. "Insurgent Attacks."
26. Flintham, *Air Wars and Aircraft*, 79.
27. Melnik, *French Campaign*, 8.
28. Flintham, *Air Wars and Aircraft*, 81.
29. Christienne and Lissarague, *French Military Aviation*, 428.
30. Aerospace Studies Institute, "Guerrilla Warfare," 39.
31. *Ibid.*, 40.
32. *Ibid.*, 62.
33. Flintham, *Air Wars and Aircraft*, 81.
34. Aerospace Studies Institute, "Guerrilla Warfare," 40.
35. *Ibid.*, 41.
36. Christienne and Lissarague, *French Military Aviation*, 430.
37. Aerospace Studies Institute, "Guerrilla Warfare," 43.
38. *Ibid.*, 92.
39. Boot, *Savage Wars of Peace*, 287.
40. *Ibid.*, 288.
41. Napier, "Air Commandos in Vietnam," 67.
42. Farmgate was a training cover for a covert mission supporting the VNAF against the Vietcong. Message, TSC-PFOCC-S 61-170.
43. Doucette, "US Air Force Lessons," 19.
44. As quoted in Napier, "Air Commandos in Vietnam," 104.
45. Corum and Johnson, *Airpower in Small Wars*, 263.
46. *Ibid.*, 265. The A-1 had the following specifications: Wright R-3350-26B 2,800-horsepower radial piston engine; empty weight of 10,550 pounds; maximum takeoff weight of 25,000 pounds; wingspan of 50 feet, nine inches; length of 38 feet, 10 inches; height of 15 feet, 8.25 inches; maximum speed of 320 mph at 18,000 feet; cruising speed of 190 mph at 6,000 feet; ceiling of 25,500 feet; range of 900 miles; and armament of four 20 mm cannons as well as 8,000 pounds of hard-point-mounted free-fall and/or forward-firing weapons. "Douglas A-1 Skyraider."
47. Corum and Johnson, *Airpower in Small Wars*, 266.
48. *Ibid.*, 267.
49. Jones, "Army SOF in Afghanistan," 21.
50. Corum and Johnson, *Airpower in Small Wars*, 261.
51. *Ibid.*, 431.
52. Mutza, *A-1 Skyraider in Vietnam*, 16.
53. Donovan, "A1 Aircraft in Southeast Asia," 6.
54. *Ibid.*, 10.
55. Drew, "Air Theory, Air Force," 341. Professor Drew refers to the need to include additional crew members to enhance observation in difficult terrain—a point made by Jerome Klingaman and other writers who have discussed types of airpower constructs for low intensity conflict.
56. Johanson, "Counterinsurgency in the USAF Today," 18–19.
57. Bliesener et al., "New and Unique Demands," 10.
58. Newton, "Armed Escort," 50.
59. Donovan, "A1 Aircraft in Southeast Asia," 6–7.

60. The T-6A Texas II entry-level trainer has the following specifications: Pratt and Whitney 1,100-horsepower Canada PT6A-68 turboprop engine; standard basic empty weight of 6,500 pounds; wingspan of 33.5 feet; length of 33.4 feet; height of 10.7 feet; maximum speed of 320 mph; ceiling of 31,000 feet; range of 900 nautical miles; crew of two; and no armament. "T-6A Texan II."

61. Donovan, "A1 Aircraft in Southeast Asia," 7.

62. Callwell, *Small Wars*, 433.

63. Christienne and Lissarague, *French Military Aviation*, 464.

64. Corum and Johnson, *Airpower in Small Wars*, 261.

65. Klingaman, "Light Aircraft Technology," 129.

66. Graham, "Over Iraq."

67. Callwell, *Small Wars*, 125.

68. Roeder, "US Soldiers, Iraqis Changed," 1, sec. A.

## **Bibliography**

- Aerospace Studies Institute. "Guerrilla Warfare and Airpower in Algeria, 1954–1960." Maxwell AFB, AL: Aerospace Studies Institute, Air University, 1965.
- Axley, Maj John H. "The Employment of Tactical Airpower in Limited War." Thesis no. 0075-67. Maxwell AFB, AL: Air Command and Staff College, 1967.
- Bateman, Capt Vance C. "The Role of Tactical Air Power in Low-Intensity Conflict." *Airpower Journal* 5, no. 1 (Spring 1991): 72–80.
- Bliesener, Cdr Arthur B., James J. Brockmyer, Roland A. Dion, Thomas B. Krieger, Kenneth R. Lindow, Dan D. Oxley, Edward E. Riley, Warren C. Shipp, Delbert E. Smith, and David O. Williams. "The New and Unique Demands of Protracted Limited Combat of Attack Aircraft Design, 1967–1976." Professional Study no. 3231. Maxwell AFB, AL: Air War College, 1966.
- Boot, Max. *The Savage Wars of Peace: Small Wars and the Rise of American Power*. New York: Basic Books, 2002.
- Bryce, Robert. "Gas Pains." *Atlantic Monthly*, May 2005, 34–35.
- Business Week*, 8 September 1962, 167–68.
- Callwell, Col C. E. *Small Wars: Their Principles and Practice*. 3d ed. Lincoln: University of Nebraska Press, 1996.
- Cassidy, Robert M. "Back to the Street without Joy: Counterinsurgency Lessons from Vietnam and Other Small Wars." *Parameters* 34, no. 2 (Summer 2004): 73–83.
- Christienne, Charles, and Pierre Lissarague. *French Military Aviation*. Translated by Frances Kianka. Washington, DC: Smithsonian Institution Press, 1986.
- Ciment, James. *Algeria: The Fundamentalist Challenge*. New York: Facts on File, 1997.
- Clausewitz, Carl von. *On War*. Edited and translated by Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press, 1976.
- Clayton, Anthony. *The Wars of French Decolonialization*. London: Longman, 1994.
- Corum, James S., and Wray R. Johnson. *Airpower in Small Wars: Fighting Insurgents and Terrorists*. Lawrence: University Press of Kansas, 2003.

- Danilowicz, Jon F. "Fish out of Water: Applying Counterinsurgency Doctrine in the War on Terrorism." Master's thesis, Naval War College, 2003.
- Donovan, Capt James A. "The A1 Aircraft in Southeast Asia." Professional Study no. 4108. Maxwell AFB, AL: Air University, November 1970.
- Doucette, Maj John W. "US Air Force Lessons in Counterinsurgency: Exposing Voids in Doctrinal Guidance." Master's thesis, School of Advanced Airpower Studies, 1999.
- "Douglas A-1 Skyraider." *Warbird Alley*. <http://www.warbirdalley.com/a1.htm>.
- Drew, Prof. Dennis M. "Air Theory, Air Force, and Low Intensity Conflict: A Short Journey to Confusion." In *The Paths of Heaven: The Evolution of Airpower Theory*. Edited by Col Phillip S. Melinger. Maxwell AFB, AL: Air University Press, 1997.
- Fadok, Lt Col David S. "John Boyd and John Warden: Airpower's Quest for Strategic Paralysis." In *The Paths of Heaven: The Evolution of Airpower Theory*. Edited by Col Phillip S. Melinger. Maxwell AFB, AL: Air University Press, 1997.
- Flintham, Victor. *Air Wars and Aircraft: A Detailed Record of Air Combat, 1945 to the Present*. New York: Facts on File, 1990.
- Francis, Maj William W., II. "Coercive Air Strategy in Post-Cold War Peace Operations." Master's thesis, School of Advanced Airpower Studies, 1999.
- Glanz, James, and Tom Shanker. "Iraq Study Sees Rebels' Attacks as Widespread." *New York Times*, 29 September 2004.
- Graham, Bradley. "Over Iraq, Pilots Fly into Action When Troops Call for Help." *Washington Post*, 19 December 2004.
- Grau, Lt Col Lester W. "Guerrillas, Terrorists, and Intelligence Analysis." *Military Review*, July–August 2004, 42–49.
- Grischkowsky, Lt Col Edgar R. "A Replacement Aircraft for the A-1 in the Air Rescue Escort Mission." Professional Study no. 4938. Maxwell AFB, AL: Air War College, 1973.
- Hebert, Adam J. "Headwinds for the Air Force." *Air Force Magazine* 88, no. 4 (April 2005): 30–36.

- Hoffman, Bruce. *Re-Thinking Terrorism in Light of a War on Terrorism*. RAND Report CT-182. Santa Monica, CA: RAND Corporation, 2001.
- Hoffman, Maj Patricia D. "Seeking Shadows in the Sky: The Strategy of Air Guerrilla Warfare." Master's thesis, School of Advanced Airpower Studies, 2000.
- "Insurgent Attacks on US Convoys in Iraq." Cable News Network, 15 December 2004.
- Johanson, Capt Clayton J. "Counterinsurgency in the USAF Today: Development of a Tactical Aircraft for COIN." Air University Aerospace Power Study. Maxwell AFB, AL, 30 March 1964.
- Jones, Frank L. "Army SOF in Afghanistan: Learning the Right Lessons." *Joint Forces Quarterly*, Winter 2003–2004, 16–22.
- Klingaman, Jerome W. "Light Aircraft Technology for Small Wars." In *Low-Intensity Conflict and Modern Technology*. Edited by Lt Col David J. Dean. Maxwell AFB, AL: Air University Press, 1986.
- Klonis, N. I. *Guerrilla Warfare: Analysis and Projections*. New York: Robert Speller and Sons, 1972.
- Lambeth, Benjamin S. *Technology Trends in Air Warfare*. RAND Report RP-561. Santa Monica, CA: RAND Corporation, 1996.
- Lawrence, T. E. "Guerrilla Warfare." In *The Art of War in World History: From Antiquity to the Nuclear Age*. Edited by Gérard Chaliand. Berkeley, CA: University of California Press, 1994.
- Melnik, Constantin. *The French Campaign against the FLN*. RAND Report RM-5449-ISA. Santa Monica, CA: RAND Corporation, 1967.
- Message. TSC-PFOCC-S 61-170. Commander, PACAF. To commander, Thirteenth Air Force, 4 December 1961.
- Metz, Steven, and Raymond Millen. *Insurgency and Counterinsurgency in the 21st Century: Reconceptualizing Threat and Response*. Carlisle Barracks, PA: Strategic Studies Institute, 2004.
- Mutza, Wayne. *The A-1 Skyraider in Vietnam: The Spad's Last War*. Atglen, PA: Shiffer Military History, 2003.
- Napier, John Hawkins, III. "The Air Commandos in Vietnam." Master's thesis, Auburn University, 1967.

- Naylor, Phillip C. *France and Algeria: A History of Decolonization and Transformation*. Gainesville, FL: University Press of Florida, 2000.
- Newton, Maj Richard D. "Armed Escort for Special Air Operations—An Operational Concept." Master's thesis, US Army Command and Staff College, 1990.
- Office of Force Transformation. *Military Transformation: A Strategic Approach*. Washington, DC: Director, Force Transformation, Office of the Secretary of Defense, 2003.
- Peterson, A. H. *The Role of Airpower in Providing Tactical Mobility in Past COIN Operations*. RAND Report P-2968. Santa Monica, CA: RAND Corporation, 1964.
- Peterson, A. H., G. C. Reinhardt, and E. E. Conger. *Symposium on the Role of Airpower in Counterinsurgency and Unconventional Warfare: A Brief Summary of Viewpoints*. RAND Report RM-3867-PR. Santa Monica, CA: RAND Corporation, 1964.
- Roeder, Tom. "US Soldiers, Iraqis Changed by Year of War, Occupation." *Gazette*, 14 March 2004.
- Russian General Staff. *The Soviet-Afghan War: How a Superpower Fought and Lost*. Translated and edited by Lester W. Grau and Michael A. Gress. Lawrence: University Press of Kansas, 2002.
- Scales, Robert H., Jr. *Firepower in Limited War*. Washington, DC: National Defense University Press, 1990.
- Sun Tzu. *The Art of War*. Translated by Samuel B. Griffith. Oxford: Clarendon Press, 1963.
- "T-6A Texan II." *Air Force Link*. <http://www.af.mil/factsheets/factsheet.asp?fsID=124>.
- US Army Field Manual (FM) 3-90. *Tactics*, July 2001. <http://www.globalsecurity.org/military/library/policy/army/fm/3-90>.
- US Marine Corps. *Small Wars Manual*, 1940. <http://www.au.af.mil/au/awc/awcgate/swm>.
- Yarborough, William P. "Counterinsurgency: The US Role—Past, Present, and Future." In *Guerrilla Warfare and Counterinsurgency: U.S.-Soviet Policy in the Third World*. Edited by Richard H. Shultz Jr. Lexington, MA: Lexington Books, 1989.
- Yousaf, Mohammad. *The Bear Trap: Afghanistan's Untold Story*. London: Leo Cooper, 1992.