

AIR WAR COLLEGE

AIR UNIVERSITY

FROM THE UNDERGROUND TO THE HIGH GROUND:

THE INSURGENT USE OF AIRPOWER

by

John G. Bunnell, Lt Col, USAF

A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

16 February 2011

Distribution A: Approved for public release; distribution unlimited.

## **DISCLAIMER**

The views expressed in this academic research paper are those of the author and do not reflect the official policy or position of the US government or the Department of Defense. In accordance with Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States government.

# Contents

Disclaimer.....	i
Contents.....	ii
Biography.....	iii
Introduction.....	1
The Tamil Tigers Air Wing.....	2
The Taliban.....	6
Brothers to the Rescue (Hermanos al Rescate).....	9
Hezbollah.....	12
Analysis and Recommendations.....	14
Conclusion.....	18
Bibliography.....	19

## **Biography**

Lt. Col. John G. Bunnell is a student at Air War College. Prior to Air University, Lt. Col. Bunnell served as an F-15E weapons systems officer in the Continental United States and Europe. During five tours flying the F-15E, he accumulated more than 3,000 hours of flying time, participating in operations over the Balkans, Iraq, and Afghanistan. Most recently, Lt. Col. Bunnell commanded the 494th Fighter Squadron at RAF Lakenheath, England. In addition to flying assignments, Lt Col. Bunnell served as the Chief of Strategy for the 603rd Air and Space Operations Center and as the Deputy Chief of Air, Space, and Information Operations for Third Air Force. Lt Col Bunnell is a graduate of the USAF Weapons Instructor Course, the US Army Command and General Staff College, and the School of Advanced Air and Space Studies.

## Introduction

At approximately 8:00 PM on 20 February 2009, two Tamil Tiger Z-143s took off from a narrow road near Puthukkudiyirippu on a flight that would spread mayhem throughout the island of Sri Lanka. Approximately thirty minutes later, the aircraft were sighted by Sri Lankan Army personnel and shortly thereafter by the Air Force radar at Vavuniya. The Sri Lankan Air Force (SLAF) gave chase with one of the six F-7G jet interceptors that had been specifically procured for this purpose. The Tamil aircraft avoided interception at low altitude and flew past Bandaranaike International Airport. Supervisors at the airport cancelled three international flights, clearly mindful of the 2001 attack that destroyed eleven aircraft at the field. As the intruders neared the capital of Colombo, the government blacked out the city while anti-aircraft units initiated a furious barrage. The fire struck one of the aircraft, which subsequently crashed into the Inland Revenue Department building, setting the building on fire, killing two civilians, and injuring 58 more. The second aircraft turned back toward the international airport, but was also felled by the anti-aircraft batteries. When Sri Lankan military investigators arrived at the last crash site, they discovered that the Z-143 was packed with 215 kilograms of C-4 plastic explosives to be detonated in a suicide crash. This desperate raid was the last chapter of the Tamil Tiger Air Wing, which had plagued Sri Lankan counterinsurgency efforts for more than two years.<sup>1</sup>

Airpower has been a feature of low-intensity conflict since the beginning of manned flight. Predominantly, airpower has been the tool of the counterinsurgent. This stands to reason, as the government forces have the financial resources, diplomatic connections, secure areas, and large organizations to employ this advanced technology. In a surprising number of

---

<sup>1</sup> Asif Fuard, "Tigers go kamikaze but attacks fail" *The Sunday Times*, 22 February 2009, [http://www.sundaytimes.lk/090222/News/sundaytimesnews\\_02.html](http://www.sundaytimes.lk/090222/News/sundaytimesnews_02.html) (accessed 4 January 2011).

recent cases, however, airpower has been the tool of the insurgent. These have often been small operations that the insurgents cannot sustain over time. Nonetheless, insurgent air operations have almost always resulted in strategic effects far beyond the effort required to execute them. The counterinsurgent, however, can anticipate and negate the effects of insurgent airpower by understanding the preconditions required for its emergence and the effects the insurgent is likely to pursue.

This paper will analyze four recent conflicts in which the insurgent use of airpower was significant enough to capture international attention. The first of these was the Sri Lankan civil war, in which the Tamil Tiger Air Wing sustained operations in the face of a superior adversary for more than two years. The second case study is of the opportunistic but effective use of airpower by the Taliban as they wrestled to gain control of Afghanistan between 1994 and 2001. The third study will assess Brothers to the Rescue, a Cuban exile group that initially formed to rescue rafters in the Florida Straits but then gained international attention for its efforts to destabilize the Castro regime. The fourth and most recent case study involves Hezbollah's use of drones against Israel between 2004 and 2006. The final section of the paper will identify trends suggested by these case studies and make recommendations to defeat the "airpower of the flea."

### **Tamil Tigers Air Wing**

For two and a half years, the Liberation Tigers of Tamil Eelam (LTTE) employed an Air Wing that was a thorn in the side of the Sri Lankan government. This force was small and technologically unsophisticated. Nonetheless, the Air Tigers gradually matured in skill and effectiveness, serving as a strategic asset for the guerrilla movement until the very end.

The Tamil Tigers worked to develop an air capability throughout the last decade of their existence. The Tigers constructed airfields at Mullaitivu and Iranamadu in the late 1990s,<sup>2</sup> from which they operated microlights and a Robinson R-44 helicopter. Their Air Wing really got off the ground, however, in early 2005, when the Tigers received three Czech-built Zlin Z-143 light aircraft. These aircraft, broken down into containers, were smuggled from Jakarta, Indonesia to the Mullaitivu coast by Tamil vessels.<sup>3</sup> The aircraft were militarized, sporting camouflaged paint schemes and bomb racks under the wing. To these racks, the Tamil Tigers mated two types of indigenously produced bombs: one high explosive model with contact fusing and one antipersonnel version with an airburst mechanism.<sup>4</sup> The organization was headed by Colonel Vythialingam Sornalingam, who possessed a diploma in aeronautics from the Hindustan Engineering College in Tamil Nadu, India. The other air and ground crew were indigenous Tamils, who were given special uniforms and touted on the Tamil Tiger propaganda products.<sup>5</sup>

The Air Tigers began operations in 2006, initially conducting simple attacks against the Sri Lankan military. After an apparently unsuccessful August 2006 attack against the Sri Lankan artillery direction center at Palali, the Air Tigers finally drew blood with a bold attack against Katunayake Air Force Base on 26 March 2007. In doing so, the tiny organization bravely hurled their slow aircraft against the Kfir and MiG fighter bombers based there. Although the Air Tigers did not succeed in destroying any of the jets, they killed three and wounded sixteen Sri Lankan Air Force personnel.<sup>6</sup> The Air Tigers attacked the Palaly Security Force Headquarters

---

<sup>2</sup> Iqbal Athas, "CBK sets Sikurui on professional course," *The Sunday Times*, 1 November 1998, <http://sundaytimes.lk/981101/sitre.html> (accessed 4 January 2011).

<sup>3</sup> "How the LTTE got its planes and trained its pilots: Kadir warned Chandrika," *The Sunday Times*, 1 April 2007, <http://www.sundaytimes.lk/070401/News/101.2news.html> (accessed 4 January 2011).

<sup>4</sup> Iqbal Athas, "They came, they bombed, and they went away," *The Sunday Times*, 2 November 2008, <http://www.sundaytimes.lk/081102/Columns/sitre.html> (accessed 4 January 2011).

<sup>5</sup> Tamil Tigers show off air force," *Aljazeera*, 26 March 2007 (accessed 2 October 2010).

<sup>6</sup> "Air Tigers bomb Katunayake," *Tamil Guardian*, 29 March 2007, <http://tamilguardian.com/article.asp?articleid=1148> (accessed 4 January 2011).

on 24 April, killing six soldiers and injuring sixteen. Two nights later, the Air Tigers again attacked the Katunayake Air Force Base, although this time without inflicting casualties.<sup>7</sup>

After their initial month of simple tactical operations, the Air Wing greatly expanded the scope and complexity of their efforts during the last two attacks of 2007. On 29 April 2007, the Tigers began intermixing strategic and tactical attacks. On this date, the Air Tigers attacked the oil installations at Kolonnawa and the adjoining gas facility at Muthurajawela<sup>8</sup> as the nation was watching the Cricket World Cup Final. The shutdown of the electrical grid (executed by the government to establish a black-out) created chaos within the city.<sup>9</sup> The Air Tigers damaged two oil tanks<sup>10</sup> and a fire-fighting facility that required 75 million rupees (\$700,000) to repair.<sup>11</sup> In addition to targeting changes, the Air Tigers greatly increased the sophistication of their attacks. On 22 October 2007, the Air Tigers conducted a joint attack with Black Tiger suicide commandos who infiltrated Anuradhapura airfield on the ground. In what was to be the Air Wing's most successful attack, the joint force destroyed eight SLAF aircraft and damaged ten others.<sup>12</sup>

When they resumed operations in 2008, the Air Wing again conducted a mix of individual and joint attacks against tactical and strategic targets. On 27 April, the Air Tigers dropped three bombs on military installations and forward defense lines near Welioya and then successfully evaded an F-7G scrambled to intercept.<sup>13</sup> On 26 August 2008, the Air Tigers turned their attention to the Sri Lankan Navy, attacking the Eastern Area Headquarters at Trincomalee

---

<sup>7</sup> Athas, "They came, they bombed, and they went away."

<sup>8</sup> Athas, "They came, they bombed, and they went away."

<sup>9</sup> "Sri Lanka rebels in new air raid," *BBC News*, 29 April 2007, [http://news.bbc.co.uk/2/hi/south\\_asia/6604645.stm](http://news.bbc.co.uk/2/hi/south_asia/6604645.stm) (accessed 2 October 2010).

<sup>10</sup> Athas, "They came, they bombed, and they went away."

<sup>11</sup> "Sri Lanka rebels in new air raid."

<sup>12</sup> "LTTE commandos smash Anuradhapura airbase," *Tamil Guardian*, 24 October 2007, <http://www.tamilguardian.com/article.asp?articleid=1442> (accessed 4 January 2011).

<sup>13</sup> "LTTE drops 3 bombs in Welioya: no damages caused," Sri Lanka Ministry of Defense, 27 April 2008, [http://www.defence.lk/new.asp?fname=20080427\\_01](http://www.defence.lk/new.asp?fname=20080427_01) (accessed 2 October 2011).



and killing four sailors.<sup>14</sup> On 9 September 2008, the Air Tigers conducted their second joint air/ground attack, attempting to destroy the INDRA-II radar site at Vavuniya. In the attack, the Tamil ground and air forces killed eleven Sri Lankans and injured two Indian radar technicians.<sup>15</sup> Unfortunately for the Tigers, they took their first loss on this raid, as a Sri Lankan Air Force F-7G shot down one of the Z-143s as the LTTE aircraft returned to base.<sup>16</sup> The Air Tigers chose a more strategic target for their last raid of 2008. On 28 October, they conducted sequential attacks against the Army Area Headquarters at Thalladay and then against the capital of Colombo. In the latter attack, the Air Tigers damaged two of the turbines at the Kelanitissa power plant. Government officials characterized the damage as “not major,” but still predicted it would take six months to repair.<sup>17</sup> The final Air Tiger attack was the airborne suicide raid of 20 February 2009. Although the crash of the first aircraft caused great damage in the Inland Revenue building, the pilot missed what appears to have been his intended target, the SLAF headquarters building next door.<sup>18</sup>

During its lifespan, the Air Tigers touched on many of the missions expected of more developed air forces. Of the eleven raids, six were tactical attacks, two against counterland targets and four against counterair targets (airfields and radars). Eventually, however, strategic targets began to dominate operations. If one counts the attacks against the Army, Navy, and Air Force headquarters as strategic attacks, five of the Air Tigers missions were against national-level assets (headquarters, oil facilities, and electrical powerplants).

---

<sup>14</sup> Athas, “They came, they bombed and they went away.”

<sup>15</sup> Iqbal Athas, “Vavuniya attack: How it happened and why,” *The Sunday Times*, 14 September 2008, <http://sundaytimes.lk/080914/Columns/sitreport.html> (accessed 2 October 2010).

<sup>16</sup> “Heavy losses in Sri Lanka clash,” *BBC News*, 9 September 2008, [http://news.bbc.co.uk/2/hi/south\\_asia/7605498.stm](http://news.bbc.co.uk/2/hi/south_asia/7605498.stm) (accessed 4 January 2011).

<sup>17</sup> David Sabapathy, “Sri Lanka: Tamil Tiger air raid, slowly emerging details,” 30 October 2008, [http://www.tamilelamnews.com/news/publish/tns\\_10331.shtml](http://www.tamilelamnews.com/news/publish/tns_10331.shtml) (accessed 4 January 2011).

<sup>18</sup> Fuard.

The overall effects of this small air force were all out of proportion to the efforts made. Just in terms of loss rates, the Air Tigers eventually lost three Z-143s, but destroyed or damaged eighteen sophisticated SLAF aircraft. Admittedly, however, some of these losses were caused by the Black Tiger ground forces during the combined attacks. In terms of manpower, the Air Tigers and the Black Tiger commandos with which they conducted operations killed 42 and wounded 134 Sri Lankans. This compares to three Air Tiger pilots lost on the Vavuniya and Colombo raids and 31 Black Tigers killed on the Anuradhapura and Vavuniya combined operations. The Sri Lankan government suffered economic losses as well, including infrastructure damage in Colombo and the cancellation of air travel. Perhaps more importantly, the Air Tiger threat forced the Sri Lankan government to divert significant military resources to air defense. These funds paid for an improved radar network and six F-7G interceptors. In fact, the Sri Lankan Air Force had planned to purchase five improved MiG-29 interceptors,<sup>19</sup> only cancelling the order after the final collapse of the Tamil insurgency.<sup>20</sup> The most significant impact, however, was undoubtedly the propaganda victory the Air Tigers won by two years of operations in the face of sophisticated counterinsurgent forces.

## **The Taliban**

The Taliban swept into Afghanistan like a storm in 1994. The world's impression of this movement was that of a band of young, simple infantry who overcame their enemies through religious fervor. While this was largely true, the Taliban were also opportunistic enough to use whatever tools were available, including airpower.

---

<sup>19</sup> Jon Grevatt, "Sri Lanka nears MiG-29 purchase," *Jane's*, 14 March 2008, [http://www.janes.com/news/defence/jdw/jdw080314\\_1\\_n.shtml](http://www.janes.com/news/defence/jdw/jdw080314_1_n.shtml) (accessed 4 January 2011).

<sup>20</sup> Shamindra Ferdinando, "Plan to Acquire MiG-29 Dropped," *The Island News*, 6 July 2009, <http://www.island.lk/2009/07/06/news2.html> (accessed 4 January 2011).

The Taliban acquired their first aircraft when they captured Kandahar in the summer of 1994. When the city capitulated, the Taliban found six MiG-21 fighters and a number of helicopters on the airfield.<sup>21</sup> The Taliban expanded their collection in April 1995 with the capture of Shindand airfield near Herat. This airbase housed further fighters (apparently the ten Sukhoi SU-22s the Taliban eventually acquired)<sup>22</sup> and additional helicopters.<sup>23</sup> The Taliban had no internal capacity to make use of these assets. However, the Taliban were able to call on their strong state sponsor, Pakistan, for engineering assistance.<sup>24</sup> Rather than send their own air force personnel, the Pakistanis convinced General Abdul Rashid Dostum to send the necessary maintenance personnel, which had some aircraft in operation by August 1995.<sup>25</sup>

The Taliban commanders quickly brought this new capability to bear, with jets attacking Herat city and airport during their September 1995 assault.<sup>26</sup> However, the Taliban jet fighters' first significant effect occurred when they bombed Northern Alliance forces in Kabul between the fall of 2005 and the spring of 2006.<sup>27</sup> One of the worst attacks occurred on 26 November 1995, when Taliban jets killed 35 and wounded 140 people in an indiscriminate bombing of the capital city.<sup>28</sup> This aerial fire was far from one-sided, however, as General Dostum eventually threw his airpower behind the Northern Alliance, bombing Taliban positions during the battle for Badghis province in October 1996.<sup>29</sup>

---

<sup>21</sup> Neamatollah Nojumi, *The Rise of the Taliban in Afghanistan: Mass Mobilization, Civil War, and the Future of the Region* (New York: Palgrave, 2002), 181.

<sup>22</sup> Geoffrey York, "Military Targets are Elusive. Afghan Army Called a Haphazard Organization," *Globe and Mail*, 19 September 2001.

<sup>23</sup> Stephen Tanner, *Afghanistan: A Military History from Alexander the Great to the Fall of the Taliban* (New York: Da Capo Press), 280-82.

<sup>24</sup> Zalmay Khalilzad, "Afghanistan in 1995: Civil War and a Mini-Great Game," *Asian Survey* 36 no.2 (February 1996), 193.

<sup>25</sup> "Dustam Made a Deal," *Afghan News* 11, no. 9 (August 1995), 7.

<sup>26</sup> Nojumi, 147. It is unclear whether the aircraft attacking Herat were the repaired Taliban fighters or were from General Dostum's fleet.

<sup>27</sup> Tanner, 282-83.

<sup>28</sup> Cynthia Hanson and Abraham T. McLaughlin, "Afghan rebel jets bombed the capital city of Kabul," *Christian Science Monitor*, 27 November 1995.

<sup>29</sup> "Afghan Faction Leader Sends Planes to Bomb Taliban Forces," *The New York Times*, 27 October 1996.

Interestingly, the Taliban used their fighter force for far more than just bombing. On 3 August 1995, Taliban MiG-21s intercepted and forced down a chartered Russian IL-76 transport carrying ammunition from Albania to Kabul. The Taliban MiGs used the same tactics to force down an Aryana Boeing 727 that was carrying commercial goods from the Persian Gulf to Jalalabad.<sup>30</sup> On 8 December 1996, Taliban MiGs intercepted and forced down a United Nations aircraft that was carrying Tajik rebel leaders to peace talks. Claiming that the aircraft did not have proper clearance, the Taliban ordered the aircraft to land at Shinand airbase. Eventually, the Taliban described the incident as a “big misunderstanding” and released the aircraft. However, there was speculation in Kabul that the Taliban were looking for ousted Afghan president Rabbani.<sup>31</sup> The final notable air-to-air action occurred in 2000, when the Taliban scrambled its MiG fighters in an unsuccessful attempt to shoot down a US MQ-1 Predator searching for Osama Bin Laden.<sup>32</sup>

Although their fighter bombers generated the most attention, the Taliban and its al Qaeda allies used whatever airpower they could. In particular, the Taliban used the helicopters captured at Kandahar and Shinand to transport members of the leadership. As the Taliban consolidated power, they increasingly impressed the Afghan national airline, Aryana, to carry Taliban and al Qaeda operatives within Afghanistan and abroad. Bin Laden was particularly in need of reliable transportation, as his U.S. Air Force-surplus T-39 had crashed before he left Sudan.<sup>33</sup>

Throughout the Taliban insurgency in Afghanistan, the religious movement used airpower in whatever ways seemed expedient. The immediate uses included air fires and transportation in support of ground operations. Soon, however, the Taliban expanded to

---

<sup>30</sup> “Dustum Made a Deal”

<sup>31</sup> “Afghan Islamic Faction Frees U.N. Plane It Forced Down,” *The New York Times*, 8 December 1996.

<sup>32</sup> Ted Bridis and John Solomon, “Officials: U.S. missed chance to kill bin Laden,” *Independent Record*, 25 June 2003.

<sup>33</sup> Stephen Braun and Judy Pasternak, “Long Before Sept. 11, Bin Laden Aircraft Flew Under the Radar,” *Los Angeles Times*, 18 November 2001.

“nondestructive” counterair operations in order to interrupt the logistical lifeline to their adversaries. Eventually, the Taliban leadership looked to achieve strategic benefits, including punishment bombings in Kabul and the attempted capture of a high-level adversary leader. Given the small number of the aircraft involved, these actions were likely not decisive in the civil war. Nonetheless, the use of airpower undoubtedly had a positive impact on the Taliban’s bid for control of the war-torn country.

### **Brothers to the Rescue (Hermanos al Rescate)**

Many may contest the classification of Brothers to the Rescue (BTTR) as an insurgent group, due to its non-violent credo. Nonetheless, the organization’s use of airpower to destabilize the Castro regime provides enough parallels to make it a valuable addition to this study. BTTR was created by Cuban exile Jose Basulto in the aftermath of Gregorio Perez Ricardo’s death from exposure in February 1990. Ricardo, a fifteen-year old Cuban youth, died while attempting to reach the United States on a homebuilt raft. Enraged by the needless death, Basulto recruited aircrew and raised funds to conduct regular searches of the Florida Straits for other rafters.<sup>34</sup>

Although BTTR started on a shoestring, it rapidly became more organized, sophisticated, and capable. Initially, Jose Basulto and a small group of supporters used their personal aircraft and funded operations out of their own savings. As the organization gained notoriety, however, charitable contributions not only covered the operating costs but also included major gifts of aircraft. Although the organization operated a number of aircraft types, they preferred the Cessna 337 Skymaster, which provided twin-engine reliability for overwater operations, good search duration, and the room to carry additional observers and relief supplies. The organization

---

<sup>34</sup> Lily Prellezo in collaboration with Jose Basulto, *Seagull One: The Amazing Story of Brothers to the Rescue*, (Gainesville, FL: University Press of Florida, 2010), 1-32.

operated out of a leased hangar at Opa-locka Airport near Miami, which was soon filled with recovered rafts and other memorabilia from successful searches. For aircrew, BTTR depended on volunteers trained in the local community. However, the organization was selective in who they allowed to join, developed a tiered system of flying qualifications, and provided additional training beyond what would be normally expected of a private pilot.<sup>35</sup>

The Brothers to the Rescue began operations on 25 May 1991 and made their first rescue eight days later. BTTR coordinated sighting procedures with the U.S Coast Guard. When the aircraft found rafters, they would plot the position, radio the Coast Guard, and remain overhead until the surface forces arrived. As the organization gained experience, they improved their techniques to include dropping relief supplies and, eventually, short-range radios to the rafters. Consistent with the U.S. immigration policy of the time, the Coast Guard would transport the rafters to the Florida coast, where they would be eligible for political asylum.<sup>36</sup>

In 1996, however, the changing political environment undercut BTTR's rescue concept, leading to increased operations directly against Cuba. On 2 May of that year, President Clinton ended the "open door" policy to Cuban refugees and instead ordered the Coast Guard to transport rescued rafters to Guantanamo Bay. With this change, the rafters no longer wanted the BTTR to report their position to the American authorities. In light of this, BTTR continued search missions on a diminished scale, but only reported to the Coast Guard if the rafters appeared in distress. Angered by the new immigration policy, BTTR conducted flights in support of the refugees through November and December of 1994. These included flying defense lawyers to Guantanamo and transporting Christmas gifts to the children interred there. While returning from Guantanamo on 10 November 1994, Basulto violated Cuban airspace for the first time,

---

<sup>35</sup> Ibid, 57, 111-113,

<sup>36</sup> Ibid, 33-38,

dropping BTTR bumper stickers over the island. The following March, Basulto again violated Cuban airspace, this time to scatter the ashes of a deceased counterrevolutionary. BTTR steered toward direct confrontation with the Cuban government on 13 July 2005, when two aircraft escorted the ship *Democracia* in an attempt to lay roses inside Cuban territorial waters. When the *Democracia* was violently intercepted by Cuban gunboats, the BTTR aircraft accelerated ahead, flying over Havana for thirteen minutes as a distraction. On two occasions in January 1996, BTTR took the confrontation with Castro to a higher level, flying just north of Cuban airspace while dropping anti-Castro leaflets that the wind eventually carried over Havana.<sup>37</sup>

Incited by this activity, Castro planned to strike back at the Brothers to the Rescue. In this, the Cubans were aided by informants within BTTR, which provided flight schedules, and the Clinton administration, which provided information on likely American responses. On 24 February 1996, the Brothers to the Rescue launched three Cessna 337s on a normal search mission. The aircraft were not carrying leaflets on this mission, although Basulto's aircraft did penetrate slightly inside Cuban airspace for a minute or two. In response, the Cubans launched a MiG-23 and MiG-29, which destroyed two of the Skymasters and chased the third. After the deaths of four airmen, the Clinton administration clamped down on BTTR, ensuring that it would never again become a flash point with Castro.<sup>38</sup>

In the end, this small organization of light aircraft achieved significant impacts, although not always the impacts intended by the leadership. At the "tactical" level, BTTR was tremendously successful in its original search mission, saving approximately 4,200 rafters in the Florida Straits between 1991 and 2003.<sup>39</sup> At the strategic level, the BTTR's results were mixed. The leaflet drops did not elicit the spontaneous non-violent protest hoped for by Basulto.

---

<sup>37</sup> Ibid, 155-56, 158-65, 169-72, 176-98.

<sup>38</sup> Ibid, 204-46.

<sup>39</sup> Ibid, 292.

Nonetheless, the Cuban shootdown of the BTTR aircraft created severe negative consequences for Castro. First, the United States took up the issue at the United Nations, which issued a resolution of condemnation against Cuba. Second, the anti-Castro sentiment raised in the U.S. derailed the Clinton administration's efforts to seek improved relations with the Cuban regime.<sup>40</sup>

## Hezbollah

In spite of facing one of the world's premier air forces, Hezbollah was able to use airpower to achieve tactical and strategic effects between 2004 and 2006. The Hezbollah unmanned aerial vehicle (UAV) program was relatively modest, but also surprisingly resilient.

The Hezbollah "air force" consisted entirely of unmanned reconnaissance drones. Hezbollah identified these drones as the "Mirsad-1," (translated as "ambush" or "espionage") although they were, in fact Iranian-built Mheger-4 reconnaissance drones. These small aircraft contained a 10-horsepower engine, three cameras, a digital radar, and a transmitter. The aircraft had a service ceiling of 6,000' and a maximum speed of 120 km/hr. Iranian officials stated that they provided the terrorist organization with eight of the drones during August 2004. Additionally, the Iranians provided training to Hezbollah's "Special Technology Unit" near Isfahan in Iran and then in Lebanon.<sup>41</sup> Israeli officials claimed that approximately one hundred Iranian trainers were serving in Lebanon in 2006.<sup>42</sup>

The initial purpose of the drone flights was reconnaissance. The first mission occurred on 7 November 2004, when a drone flew over Nahariya, turned seaward, and then crashed into the Mediterranean.<sup>43</sup> These sorties continued intermittently over the next two years.<sup>44</sup> On 31

---

<sup>40</sup> James Collins and Cathy Booth, "Blown Out of the Sky," *Time*, no. 147 (4 March 1996).

<sup>41</sup> "Iran gave Hezbollah 8 drones: report," *Daily Times*, 13 November 2004.

<sup>42</sup> "Iranians Advising Hezbollah on Use of Missiles, UAVs," *Aerospace Daily and Defense Report*, 10 August 2006.

<sup>43</sup> Laura King, "Drone Enters Israeli Airspace," *Los Angeles Times*, 8 November 2004.



November 2005, international news organizations captured video of a Hezbollah drone flying over northern Israeli army outposts.<sup>45</sup> Oddly, the Mirsad flights were not the first opportunity Hezbollah had to utilize UAV video. During a 2010 press conference, Hezbollah chief Nasrallah released video demonstrating that Hezbollah had been hacking into Israeli UAV feeds in the late 1990s, including during a 1997 ambush in which twelve Israeli commandos were killed.<sup>46</sup>

The Hezbollah operational concept changed with the Israeli incursion into Lebanon during 2006. Hezbollah used their drones for artillery spotting, although with unknown effect. More menacingly, Nasrallah claimed that the drones could be outfitted with “a quantity of explosive ranging from 40 to 50 kilos and send it to its target.”<sup>47</sup> True to his word, Nasrallah began sending armed drones south in July 2006. An Israeli F-16 shot down the first drone on 8 July off the coast near Haifa.<sup>48</sup> Six days later, Israeli jets spoiled a simultaneous attack when they shot down one drone over Kibbutz Cabri and another over Tyre. The next day, the Israelis shot down a fourth drone over Western Galilee. In this last case, the Israelis located the wreckage, confirmed that the drone was carrying 30 kg of explosives,<sup>49</sup> and speculated that the aircraft was en route to Tel Aviv.<sup>50</sup>

---

<sup>44</sup> IDF Bolsters Forces in North to Thwart any Hizballah Attempt to Escalate Tension,” *The Jerusalem Post*, 19 April 2005.

<sup>45</sup> Lisa Myers, “Hezbollah drone threatens Israel,” *NBC Nightly News*, 4 December 2005.

<sup>46</sup> Roe Nahmias, “Nasrallah describes 1997 ambush,” *Israel News*, 9 August 2010, <http://www.ynetnews.com/articles/0,7340,L-3932886,00.html> (accessed 4 January 2011).

<sup>47</sup> Myers.

<sup>48</sup> Amos Harel, “IDF shoots down Hezbollah drone over sea near Haifa coast,” *Haaretz*, 8 July 2007, <http://www.haaretz.com/news/idf-shoots-down-hezbollah-drone-over-sea-near-haifa-coast-1.194556> (accessed 4 January 2011).

<sup>49</sup> Amos Harel, Eli Ashkenazi, Yoav Stern, and Agencies, “Hezbollah drone brought down over Galilee held 30 kg of explosives,” *Haaretz*, 14 August 2006, <http://www.haaretz.com/news/hezbollah-drone-brought-down-over-galilee-held-30-kg-of-explosives-1.195115> (accessed 4 January 2011).

<sup>50</sup> “IDF Officer: UAV Sent by Hizballah Into Israel in Lebanon War Carried Explosives,” *The Jerusalem Post*, 19 September 2006.

Although unsuccessful in armed attacks, Hezbollah continued to pursue drone technology. Unconfirmed reports indicate that the terrorist group may have taken possession of more advanced UAVs. These may include the Ra'd low altitude drone, with a reduced radar signature, and the far more advanced Karrar turbojet powered drone, which can fly at speeds up to 1,000 kilometers per hour.<sup>51</sup>

At the tactical level, the use of drones by Hezbollah appears to have met only limited success. Although overflights of Israeli territory may have provided some targeting information, Hezbollah rockets were not precise enough to make full use of this data. The use of drones as attack vehicles proved even less effective, with no successful attacks and the loss of at least four aircraft to Israeli fighters. The most significant effect from the UAVs, therefore, came from the propaganda value of embarrassing the previously unblemished Israeli Air Force.

### **Analysis and Recommendations**

Although these four case studies span several decades and cover the globe, they highlight some trends for the use of airpower by insurgent forces. By understanding the essential ingredients for an insurgent use of airpower and the effects that the insurgent will attempt to achieve, the counterinsurgent can take steps to thwart this military instrument.

These case studies suggest the conflict must have the following characteristics for insurgent airpower to emerge: external support, a sanctuary area, a somewhat permissive air environment, and a reasonably sophisticated command and control system.

External support is probably the most essential of these four elements. Aviation is expensive, technologically complex, and requires an extensive logistical support network. Accordingly, it will be very difficult for an insurgent to field airpower without external support.

---

<sup>51</sup> "Is Lebanon's Hezbollah Equipped with New Iranian Drones?" *Terrorism Monitor: In-Depth Analysis of the War on Terror*, no. VIII (24 November 2010), 2.

The insurgent needs the external sponsor to provide aircraft, supply maintenance, train the air and ground crews, or any combination of these. Of the four case studies, the Taliban provided the most “independent” case, in that they provided their own high-technology air assets. However, these assets were useless until the Pakistanis provided the maintenance support to enable reliable operations. Hezbollah, on the other hand, provided the most “dependent” case, as Iran provided the equipment, training in Iran, and support specialists on the ground in Lebanon. The Cuban exile community was the external sponsor for Brothers to the Rescue, from which the organization drew trained pilots and contributions of aircraft and operating funds. Of all the groups, the Tamil Tigers appear to have had the least external support, although their international networks at a minimum provided for the initial shipment of aircraft and training of crews.

Secure basing is a second essential ingredient. Airpower requires some amount of fixed infrastructure, such as airfields, maintenance facilities, or at least launch rails. This requires the insurgent to have secure territory either within the contested nation or the sponsoring state. This was a strength for the Taliban, as they controlled large segments of Afghanistan, including cities with major military airfields (Kandahar, Herat, Mazar-i Sharif, etc.). Likewise, Hezbollah enjoyed almost total control over the territory in southern Lebanon. The Tamil Tigers initially had a secure sanctuary in the northern Sri Lanka, controlling territory that contained several improved and unimproved airfields. Indeed, it was the imminent loss of this territory that forced the Air Tigers to switch from a sustained pattern of air operations to a last-ditch suicide mission. Brothers to the Rescue provide an example of a sanctuary within a sponsoring state, as the Cuban government would have never contemplated direct attack against American territory.

A somewhat permissive air defense environment is the third essential requirement. Indeed, each of these case studies demonstrates that the counterinsurgent can defeat the rebel air force with a strong air defense network. In Sri Lanka, one of the Air Tiger aircraft was downed by an F-7G interceptor and the other two were hit by anti-aircraft fire, all alerted by an improved radar detection system. In Lebanon, Hezbollah lost a considerable portion of their UAV force to Israeli fighters during the summer 2006 combat actions. Once Castro decided to engage the BTTR, his MiGs made quick work of the unarmed search aircraft, forever stopping their intrusions into Cuban airspace. Finally, the Taliban air force was decimated in hours by US bombers in the fall of 2001.

Reasonably sophisticated command and control is the fourth essential requirement for insurgent airpower. The Tamil Tigers demonstrated perhaps the greatest capability in this area, carefully orchestrating air and ground raids between their Black Tigers and Air Tigers. In Afghanistan, the Taliban demonstrated their ability to plan air operations by gaining the intelligence to intercept cargo aircraft crossing their territory. BTTR had a sophisticated command and control network to accomplish their rescue task and carefully planned and tested for their leaflet drops. Hezbollah showcased its ability to process the intelligence from their reconnaissance drones, although they still lacked the ability to precisely target anything they discovered.

Understanding these critical requirements provides the counterinsurgent with many avenues to deny insurgent airpower. The airman's initial inclination may be to remove the threat by a decisive counterair operation. This has been markedly effective in the past, but can also involve great expense. In light of this, the counterinsurgent may also consider denying insurgent

airpower by isolating the insurgent from external sponsors, denying the insurgent territory, or disrupting insurgent command and control.

If the counterinsurgent cannot stop insurgent air activity, he may instead be able to negate the effects by understanding the tactics and strategies the insurgent is likely to use. These four case studies provide several consistent patterns regarding the insurgent's utilization of airpower.

All four of these case studies suggest that the insurgent will initially concentrate on tactical uses of their air assets, although these tactical uses may replicate any mission set performed by a more mature air force. In Sri Lanka, The Air Tigers initially conducted counterland and counterair attacks against purely military targets that were directly affecting their ground forces. Likewise, the Taliban initially used their MiGs for interdiction attacks against Afghan government forces opposing their troops. For several years, BTTR focused on their core search and rescue mission. Finally, Hezbollah used their drones for their intended purpose of tactical reconnaissance during the first two years. The execution of these tactical missions became more sophisticated as the insurgents gained experience. For example, the Tamil Tigers conducted several very successful joint air and ground attacks in 2007 and 2008. However, these case studies do not suggest that the insurgents will have the tactical capability to conduct dynamic missions requiring close coordination, such as close air support.

Each of these case studies also suggests, however, that the insurgent air force will graduate to more strategic tasks as it either gains experience, is forced into a desperate situation, or both. In Sri Lanka, the Air Tigers eventually shifted from tactical attacks to raids against national infrastructure (oil storage and electrical power plants) and national command and control. With experience, the Taliban used its fighters in an attempt at strategic decapitation. BTTR eventually shifted from rescue to strategic information operations against the Castro

regime. Hezbollah packed its reconnaissance drones full of explosives to attack strategic targets in Israel. At the same time, these case studies suggest that these strategic missions will probably be episodic, as the insurgents cannot sustain high sortie rates. In light of this, the insurgents may not follow any recognizably consistent coercive strategy (punishment, denial, etc.). Instead the insurgent may simply look to get the most dramatic effects possible with each sortie. This may include simultaneous strategic and tactical effects (by attacking dual use infrastructure targets, for example). This may also include simultaneous kinetic and informational effects (by destroying targets and gaining international news coverage, for example).

By understanding this life cycle, the counterinsurgent can potentially establish active and passive defenses to negate insurgent air operations. Initially, defenses close to insurgent areas may be sufficient. However, the counterinsurgent should recognize the probability that the insurgent will eventually “go deep” against lucrative concentrations of targets. At all times, the counterinsurgent should be ready to counter insurgent propaganda by highlighting insurgent air losses and tactical incompetence.

## **Conclusion**

Although airpower is expensive and complex, these case studies show that it is not the exclusive domain of the counterinsurgent. Indeed, the insurgent forces can use airpower as a significant force multiplier, producing effects far beyond the price the insurgent pays. The counterinsurgent can prepare, however, by understanding the conditions under which insurgent airpower is likely to appear and the path it is likely to take.

## Bibliography

- Aljazeera*. "Tamil Tigers show off air force," 26 March 2007.  
<http://englishaljazeera.net/news/asia/2007/03/2008525184856552419.html> (accessed 2 October 2010)
- Athas, Iqbal. "CBK sets Jaya Sikurui on Professional Course." *The Sunday Times* (Sri Lanka), 1 November, 1998. <http://sundaytimes.lk/981101/sitrep.html> (accessed 2 October 2010).
- Athas, Iqbal. "They came, they bombed and they went away." *The Sunday Times* (Sri Lanka), 2 November 2008. <http://www.sundaytimes.lk/081102/Columns/sitreport.html> (accessed 2 October 2008).
- Athas, Iqbal. "Vavuniya attack: How it happened and why." *The Sunday Times* (Sri Lanka), 14 September 2008. <http://sundaytimes.lk/080914/Columns/sitreport.html> (accessed 2 October 2010).
- Aerospace Daily and Defense Report*. "Iranians Advising Hezbollah on Use of Missiles, UAVs." 10 August 2006.
- BBC News*. "Air raid scare spooks Sri Lanka," 26 April 2007.  
[http://news.bbc.co.uk/2/hi/south\\_asia/6597959.stm](http://news.bbc.co.uk/2/hi/south_asia/6597959.stm) (accessed 2 October 2010).
- BBC News*. "'Eight Lankan planes' destroyed," 24 Oct 2007.  
[http://news.bbc.co.uk/2/hi/south\\_asia/7059661.stm](http://news.bbc.co.uk/2/hi/south_asia/7059661.stm) (accessed 2 October 2010).
- BBC News*. "Heavy losses in Sri Lanka clash," 9 September 2008.  
[http://news.bbc.co.uk/2/hi/south\\_asia/7605498.stm](http://news.bbc.co.uk/2/hi/south_asia/7605498.stm) (accessed 4 January 2011).
- BBC News*. "Hezbollah drone flies over Israel", 7 November 2004.  
<http://news.bbc.co.uk/2/hi/3990773.stm> (accessed 2 October 2010).
- BBC News*. "Sri Lankan rebels in new air raid," 29 April 2007.  
[http://news.bbc.co.uk/2/hi/south\\_asia/6604645.stm](http://news.bbc.co.uk/2/hi/south_asia/6604645.stm) (accessed 2 October 2010).
- Collins, James and Cathy Booth. "Blown out of the sky: Cuban MiGs down two civilian planes, further straining Washington's relations with Castro." *Time*, vol. 147 (4 March 1996).
- Daily Times*. "Iran gave Hezbollah 8 drones: report" 13 November 2004.  
[http://www.dailytimes.com.pk/default.asp?page=story\\_13-11-2004\\_pg7\\_43](http://www.dailytimes.com.pk/default.asp?page=story_13-11-2004_pg7_43) (accessed 14 October 2010).
- De Valle, Elaine. "Last Brothers to Rescue plane sold for hurricane relief." *The Miami Herald*, 18 November, 2008.
- Ferdinando, Shamindra. "Plan to Acquire MiG-29 Dropped." *The Island News*, 6 July 2009.  
<http://www.island.lk/2009/07/06/news2.html> (accessed 4 January 2011).
- Fuard, Asif. "Tigers go kamikaze but attacks fail." *The Sunday Times*, 22 February 2009.  
[http://www.sundaytimes.lk/090222/News/sundaytimesnews\\_02.html](http://www.sundaytimes.lk/090222/News/sundaytimesnews_02.html) (accessed 22 February 2009).
- Graffis, Judy M. "Toward a Theory of Insurgent Airpower." School of Advanced Military Studies, United States Army Command and General Staff College, 1997.
- Grant, Greg. "Hezbollah Claims it Hacked Israeli Drone Video Feeds." *Defensetech*, 10 August 2010. <http://defensetech.org/2010/08/10/hezbollah-claims-it-hacked-israeli-drone-video-feeds/> (accessed 14 October 2010).

Grevatt, Jon. "Sri Lanka nears MiG-29 purchase." *Jane's*, 14 March 2008.  
[http://www.janes.com/news/defence/jdw/jdw080314\\_1\\_n.shtml](http://www.janes.com/news/defence/jdw/jdw080314_1_n.shtml) (accessed 4 January 2011).

Hanson, Cynthia, Abraham T. McLaughlin, and Suman Bandrapalli. "Afghan rebel jets bombed the capital city of Kabul." *Christian Science Monitor*, 27 November 1995.

Harel, Amos. "IDF shoots down Hezbollah drone over sea near Haifa coast." *Haaretz*.  
<http://www.haaretz.com/news/idf-shoots-down-hezbollah-drone-over-sea-near-haifa-coast-1.194556> (accessed 4 January 2011).

Harel, Amos, Eli Ashkenazi, Yoav Stern, and Agencies. "Hezbollah drone brought down over Galilee held 30 kg of explosives." *Haaretz*. <http://www.haaretz.com/news/hezbollah-drone-brought-down-over-galilee-held-30-kg-of-explosives-1.195115> (accessed 4 January 2010).

*The Jerusalem Post*. "IDF Bolsters Forces in North to Thwart Any Hizballah Attempt to 'Escalate Tension.'" 19 April 2005.

*The Jerusalem Post*. "IDF Officer: UAV Sent by Hizballah Into Israel in Lebanon War Carried Explosives." 19 September 2006.

Khalilizad, Zalmay. "Afghanistan in 1995: Civil War and a Mini-Great Game." *Asian Survey*, Vol. 36, No. 2 (February 1996): 190-195.

King, Laura. "Drone Enters Israeli Airspace." *Los Angeles Times*, 8 November 2008.

Miasnikov, Eugene, "Terrorists Develop Unmanned Aerial Vehicles." (Moscow: Center for Arms Control, Energy and Environmental Studies, 6 December 2004).

Myers, Lisa and the NBC Investigative Unit. "Hezbollah drone threatens Israel." NBC Nightly News, 12 April 2005.

*The Nation*. "Why weren't flying Tigers intercepted?" 22 September 2009.  
<http://www.nation.lk/2009/02/22/news6.htm> (accessed 04 January 2011).

National Commission on Terrorist Attacks Upon the United States. *The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States*. New York: Soho, .

*The New York Times*. "Afghan Faction Leader Sends Planes to Bomb Taliban," 27 October 1996.

*The New York Times*. "Afghan Islamic Faction Frees U.N. Plane it Forced Down," 9 December 1996.

*The New York Times*. "Afghan Opposition Bombs Kabul's Airport," 6 July 1997.

Nojumi, Neamatollah. *The Rise of the Taliban in Afghanistan: Mass Mobilization, Civil War, and the Future of the Region*. New York: Palgrave, 2002.

Prellezo, Lily. *Seagull One: The Amazing True Story of Brothers to the Rescue*. Gainesville, FL: University of Florida Press, 2010.

*Press TV News*, "Evidence of Israeli Hand in Hariri Killing," 9 August 2010.

Sabapathy, David. "Sri Lanka: Tamil Tiger air raid, slowly emerging details." *Tiger Eelam News Services*, 30 October 2008.  
[http://www.tamileelamnews.com/news/publish/tns\\_10331.shtml](http://www.tamileelamnews.com/news/publish/tns_10331.shtml) (accessed 4 January 2011).

Schmidt, Christopher. "Hezbollah drones pack psychological rather than military punch." *Lebanonwire.com*, 8 August 2006.  
<http://www.lebanonwire.com/0608MLN/06080844LAF.asp> (accessed 14 Oct 2010).

Sri Lanka Ministry of Defense. "LTTE drops 3 bombs in Weliova: no damages caused," 27



April 2008. [http://www.defence.lk/new.asp?fname=20080427\\_01](http://www.defence.lk/new.asp?fname=20080427_01) (accessed 2 October 2010).

*Sri Lanka News First*, “LTTE terrorists launch abortive raid at Trincomalee naval base,” 26 August 2011. <http://www.srilankanewsfirst.com/Security/5649.rss> (accessed 4 January 2011).

*Tamil Guardian*, “Air Tigers bomb Katunayake,” 29 March 2007.  
<http://tamilguardian.com/article.asp?articleid=1148> (accessed 4 January 2011).

*Tamil Guardian*, “LTTE commandos smash Anuradhapura airbase,” 24 October 2007.  
<http://www.tamilguardian.com/article.asp?articleid=1442> (accessed 4 January 2011).

Wright, Lawrence. *The Looming Tower: al-Qaeda and the Road to 9/11*. New York: Alfred A. Knopf, 2006.

York, Geoffrey. “Military Targets are Elusive. Afghan Army Called a Haphazard Organization.” *The Globe and Mail*, 19 September 2001.