

ABERRATIONS OF AIR WAR: OPERATIONS ENDURING FREEDOM AND IRAQI FREEDOM

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Aerial combat characterized major warfare throughout the twentieth century. Between 1918 and 1999, U.S. aircraft shot down just over 17,500 enemy airplanes, including 624 in World War I,¹ 15,800 in World War II,² 894 during the Korean War,³ and 137 in Vietnam.⁴ During wars against Iraq and Serbia in the 1990s, the United States downed 48 enemy aircraft, 39 over Iraq and 9 over the former Yugoslavia.⁵ Air-to-air combat was absent only in minor contingency operations.

Yet between 2001 and 2011, aerial combat disappeared. During that decade, the United States fought two major wars, one in Afghanistan and one in Iraq; but no one became an ace, no pilot earned a single aerial victory credit, no airplane shot down another airplane. The absence of aerial combat in the first decade of the twenty-first century has led some to believe that the day of aerial victories is gone forever and that expensive air superiority fighters are no longer necessary. This paper explores the reasons why aerial combat did not play a role in the wars in Afghanistan or Iraq and why those major wars, in air power terms, were atypical.

On October 7, 2001, the United States launched Operation Enduring Freedom against the Taliban regime of Afghanistan, which sheltered Osama bin Laden and the al Qaeda terrorist organization responsible for hijacking four United States commercial airliners on September 11. The terrorists used two of them to destroy the twin towers of the World Trade Center in New York and a third to severely damage the Pentagon. The fourth airliner, United flight 93, would have targeted another site in Washington, D.C., if its passengers and crew had not forced the plane down in a field in Shanksville, Pennsylvania. The Afghan air force was so small at the

time that it did not even warrant an entry in the volumes of *Jane's All the World's Aircraft* covering the years 1999–2002.⁶ Without its own aviation industry, Afghanistan had depended on other nations, particularly the former Soviet Union, for its aircraft. During the 1980s, Afghan guerilla fighters had become adept at using small surface-to-air missiles against airplanes; during the 1990s, the emphasis within Afghanistan had been on ground fighting. What was left of the Afghan air force had been divided among the factions vying for control of the country. Spare parts to keep aircraft functioning were in short supply, and flying training was extremely limited. In 1996, the Taliban had taken over most of the country, except the far north, but its share of the surviving air force was small and weak. One estimate counted eight MiG–21s, eight Su–22s, a relatively small number of transports, and about twelve helicopters.⁷ Another source estimated that the Afghan air force had some eighty armed helicopters, and fewer than fifty MiG–21 and Su–22 fighter aircraft, including many out of service, and no more than forty fighter pilots able to fly them. United States Central Command feared the small number of aircraft, not because of traditional aerial opposition, but because the enemy might load them with explosives and use them to fly suicide missions into U.S. military encampments. The threat of the Afghan air force was far less than that faced by U.S. and allied pilots enforcing no-fly zones over other countries during the 1990s.⁸

When the United States invaded Afghanistan in 2001, it was determined at the outset to establish uncontested control of the air. Among the thirty-one targets hit on the first night of air strikes were Taliban airfields and aircraft. Enemy airfields harboring MiG–21 and Su–22 airplanes included Shindand and Mukurin. Air defenses were largely destroyed during the first night, and for seven consecutive days that October, U.S. aircraft took part in an “aircraft plinking” campaign to destroy every enemy military aircraft and helicopter in Afghanistan. On

October 25, the Pentagon declared that Taliban air defenses had been eliminated, but actually they had been destroyed very early in the campaign.⁹

As a result of the initial weakness of the Afghan air force, no Taliban aircraft took off to oppose the early air strikes. In fact, no enemy fighters got airborne at *any* time during the entire campaign. U.S. pilots had no opportunity to shoot down enemy airplanes, because the Taliban had so few of them to begin with, and the few they did have were largely destroyed in the first hours of Operation Enduring Freedom.¹⁰ Destruction of what little existed of the Taliban air defenses was so complete that the United States was able to employ, at a very early stage in the campaign, relatively slow-moving and low-flying helicopters, transports, gunships, and unmanned aerial vehicles (remotely-piloted vehicles). These aircraft would have been too vulnerable to use had the enemy possessed or retained an effective air force. After the initial nighttime air strikes, the United States could operate a variety of aircraft easily over Afghanistan even in the daytime with very little need for suppression of enemy air defenses (SEAD). Even enemy surface-to-air missiles and anti-aircraft artillery failed to pose a significant threat to U.S. air operations, after the key sites and command and control facilities had been taken out.¹¹

While the war in Afghanistan continued, President Bush launched an even larger invasion of Iraq in order to topple the regime of Saddam Hussein, who had for years threatened his neighbors and who had defied United Nations inspectors seeking evidence of the manufacture of weapons of mass destruction. Pilots of USAF aircraft entering Iraq at the opening of Operation Iraqi Freedom on March 19, 2003 could not be sure the Iraqi air force would be as impotent as the Afghan air force had been. After all, twelve years earlier, the Iraqi air force had been one of the most powerful in the entire region. It had fought well during a brutal eight-year war with Iran that ended in 1988. By 1991, it was one of the largest air forces in southwestern Asia, with

well over 700 fixed-wing combat aircraft. Iraq had purchased new and very capable fighter aircraft, including MiG-29s from the Soviet Union and Mirage F-1s from France. The country had also improved its air bases, increasing the size and number of their runways and taxiways, and constructing hundreds of hardened aircraft shelters to protect aircraft on the ground.¹²

Twelve years later that powerful Iraqi air force had disappeared. Not one Iraqi warplane attacked the U.S. and coalition forces advancing on the ground toward Baghdad. Complete aerial supremacy contributed to the quick victory that toppled the regime of Saddam Hussein and placed U.S. and coalition military forces in the enemy capital in less than one month. What happened to the formerly formidable Iraqi air force between 1991 and 2003?¹³

More than any other factor, the war between Iraq and the United States and its coalition partners in early 1991, known as Operation Desert Storm or the Gulf War, decimated the Iraqi air force. After Iraqi forces failed to withdraw from Kuwait, which they had occupied in 1990, the United States and its coalition partners enforced United Nations resolutions calling for liberation of the country.¹⁴ A weeks-long air campaign preceded a short and successful days-long ground war. Between January and March 1991, USAF pilots shot down thirty-seven Iraqi aircraft, including thirty-two airplanes and five helicopters. Downed Iraqi fixed-wing airplanes consisted of eight MiG-23s, six F-1s, five MiG-29s, four SU-22s, two SU-25s, two MiG-25s, two MiG-21s, one PC-9, one IL-76, and one SU-7. The lost helicopters included two MI-8s, one MI-24, and two that were not identified. Most of these aircraft had been manufactured in the Soviet Union or one of its satellites. All of the USAF victors flew F-15s except for two A-10 pilots, who each shot down a helicopter. The two-man crew of an F-15E shot down the MI-24 helicopter. Each of the other F-15 pilots flew in a single-seat F-15C.¹⁵

Iraqi warplanes, during the same period, were unable to shoot down a single USAF aircraft.¹⁶ U.S. and allied aircraft attacked Iraqi airfields, cratering them so as to render them useless to the enemy. Not long into the campaign, they had become useless anyway, because the uneven aerial battles had convinced Iraqi pilots not to engage in aerial combat in which they were likely to be shot down.¹⁷

Gen. Charles A. Horner, the air component commander for Operation Desert Storm, authorized his air forces to strike Iraqi aircraft on the ground. Many of these were located within hardened aircraft shelters, armored with reinforced concrete, which Saddam Hussein hoped would prove impervious to air attack. He was wrong: F-111s and F-117s armed with laser-guided bombs destroyed not only the shelters one by one, but also the aircraft inside them. Among the weapons used were GBU-10s, GBU-24s, and GBU-27s, all of which weighed some 2,000 pounds each. F-111 sorties directed against Iraqi airfields rose from less than fifty percent the first week to more than sixty percent the second week. F-117 sorties devoted to the same targets rose from ten percent the first week to twenty-six percent the second week. United States and coalition warplanes targeted virtually all seventy Iraqi airfields during the first three weeks and destroyed or damaged an estimated sixty-three percent of the approximately 500 to 600 hardened aircraft shelters in Iraq, some of them empty. By the end of the Gulf War in the spring of 1991, allied aircraft had destroyed an estimated 141 Iraqi aircraft in their shelters.¹⁸

Instead of protecting the aircraft, the shelters actually attracted coalition air strikes, making the aircraft more vulnerable in them. The Iraqis realized that the shelters themselves were easier targets to hit than individual aircraft dispersed on fields, and they began to move their airplanes away from the shelters. While the aircraft were more difficult to find than those in the air or those in hardened shelters, they were still extremely vulnerable to the air strikes of

the United States and its coalition partners. The coalition destroyed some 113 Iraqi aircraft in the open by the end of Operation Desert Storm.¹⁹

Iraqi airfields received more Desert Storm air strikes than any other target set except the Iraqi field army in Kuwait. During the operation, the coalition flew 2,990 air strikes against Iraqi airfields. Realizing that their aircraft were being eliminated systematically, in the air and on the ground, the Iraqis began to seek ways to save them by flying them to a neighboring country. Jordan was the logical choice, because of formerly friendly relations, but Jordan was too far away, and Iraqi pilots realized that flights from Iraq to Jordan would be detected and intercepted, with more aerial victories for the Americans and their allies. Iran was a possibility, but Iran had been the archenemy of Iraq less than four years earlier. Flying Iraqi aircraft to Iran for their protection required some diplomacy. The Iraqis were able to persuade the Iranians to allow Iraqi combat aircraft to fly to Iran, but the Iranians did not promise to ever give them back. By the end of Operation Desert Storm, 121 Iraqi aircraft made it safely to Iran, but they never returned.²⁰

During Operation Desert Storm, the air forces of the United States and its allies eliminated the majority of the fixed-wing aircraft of the Iraqi air force, destroying 286, including 32 in the air and 254 on the ground. Counting the airplanes that had been flown to Iran, Iraq lost an estimated 407 fixed-wing airplanes during the first three months of 1991. This left only 322, less than half of the 729 it had at the beginning of 1991.²¹

U.S. and coalition aerial victories and air strikes removed the threat of the Iraqi air force early in Operation Desert Storm, resulting in complete air supremacy in the theater, which the commander of the operation, Gen. H. Norman Schwarzkopf, U.S. Army, declared on January 27,

1991. This allowed coalition ground forces to operate without the threat of any enemy aircraft attacks on them. It also allowed relatively vulnerable aircraft—such as tankers, transports, and intelligence, surveillance, and reconnaissance aircraft—to fly into the theater without fear of being shot down by enemy airplanes.²²

During the 1990s, the United States and its coalition partners kept the pressure on Iraq, not only to discourage any renewed invasion of Kuwait but also to protect Iraqi minorities. In the southern part of Iraq, near Kuwait and Iran, Shiite residents rose up in rebellion against Saddam Hussein as the first Gulf War came to a close in the spring of 1991. For their protection, and to provide a buffer for Kuwait, the United States launched Operation Southern Watch to enforce a no-fly zone in southern Iraq. To protect the Kurdish population of northern Iraq, and to deliver humanitarian supplies to those who fled their homes toward Turkey, the United States also launched Operation Provide Comfort in 1991, in effect another no-fly zone over northern Iraq.²³

Saddam Hussein rarely launched aircraft to challenge United States aircraft patrolling the U.N.-sanctioned no-fly zones over Iraq. However, on December 27, 1992, a USAF pilot patrolling the southern no-fly zone shot down an Iraqi MiG-25, scoring the first aerial victory by an F-16 and the first using the AIM-120A advanced medium-range air-to-air missile. On January 17, 1993, another F-16 pilot shot down an Iraqi MiG-23 over Iraq.²⁴

In 1996, Iraqi troops entered the northern no-fly zone and seized the Kurdish city of Irbil. In response, the United States launched Operation Desert Strike on September 2 and 3. During that operation, USAF B-52s launched thirteen cruise missiles against Iraqi military targets, including air defense and radar installations. Another result of the Iraqi offensive in the northern

no-fly zone was the extension of the southern no-fly zone northward from 32 to 33 degrees North latitude. This further restricted the space in which the Iraqi air force could operate or train. Partly as a result of Saddam Hussein's military offensive against the Kurds in northern Iraq, the United States replaced Operation Provide Comfort over northern Iraq with Operation Northern Watch at the beginning of 1997.²⁵

Iraqi training flights were restricted also by another factor. During the late 1980s, Saddam Hussein had sent nineteen of his Soviet-made combat aircraft to Yugoslavia for refurbishing, but he was not able to get them back because the United Nations imposed economic sanctions on Iraq after its invasion of Kuwait in 1990.²⁶ The United Nations did not lift those sanctions after the 1991 war, primarily because Saddam Hussein continued to resist efforts to confirm that his facilities for producing nuclear, biological, and chemical weapons of mass destruction were no longer functioning. The sanctions prevented Iraq from importing new aircraft and aircraft parts. In September 1995, the United Nations Security Council voted to extend sanctions against Iraq that had been in place for five years. As a result, the Iraqi air force inventory continued to age. As parts wore out, they were not as easy to replace as they had been before 1990.²⁷

Contributing to the failure of the Iraqi air force to recover its pre-1991 strength and vitality during the following decade was Saddam Hussein's distrust of senior military officers who might pose a threat to his leadership. Fearing attempted coups, the Iraqi dictator periodically purged his military leadership, including some of the high-ranking officers in the Iraqi air force. Saddam Hussein wanted Iraq's military to be led by those unquestionably loyal to him. As a result, the Iraqi air force lacked the leadership it needed for a significant revival.²⁸

Saddam Hussein's refusal to allow U.N. weapons inspectors to continue their work in Iraq resulted in another set of air attacks by the United States and its allies on Iraq in December 1998. During Operation Desert Fox, the United States launched 415 cruise missiles against military targets in Iraq. U.S. and coalition warplanes also dropped 600 bombs. A total of 97 Iraqi targets were destroyed or heavily damaged by aircraft or missile attacks. As part of the operation, U.S. and British warplanes bombed Tallil Air Base in Iraq and destroyed several Iraqi unmanned aerial vehicles that had been converted from trainers, presumably to deliver chemical or biological weapons.²⁹

All of these factors weakened what was left of the Iraqi air force between the end of the Gulf War in 1991 and the beginning of Operation Iraqi Freedom in 2003. In 2002, the Iraqi air force inventory totaled approximately 267 aircraft, including 135 combat aircraft and 132 trainers. Of the combat aircraft, 124 were fighters, 9 were transports, and 2 were combat helicopters. Presumably the Iraqis cannibalized some of their combat aircraft between 1991 and 2002 in order to keep their fleet operational.³⁰

When the United States invaded Iraq in 2003, the Iraqi air force did not show up. It did not generate a single sortie. Allied air and ground forces operated without any aerial opposition. The absence of Iraqi air force opposition allowed the U.S. Air Force to use its more vulnerable aircraft over Iraq without much fear of having them shot down. Of course, the failure of Iraq to launch any aircraft to oppose the invasion was partly deliberate. The Iraqi leadership realized that challenging the U.S. and coalition air forces would be futile, in light of the 1991 campaign, especially since the Iraqi air force was only a shadow of what it had been a decade earlier. In addition, U.S. and coalition air attacks destroyed the Iraqi command and control system on which the Iraqi air force depended so much, including many radar stations that might have

furnished a foundation for effective air resistance. Following the example of the Serbs in 1999 during the war over Kosovo, the Iraqis sometimes saved surface-to-air missile batteries by not activating their radar, thereby identifying them as targets for United States fighters armed with high-speed anti-radiation missiles (HARMs). American and British aircraft also cratered runways of Iraqi air bases to make sure that they would not be used to facilitate interceptor launchings.³¹

Table of Iraqi air force Aircraft in 2002 (Source: JANE’S WORLD AIR FORCES, Issue 16 (Clousdon, UK: Jane’s Information Group, 2002), pp. 196-197)

Aircraft designation	NATO nickname	type of aircraft	number
MiG-23	Flogger	fighter interceptor	30
MiG-25	Foxbat	fighter interceptor	5
MiG-29	Fulcrum	fighter interceptor	4
F-1	Mirage	air defense/attack	20
MiG-21	Fishbed	air defense/attack	30
SU-22	Fitter	Attack	20
SU-24	Fencer	Attack	5
SU-25	Frogfoot	Attack	10
Bell 21		combat helicopter	2
AN-24		Transport	2
AN-26		Transport	6
IL-76		Transport	1
		Trainer	132

Air power played significant roles in the wars in both Afghanistan and Iraq in 2001 and 2003, but fighting for air superiority was not one of them. Enemy aircraft did not shoot down one U.S. aircraft, and U.S. aircraft did not shoot down one enemy aircraft, because there were no air battles at all. Unlike in previous wars, there were no aerial victory credits.

Current technological sophistication allows remotely piloted vehicles to detect and destroy enemy forces on the ground, even if those targets are moving. Pilots on the ground in Nevada have accomplished air strikes against enemy targets on the other side of the world in

Afghanistan and Iraq. These capabilities might tempt some to believe that manned fighters are no longer necessary. However, remotely piloted vehicles are relatively slow and easy to shoot down. They are no match for faster, better armed, and more durable manned fighters that would be more likely to shoot them down than the other way around.

Future wars might well involve opponents with much more powerful air forces than those of Afghanistan in 2001 and Iraq in 2003. Former enemies such as China and Russia, for example, are currently developing fifth-generation fighter aircraft with stealth technology.³² Air forces with such technology might challenge U.S. control of the skies over battlefields. The skies themselves would be battlefields, with fighter aircraft clashing for control of the air. If the enemy ever gained air superiority, everything else would change, because the side that controls the air usually controls the surface. Control of the air is a prerequisite for victory. A powerful enemy fighter force, if not countered by a powerful U.S. fighter force, would threaten other U.S. aircraft such as remotely piloted vehicles, transports, helicopters, and intelligence, surveillance, and reconnaissance aircraft. In terms of national policy objectives, modern fighter aircraft are extremely expensive; but lack of modern fighter aircraft, especially against certain enemies, might be even more expensive.

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NOTES

¹ USAF Historical Study 133, *U.S. Air Service Victory Credits, World War I* (Maxwell AFB, AL: Air University, 1969), pp. 177-178.

² USAF Historical Study 85, *USAF Credits for the Destruction of Enemy Aircraft, World War II* (Washington, DC: Office of Air Force History, and Maxwell AFB, AL: Albert F. Simpson Historical Research Center and Air University, 1978), pp. 211-366.

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- ³ USAF Historical Study 81, *USAF Credits for the Destruction of Enemy Aircraft, Korean War* (Washington, DC: Office of Air Force History, and Maxwell AFB, AL: Albert F. Simpson Historical Research Center and Air University, 1975), p. 43 plus recent credit awarded to Charles Cleveland.
- ⁴ *Aces and Aerial Victories: The United States Air Force in Southeast Asia, 1965-1973* (Washington, DC: Office of Air Force History, and Maxwell AFB, AL: Albert F. Simpson Historical Research Center and Air University, 1976), p. 157.
- ⁵ "No Contest: Aerial Combat in the 1990s," research paper by Daniel L. Haulman, based on orders awarding aerial victory credits to USAF pilots in Southwest Asia, 1991-1995 and over the former Yugoslavia, 1994-1999.
- ⁶ *Jane's All the World's Aircraft, 1999-2000* (Surrey, UK: Sentinel House, 1999); *Jane's All the World's Aircraft, 2000-2001* (Surrey, UK: Sentinel House, 2000); *Jane's All the World's Aircraft, 2001-2002* (Surrey, UK: Sentinel House, 2001).
- ⁷ Forrest L. Marion, "The Destruction and Rebuilding of the Afghan Air Force," *Air Power Journal*, vol. no (Summer 2010), pp. 24-27, 31.
- ⁸ Benjamin S. Lambeth, *Air Power Against Terror* (Santa Monica, CA: RAND National Defense Research Institute, 2005), pp. 76-77.
- ⁹ Benjamin S. Lambeth, *Air Power Against Terror* (Santa Monica, CA: RAND National Defense Research Institute, 2005), pp. 82, 85-88.
- ¹⁰ Benjamin S. Lambeth, *Air Power Against Terror* (Santa Monica, CA: RAND National Defense Research Institute, 2005), pp. 84-85.
- ¹¹ Anthony H. Coresman, *The Lessons of Afghanistan* (Washington, DC: Center for Strategic and International Studies, 2002), p. 15.
- ¹² Williamson Murray and Maj. Gen. Robert H. Scales, Jr., *The Iraq War: A Military History* (Cambridge, MA: Belknap Press, 2003), pp. 163, 180-181.
- ¹³ Williamson Murray and Maj. Gen. Robert H. Scales, Jr., *The Iraq War: A Military History* (Cambridge, MA: Belknap Press, 2003), pp. 163, 180-181.
- ¹⁴ Richard P. Hallion, *Storm Over Iraq* (Washington, DC: Smithsonian Institution Press, 1992).
- ¹⁵ CCAF Special Order GA-1, 1991; USCENTAF Special Order GA-22 dated 15 June 1991; CCAF Special Order GB-386, 1993; CCAF Special Order GA-32, 1995; CCAF Special Order GA-33, 1995; Air Force Historical Research Agency aerial victory credits home page.
- ¹⁶ CCAF Special Order GA-1, 1991; USCENTAF Special Order GA-22 dated 15 June 1991; CCAF Special Order GB-386, 1993; CCAF Special Order GA-32, 1995; CCAF Special Order GA-33, 1995; Air Force Historical Research Agency aerial victory credits home page.
- ¹⁷ Gulf War Air Power Survey (S) vol. II, part I, Eliot A. Cohen, editor; Barry D. Watts and Williamson Murray, principal authors. Information used is (U), p. 202.
- ¹⁸ Gulf War Air Power Survey (S) vol II, part I Eliot A. Cohen, editor; Barry D. Watts and Williamson Murray, principal authors. Information used is (U), pp. 203-204, 209-211; Gulf War Air Power Survey (S), vol. II, part II, Eliot A. Cohen, editor; Barry D. Watts and Thomas A. Kearney, principal authors. Information used is (U), p. 156, Table 10; Tom Clancy and Gen. Chuck Horner, *Every Man a Tiger* (New York: G. P. Putnam's Sons, 1999), p. 358.
- ¹⁹ Gulf War Air Power Survey (S), vol. II, part II, Eliot A. Cohen, editor; Barry D. Watts and Thomas A. Kearney, principal authors. Information used is (U), pp. 145, 147, 150-154, 156, Table 10.
- ²⁰ Gulf War Air Power Survey (S), vol. II, part II, Eliot A. Cohen, editor; Barry D. Watts and Thomas A. Kearney, principal authors. Information used is (U), pp 147-148, 156, Table 10; Tom Clancy and Gen. Chuck Horner, *Every Man a Tiger* (New York: G. P. Putnam's Sons, 1999), pp. 358 and 478.
- ²¹ Gulf War Air Power Survey (S) vol. II, part II, Eliot A. Cohen, editor, Barry D. Watts and Thomas A. Kearney, principal authors. Information used is (U), p. 156, Table 10.
- ²² Gulf War Air Power Survey (S), vol. II, part II, Eliot A. Cohen, editor; Barry D. Watts and Thomas A. Kearney, principal authors. Information used is (U), p. 158.
- ²³ A. Timothy Warnock, editor, *Short of War: Major USAF Contingency Operations* (Washington, DC: Air Force History and Museums Program, 2000), pp. 179-195.
- ²⁴ Central Command Air Forces Special Order GA-1, issued in 1993, and Department of the Air Force Special Order GB-386, also issued in 1993.

²⁵ Henry E. Mattox, *A Chronology of United States-Iraqi Relations, 1920-2006* (Jefferson, NC: McFarland and Company, Inc., 2008), p. 101-104.

²⁶ Rod Nordland, "Remnants of Iraq Air Force Are Found," *New York Times*, August 31, 2009.

²⁷ Henry E. Mattox, *A Chronology of United States-Iraqi Relations, 1920-2006* (Jefferson, NC: McFarland and Company, Inc., 2008).

²⁸ R. Jeffrey Smith, "Internal Dissent in Military Said to Precede Iraqi Purge: Saddam Reportedly Climbs Foes Plotted to Kill Him," *The Washington Post*, July 10, 1992.

²⁹ Paul Jackson and Lindsay Peacock, *Jane's World Air Forces*, Issue Sixteen (Coulsdon, UK: Jane's Information Group, 2002), pp. 196-197; Henry E. Mattox, *A Chronology of United States-Iraqi Relations, 1920-2006* (Jefferson, NC: McFarland and Company, Inc., 2008), p. 111.

³⁰ Paul Jackson and Lindsay Peacock, *Jane's World Air Forces*, Issue Sixteen (Coulsdon, UK: Jane's Information Group, 2002), pp. 196-197.

³¹ Williamson Murray and Robert H. Scales, Jr., *The Iraqi War* (Cambridge, MA: Belknap Press of Harvard University, 2003), p. 163, 170, 171, 180.

³² Michael Auslin, "The Growing Threat From China's Air Force," *The Wall Street Journal*, August 24, 2011, p. 2.