

# AIRPOWER DOLLARS AND SENSE

## RETHINKING THE RELATIVE COSTS OF COMBAT

By LEE T. WIGHT

Since the end of the Cold War and the realization that few adversaries can compete directly with American conventional military power, the term *asymmetric warfare* has become a staple of the contemporary lexicon. Yet asymmetric warfare is hardly a new concept. Ever since man learned that a club improved his ability to batter his fellow man, he has sought an asymmetric edge over his opponent. Once aviation was added to the military arsenal, visionaries imagined bypassing the indecisiveness of trench warfare to strike directly at the heart and home of the enemy. Giulio Douhet and Billy Mitchell took the concept further—possibly to airpower’s immediate detriment—and argued airpower alone could win wars, igniting a debate which rages unchecked to this day.<sup>1</sup> This article illustrates how history has rendered the “decisiveness” argument moot and studies eight contemporary military operations—half of them land-centric and half air-centric—in

terms of their relative “costs” (see table). It then makes prescriptive recommendations for future American policy based on airpower’s apparent lower “costs” and its potential ability to enable indigenous ground forces.

### Can Airpower Be Decisive?

A reasonable but critical analyst might argue that airpower’s ability to win wars depends heavily on the nature of the adversary, objectives of the conflict, and capabilities at hand. For example, he could argue that air-delivered nuclear weapons proved decisive in ending the World War II conflict with Japan. Others may argue that even absent an invasion of the Japanese homeland, the Japanese would have eventually collapsed from the combined effects of Curtis LeMay’s firebombing campaign and the starvation being forced on the Japanese people by the air and naval blockade of their islands. Contemporary airpower theorists such as John Warden would

argue that airpower can be decisive against an adversary led by a single charismatic individual or leadership group by decapitating the leader(s), resulting in a collapse of the organization.<sup>2</sup> Regardless, there are those who maintain airpower alone cannot ever be decisive and its primary purpose is to provide supporting fires, intelligence, and mobility to the land elements that must close with the enemy to achieve victory.

Logically, objectives are the key to determining when victory is achieved. If conquering a country or retaining territorial integrity is the objective, significant land forces will likely be required. If regime change is the objective, however, can that be achieved without the physical occupation of an enemy’s territory by American forces? Recent events in Libya confirm this potential, while Kosovo and Operation *Enduring Freedom* in Afghanistan offer earlier but similar precedents. Although the specified objectives of *Enduring*

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## Comparison of Recent U.S. Air- and Land-centric Military Operations

Conflict	Type	Duration	Direct Costs (FY10\$) <sup>1</sup> (M: million; B: billion; T: trillion)	U.S. Casualties <sup>2</sup> (D: dead) (W: wounded)	Civilian Casualties <sup>3</sup> (estimated)	Strategic Objective(s) <sup>4</sup>	Objectives Achieved?
Vietnam	Land	1956–1975	\$677B–\$1.04T	58,236(D)/153,452(W)	486,000–1,200,000	Preserve government of South Vietnam	No
Panama 1989 ( <i>Just Cause</i> )	Land	7 days	\$287.5M	23 (D)/322 (W)	500	Regime change	Yes
Iraq 1991 ( <i>Desert Storm</i> )	Air	42 days	\$97.7B	148 (D)/467 (W)	1,000–5,000	Liberate Kuwait	Yes
Kosovo 1999 ( <i>Allied Force</i> )	Air + Indigenous ground	78 days	\$19.6B	0 (D)/0 (W)	500–5,000	Stop ethnic cleansing	Yes
Afghanistan 2001–2003 ( <i>Enduring Freedom I</i> )	Air + Indigenous ground	2001–2003	\$42B <sup>5</sup>	109 (D)/137 (W)	3,100–3,600	Regime change/destroy terrorist infrastructure	Yes
Iraq 2003 ( <i>Iraqi Freedom</i> )	Land	2003–2011	\$800B	4,400(D)/32,000(W)	34,832–793,663	Regime change/foster democracy, liberal values	Yes/Unknown
Afghanistan 2004 ( <i>Enduring Freedom II</i> )	Land	2004–2014?	-\$958B <sup>6</sup>	-2,160(D)/-20,000 (W) <sup>7</sup>	10,960–46,000 <sup>8</sup>	Foster democracy/liberal values	Unknown
Libya 2011 ( <i>New Dawn/Unified Protector</i> )	Air + Indigenous ground	8 months, 8 days	\$1.1B	0 (D)/0 (W)	9–85 <sup>9</sup>	Protect civilians/regime change	Partially/Yes

1. All costs are approximate as referenced in the text and converted to fiscal year 2010 dollars using previously described methodology.

2. Numbers are for U.S. forces only, although coalition/friendly forces generally suffered losses also, but at lower rates. Breakouts by nationality are available at Web sites [icasualties.org](http://icasualties.org) and [word/iq.com](http://word/iq.com). Fatalities are combat-related only, where available. Most wounded numbers do not specify origin of the injury, but are presumed to be combat-related.

3. Numbers are estimated as cited and described in the text. They include postulated minimum and maximum numbers and are those attributed to U.S./coalition military combat operations, not those due to ethnic cleansing, civil war, disease outbreaks, and so forth, even though those may be related.

4. Although complete objectives are detailed in the text, this table illustrates only the major specified or implied strategic objectives.

5. "Estimated War-Related Costs, Iraq and Afghanistan," November 22, 2011, available at [www.infoplease.com/ipa/A0933935.html](http://www.infoplease.com/ipa/A0933935.html).

6. Estimated through 2014, less 2001–2003 costs previously referenced.

7. Estimated numbers if present trends continue through 2014, less approximate Operation *Enduring Freedom* numbers for deaths.

8. Actual high estimate is 49,600 corrected to account for Operation *Enduring Freedom* figures cited in the same estimate.

9. Nazish Fatima, "NATO accused of having minimized civilian casualties in Libya," *AllVoices.com*, May 14, 2011.

*Freedom* were aimed at removing the Taliban's military capability, removing the regime from power was at least an implied objective immediately following the 9/11 terror attack on the U.S. homeland. These objectives were successfully completed using airpower to back indigenous ground forces (the Northern Alliance) supported by a cadre of U.S. special forces.<sup>3</sup> What if the objective of combat is forcing a regime to alter such policies as committing genocide or acquiring nuclear weapons? North Atlantic Treaty Organization (NATO) air operations over Kosovo were an example of the former during Operation *Allied Force*, while Israeli air raids on both Iraqi and Syrian nuclear facilities<sup>4</sup> were airpower approaches to

the latter. Certainly a strong argument could be made that airpower was the most significant, if not completely decisive, contributor to expelling Iraqi forces from Kuwait during Operation *Desert Storm*.<sup>5</sup>

### What about Land Forces?

Even casual observers of current events are aware of several recent land-centric approaches to regime change for affecting an adversary's strategic decisionmaking. Forcible regime change using a U.S.-led ground force (although supported by the full spectrum of joint fires including a large air component) was accomplished during Operation *Iraqi Freedom* and led to an even larger American

land force presence in support of subsequent stability operations.<sup>6</sup> The 2005 Taliban resurgence in Afghanistan eventually led to a significant expansion of American, NATO, and other coalition land forces deployed there, resulting in a "surge" to over 150,000 land troops to interdict the terror networks of al Qaeda and its affiliates, while setting conditions for the return of security and governance to the Afghans in support of the current version of Operation *Enduring Freedom*.<sup>7</sup> By contrast, Operation *Just Cause* featured a relatively small U.S. land force of approximately 21,000, supported lightly by airpower, to rapidly effect regime change in Panama by capturing Manuel Noriega.<sup>8</sup> As all



of these examples illustrate, under the right circumstances, either predominantly air- or land-centric operations can be successfully used to achieve national military objectives.

### The Limits of Military Power

Everything has its limits. Military power is certainly not an exception to this rule. In all of these studied operations, military forces achieved operational objectives. Even in Vietnam, U.S. forces won almost every significant military engagement. As history has shown, though, tactical military victories failed to achieve the strategic political objective of preventing the fall of the South Vietnamese government. While the *Just Cause* operations appear to have been successful on both military operational and political strategic levels, other examples are less clear cut. *Desert Storm* is generally regarded as an overwhelming military success; however, it is debatable whether the stated national policy objectives of “ensuring the security and stability of Saudi Arabia and other Persian Gulf nations” and “[ensuring] the safety of American citizens abroad”<sup>9</sup> are achievable by any military means, let alone whether or not *Desert Storm* air and land operations contributed positively or negatively to either of them. Likewise, while the military was able to end the regime of Saddam Hussein during *Iraqi Freedom*, defending the American people requires more than an invasion of Iraq, an action that history may ultimately judge as indecisive.<sup>10</sup> *Enduring Freedom* operations share the same challenge. Terrorist operations and training camps in Afghanistan have certainly been

disrupted since October 2001, but the cessation of all terrorist operations in Afghanistan is something that is likely beyond the potential of military operations to achieve.<sup>11</sup>

Notably, this article lists cases in which both air- and land-centric military operations have achieved their objectives, as well as several in which success has been or may prove elusive. While success is certainly possible, one should also recognize that either form may also prove indecisive or fail entirely. This article does not intend to argue that one form of warfare can prove more decisive than the other. Astute policy analysts recognize there are some tasks unsuitable for military actions alone that must involve other levers of national power in order to have real potential to succeed. Therefore, we turn to the central thesis of this article, a comparison of the relative costs of land- versus air-centric operations— independent of their potential or actual success.

### What Do Military Operations Cost?

Those who continue to debate whether air-centric operations can be successful risk being labeled pedantic or parochial and miss the point entirely in today’s financial climate. Former President Bill Clinton famously stated, “It’s the economy, stupid!” In the current budget environment, that statement could equally apply to military operations. With the U.S. deficit at a record \$15 trillion,<sup>12</sup> the Department of Defense is already executing approximately \$400 billion in cuts. At least that much more is anticipated for the next 10 years, especially now that the congressional budget “super committee” has failed to reach

agreement. Fiscal issues have become one of the most critical calculi for military and political decisionmakers today.

Money aside, there are other costs to military operations. Traditional statecraft measures military actions in terms of the cost to the nation in “blood and treasure.” Whether the cost in terms of blood in this context refers directly to deaths, injuries, or long-term rehabilitation, war always has a human toll. These human and economic costs, combined with the conflict’s duration and perceived effect (or lack thereof) on the American public, shape what is often described as the U.S. “center of gravity”— public opinion. Indeed, in a democracy, this ultimately determines how long the government will remain engaged in a conflict. Thus, with our definition of *cost* as national blood and treasure, this article first compares recent land- and air-centric military operations to determine which might be considered more cost effective in the national interest.

### Costs of Land Operations

Looking first to Iraq (Operation *Iraqi Freedom*), where the U.S. presence has recently been declared over by President Barack Obama,<sup>13</sup> the most frequently advanced dollar cost estimates are in the neighborhood of \$800 billion, although some observers note ongoing medical treatment and replacement equipment could bring the eventual total to over \$4 trillion.<sup>14</sup> Total U.S. casualties number around 32,000 over a period of almost 9 years, including approximately 4,400 deaths.<sup>15</sup> In terms of objectives, a tyrant was removed, the Iraqi people were liberated, and Iraq did not

acquire nuclear weapons. Long-term stability, by any observer's estimate, is fragile at best and whether the state ultimately survives intact is anyone's guess. Assessing whether the invasion achieved the stated objective of defending the American people has been widely debated and is much more difficult to assess.

Operations in Afghanistan (*Enduring Freedom*) continue, and if American forces remain as projected until at least 2014, it will have taken 13 years in total (albeit several of those years were low intensity while operations were focused in Iraq), and if trends continue, it will cost upward of \$1 trillion, approximately 2,300 deaths, and approximately 20,000 wounded.<sup>16</sup> While it is imprudent to assess objectives from an operation yet to be completed, so far thousands of terrorists have been killed and the Taliban have certainly been removed from leadership of the government. Yet they are still present in the country, remain active, and may eventually be reincorporated into the government (by Afghan choice). Much like Iraq, a crystal ball is needed to determine whether democracy, rule of law, and human rights will ultimately bloom from the seeds planted by the International Security Assistance Force, and doubters will continue to cite the strong tribal structure of Afghanistan and limited history of an effective or accepted national government.<sup>17</sup>

The proverbial elephant in the room in terms of these types of large, land-centric occupations is, of course, Vietnam. Almost 20 years of conflict there cost approximately 60,000 U.S. Servicemembers killed or missing and over 303,000 wounded. Direct dollar cost estimates vary between \$130 and \$200 billion (approximately \$677 billion and \$1.04 trillion in 2010 dollars),<sup>18</sup> with an approximate indirect dollar cost at least equaling that in terms of rehabilitation, debt interest, and payments to veterans and their families.<sup>19</sup> Despite this investment and the valor of those involved, in the final analysis, the effort failed to prevent the South Vietnamese government from falling.<sup>20</sup> In fairness, however, success or failure of the "proxy war" against the Soviet Union must be judged in the context of the eventual U.S. Cold War victory and subsequent collapse of the Soviet empire. Whether or not the will of the United States to engage in Vietnam at that cost ultimately affected the outcome of the larger strategic contest must be considered but can never be proven.

A much easier example to assess is the 1989 U.S. intervention in Panama (Operation *Just Cause*). There, approximately 20,000 ground troops, supported to some degree by airpower, engaged in a week-long operation to capture Manuel Noriega. At a cost of 23 U.S. troops killed, approximately 322 wounded, several helicopters lost,<sup>21</sup> and approximately \$163.6 million in direct costs<sup>22</sup> (estimated to be approximately \$287.5 million in 2010 dollars),<sup>23</sup> regime change occurred. Noriega was captured, and after serving prison sentences in the United States and France, has been returned to Panamanian custody to face additional charges for allegedly murdering political opponents.<sup>24</sup> After the intervention, the United States additionally pumped several billion dollars into the Panamanian economy to facilitate recovery.<sup>25</sup>

### Costs of Air Operations

Turning to air-centric operations, the opening stages of *Desert Storm* consisted of over a month<sup>26</sup> of airstrikes, credited with so gutting the Iraqi ground forces that they placed "Iraq in the position of a tethered goat," according to the war's air boss, General Charles Horner, USAF.<sup>27</sup> A land force built around 17 divisions and approximately 500,000 coalition soldiers and marines required only 100 hours to expel the decimated Iraqi forces from Kuwait.<sup>28</sup> During the operation, 20 airmen were lost (14 battle-related), and there was a total of 293 U.S. fatalities (148 battle-related fatalities) with 467 wounded.<sup>29</sup> When President George W. Bush announced the operation complete, all Iraqi forces had been withdrawn from Kuwait, the legitimate government of Kuwait was restored, and the security and stability of Saudi Arabia and other Persian Gulf nations were ensured for the near term.<sup>30</sup> Cost estimates in this case are difficult to determine, as multiple nations participated and some costs were eventually reimbursed to the United States; regardless, direct U.S. costs are estimated to have been between \$47.5 and \$61 billion with the General Accounting Office estimating total costs at approximately \$61.1 billion<sup>31</sup> (approximately \$97.7 billion in 2010 dollars).

Kosovo (*Allied Force*) took 78 days of combat operations, with the loss of an F-16, an F-117, and zero U.S. lives, and is estimated to have cost £2.63 billion (approximately \$4.2 billion) in direct costs for all NATO military

forces, with an estimated total cost of £31.67 billion (approximately \$50.67 billion), including aid, follow-on peacekeeping, and reconstruction.<sup>32</sup> The direct U.S. cost was approximately \$15 billion (approximately \$19.6 billion in 2010 dollars), not including subsequent foreign aid and peacekeeping costs.<sup>33</sup> Since 1999, the United States has provided over \$1.2 billion in assistance for Kosovo reconstruction, restoring self-governing institutions, and a viable economy.<sup>34</sup> At the conclusion of NATO combat operations, Serbian forces were driven out of Kosovo and Serbian President Slobodan Milosevic unconditionally accepted the peace terms presented by European Union and Russian envoys.<sup>35</sup> Milosevic was subsequently arrested in 2001 for war crimes, tried in The Hague, and eventually died in custody.<sup>36</sup> Similar to recent NATO operations in Libya, an indigenous ground force aided by NATO airpower gained effectiveness toward the end of the operation and may have contributed in part to Milosevic's eventual capitulation.

Turning to the post-9/11 response to al Qaeda in Afghanistan (*Enduring Freedom*), the air-centric portion of the operation, where the United States enabled the Northern Alliance forces with support from U.S. and British special forces on the ground, ran from approximately October 7, 2001, through the start of Operation *Anaconda* in March 2002,



when significant U.S. ground forces began to be introduced—although the operation officially ran through May 2003 when Secretary of Defense Donald Rumsfeld announced the end of Afghan combat.<sup>37</sup> Its original objectives were the destruction of terrorist training camps and infrastructure in Afghanistan, capture of al Qaeda leaders, and cessation of terrorist activities in Afghanistan.<sup>38</sup> As a result of these actions, the Taliban were driven from power and al Qaeda operations were significantly disrupted, although Osama bin Laden survived in Pakistan until 2011. During the operation, approximately 140 total coalition casualties were suffered through the end of 2003, with 109 of them U.S. lives lost.<sup>39</sup> Costs to date are estimated at \$443 billion along with 1,523 U.S. military lives lost.<sup>40</sup> Overall, of course, the results remain a work in progress and history will judge their eventual success or failure.

In the example du jour—Libya—airpower protected, to a degree, the civilian populace from slaughter by Muammar Qadhafi's supporters, enabled regime change, and facilitated the overthrow of Qadhafi himself (whether or not that was a specified objective of the operation). The cost was zero American or NATO lives lost, one F-15E lost, and about \$1.1 billion in direct costs over the course of the 8-month conflict.<sup>41</sup> One relatively unique aspect of the Libya operations was the rapid handover of combat operations to NATO, placing the United States in an active but supporting role.<sup>42</sup>

### Adding Up the Costs

A review of these land- and air-centric operations shows fairly clearly that some costs are an “apples to oranges” comparison—so different in some cases that one might say an “apples to transmissions” analogy is more apt. As far as monetary or treasure costs

or goods or services in exchange, is likewise difficult to decipher. Furthermore, some cost reports only include direct costs, while others are “total” costs.

Deciding the total cost of an operation is somewhat subjective, as one has to draw a line at some point regarding veteran's compensation, survivor and social security benefits, reconstruction, and foreign aid. Some of these factors are never completely known or they continue to develop through the lifespans of those who participated in the operation. Total costs, in theory, would also include all of the research and development costs of the weapons systems and equipment used, along with the weapons themselves, as well as the training, education, and accession costs of the personnel who employ them.

Furthermore, all costs must be normalized for the effects of inflation in order to provide a relevant basis of comparison. For operations spanning several years—such as Vietnam, Iraq, and Afghanistan—direct and indirect costs for each year of the operation would have to be calculated and similarly adjusted to arrive at a total cost—a project worthy of its own study.

After considering all of the above factors, it becomes apparent that when comparing the relative costs in terms of treasure, the most useful monetary metric is the generalization that dollar costs increase as a function of the time required to complete the operation and the amount of American forces committed to the fight. Generally speaking, as supported by each of the cases considered in this article, we can conclude that shorter duration operations cost less financially. As previously noted, time may also be relevant—but not necessarily decisive—in terms of its effect on U.S. public opinion. The American public has supported long-duration conflicts: almost 20 years in the case of Vietnam and over 20

however, as the land-centric Operation *Just Cause* required only a week for completion.

Another aspect to consider is the long-term sustainability of the changes implemented by the military operations. The gains in Iraq are fragile, nascent, and easily reversible, as they also appear to be in Afghanistan to date. A counterargument to extended American presence is the development of a perceived dependence on the United States so long as its forces perform security and governance tasks for a population that is either uncommitted or ambivalent to the changes (at least from a liberal, human rights, and democracy perspective). As with the experience in Vietnam, there is a strong possibility that many if not all of these changes may fail upon the complete withdrawal of U.S. forces. While it is again far too early to tell, there is a strong argument to be made that in airpower-centric actions where airpower enabled an indigenous ground force (Kosovo, Libya, *Enduring Freedom*), ground forces had more of a personal stake in the outcome because they shared in both the sacrifice of combat and the fruits of victory. They also remain long after U.S. or other foreign combat forces are withdrawn—leading to a higher level of commitment to the changes for which they fought and potentially making them more sustainable over the long term. One could also make the argument that even if the operations ultimately prove indecisive, whether spearheaded by either air- or land-centric means, the lower cost operations would still be a better choice from an American perspective.

Additionally, the supporting role template used in Libya may also have the benefit of reducing indirect reconstruction and rebuilding costs. In a U.S.-led operation, there appears to be a long-term sense of ownership of the problem, similar to the retail “you break it, you buy it” mantra. As previously documented, all U.S.-led air- or land-centric operations have entailed significant reconstruction costs. However, in Libya, there does not appear to be the same sense. The U.S. decision to yield political leadership of the NATO-sponsored operation to the United Kingdom and France (while still providing the bulk of the support, enabling operations, and initial strikes) may reduce the long-term costs to U.S. taxpayers.<sup>45</sup>

Although attempting to reconcile the financial costs of these operations is difficult, this study does make abundantly clear that

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go, in some cases, units failed to document them to such an extent that even the General Accounting Office was unable to accurately determine costs.<sup>43</sup> In other cases, costs were reimbursed (or planned to be reimbursed) by other nations.<sup>44</sup> Whether or not the U.S. Government ever received full reimbursement,

years combined in Iraq and Afghanistan. The most costly operations have included large American ground forces. In this context, airpower has generally been able to achieve results significantly faster, and thus was less costly in terms of treasure than were land-centric means. No rule is without its exception,



U.S. Air Force (William Greer)

A-10 Thunderbolt

in terms of blood costs, airpower-centric operations have been dramatically cheaper for friendly forces. Despite the tremendous reduction in land force casualties from Vietnam (approximately 60,000 killed) compared to either Iraq or Afghanistan (approximately 6,200 total killed to date), these reduced casualties pale in comparison to the combined costs of the air-centric operations of Kosovo, *Enduring Freedom*, and Libya, which featured an unprecedented loss of zero U.S. or NATO lives. From an airpower perspective, *Desert Storm* only took the lives of 14 aviators in battle-related deaths, for a loss rate that was “lower than normal training” according to General Horner.<sup>46</sup> By comparison, even the shortest land-centric operation studied here, *Just Cause*, cost 23 killed and over 320 wounded.<sup>47</sup> To put that in perspective, less American blood was spilled in four complete air-centric operations, totaling over 3 years of combat, than was lost in a single, 1-week land-centric conflict.

A critic might argue that these low casualty figures were the result of the air-centric conflicts occurring against an opponent that was unable or unwilling to directly face American airpower. The ultimate ease of the coalition victory in *Desert Storm* tends to obscure the fact that prior to 1990, Iraq had the world’s fifth-largest military, including a substantial and integrated air defense, and had added so much capability

it was described as “the world’s largest arms market,”<sup>48</sup> making it the largest military in the Middle East, including over 700 modern military aircraft.<sup>49</sup> Furthermore, the Soviet-trained Serbian air defenses were highly capable, effectively integrated, and, for the most part, willing to fight. In fact, NATO never gained air supremacy and suffered the loss of one of its most technologically sophisticated aircraft—a “stealth” F-117.<sup>50</sup> Even Afghanistan had air defenses that troubled the Soviets during their occupation.<sup>51</sup> That American airpower achieved such incredible results in those conflicts at such a low cost in blood and the fact that other adversaries chose to concede air dominance rather than fight is exactly the point. American airpower is a tremendous asymmetric advantage and has proven that it can achieve results at costs other means cannot match.

### Everyone Matters

When coldly calculating the “military” costs of an operation, it can be easy to overlook the fact that noncombatants traditionally pay an equally heavy or even heavier cost in blood than the military participants on either side.<sup>52</sup> While accurate civilian casualty statistics are notoriously difficult to obtain and their interpretation is wildly speculative, the “faster is better” mantra related in this article regarding the cost of military operations also appears relevant in terms of reducing civilian

casualties—regardless of the predominantly air- or land-centric nature of the combat.

Considering short-duration operations on one hand, the week-long land-centric invasion of Panama reportedly caused about 500 civilian casualties.<sup>53</sup> A similar figure is noted by Human Rights Watch for *Allied Force*, although other estimates range between 1,200 and 5,000.<sup>54</sup> Another relatively short-duration combat operation, *Desert Storm*, resulted in civilian deaths allegedly ranging from 1,000 to 5,000.<sup>55</sup> The standard-bearer for low civilian casualties, however, may be the recently concluded Libya operation, in which only a few civilian deaths were reported as a result of NATO combat.<sup>56</sup>

On the other hand, as one might predict, longer duration operations tend to have significantly higher associated civilian casualty figures. While again subject to a wide number of estimations, Afghanistan civilian death figures are placed by one source at approximately 2,777 in 2010 alone, although the U.S. military has been fighting there since 2001.<sup>57</sup> This casualty figure is similar to the total estimated for the duration of *Desert Storm*. Furthermore, the numbers for *Iraqi Freedom*, where a low estimate of 34,832 dead to a high estimate of 793,663,<sup>58</sup> and Vietnam, with estimates ranging from 486,000 to over 1.2 million fatalities, illustrate the far end of the spectrum.<sup>59</sup> Interestingly, the Iraq and Afghanistan data are especially

telling, inasmuch as coalition forces have placed an especially high priority on avoiding such casualties and friendly combatants are using the latest in precision weaponry under very strict rules of engagement.<sup>60</sup>

Thus, despite all efforts to reduce the potential for harm to civilians, it appears almost inevitable that some will die as

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collateral damage of military conflicts. However, the data reviewed here appear to support the proposition that generally speaking, shorter conflicts can reduce the number of civilian casualties. If airpower indeed can shorten a conflict, then it can also reduce the cost in terms of civilian blood indirectly involved in these hostilities.

### Implications

Returning to President Clinton's exhortation about the economy and looking at the bottom line, the inescapable conclusion is that airpower—in terms of blood and treasure as defined in this article and under certain circumstances—while not the sole answer to all military problems, can provide cheaper and generally more rapid solutions to many national security challenges. Moreover, when used to enable indigenous ground forces, such an approach may lead to greater indigenous commitment and a more enduring outcome. An airpower-centric approach may also offer less long-term entanglement, reducing the perceived need for the United States to effectively buy the broken country for an extended reconstruction period.

It is worth restating this does not mean that airpower is a panacea for all political ills, or does it mean that it provides an absolute guarantee against any future American or civilian loss of life. It is also critical to note that senior decisionmakers may not always have a choice to employ air or ground forces exclusively. The nature and makeup of forces required will always depend on the desired objectives and the situations at hand. Capable indigenous ground forces may not always be available to be enabled by airpower. Our nation will likely always need a full complement of military capabilities spanning the range of military operations, and there may well be future conflicts in

which having the world's best land forces is the only guarantee of success.

This article is not intended to argue for the abandonment of our unmatched land force capabilities. Under the right circumstances, both land- and air-centric operations can each achieve desired outcomes, either individually or in combination. However, as

purse strings tighten to the breaking point and one assesses long-term security challenges along with American will to remain engaged abroad in large numbers, it appears that in many future conflicts, airpower may offer American taxpayers the best return on their investment of blood and treasure. When given a choice—as an accountant and a certain former President might say—it is the bottom line that really matters. **JFQ**

### NOTES

<sup>1</sup> See, for example, Stephen O. Fought and O. Scott Key, "Airpower, Jointness, and Transformation," *Air and Space Power Journal* (Winter 2003), available at <[www.airpower.au.af.mil/airchronicles/apj/apj03/win03/fought.html](http://www.airpower.au.af.mil/airchronicles/apj/apj03/win03/fought.html)>; and Randy Kee, "Brig Gen Billy Mitchell's Continuing Legacy to USAF Doctrine," *Chronicles Online Journal*, October 25, 2011, available at <[www.airpower.maxwell.af.mil/airchronicles/cc/kee1.html](http://www.airpower.maxwell.af.mil/airchronicles/cc/kee1.html)>.

<sup>2</sup> David R. Mets, *The Air Campaign: John Warden and the Classical Airpower Theorists*, rev. ed. (Maxwell Air Force Base, AL: Air University Press, April 1999), 59–60.

<sup>3</sup> See "History of Operation Enduring Freedom," available at <[www.wordiq.com/definition/Operation\\_Enduring\\_Freedom](http://www.wordiq.com/definition/Operation_Enduring_Freedom)>; and "President Bush Announces Military Strikes in Afghanistan," *GlobalSecurity.org*, available at <[www.globalsecurity.org/military/library/news/2001/10/mil-011007-usia01.htm](http://www.globalsecurity.org/military/library/news/2001/10/mil-011007-usia01.htm)>.

<sup>4</sup> David E. Sanger and Mark Mazzetti, "Israel Struck Syrian Nuclear Project, Analysts Say," *The New York Times*, October 14, 2007, available at <[www.nytimes.com/2007/10/14/washington/14weapons.html](http://www.nytimes.com/2007/10/14/washington/14weapons.html)>.

<sup>5</sup> For a debate over the relative importance of airpower vis-à-vis ground forces, see Richard P. Hallion, *Storm Over Iraq: Air Power and the Gulf War* (Washington, DC: Smithsonian Institution Press, 1992); and Martin Wojtyciak, "Another View of the Myths of the Gulf War," *Aerospace Power Journal* (Fall 2001), available at <[www.airpower.au.af.mil/airchronicles/apj/apj01/fal01/wojtyciak.html](http://www.airpower.au.af.mil/airchronicles/apj/apj01/fal01/wojtyciak.html)>.

<sup>6</sup> Jim Garamore, "Rumsfeld Lists Operation Iraqi Freedom Aims, Objectives," American Forces Press Service, March 21, 2003, available at <[www.af.mil/news/story.asp?storyID=32403155](http://www.af.mil/news/story.asp?storyID=32403155)>.

<sup>7</sup> "Obama Announces Quick Surge and Exit Plan," Fox News, December 2, 2009, available at <[www.foxnews.com/politics/2009/12/01/obama-announces-plan-dispatch-troops-afghanistan/](http://www.foxnews.com/politics/2009/12/01/obama-announces-plan-dispatch-troops-afghanistan/)>.

<sup>8</sup> See "Operation Just Cause," *GlobalSecurity.org*, available at <[www.globalsecurity.org/military/ops/just\\_cause.htm](http://www.globalsecurity.org/military/ops/just_cause.htm)>; and Air Combat Information Group, Central and Latin America Database, Panama, 1989, Operation "Just Cause," available at <[www.acig.org/artman/publish/article\\_160.shtml](http://www.acig.org/artman/publish/article_160.shtml)>.

<sup>9</sup> General Accounting Office (GAO), "Operation Desert Storm Objectives," in *Operation Desert Storm: Evaluation of the Air Campaign*, June 12, 1997, appendix V, available at <[www.fas.org/man/gao/nsiad97134/app\\_05.htm](http://www.fas.org/man/gao/nsiad97134/app_05.htm)>.

<sup>10</sup> Garamore.

<sup>11</sup> "History of Operation Enduring Freedom."

<sup>12</sup> See <[www.brillig.com/debt\\_clock/](http://www.brillig.com/debt_clock/)>.

<sup>13</sup> Ben Feller, "Iraq War Over, U.S. Troops Coming Home, Obama Says," Associated Press, October 22, 2011.

<sup>14</sup> David R. Francis, "Iraq War Will Cost More Than World War II," *The Christian Science Monitor*, October 25, 2011, available at <[www.csmonitor.com/Business/new-economy/2011/1025/Iraq-war-will-cost-more-than-World-War-II](http://www.csmonitor.com/Business/new-economy/2011/1025/Iraq-war-will-cost-more-than-World-War-II)>.

<sup>15</sup> Department of Defense, Operation Iraqi Freedom, New Dawn, Enduring Freedom Casualty Status as of October 24, 2011, available at <[www.defense.gov/news/casualty.pdf](http://www.defense.gov/news/casualty.pdf)>.

<sup>16</sup> Ibid.

<sup>17</sup> Dave Schuler, "What Are Our Strategic Objectives in Afghanistan?" *OutsidetheBeltway.com*, August 10, 2009, available at <[www.outsidethebeltway.com/what\\_is\\_the\\_strategic\\_objective\\_in\\_afghanistan](http://www.outsidethebeltway.com/what_is_the_strategic_objective_in_afghanistan)>.

<sup>18</sup> Oregon State University Political Science Department, 2011, "Individual Year Conversion Factor Tables," available at <<http://oregonstate.edu/cla/polisci/individual-year-conversion-factor-tables>>. All dollar costs cited in this article were converted to 2010 dollars using the methods detailed in this reference.

<sup>19</sup> See John S. Bowman, ed., *The Vietnam War: Day by Day* (New York: Bdd Promotional Book Co., 1989), which uses the \$150 billion direct cost figure; and 25<sup>th</sup> Aviation Battalion Web site, "History of Vietnam," available at <<http://25thaviation.org/id795.htm>>, which uses \$130 billion, but references a Cornell University study that calculated \$200 billion in direct costs.

<sup>20</sup> "Vietnam War Casualties," available at <<http://vietnamwar-database.blogspot.com/2010/11/vietnam-war-casualties.html>>.

<sup>21</sup> U.S. Army Center of Military History, *Operation "Just Cause": The Incursion into Panama*, available at <[www.history.army.mil/brochures/Just%20Cause/JustCause.htm](http://www.history.army.mil/brochures/Just%20Cause/JustCause.htm)>.

<sup>22</sup> GAO, *Panama: Cost of the U.S. Invasion of Panama*, NSIAD-90-279FS (Washington, DC: GAO, September 1990), available at <[www.legis-torm.com/score\\_gao/show/id/19610.html](http://www.legis-torm.com/score_gao/show/id/19610.html)>.

<sup>23</sup> Oregon State University Political Science Department, 2011.

<sup>24</sup> "Noriega returns to Panama a largely forgotten man," Associated Press, December 11, 2011.

<sup>25</sup> Air Combat Information Group. U.S. foreign aid to Panama since 1996 alone has totaled over \$1.1 billion. See "Just the Facts," available at <<http://justf.org/Country?country=Panama&year1=1996&year2=2012&funding=All+Programs&x=92&y=9>>.

<sup>26</sup> The actual length of the air campaign is debatable. Randy Roughton's dates result in 37 days and other sources show 38 days, but a GAO report lists 43 days. See Randy Roughton, "Desert Storm 20 Years Later: Lessons from Vietnam Guided Commanders as They Planned Gulf War Strategy," *Airman Magazine*, January 1, 2011, available at <<http://periodicals.faq.s.org/201101/2262756361.html>>; and GAO, *Operation Desert Storm: Evaluation of the Air Campaign*, Letter Report, "Appendix V: Operation Desert Storm Objectives," NSIAD-97-134 (Washington, DC: GAO, June 12, 1997), available at <[www.fas.org/man/gao/nsiad97134/app\\_05.htm](http://www.fas.org/man/gao/nsiad97134/app_05.htm)>.

<sup>27</sup> Roughton.

<sup>28</sup> Tim Thompson, "The U.S. Military and the Persian Gulf War," available at <[www.tim-thompson.com/desert-storm.html](http://www.tim-thompson.com/desert-storm.html)>.

<sup>29</sup> Roughton.

<sup>30</sup> GAO, *Operation Desert Storm: Evaluation of the Air Campaign*.

<sup>31</sup> See, for example, "Desert Storm, Operation," available at <[www.talktalk.co.uk/reference/encyclopaedia/hutchinson/m0031881.html](http://www.talktalk.co.uk/reference/encyclopaedia/hutchinson/m0031881.html)>; and "15 Year Anniversary of Start of First Gulf War, Desert Storm," available at <<http://ptsdcombat.blogspot.com/2006/02/15-year-anniversary-of-start-of-first.html>>, which lists the Department of Defense as the source of its figures. The GAO's *Operation Desert Shield/Storm: Costs and Funding Requirements* (Washington, DC: GAO, September 1991), lists \$47.1 billion as the total funding requirement and \$61.1 billion as total incremental costs, although the report states the lower figure may be overstated and documents the challenges with units failing to record incremental costs of the operation; available at <<http://archive.gao.gov/t2pbat7/145082.pdf>>.

<sup>32</sup> "Kosovo War Cost £30bn," BBC News, available at <<http://news.bbc.co.uk/2/hi/europe/476134.stm>>.

<sup>33</sup> "The Cost of Kosovo," *The Economist*, May 27, 1999, available at <[www.economist.com/node/322101](http://www.economist.com/node/322101)>.

<sup>34</sup> U.S. Agency for International Development, "Kosovo," available at <[www.usaid.gov/locations/europe\\_eurasia/countries/ko](http://www.usaid.gov/locations/europe_eurasia/countries/ko)>.

<sup>35</sup> "Operation Allied Force," *GlobalSecurity.org*, available at <[www.globalsecurity.org/military/ops/allied\\_force.htm](http://www.globalsecurity.org/military/ops/allied_force.htm)>.

<sup>36</sup> Sylvia Poggoli, "Milosevic: The Life and Death of a Strongman," National Public Radio, March 10, 2006, available at <[www.npr.org/templates/story/story.php?storyId=5257846](http://www.npr.org/templates/story/story.php?storyId=5257846)>.

<sup>37</sup> "History of Operation Enduring Freedom."

<sup>38</sup> Ibid.

<sup>39</sup> "Operation Enduring Freedom," *iCasualties.org*, available at <[www.icasualties.org/OEF/index.aspx](http://www.icasualties.org/OEF/index.aspx)>.

<sup>40</sup> Devin Dwyer, "Afghanistan War Costs Loom Large over Obama Troops Announcement," *ABC World News*, June 22, 2011, available at <<http://abcnews.go.com/Politics/afghanistan-war-costs-soar-obama-troops-announcement/story?id=13902853>>.

<sup>41</sup> Julian E. Barnes and Adam Entous, "NATO Air Strategy Gains Renewed Praise," *The Wall Street Journal*, October 21, 2011, available at <<http://ebird.osd.mil/ebfiles/e20111021849381.html>>.

<sup>42</sup> Adam Levine, "Lead from Behind or Leave That Strategy Behind in Libya," *CNN.com*, October 21, 2011, available at <<http://security.blogs.cnn.com/2011/10/21/lead-from-behind-or-leave-that-strategy-behind-in-libya>>.

<sup>43</sup> GAO, *Operation Desert Shield/Desert Storm*.

<sup>44</sup> "The Cost of Kosovo"; and GAO, *Evaluation of the Air Campaign, Operation Desert Storm*.

<sup>45</sup> Max Boot, "Did Libya Vindicate 'Leading From Behind'?" *RealClearWorld.com*, September 1, 2011, available at <[www.realclearworld.com/articles/2011/09/01/did\\_libya\\_vindicate\\_leading\\_from\\_behind\\_99654.html](http://www.realclearworld.com/articles/2011/09/01/did_libya_vindicate_leading_from_behind_99654.html)>.

<sup>46</sup> Roughton.

<sup>47</sup> U.S. Army Center of Military History.

<sup>48</sup> "Iraqi Army," *GlobalSecurity.org*, available at <[www.globalsecurity.org/military/world/iraq/army.htm](http://www.globalsecurity.org/military/world/iraq/army.htm)>.

<sup>49</sup> Department of State, "Iraq," available at <[www.state.gov/r/pa/ei/bgn/6804.htm](http://www.state.gov/r/pa/ei/bgn/6804.htm)>.

<sup>50</sup> Benjamin S. Lambeth, "Kosovo and the Continuing SEAD Challenge," *Aerospace Power Journal*, June 3, 2002, available at <[www.airpower.maxwell.af.mil/airchronicles/apj/apj02/sum02/lambeth.html](http://www.airpower.maxwell.af.mil/airchronicles/apj/apj02/sum02/lambeth.html)>.

<sup>51</sup> Rebecca S. Grant, "The Afghan Air War," Air Force Association, September 2002, available at <[www.afa.org/media/reports/afghanbook/](http://www.afa.org/media/reports/afghanbook/)>.

<sup>52</sup> Phillip S. Meilinger, "Lowering Risk: Air Power Can Reduce Civilian Casualties," *Armed Forces Journal*, July 2009, available at <[www.armed-forcesjournal.com/2009/07/4079006](http://www.armed-forcesjournal.com/2009/07/4079006)>.

<sup>53</sup> "Operation Just Cause."

<sup>54</sup> "Kosovo: Civilian Deaths in the NATO Air Campaign," Human Rights Watch, February 1, 2000, available at <[www.unhcr.org/refworld/country,,HRW,,SRB,,3ae6a86b0,0.html](http://www.unhcr.org/refworld/country,,HRW,,SRB,,3ae6a86b0,0.html)>.

<sup>55</sup> Francis.

<sup>56</sup> See Laurent Thomet, "NATO Declares Oct. 31 End to Libya Mission," *Defense News*, October 28, 2011, available at <[www.defensenews.com/story.php?c=MID&s=TOP&i=8083842](http://www.defensenews.com/story.php?c=MID&s=TOP&i=8083842)>; Amnesty International, "NATO Urged to Investigate Civilian Deaths during Libya Air Strikes," August 11, 2011,

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<sup>57</sup> Jim Michaels, "Taliban Behind Most Afghan Civilian Casualties," *USA Today*, June 22, 2011, available at <[www.usatoday.com/news/world/afghanistan/2011-06-22-afghan-civilian-casualties\\_n.htm](http://www.usatoday.com/news/world/afghanistan/2011-06-22-afghan-civilian-casualties_n.htm)>.

<sup>58</sup> Hannah Fischer, *Iraqi Civilian Deaths Estimates*, RS22537 (Washington, DC: Congressional Research Service, August 27, 2008), available at <[www.fas.org/sgp/crs/mideast/RS22537.pdf](http://www.fas.org/sgp/crs/mideast/RS22537.pdf)>. The most commonly accepted figures appear to be those compiled by the "Iraq Body Count," which shows 86,661 and 94,558 deaths between 2003 and 2008. Clearly that number is higher when extrapolated to the present.

<sup>59</sup> For a historical assessment of civilian casualties since the invention of airpower as well as an argument that airpower can reduce the risk of civilian deaths, see Meilinger. For a wide-ranging estimation of civilian deaths during the Vietnam conflict, see "Vietnam War Casualties."

<sup>60</sup> Thom Shanker, "NATO Tries to Reduce Afghan Casualties," *The New York Times*, September 16, 2008, available at <[www.nytimes.com/2008/09/17/world/asia/17gates.html](http://www.nytimes.com/2008/09/17/world/asia/17gates.html)>.