Understanding Airpower

Bonfire of the Fallacies

Colin S. Gray

This study rests upon two vital assumptions, both of them anathema to post-modern minds. First, it believes that historical truth can be found, or at least approached. Second, it believes in the utility of ambitious theory. The discussion here flatly rejects the proposition that "history" simply comprises competing "fables" told by historians with interests and attitudes.[1] Similarly, it dismisses almost out-of-hand the belief that one theory is worth about as much as any other, which is not very much. This analysis seeks to find plausibly verifiable truth and, as a consequence, to identify error, the "fallacies" in the secondary title. To understand airpower, most especially American airpower, is a task imbued with high significance for national and international security. But, this task is harassed and frequently frustrated by both unsound history and incompetent theorizing. The problem is that those who debate airpower typically seek the history that they can use to advantage, not the history that strives honestly to be true. As for the theory of airpower, it never did take off safely; it continues to fly in contested skies or to taxi indecisively on the runway. No single short study can aspire to correct for 90 years of poor history and shoddy theory, but it can at least make a start.

The hunter who seeks to find and slay fallacies about airpower finds himself in a target-rich environment. Paradoxically and ironically, airpower's most forceful advocates, from the time of Billy Mitchell (1920s) to the present, also have served as its worst enemies. *The prime loser has been US national security*. A good story overstated rapidly becomes unpersuasive

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to those as yet uncommitted. Moreover, generic critics of airpower have been delighted to hold the aerial arm to unrealistic standards for successful performance, as specified, or certainly implied, by its own spokespeople. This is frustrating, because theory useful for education and ultimately for guidance in action falls victim to unsafe historical judgments and insecure concepts.

Alas, this is just the way things are. Parochial analysis and counter analysis is a fact of life in the extended defense community. Exhortations for greater objectivity are entirely futile, no matter how sincerely they are meant. Like Caesar's Gaul, the military instrument is divided by geographical focus into three main parts, with space and cyberspace in addition pressing ever more insistently for status, attention, understanding, and funding. We may deter and, if need be, fight, one war, but we must fight it in its separate, albeit fairly interdependent, military geographies. Every community on Earth develops a protective ethos, invents a self-defining doctrine, and struggles to assert its material and spiritual interests.[2] Obviously, military communities can be no different from the norm. In other words, interservice rivalry is just an eternal fact of life. History and theory are prime weapons in this ongoing contest. Mythology matters. Legends have a lasting currency. Fallacies need to be exposed insofar as this is possible, if only to provide some policing discipline in a defense debate that can stray into the dysfunctional zone. An open market for ideas and evidence–based historical judgment is essential. Key to the quality of the historical and theoretical/doctrinal production offered in this market is a fearless commitment to burn such important fallacies as can be located and targeted. The hunt is on.

This is a two-step inquiry. First, the varied character of the challenge posed by major fallacies is identified and outlined. Not all fallacies are stamped from the same mold. Some are sincerely held, others are merely expedient beliefs, but most either are, or become, both. The human ability to adhere to that which serves what we believe to be our interests is all but infinite.

The second step is to find and expose major fallacies about airpower. Eight are selected for trial by critical analysis and empirical verification. Phillip S. Meilinger has already made a most useful contribution to the necessary mission, and this study is in his debt. His *Airpower: Myths and Facts* provides exemplary proof of what can be achieved by precision bombardment with a host of checkable facts.[3] My work here can be viewed

as an attempt, at least, to continue on from Meilinger's excellent history, albeit from a higher altitude. Deliberately, my aim is to find and destroy beliefs that have extensive leverage over practical matters of doctrine, posture, and operational behavior. My eight broad fallacies are not as obviously empirically refutable as were Meilinger's massacred 14, but, appearances to the contrary possibly notwithstanding, they are no less vulnerable to evisceration.

Fallacies to Left of Them, Fallacies to Right of Them, Volleyed and Thundered

I must apologize to the memory of Alfred, Lord Tennyson, whose immortal poem, "The Charge of the Light Brigade" (at Balaclava in 1854 in the Crimean War), is the inspiration behind the title to this section. Following Sun Tzu, we must begin by knowing the enemy.[4] Also in the Chinese tradition, we need to bear in mind the heavy salience of deception. Arguments apparently about airpower often conceal other agendas. Readers may choose to compose their own lists, but this study is content to get a grip upon its subject by means of recognizing, being alert to, no fewer than seven types of error or fallacy.

(a) 1. sincere
    2. insincere
(b) 3. factual
(c) 4. logical
    5. error of conception (wrong question, wrong answer)
(d) 6. refutable
    7. irrefutable

Purposely, these seven non-exclusive analytical scalpels do not comprise a uniform tool set, but they do tend to cluster. Each of the fallacies exposed below can be categorized by (a) motive, (b) character, (c) logic, and (d) evidence. It may be needless to add that a fallacy may comprise a compound product made of factual, logical, and fundamental conceptual error—a "triple whammy!"—as well as being either sincerely held or not, and more, or less, refutable. *The law of unintended consequences tells us that*

when airpower theorists commit gross errors of fact, logic, and conception, they arm their enemies in debate.

This text generally chooses to dignify the historical reality of argument about roles, missions, policy, strategy, weapons, and budgets, with the word "debate." Strategic intellectual debate is important, but it is only one strand to what we know without overmuch affection as "the policy process." This process is political by any definition, which means it is about relative power. US national security policy and strategy emerge typically with characteristically bland and even banal content from a protracted, indeed endless, political struggle among a small set of stakeholders. Because policy and strategy are of necessity intensely political in nature, they are all about "who gets what, when, how,"[5] and what is done with what is won. There is no Great Objective Strategic Person as a stakeholder. Although ever higher levels of political authority should equate to ever more objectivity vis-à-vis the contending parochialisms at lower levels—among the services, or among military functions—one soon realizes that every player in the grandly complex policy-and strategy-making process has his own interests. And, those distinctive interests paint strategically unique pictures of reality for their players.

Overall, even if it is conceded to be discoverable, how can strategic truth possibly matter in the context of a policy-and strategy-making process that apparently is so indifferent to it? The basic answer to this skeptical cynical question is that the United States can be well or ill prepared along a spectrum for the strategic challenges it will face. The content of the choices made on military posture and strategy matter deeply, whether or not it is the product of careful strategic analysis. Moreover, practicably viewed, the US government is no more, or less, peopled by Rational Strategic Persons than is the world at large. Every polity, no matter what its culture, makes strategic decisions through a political process. Furthermore, even though important tracts of national security country can be cleared of some, at least, major fallacies, much that is key to our future safety is inherently unknowable and therefore must be contestable. At the very least we are obligated to harass the purveyors of fallacy, embarrass them, and limit their ability to cause harm. Although it is all too easy to be pessimistic over the prospects for strategic understanding, it is a fact that better ideas succeed against worse ideas more often than might be expected. While there is much to criticize about US defense policy, strategy, posture, and behavior, also there is much to praise. One important reason why there is

so much to praise is because a small body of defense professionals is committed to the pursuit and dissemination of reliable history and effective theory and doctrine. In addition, the US armed forces demonstrate an unrivalled willingness and ability to learn from their mistakes. In 1968 and in 2007–8, America's military made huge course corrections in the context of ongoing warfare. Many countries' militaries could not have effected such radical changes.

Those readers with continental, maritime, space, or cyberspace mindsets and worldviews may believe that their most-favored military strategic instrument is unfairly treated in this analysis. Two claims must be recorded promptly. First, the purpose of this study is to tell the truth about contemporary airpower, not to promote the aerial instrument as an end in itself. I believe strongly that this "bonfire of the fallacies" will serve to advantage both the airpower stakeholder in US national security and *the rest of us*. After all, it is *our* airpower that is the focus of this assessment. Second, airpower is not the only military instrument whose true value is menaced by the popularity of significant fallacies. One could, and probably should, serve national security by exposing fallacies about the other American military instruments. In a previous publication for the Airpower Research Institute, I argued that although airpower theory is weak and contested, so also are the general theories with which we seek to explain land power, sea power, space, and cyber power.[6]

Airpersons may be unhappy with an item or two among these fallacies. The analysis takes serious issue with some service beliefs of such long-standing and historical authority that they are akin to being sacred. Doctrine, after all, is not only about what is believed to be the best military practice. In addition, sometimes preeminently, it amounts to a credo. To overreach in what is believed to be a good cause is all too human. What can be termed the "friendly fallacies," those prompted by airpower's advocates, are apt to be more damaging than the "unfriendly fallacies" disseminated by airpower's foes.

The Fallacies

This analysis of major fallacies needs to be prefaced by five aids to proper understanding. If readers judge these points to be reasonable, they should be able to approach the candidate great fallacies much as does this author.

First, the fallacies are not presented as quotations. One can locate quotations to support just about any belief about defense matters. Sometimes it is useful to illustrate a claim with a single verifiable quotation, but as often it is not. I contend that each of the fallacies discussed below is both widely believed and carries implications important for national security. The precise wording of the fallacies is driven by a determination to present the erroneous statements as clearly as possible. The fallacies are not straw targets; they are all too real as persisting beliefs and attitudes. Some of the fallacies are fundamentally so hostile to airpower that they are rarely stated as unambiguously as they are recorded here.

Second, we have to be careful to guard the integrity of distinctive, albeit linked, levels of analysis. With thanks to the useful concept of "mission creep," we should be alert to the danger of "level-of-analysis-creep." We must not permit tactical, operational, strategic, or political verities to slide promiscuously from level to level. For example, John Boyd's famed OODA loop (observe, orient, decide, act), may have tactical and even possibly operational merit, but it is far less plausible when presented as the strategist's "theory of everything." One has to be alert to the temptation to apply a good-looking conceptual key to every intellectual lock in sight.[7]

Third, reluctant though many debaters are to admit, frequently it is the case that within a fallacy there is a truth struggling for recognition. Hardly ever, indeed probably never, is a significant belief about a strategic issue utterly bereft of all merit. In the heat of defense debate, it is not difficult to persuade oneself that his or her debating rivals are not only somewhat ignorant and misguided but are knaves and fools as well. They may well be such people, but it is never safe to assume so. If we neglect to honestly seek to understand an unfavored argument and probe it for merit, then we both invite intellectual ambush in debate and ensure that our position is not as robust as it should be.

Fourth, fallacies can be situational. However, defense debate is not entirely innocent of "flat-earthers" who insist upon ideas that seem to us to have zero value. Actually, such ideas can have negative value because they may be sufficiently popular that a great deal of scarce time and energy has to be expended countering them. But, many strategic beliefs are neither valid nor invalid in general terms. For example, unremarkably, airpower has always been highly effective tactically and operationally over desert terrain. Provided one enjoys air superiority, an enemy's army in the desert has no place to hide. Beliefs about the quality of threat to land power

posed by a superior enemy air force are shaped by experiences in particular geographical and military contexts.

Finally, in the absence of thoroughly incorruptible and totally competent professional analytical policemen, well-trained defense theorists and analysts are able to produce the answer that they want, and with which they began, by means of the simple method of selecting the question, or at least the wording of the question, friendly to their purpose. This seemingly banal point alas is all too relevant to the history of airpower, up to, and including, the present day. For example, it is not especially difficult to demonstrate with overwhelming empirical plausibility that "airpower has failed"[8]—provided one is allowed to construct the test that sets the "pass" mark. More often than not, airpower's more vociferous generic advocates have cooperated in their own intellectual destruction by themselves setting out airpower's stall with improbably heroic claims. To risk stating what should be hugely obvious, if one wants to be sure that the answers will be "right," then he or she must be careful in drafting the correct questions. Since even honest and competent analysts can err greatly in defense analysis, it is scarcely surprising that the less honest and the not fully competent are able to thrive in an extended defense community as large as ours. And this is why we need to attend most assiduously to the necessary task of exposing fallacies.

None of the fallacies deployed and exposed here are of my invention. However, they are crafted in the form selected not for the purpose of impaling particular people and institutions—though that might be considered "bonus damage"—or even directly to win debates, but rather to serve as keys to unlock rooms currently cluttered with misunderstandings.

Fallacy One: ***Airpower is an inherently strategic instrument.***

It has long been doctrine, formal and informal, even canon-law equivalent among airpersons, to claim that airpower (written as a single word, not as air power, the standard pre-1940 usage),[9] is uniquely "strategic." As best one can tell from history and logic, this assertion rested upon the belief that airpower alone among the geographically distinctive military instruments could be independently decisive in war, or as a deterrent in peace and crisis. This is a relatively sophisticated version of the strategic rationale. Less functional reasoning simply insisted that airpower is, or can be, "strategic" because it is long-range or somehow very important. The somehow was rendered helpfully specific, indeed to the point of

transcending grounds for contention, with the advent of the nuclear age. In the late 1940s and early in the 1950s, it was commonplace for speakers and authors to associate "atomic" and airpower so closely that adjective and noun all but fused into a single, grand conception.

Although rarely stated explicitly, the claim that airpower is inherently strategic implies strongly that land power and sea power (and now space power and cyber power) are not. The claim matters enormously because it carries the message that airpower, being uniquely strategic, matters most. The implications of what we shall demonstrate to be a fallacy could hardly be more serious for "strategic" understanding and, of course, for budgetary shares and their postural, career, and industrial consequences. It is well worth noting that despite its traditional adherence to belief in airpower's uniquely strategic quality, adaptive practice by the Air Force persistently has belied the tenet. It is clear from the historical record why airpersons registered the claim for a uniquely strategic status.

Two reasons were dominant. The first was no deeper than a genuine lack of conceptual grasp of the proper meaning of *strategy*, and, hence, of *strategic*. The second reason, much aided by the conceptual disorder of the first, was the perceived necessity to rest the demand for institutional autonomy, even independent service co-equality or better, upon the firmest of bases. If airpower could deliver victory in war essentially unaided by the older services, its claim for independence should be undeniable. The arrival, then proliferation of atomic, succeeded by hydrogen, weapons, seemed to close off any merit in further debate. After all, what could be more "strategic" than the capability to obliterate the USSR and China in a matter of hours? The tenet that nuclear-armed airpower is uniquely strategic appeared to be self-evidently true. It was both *the* deterrent and, if necessary, the instrument of Armageddon for the Evil Empire. Alas, such a commonsense view was seriously in error. Moreover, it was seriously erroneous in ways that have effected lasting damage to sound appreciation of airpower's potency. In other words, the claim for inherently strategic status is both fallacious and gratuitously self-harmful. What do we mean by this?

To explain this fallacy and correct for it, one must begin by clarifying the meaning of *strategy* and *strategic*, and by explaining why it is vital to adhere strictly to this meaning. Stated at the most basic of levels: *policy* provides political goals to be secured; *military strategy* provides ways to secure them; and *tactics* does the actual securing. If one confuses these

three fundamental distinctions, one enters a world of theoretical, doctrinal, and, especially of note, practical grief. The critical difference between the strategic and the tactical is the quality of instrumentality. Strategic effect is distinctive in kind or quality from tactical effect, not in quantity. A vehicle does not become strategic because it is intercontinental in range rather than merely intraregional or even intracontinental. A weapon, a capability, a project, is strategic only in its consequences.[10] Yes, US airpower inherently has strategic meaning, as does US land power, sea power, space power, and cyber power. The most crucial relevant concept is *strategic effect*. By this we mean the consequences of (tactical) actual military behavior for the course and outcome of a conflict. It is conceptual and practical nonsense to assert that some weapons and behaviors are strategic, while others are merely tactical, perhaps operational.

A military instrument deemed inherently strategic is difficult to question strategically. What one has done is to fuse the tactical and the strategic categories of thought and behavior, with the inevitable result that the intangible utility of strategic values—their political effects—all too readily evade attention. Not to dodge the bullet, one is likely to produce a context wherein military action is divorced from intelligent political direction—via strategy and political assessment—again via strategic review. The strategist must always pose the question So what? Belief that there is inherently strategic military behavior is apt terminally to foreclose upon the insistent levelling of this challenge. However, as claimed here, there can be no inherently strategic forces, whether or not one is strategically educated. At issue here is not an arcane academic point of theory, possibly appearances to the contrary admitted. It is a fact that there is, and has always been, a fundamental distinction between behavior and its consequences.

The damage to American airpower wrought by this fallacious seizure of the "strategic" ascription takes several forms. First, it all but obliged US air planners, strategists, to seek independent decision through airpower, given their assertion of the uniquely strategic quality of their instrument. Since such independent decision is only very rarely achievable, because of the complexity and variety of wars and warfare, airpersons are setting themselves up for demonstrable failure. Increasingly it has been the case that in regular conventional warfare, superior airpower decides which belligerent will win, though it will be unable to deliver conclusive victory unaided.[11] This was the case in both Gulf Wars. The quest for independently decisive airpower is pursuit of a chimera. The United States would like to

have such a capability, reliably, but that is not possible. So, it should be more than content to settle for an airpower that will "decide" who wins its regular conventional conflicts and delivers literally critical support when land power or sea power truly must be the leading executive agent of military decision.

The misuse, and genuine misunderstanding, of strategic also encourages underappreciation of airpower's nonkinetic impact upon the course of strategic history. Most people recognize that airpower is a concept and material descriptor that embraces everything that flies—rotary and fixed (and adjustable "swing") wings—but the abuse of strategic leads to undervaluation of airpower's many nonkinetic roles. In COIN (counterinsurgency operations), for a very current example, while airpower provides essential firepower support, also it enables high tactical mobility to friendly forces—insertion and timely extraction, reconnaissance, search and rescue, medevac, resupply, and humanitarian relief—to cite but some among airpower's roles and missions.[12] The point is that every one of the duties just cited, kinetic and definitely non-kinetic, will have more, or less, strategic effect upon the course of a COIN campaign. The proper appreciation of airpower's strategic value requires final abandonment of the old dogma that it is inherently a strategic instrument. *Soundly viewed, all of America's armed forces are strategic agents.*

Fallacy Two: ***The development of airpower is driven by technology, not ideas.***

It is commonplace to believe that airpower not only *is* technology, but also, pathologically, is *about* technology. This belief, which we shall demonstrate to be fallacious, holds that airpower is an ever-dynamic product of the "ripening plum" syndrome. The fable insists that technologies engineered into aerial vehicles mature more or less for reason of sheer technical momentum and cumulative, sometimes radical, innovation. The roles of political context for policy, of strategic demand, and of operational and tactical requirements are judged historically to have been distinctly secondary. Technology, duly reified in this view, moved on for not much better reason other than that it could do so. It is probably true to claim that a majority of commentators upon airpower history have subscribed to this erroneous opinion.[13] In effect, the fallacy claims that airpower can be likened to the sorcerer's apprentice, continuing mindlessly to go on doing what is being done currently, regardless of consequences. Technological

advance is its own rationale. At ever greater expense, so the argument proceeds, technology as airpower advances to nowhere in particular for no good political or strategic reasons. Technology is the pilot; it is served by policy, strategy, operations, tactics, and logistics.

This assertion can appear to fit historical facts. Airpower flies ever upwards in its technical specifications and performances, whether or not the performance enables net military, strategic, or political achievement that is useful. Why is this argument important? It taints the necessarily technological product that is airpower with the strong suspicion, or worse, of costly stupidity. Air forces generally purchase ever-more-sophisticated (i.e., expensive) aerial vehicles even though strategic, operational, and tactical ideas for their employment persistently have lagged behind. Restated, the claim is to the effect that the history of airpower has been the story of a supply-led, not demand-led, instrument.

To endorse this belief is to risk seduction by the attractions of technophobia. Because people matter most and it is characteristically American to place faith in technology, it is tempting to cite technologists, even a reified technology, as villains. Somehow, the material servant has replaced the political and strategic master. The principal reason why this fallacy is so significant is because *technology continues to be the source of marked competitive benefit to the United States and its foreign security dependents*.

The country can ill afford a generic, frequently uninformed, suspicion of technology when technical achievement is America's leading asymmetrical advantage over foes of all kinds. If Americans are apt to employ technology, especially as firepower that can prove counterproductive, the problem lies with culture, theory, and doctrine, not with the machines themselves. Theory and doctrine for airpower have left much to be desired, but it makes no sense to seek improvement by demeaning technology.[14] Airpower is as airpower does, and what airpower is allowed to do is a matter of human discretion, guided by ideas. This second major fallacy implies that a mighty abstraction, airpower, somehow has developed while, perhaps by, evading political, strategic, and military control. The confusion of technological instrument with human agency promotes the conviction that airpower typically has failed in war after war. Time after time, so the tale is told, it did not deliver upon its promise, explicit and implicit.[15]

The view just expressed is a fallacy not so much because it depends upon an unsafe conceptual architecture, though that is the case, but rather because it is historically inaccurate. From the nineteenth century until

today, ideas—strategic and other theory—generally have led technical achievements. The whole historical saga of airpower has been peopled by scientists and engineers who have striven to solve technical problems so that the flying machines could perform as political, military, and commercial clients required or desired.

Airpower in all its shapes and forms has always been the product of a specific vision, or visions, of utility. One quality in particular never in short supply among the air-minded is a notion, clear or fuzzy, of the value of aircraft that currently are over the technical horizon. In historical practice, there has been an air community, comprising inventors, manufacturers, and prospective commercial and military people, who have conducted a constant dialog. Sometimes the aircraft and ancillary industries have invested speculatively in technical innovation in the hope that military and/or commercial customers will be unable to resist the new performance plausibly on offer. However, even when industry and its engineers move ahead of explicit military demand, it is nearly always the case that the need to achieve a definite capability guides the enterprise. Technology does not advance as it were mindlessly, bereft of purpose beyond curiosity and profit. Rather must it be driven and shaped by goals that make sense to, and can be defended by, the intended customers.[16]

The relationship between military demand and industrial supply is not unidirectional. Manufacturers do conceive of vehicles, qualities in performance, and even of missions, that potential clients did not know they needed before they were educated, which is to say "sold," by intending suppliers. In practice to date, armed forces have wanted more performance than aerial technology could provide. In large part, though, this situation now has been so altered that the "transformation of American airpower" described and assessed so convincingly by air analyst and pilot, Benjamin S. Lambeth, nearly 10 years ago now, is approaching perfection.[17] The problems are no longer with a technically flawed military instrument, but rather with the nature of warfare as a duel. Uncooperative enemies have been sufficiently disobliging as to devise tactics intended to deny US airpower the targets it could certainly destroy were it able to locate them reliably. The potential perfection of American airpower, certainly as a kinetic tool for dealing out firepower, must remain only potential, albeit excellent, because its enemies will be motivated, and to some degree able, to find ways to offset the prospectively conclusive US military advantage in the air.

The airpower that we buy is the result of ongoing negotiation among many stakeholders, civilian and military. It expresses the balance of political power within the policy-budgetary process; the public political mood vis-à-vis security; the state of the art in weapons and other technologies relevant to airpower; and, last but not always least, systems of belief about air tactics, operations, and strategy. Would-be innovators, individuals, and teams will offer the Air Force dazzling prospects of military performance and value for what currently may only be glints in the eye. But officials and politicians are not in the habit of buying into visions they do not share. Theory is not all that matters in the grand historical narrative of airpower, but it does matter most, and it always has. Even available technology will not be acquired and applied if it fails to fit settled military doctrine.

Throughout its history, US military airpower has expressed strategic, operational, and tactical beliefs, as well, naturally, as the evolving state of the technical art at the time of procurement, as well as subsequently when in-service midlife upgrades would be effected. The latter point is simply a necessary truth; it does not mean that as a general rule technology has led ideas on military utility. Not infrequently, though certainly not invariably, a country is obliged to fight with a basket of air and air-related technologies that are either more or less technically inadequate for their tasks, or that express what proves by events to be the expression of faulty technical choices. This last point does not always, probably usually, refer to technologies that did not perform as expected, but rather to those that provided a military air posture ill suited to the war it had to wage.

Finally, the "transformation of American airpower" achieved since the first Gulf War (1991) has been a cumulative achievement—visible over Bosnia in 1995, Iraq in 1998, Kosovo in 1999, and then over Afghanistan and Iraq in the 2000s—expressing strategic, at least military, theory as well as what technology can do. The latter has not in some deterministic fashion produced the former. US airpower today is very much the airpower desired by American ideas. There is always room for technical and doctrinal improvement, but that is a different story.

Fallacy Three: *Airpower is about targeting.*

No, it is not. What airpower is about includes the military, strategic, and political consequences of its targeting. The greatest of all air theorists, Italian general Giulio Douhet, claimed that

> [A]s a matter of fact the selection of objectives, the grouping of zones, and determining the order in which they are to be destroyed is the most difficult and delicate task in aerial warfare, constituting what may be defined as aerial strategy.[18]

A little later, Douhet reemphasizes the point that "[t]he choice of enemy targets . . . is the most delicate operation of aerial warfare."[19] This fallacy holds that aerial strategy is the selection of targets. Airpower properly employed, which is to say true to its offensive nature, influences and even controls the course of events on the ground and at sea primarily by its kinetic effect. For airpower the world is akin to a dart board. The salience of this comparison is highlighted by air theorist John Warden's "Five Rings" of target categories.[20] Airpower delivers on its potential when it is unleashed to damage and destroy the vital centers of enemy power.

To claim that airpower is about targeting is not entirely wrong. It is only an error if one insists that targeting for kinetic effect is all that really is important about the roles of airpower in war. The roots of this fallacy are not exactly hard to trace, any more than are the reasons for its continuing popularity among some misguided airpersons. While targeting for bombardment from the air can be regarded as a duty that enables more effective land power and sea power, also, of critical moment to airpower as a cause or quasi-religion, it is the behavior that allows airpower to win wars independent of significant war-fighting assistance from the other military instruments and their agencies. Unfortunately, perhaps, although firepower from altitude, whatever the character of the vehicle, is nearly always useful, and sometimes is far more than just useful, it cannot be synonymous either with war as a whole or even with warfare. It should be clear enough from this analysis that the fallacy does not lie in claiming importance for the targeting function, or for kinetic impact from the sky. Rather are the fallacious elements: (1) the belief that bombardment can equate to warfare, let alone to war; (2) the belief that bombardment itself, somehow, mysteriously, *must* translate into a strategic effect that will prove politically conclusive; and (3) the belief that airpower's distinctive strategic contribution is focused in its ability to damage things and kill people.

Lest my argument has been at all obscure, let me restate it in the most direct possible terms. Airpower writ large generally must express careful thought on targeting. But airpower is not, and cannot be, *about* targeting. What matters is not targeting per se or even the damage that well-directed aerial bombardment can inflict. Instead, what are of importance are the effects of that damage upon the course and outcome of a conflict. This is

why a previous discussion in this study zeroed in on the fallacy that airpower is, or can be, inherently "strategic." What airpower does cannot be strategic, regardless of what one calls a military organization (e.g., SAC or Strategic Command). What is strategic about airpower and its behavior—and land, sea, space, and cyber power—is its instrumental value.

The targeting and symbiotically associated kinetic themes in airpower theory have an unfortunate tendency to crowd out appreciation of the less dramatic, but frequently no less important, activities of air organizations. *In truth, airpower is all about mobility and power projection*. It is about bringing fire to bear on the enemy, be he near or far; about inserting and extracting friendly ground troops;[21] about surveillance, reconnaissance, and other forms of intelligence gathering; about supply and its movement; about medical evacuation; and about search and rescue. Also, our airpower is about the business of helping train the airpower of friends and allies.[22]

This fallacy hurts at two levels. It risks encouraging the false belief that warfare is really all about killing people and damaging materiel, in this case from weapons in vehicles in the sky. Such violence is necessary and indeed is the most defining characteristic of war.[23] However, wars are not won by violence alone, and the violence exercised can be more or less effectively chosen. Also, the fallacy, by its implicit exclusions, demotes the importance of airpower capabilities and behaviors other than the kinetic. US airpower, in all its forms, performed magnificently over Southeast Asia from 1964 to 1973. It "failed" only in the sense that neither when employed independently to coerce nor when used to support the warfare in the South (and, to a lesser extent, over Laos and Cambodia), could it deliver or help deliver a fair facsimile of victory. There are wars wherein an appallingly flawed strategy, and sometimes even a thoroughly ill-advised political purpose, can be offset by the strategic effect of the military power applied. Vietnam, unfortunately, was not such a case.[24]

Fallacy Four: ***Airpower must always be subordinate to land power.***

Because we humans can live only upon the land, and because all of our inter- and intra-communal quarrels must have terrestrial reference, it has to follow that land power is the senior military instrument. No matter how influential the joint contribution from the sea, air, space, and cyberspace, conclusive effects and their consequences have to be terrestrial. Militarily speaking, according to those who subscribe to this fallacy, it follows of necessity that land power must always be the supported instrument.

This fallacy is important because, as so often with plausible conceptual errors, it contains sufficient truth to be highly credible. Little imagination is required to grasp why this erroneous belief is dangerous to strategic effectiveness. *A blanket conviction that land power must always be the dominant military instrument all but ensures some misuse of airpower.* This fallacy presents a minor, even banal, truth as justification for a massive mistake. Let us concede the truism that every conflict has terrestrial reference. We humans do not live in, or fight for, the air. When we fight in the air, or for the purpose of dominating some segment of the air, it can only be in pursuit of advantage in a terrestrially defined contest. These elementary facts should be as uncontentious as they seem often to be unknown to rival theorists and practitioners.

The land power versus airpower controversy, which has flickered and flared from the early 1920s until the present day, reflects a pervasive Western intellectual weakness—a liking for binary distinctions. Warfare allegedly is regular or irregular, conventional or nuclear, symmetrical or asymmetrical, and is led by land power or airpower. Western strategic debate has great difficulty accommodating the holistic subtlety of both/and, ch'i and ching (unorthodox/orthodox, energetic/passive). This systemic conceptual limitation is especially unfortunate, given the increasing, though limited, number of important tasks that are not necessarily owned exclusively by any one of the five geographical environments. Rephrased, today, far more than ever in the past, some military tasks can be performed on land, from the sea, *and* from the air. For the most obvious example, firepower with comparable accuracies can be delivered by artillery, land-based short- and medium-range missiles (ballistic and cruise), from ships, and in principle from orbiting satellites. Notwithstanding our joint organization for war fighting, the distinctive physical geographies continue to hold a telling grip on minds and, of course, on bodies. The geographies are real, and to operate in one rather than in or on another requires unique equipment, doctrine, training, tactics, strategic reasoning, and mind-set. For reasons of inherent physical limitations as well as state of technology, the inter-geographies military and strategic debate largely is focused upon the relationship between land power and airpower. Other debating pairs are possible, indeed are extant, but none (say, airpower versus space power, or land power versus sea power) has the fuel currently available to soldiers and airpersons.[25]

It may occur to some readers that debate between spokespersons for land power and airpower is ever liable to be impoverished by the troublesome swamp of spongy definitions. What is land power? What is airpower? These apparently conceptual, even philosophical, concerns have major implications for the power and influence of military institutions and for the manner in which we fight. This is not simply a matter of idle intellectual curiosity, rather is it a subject area deeply infused with practical significance.

Common sense is not always victorious in military debate, but let us at least try. All military power is land power. Our military strength both derives from the land, whereon we have to live, and must be sustained by our assets on land. This is true for armies, navies, air forces, space forces, and cyber forces. Although it is perhaps a trivial, because necessary, truth, more explicit recognition of its merit might help defuse some needlessly angry contention.

What is military land power? If it is anything that can fight or contribute quite directly to our ability to fight on land, why should understanding of its domain be limited to the ground? Since the US Army owns more aircraft—helicopters, in particular—than does the Air Force, does it make sense to conceive of land power distinct from airpower? *Given that the United States will never,* repeat never*, wage ground (or sea) warfare without a more or less integral air dimension as an enabler, a complement, or more, is it useful or even accurate to talk about American land power, sea power, or air power?* I challenge any American defense professional, regardless of service orientation, to claim that he or she can conceive of the country waging war of any character on land or at sea in a manner utterly indifferent to the state of play in the air environment. The very idea is absurd in the 2000s and indeed has been since at least the 1940s.

If we put aside for the moment the argument just presented, which suggests that today the concepts of land power, airpower, and sea power do not reflect military reality very usefully, is it possible to discern any general strategic truth about the relationship between land power and airpower? The answer, for once helpfully, is both "yes" and "no." Yes, in that the strategic history of the past 20 years demonstrates beyond a reasonable doubt that, ceteris paribus, the balance of relative influence between land power and airpower has been shifting in favor of the latter.[26] US airpower is vastly more capable than it was in Vietnam, say, though as we noted above, despite a substantially inappropriate air posture, doctrine, and training, still it performed far above and beyond the strict call of

duty. From the 1960s to the present, in conflict after conflict, US airpower cumulatively has been transformed into a truly lethal instrument, regarded either as an agent of kinetic effect or as a multicompetent enabler of ground power. But, and this has to be treated as a noteworthy caveat, the relative importance of airpower, especially airpower of the fixed-wing, longer-range kind, must be situational. Airpower is militarily relevant to every conflict, be it largely irregular in character or be it conventional—in which case it will be the dominant military force—be it largely rural in battlespace or be it predominantly urban. However, its strengths are flattered by some contexts rather than others.

To combat a highly irregular and in the main only part-time enemy who hides amongst quite densely packed civilians, airpower cannot be the leading edge of military effectiveness. In the form of helicopters for tactical troop mobility and resupply, for the infliction of occasional very precise destruction, and for useful reconnaissance and intelligence gathering generally, airpower will be important, even vital. Nonetheless, in an urban context for insurgency, airpower's contribution to the COIN effort typically will be as necessary as it will be limited. The need for sustained presence by friendly "boots on the ground" may be a cliché, but it happens to be a strategic truth that one neglects at peril of failure. Extreme tactical mobility by rotary-wing aircraft has the ability to place small numbers of very lightly armed soldiers in the greatest of danger. And the ability to insert does not always mean the ability to extract at will.[27]

By way of contrast, if an enemy chooses, or has no practical alternative other than to wage warfare in a regular conventional way, US airpower will defeat it long before US ground power comes into contact. This was clearly true in 1991, it was even more clearly true in 2003, and it should not require any very detailed defense as a thesis for the future.[28] US airpower will kill or disable any enemy forces it can locate on land, at sea, or in the air. I would like to add "or in orbit," but that would not be true. US defense policy and the national military strategy endorse the concept of "space control" unambiguously. Unfortunately, though, for reasons that need not be identified or explained here, the US armed forces currently do not have the means, let alone the official license, contingently to enforce this policy and strategy.[29]

Although land power, mainly in the form of unmistakeable *ground* power, continues to be literally essential for the conduct and conclusion of America's wars, it does not follow that this power must be the primary

instrument of military, for strategic and political, decision. For example, the generally genuinely dazzling prowess demonstrated by the US Army and Marine Corps on the ground in Iraq in April 2003 was enabled by an air campaign that guaranteed swift success.[30] This is not to claim that the Army and Marine Corps could not have won without the air campaign, and neither is it to suggest, absurdly, that they did not face some determined, largely irregular foes that could not be lightly brushed aside. It is to claim, though, that as a matter of researchable record US airpower played the dominant role in the brief regular war of spring 2003. Some among America's future enemies may prove far more effective in resisting US conventional military prowess than were the Iraqis in Gulf War II. But, this probability does not plausibly reduce the strength of the proposition that American airpower will decide the course and outcome of its regular warfare.

The thesis that airpower must always be subordinate to land power is fallacious because it rests upon a basic misunderstanding of airpower and its capabilities. Conceptually enabled by the great theoretical and practical oversimplification of a generic "airpower," it is a relatively easy matter to twist the debate into an argument about the efficacy of so-called strategic airpower (see the discussion below). Committing what we should call the "binary error," the use of air striking power independent of operations on land or at sea is condemned as a secondary, or even net futile, effort, somewhat complementary at best to the decision that is being achieved by friendly "boots on the ground." As we show in our analysis of the next fallacy, this error, apart from generally being motivated in large part by parochial institutional interests, is much facilitated by the poverty of historical and current debate about the promise and performance of "strategic bombing."[31] To clarify hastily: if we are to grasp how air and ground, airpower and land power most especially, relate militarily and strategically, first we need to identify the contemporary measure of their essential unity. In particular, if land power must include a highly significant air dimension, which is the case today, it is not obviously sensible for us to try to argue about their relative military and strategic importance.

Fallacy Five: ***The theory of strategic airpower is fundamentally flawed.***

The classical and neoclassical theory of strategic airpower comes in several variants, but its central tenet is to the effect that airpower, properly exercised, is able to be an instrument of independent decision in war.

There is, or should be, a rather more intelligent, less demanding, theory of "strategic" airpower which is eminently defensible historically. Unfortunately, the dominant ancient and modern theory took such firm hold within the air community and has been seized upon for so long by its critics that it is extraordinarily difficult to consign it to the museum of attractive ideas, where it belongs. Because of what have been believed to be its life and death implications for the institutional independence of air forces, and because technology has seemed to provide ever greater support for the key concept, the extreme version of strategic airpower theory continues to live.

Among the classical and neoclassical authors of strategic airpower theory, I will single out just four: Giulio Douhet (1869–1930), Marshal of the Royal Air Force (RAF) Sir Hugh Trenchard (1873–1956), Gen William "Billy" Mitchell of the USAAC (1879–1936), and far more recently, Col John A. Warden III, USAF (1943–).[32] The differences in their theorizing arguably are important, significant, and interesting, but they pale into near insignificance in comparison with the breadth and depth of their agreement. Each of these "classical" and "neoclassical" (Warden) theorist-practitioners preached vehemently the gospel that it is possible to secure "a victory for air power and airpower alone," to quote British historian Sir John Keegan on the subject of NATO's ultimately successful 78-day air campaign against Serbia over Kosovo in 1999.[33]

Douhet claimed that airpower should be employed initially to disable and destroy the enemy's airpower on the ground. Next, having thus secured "command of the air," airpower would so terrify a civilian population by direct assault with high explosives, incendiaries, and gas, that its government would be obliged to sue for peace. For his part, Trenchard came to believe that bombing must destroy the morale of an enemy's civilian population, the same thesis as Douhet's. But, whereas Douhet was willing to advocate explicitly assault upon civilians, Trenchard always insisted that civilian morale should be attacked through the infliction of damage and destruction upon vital industry. American Billy Mitchell was far less focused upon the mysterious quality "morale" and far more upon the damage that precise long-range bombing could do to an enemy's "vital centers." He co-founded the American school of airpower doctrine, which prescribed defeat of the enemy through the destruction of the most vital "nodes" in his "industrial web." If we fast-forward to the late 1980s, USAF Col John Warden all but individually revived the classical theory

of strategic airpower, though his preferred route to victory by airpower was through the imposition of command paralysis. Warden reinvented the "air campaign" for the contemporary context, albeit with much assistance from the intellectual heritage of Mitchell and the US Air Corps Tactical School of the 1930s. Warden specified a bombers' dart board comprising five concentric circles.

> The most important element—the enemy command—is in the center circle; essential production is second; the transportation network is third; the population is fourth; and the fielded military forces—the shield and spear—are fifth.
>
> The most critical ring is the enemy command structure because it is the only element of the enemy—whether a civilian at the seat of government or a general directing a fleet [*sic!*]—that can make concessions.[34]

Figuratively or literally, Warden's vision of a well-run strategic air campaign should seek to decapitate and hence paralyze the enemy. Even if this ambitious goal is unachievable, the five-ring thesis provides a general theory of how an air campaign should be conducted. It explains targeting priorities. In short, it is an air strategy. Of course, the problem is that Warden's theory, in common with those crafted between the two world wars, is not just an air strategy. The theory is presented as an air theory of war. The theory claims to encompass all that should need to be done, as well as explaining how it should be done, in order to secure victory in war as a whole.

With the arguable exception of NATO's air war about Kosovo in 1999, "strategic" airpower, which is to say airpower intended by its employers to achieve decisive strategic effect for political success, seems to have failed in war after war after war.[35] The air community has defended the integrity of its quasi-sacred doctrine by arguing, repeatedly, that the available airpower was misused, some wrong choices were made as to quantity and quality, and its technology has not been quite adequate for the mission. The first argument has been politically safer than the latter two. It so happens that the airperson's defense of airpower has had a solid foundation in fact. Airpower has been misused; not infrequently, highly challengeable technical decisions have been made, while it cannot be doubted that prior to the late 1990s and the 2000s, it was hindered significantly in its prowess by some strictly technical limitations. However, this is not to deny that from the 1940s to the present, the military and hence strategic deficiencies of available airpower more often than not have been the product of

a mismatch between the contexts for war fighting anticipated and those that actually happened. One can always do better with tactically more effective technologies, but it helps if there is some natural fit between the higher competencies of a particular air posture and the military tasks that conflicts demand be tackled.

Despite the content of the classic theory, which tends to privilege strongly the bombing of nonmilitary targets, albeit generally not civilians per se (only their "morale"!), a more useful theory of strategic airpower should not be wedded to a rigid template, a doctrinal credo, of bombing priorities. Properly stated, the theory of airpower must inform *strategies* anticipated to achieve maximum strategic effect upon the course and outcome of distinctive, indeed unique, wars. This effect may be secured, for examples, by political or military command decapitation or paralysis, or by the physical destruction and disablement of fielded forces. The historical context must guide the application of airpower. To claim as a grand generalization that "strategic bombing does not work" is plainly wrong, theoretically and empirically. Faulty theory has a way of producing flawed answers.

Fallacy Six: ***The institutional independence of the USAF is a major hindrance to the development of a truly joint, coherently integrated, American theory of, and doctrine for, warfare.***

This is a plausible fallacy to most non-airpersons. Even to those with no organizational stake in the abolition or radical demotion of the USAF from its current status as a distinct, bureaucratically coequal, armed service, this claim appeals to both strategic logic and common sense. This being so, it is perhaps surprising to appreciate just how erroneous the argument proves to be when subject to close examination.

The fallacy holds that the United States does not require an institutionally, and hence politically, independent Air Force. The claim has several interlocking pieces. Although there remains a long-range (presumably very largely nuclear) strike mission, there is no strict necessity for this even to imply the need for a USAF. The mission increasingly can be fulfilled by seaborne forces, while the comparatively recent creation of US Strike Command expresses the conviction that strategic offense, defense, space, and cyberspace forces should be organized and commanded as a single bundle of assets. Nuclear deterrence, for example, is a national strategic task, not an Air Force one, and this has been a reality since the 1950s, when the US Navy first acquired the ability to strike at Soviet targets

with nuclear weapons. In addition to there being no strategic nuclear (or other) mission that might lend persuasiveness to the case for independent airpower, the entire historical record of airpower in warfare demonstrates the complementary character of airpower, land power, and sea power (and now space power and cyber power).

Institutionally and politically independent airpower cannot be trusted to perform as a reliably joint team player. The deepest belief of airpersons is that theirs is an instrument uniquely capable of securing independent military and strategic decision. While they can be bludgeoned into air-land and air-sea cooperation, usually they will perform reluctantly in those roles. They are not just being uncooperative for its own sake. Rather will they be strongly motivated to resist what their quasi-religion of (strategic) airpower tells them is the proper employment of their specialty.

The core problem, this fallacy insists, is that an independent air force creates and sustains an air ethos that history shows to be counterproductive for the most effective prosecution of warfare in all its complexity. All major institutions, especially military ones, are obliged to invent, foster, and officially adopt, distinctive cultures.[36] I should rush to explain that there is no necessary implication of a malign parochial, if Machiavellian, cunning in this argument. Generic opponents of institutionally independent airpower usually can be brought to recognize that airpersons are quite sincere in their credo, albeit mistaken. I could proceed further to present the arguments against a separate USAF, past, present, and prospectively future, but I believe that the points exposed already will suffice. The indictment, for this is what it amounts to, is truly serious.

There are, and have always been, some unworthy reasons fueling this fallacious belief, but also one must admit that there is some good sense. Stated at its broadest, the purveyors of this fallacy—the sincere ones, that is—fail to grasp that separate armed services are a regrettable necessity. One could even go so far as to claim that an independent Air Force, Navy, Army, and (sort-of) separate Marine Corps, and Coast Guard, are necessary evils. Over the past decade, leaders of the US Navy and Coast Guard have advanced the concept, and some limited reality, of a "national fleet."[37] In truth, the United States does not and will not wage war by service or by discreet geography but rather by inherently joint combatant commands. The country wages warfare holistically with its *armed forces*, not with its Navy, Army, Air Force, or Marine Corps. However, although modern warfare for the United States necessarily is a joint project, it does

have to be prosecuted in distinctive geographies, and the distinctions matter greatly. Neither Americans nor other people, realistically, can aspire to recruit, equip, train, and employ generic soldiers, warriors, or combat persons—pick your preference! Although warriors and other military personnel share features in common among the geographical environments, it remains a fact that military behavior differs radically from geography to geography. In other words, while the separate armed services constitute some organizational affront to the essential unity of warfare and war, more importantly they express inescapable material and consequential psychological truths.

Some air theorists have advanced the proposition that there is an "air-mindedness" that needs to be treated as a vital input to defense planning, military strategy, and operational designs.[38] This obviously self-serving belief happens to be true, as well as every bit as significant as air theorists insist. Indeed, the most persuasive and unbiased explanation of the worldviews of airpersons, soldiers, and sailors, is to be found in an outstanding short book written 40 years ago by an American rear admiral, J. C. Wylie.[39] He exposed the enduring reasons why the world as potential battlespace, its difficulties and its opportunities, looks very different to those who must function on land, at sea, in the air, or—today—in control of space power and cyber power. The United States is obliged to approach warfare holistically but also it has no option but to rely upon the expertise of military professionals who have no choice other than to be expert operators in one geography rather than others, let alone all five of them. And, as Wylie insisted, the world looks very different to those who must function in the mud of terrestrial terrain, on or under the uniformity of the sea, or over the heads of both.

The point that some critics of the Air Force have failed to grasp is that the "air-mindedness" that the USAF lives, breathes, and fosters, is not only a reflection of the semirecreational joy of flying—though this should not be denied—or of loyalty to institutional culture. In addition, far more important, there should be no dispute over the fact that the USAF ought to be trusted to comprehend aerial battlespace, if not always its terrestrial implications, better than the Army and the Navy. Of course, faulty service doctrine can impede, and has impeded, such comprehension. This is why the promotion of unsound doctrine is so damaging to the service in particular, as well as to the country's strategic potency overall. The Air Force should learn from its history that when current doctrine hinders nationally

required performance, eventually it will be compelled to fall into line, regardless of its current credo.

Airpersons need to appreciate the challenge in a vital paradox. While, on the one hand, only they can be trusted fully to understand airpower's strengths and limitations in detail, on the other hand they are frequently mistrusted by soldiers and sailors because of their actual, perceived, or anticipated military and strategic parochialism. All one can say about this, really, is that each service, reflecting its particular duties and contexts, cannot help but filter data through its own geographical lens. This is just a fact of strategic life, and indeed of institutional loyalty and occupational culture. *To have an independent Air Force is an expression both of geostrategic reality and is the best way by far to ensure that the ever more critically significant aerial dimension to conflict is appreciated in a professionally expert way.* One need hardly add that service independence does come at some occasional possible opportunity cost in quality of jointness foregone. However, the potential cost of a shotgun multiple-marriage of the still fairly separate services would be truly enormous. If one wishes to advance the misuse of airpower, one could hardly do better, or worse, than recommend the institutional demise of the USAF.

Last but not necessarily least among the reasons why it is a fallacy to believe that the United States should not maintain a separate air force is the factor of morale—the human dimension. We humans, military folk probably more than most because of the unique demands of the profession, demand, even crave, clear identity. It is a source of particular pride to join, be initiated into, encultured, and looked after by an armed service. The key values are tradition, pride, and their product, morale. Given the potential material perils of the warrior's life, his psychology has always been critically important. Moreover, given also that warfare in nearly all its aspects essentially is a team effort, the strength of an individual's identification with the "team" is of fundamental moment. Today, all US service personnel are exactly that, players in a great joint enterprise. But, the physical and hence key psychological reality is that they have a particular military geographical orientation and hence unique military institutional affiliation; they have a military family, actually a cluster of family groups, greater and smaller. This matters for military performance; it is an eternal truth about "soldiering." The ancient Greeks knew it, as did the Romans, and so should we.

Fallacy Seven: ***Airpower can never be other than a minor player in the conduct of COIN.***

Everyone agrees that good governance is key to COIN success. But what many scholars and officials neglect to mention is that *generally a COIN campaign is required precisely because good governance has been lacking*. In addition, not all textbooks on COIN explain as clearly as they should that such governance, though typically essential, cannot deliver political success in the absence of physical security for the bulk of the population. In other words, security from acute fear and political advantage are both vital and critically interlocked. Neither can succeed without the other. COIN does not work as a wholly military enterprise, but nor can it be treated as an all but exclusively political mission.

This is yet another fallacy that is apt to persuade because it contains some truth. Also, it sounds plausible with the image it conveys of firepower from the sky being applied without due care and discrimination against insurgents who often are indistinguishable from largely innocent, or even friendly, civilians. The claim is to the effect that whereas airpower today should be a force for military decision in regular conventional warfare, in COIN much, even most, of its potential benefits cannot be delivered. The very nature of COIN warfare, so the argument proceeds, denies airpower the kinds of targets against which it can be lethal. At a more fundamental level, whereas regular conventional warfare is won by defeating the reasonably symmetrical forces of the regular-style enemy, in COIN victory is won only by securing the support of a large majority among the general public. The military road to success in regular warfare is by a flexible mix of firepower, shock, and maneuver. COIN warfare, in the main, is radically different. We must add the qualifier "in the main" because it is easy to forget that insurgency is not synonymous with guerrilla warfare or terrorism. Both are only tactics, or styles, of combat. By definition, indeed insurgencies aspire to expand their scale of military behavior and "go regular" to achieve a decisive strategic and then political victory. This means that although insurgencies start small and highly irregular in style, if successful they will grow large and increasingly regular. It follows that COIN is not by definition a conflict only with an enemy committed narrowly to irregular forms of action.

Despite the important qualification in the paragraph immediately above concerning the "mixed" character of many insurgencies—with regular and irregular styles of fighting—it is generally true to claim that COIN re-

quires the defeat of a guerrilla/terrorist foe. Two facts provide the highly plausible basis for the fallacious belief that airpower can only be a minor player in COIN. First, it is the case that COIN must principally be a political venture—so airpower is at a discount simply because it is a military tool. Second, airpower is a military tool inherently incapable of engaging "up close and personal" with enemies and actual and potential allies amongst the people on the ground.[40] In combination, these twin blows suffice to make a potent generic claim for airpower's minor status in COIN.

Although this analysis explains and exposes this fallacy for the error that it is, there should be no doubting the reality of COIN's contexts that must privilege land power, really ground power, over airpower. Though given the necessity for a joint, even integrated, ground-air approach to COIN's military dimension, one needs to be careful lest the false notion is conveyed that ground and air are competitors rather than mutually dependent partners. Contentedly following Billy Mitchell's lead, this study takes a broad view of the nature of airpower.[41] For our purposes here, at least, airpower is understood to mean the potential military and strategic effects of anything useful that can fly. So, airpower can refer to the inherent capabilities of the diverse air instrument, as well as to its consequences in application. The gloriously mobile strength of airpower "works" kinetically as well as logistically; it gathers intelligence, and it evacuates the wounded; it shifts troops and removes them; it performs direct support to friendly assets in half a dozen ways and indirect in a dozen or more. Save very rarely, airpower will be the supporting rather than the supported force in COIN.[42] However, to use that familiar formula is to risk misleading the reader. The supporting airpower is, by definition, the junior partner in COIN.[43] But, that subordinate role, with its basketful of tasks, has become literally essential. To refine the point, while many states in the past have conducted COIN with zero or very poor aerial assets, the United States today and tomorrow could not even conceive, pragmatically, how to do so. America is uniquely air-dependent in its way of COIN, but it is far from lonely. Every country in the world that has a COIN problem and owns some airpower finds ways to employ its asymmetric (over insurgents) capability more or less usefully.

It may or may not be convenient to make a sharp conceptual and operational distinction between "supported" and "supporting" forces, but this idea is unhelpful in its ability to conceal the necessity for the contribution of the supporting element. Airpower for COIN in the 2000s is not just

"nice to have," it is absolutely essential. To register this empirically based claim is only to recognize operational realities; it is not to argue with the proposition that COIN inherently is ground- and people-centric.

There is a danger that in analyzing airpower somewhat abstractly, as here, postural detail that really matters may be lost from sight. Airpower is not a uniform capability. A country may enjoy a sound understanding of what airpower should be able to accomplish, either as a primarily supporting or supported force. But countries do not fight with concepts, sound or otherwise. They fight with actual aircraft and with the infrastructure to keep those aircraft and their replacements flying. An inadequate air posture will always be able to frustrate what otherwise appears to be a good idea. For COIN support, it is not the case that an air force judged good enough to fight "the big one" assuredly will be good enough to cope with much lesser challenges. In some significant ways, the proper diverse employment of airpower for COIN is every bit as challenging as the task of preparing for a great-power conflict. Suboptimal equipment for airpower in COIN must lead to a suboptimal contribution to the ground-air team effort, notwithstanding the professional skills and courage of airpersons. Nonetheless, even the ill consequences that flow from the self-inflicted wound of poor, or just unlucky, choices in aerial force structure fade into relative insignificance when they are compared with the harm inflicted by incorrect strategy—military and grand.

Victory is improbable if one asks airpower to perform tasks for which it is not well suited against an intelligent and competent enemy. Airpower has qualities that politicians tend to find uniquely appealing. The more extreme advocates of strategic airpower, perhaps of airpower as the dominant military source of strategic effect, find themselves in mutually dangerous alliance with policy makers in search of swift and relatively economical solutions to messy and complex problems. Properly conducted, COIN is always untidy and requires protracted military campaigning in the context of what the British government today likes to call a "comprehensive approach," one which combines political, military, and economic efforts. It is tempting to believe that an air-led COIN effort, relying primarily upon kinetic effect, will be able to defeat insurgents. Known or suspected deficiencies in one's ground power will be sidelined, and casualties on both, or all, sides should be modest. The grand political, strategic, and military narrative of the Israeli adventure in Lebanon in 2006 illustrates near perfectly why it is essential for US security that fallacies about airpower in

general, and US airpower in particular, should be recognized, exposed, understood, and avoided.

It may be important to mention a pathology not of airpower itself but of its misuse. Because the air instrument is swift in execution, lends itself to overoptimistic expectation, risks few American lives, and—in the US case, these days, at least—almost invariably is available, it is a constant temptation. When politicians want to "do something," most especially when they need to be perceived as doing something, and when other nonmilitary and military options either are not available or could only work slowly and uncertainly, it is a great temptation to reach for one's airpower "gun." Airpower usually will be the first preference for US policy makers who feel the need to make a bold, hopefully decisive, statement through action. Alas, too often, it is highly expedient to resort to kinetic airpower as the default option; it is the expedient tool for those who are impatient or desperate. Of course, there are occasions when kinetic airpower should be used. This discussion is not in any sense intended to offer blanket condemnation. Because American airpower, necessarily and advantageously, is all but ubiquitously available to lead or support military action, it cannot help but invite and produce addiction. None of these comments contradict my belief that the merits of a "gently, gently" approach to "war amongst the people," particularly to COIN, can be overstated. As always, actual behavior, in contrast to theory, principle, and some myths, has to be appropriate to the real-time situation.

It is easy to forget, for example, that the dominant British imperial approach to COIN was known, for excellent reasons, as "burn and scuttle." A punitive expedition, small or large, would teach the locals the errors of antisocial insurgent behavior. It is not politically correct to admit this in polite Western circles, but from the bad old days of colonial "policing" through today in Afghanistan and Iraq, there are times when it is strategically highly desirable to damage property and kill people. Regrettably, we are talking about warfare, and violence resides at the core of warfare's nature.[44] I should not need to add that the violence should never be other than strictly instrumental. It ought not to become merely expressive, let alone recreational, for those exercising it, but once the key is turned for its employment, we humans inalienably are in perilous terrain. Potential pathologies lurk to ambush what began as sound strategic behavior.

Because COIN can be exceedingly frustrating and demanding of high, even some rare, skills tactically on the ground, it is only sensible to reach

for airpower in search of compensation for otherwise missing effectiveness. In common with the Special Operations Forces, airpower is always liable to be charged with tasks that either it cannot perform well or that it ought not to be required to attempt at all.[45] What are those tasks? The answers derive both from airpower's inherent strengths and limitations, but most significantly, of course, from the actual condition of friendly airpower in specific historical contexts. General theory has its place, but it must always be expressed in terms suitable to distinctive historical circumstances. Strategy, including strategies for airpower, is always particular in detail in its application at specific times, in distinct places, and by unique militaries. Airpower is a wonderfully generic concept, but it is anything but generic in its material reality from state owner to state owner.

Fallacy Eight: ***The twenty-first century is the missile, space, and cyberspace age(s); airpower is one of yesterday's revolutions.***

This claim points to the still underacknowledged fact that the emergence, maturing, and near perfection of airpower in the twentieth century was itself, and required, the most radical change in warfare in the period. The twentieth was the air century, notwithstanding the abrupt atomic, then nuclear, facts of the 1940s and beyond. The airpower revolution in warfare, though nearly 100 years in process, is still in some senses incomplete. If this were not so, how could I have written this study? In the late 2000s, controversy continues to attach to issues such as the relative utility of airpower vis-à-vis every other kind of military power, and those other kinds have expanded of recent decades to include space and cyber instruments. This fallacy points with unerring accuracy to the readily demonstrable facts that ours is not only the "air age" and the "nuclear age;" also, it is the missile, space, and information ages. And, as one should expect, the more recent technological arrivals are generically more exciting, being new, more challenging to understand, and possibly more deadly in use than are "yesterday's" military tools. The fallacy in question here pertains to the claim that airpower is becoming obsolescent to the point of being obsolete for a growing number of mission types. What is wrong with the assertion is the prediction that, in effect, airpower is being squeezed out of playing valuable military roles. Unmanned aerial vehicles (UAV), missiles of all kinds, space systems, and computers, are reducing the significance of airpower in its several manifestations.

The error that fuels this fallacy is the mistaken conviction that the military relevance of manned airpower is being overtaken by technology. It is not. While it is true that some missions can and should be performed by UAVs, ballistic missiles, or orbiting spacecraft, there is no persuasive case for a need to anticipate the demise or even the substantial retirement of manned military aircraft. Ironically, perhaps, the same technologies that appear to undermine the need for manned flying vehicles render manned aircraft much more effective. Yet again in this discourse, in this case regarding *manned* airpower, controversy is foolishly framed in terms of either/or when it ought to approach the matter as both/and. Yes, there are legitimate issues to analyze and debate over the future of airpower, especially manned airpower, in particular roles. But that analysis and debate should be conducted in full awareness of the complementarities of the technologies and vehicle types under discussion.

To repeat what by now must read as a familiar refrain, the importance of the subject addressed in this concluding fallacy could hardly be higher. At issue here is nothing less than the future air posture, space posture, and cyber posture, of the world's only true air power, the United States. Should the F-22 and the F-35 be regarded as the last generation of manned fighter aircraft? Does the United States require a follow-on, long-range bomber to succeed the venerable B-52, the middle-aged-plus B-1, and the B-2? Should we be thinking of some approximation to a flying "missile truck," generically akin to the naval concept of an "arsenal ship"? Are we entering, or have we entered already, the final phase of the era of military manned aircraft in some key roles? These are large questions of great importance, which this study cannot answer with absolute confidence. Nonetheless, I am optimistic about the future of manned military aircraft for a number of strong reasons. Although these reasons are not advanced as would-be eternal truths, I do believe them to be more than marginally persuasive.

First, menacing air defense contexts in the future can be transformed by defense suppressive measures. Warfare is always a duel. It is necessary and useful not to forget the growing problems posed by state-of-the-art air defenses. But it is scarcely less necessary and useful to remember that not all air defenses will be state of the art, and even those that are may be taken down, at least tamed, by smart tactics and technologies. Just because the global military environment contains weapon systems lethal to particular elements in our arsenal, it need not follow that our nominally threatened forces are in any sense thereby rendered obsolete. For example, antiaircraft

artillery appeared very early in the history of airpower, but scarcely ever has it achieved a tactical or technical dominance. Dedicated antitank weapons, similarly, followed closely on the tracks of the first tanks, but tanks remain with us. The same reality has applied at sea. Submarines, for example, have yet to negate the value of a surface fleet; they can just make its operations more hazardous.

Second, while it is true in fact, and potentially in fact, that space and cyberspace could perform some missions currently assigned to airpower, it is essential to recognize the eternal truth that no geographical environment can be a sanctuary if it is exploited for strategic advantage. Cyber warfare already is a reality. It figured significantly in Operation Iraqi Freedom in 2003,[46] it is a minor but continuous dimension to great-power rivalry today, and we can be absolutely certain that it will figure in a major way in future conflicts, be they largely regular or irregular in character. It is plain to see that cyberspace is not a sanctuary today for any belligerent. Furthermore, orbital space, certainly space systems considered in all three of their segments (satellites in orbit, communications among them and to and from ground facilities, and ground facilities themselves), inevitably is going to join the other four geographies in the great column of "battlespace." To summarize, although it is sensible to anticipate growth in the lethality of late-model air defenses, there are no very good grounds for pessimism over the prospects for US airpower to achieve tolerable survivability by tactical skill and technical excellence. Also, control of the space and cyberspace environments similarly will have to be defended. This is integral to the logic, even the lore, of warfare as a duel—past, present, and future.

Third, missiles tend to be relatively cheap when compared with manned aircraft. But this general truth can easily mislead. Missiles, certainly ballistic missiles, self-destruct in their suicidal missions; aircraft do not. How do we do an intelligent cost-benefit analysis comparing reusable with one-shot weapons? Also, while missiles have some obvious advantages—no loss of morale, for example—and, generally speaking, they are immune to the constraints of weather, they are far from invulnerable. This is indeed the missile age, but increasingly it will be the missile-defense age also. Ballistic missiles, in common with orbiting spacecraft, are obliged to travel as the laws of physics command. Since those laws are common knowledge, the trajectories of ballistic missiles are predictable. At least they are predictable if the adversary has the technical means to observe the facts of their launch and early courses. In principle, missiles—ballistic and cruise—as well as satellites, can

be programmed or commanded to maneuver, but this capability is technically demanding and operationally costly in loss of payload.

For logistic functions, manned aircraft face zero competition from missiles and spacecraft. This situation is likely to continue indefinitely. Given that it costs $20,000 plus to hoist a pound of weight into orbit, space power has a way to go before it can even begin to emerge as a long-haul carrier of heavy or bulky items. Missiles, transorbital and suborbital, are simply not in the technical-tactical frame to compete with airlift. Missiles can travel more rapidly, even as accurately, as can aircraft, but generically there are huge pragmatic constraints on the spectrum of their utility. For an overall judgment, missiles lack the flexibility of manned aerial vehicles. One day, UAVs may be genuine rivals to manned aircraft for nearly all intelligence gathering and strike roles, but I strongly suspect that major air powers will continue to favor retention of the flexibility and adjustability to unexpected circumstance inherent in the human presence in the cockpit.

Fourth, I will surrender to temptation and claim that even in this age of fairly mature long-range missile technologies; if the intercontinental manned bomber did not exist, the United States would need to invent it. The ability to reach out and touch foes literally anywhere on Earth—with aerial refuelling and some support from forward basing, though *from North America if need be*—with the flexibility provided by manned aircraft is valuable beyond strategic price. In all except for an extreme nuclear scenario, bombardment from altitude nowhere near constitutes the whole of warfare, let alone the whole of war. But such bombardment is a vital arrow in America's grand-strategic and military-strategic quivers. For reasons of survivability, prelaunch and en route, the United States should continue to find strategic value in an ICBM force. However, that force will not often compete plausibly with manned aircraft to be the chosen instrument for very long-range bombardment. Aircraft are not associated as closely as ICBMs with nuclear missions; they are reusable assets and can execute tasks subject to real-time guidance for flexibility.

Fifth, airpower and space power are in modest measure rivals, but to a far greater degree are complementary. What they are not are two geographically adjacent instruments that are in the lengthy process of effecting a fusion that offends against the laws of physics. In other words, airpower plus, or multiplied by, space power, does not equal aerospace power. Aircraft inherently enjoy complete freedom of maneuver, subject only to the constraints of fuel-weight, gravity, and human operator tolerance. Spacecraft,

by contrast, enjoy no freedom of maneuver in orbit, save at a high cost in payload for fuel and (admittedly small) engines. The relative military and strategic value of aircraft, manned and unmanned, and spacecraft does not admit of a general analysis and answer. This vital subject is thoroughly mission and military context specific. For high-resolution imagery needed on short notice, for example, reconnaissance satellites in low Earth orbit may not be well positioned to respond. With reference to the possible military value of spacecraft as providers of kinetic support for terrestrial combat, gravity would be our friend. To date, though, even if the political arguments against "weaponizing" space could be overcome, there is no compelling reason to do from orbit what we can do far more cheaply and flexibly from Earth. By way of a closing thought, US preparation for space warfare in all its aspects—to, in, and from orbit—currently is so immature, in good part because our theory and doctrine for space power still leaves so much to be understood and agreed, that it is premature to advance far into the zone of considering air/space competition. Overall, it seems all but self-evident that for the US armed forces airpower, space power, and cyber power must be approached as true partners, not as rivals.

America, The Air Power

Airpower is America's sharpest sword in regular conventional, though probably somewhat asymmetrical, warfare. When the country chooses to wage warfare against enemies who fight irregularly, it is choosing a military context wherein its most deadly weapon will have only some discounted value. If warfare against irregulars is judged necessary by US policy makers, then so be it. But, those politicians need to understand that in wars where airpower cannot be the dominant tool in the military tool bag, the United States may well prove to be fatally short of the means and methods essential for sufficient strategic advantage. When airpower leads, which is to say in regular warfare, the battlespace is healthily tilted, probably precipitously, in America's favor.

In this study we deployed eight fallacies about airpower for the overarching purpose of improving understanding of what US airpower generally can do well and also what it is likely to do poorly. Above all else, the story here, unremarkably, has emphasized the necessity for a truly joint, even integrated, approach to warfare. This is not, at least should not, reduce to the banality that "each military instrument in its way is

strategically essential," true though such a platitude happens to be. Rather should the claims be registered that airpower: (1) is America's prime military advantage, a benign condition that now has endured since 1943–44; and (2) that the more relevant militarily is airpower in the unique context of a particular conflict, the more probable is it that American arms will win. These claims should not be read as demeaning to the US Army and Navy. The former noble institution, today and in the future, more and more must be the *supporting*, rather than the *supported*, force *in regular conventional warfare.* In warfare against insurgents, the reverse is true. As for the US Navy, its vital contribution to maritime strategy, and even its residual interest in naval strategy narrowly, is all but wholly tightly meshed with a pervasive aerial dimension. For the United States, at least, to try to distinguish between sea power and airpower in the twenty-first century would be an exercise in futility. The details have changed radically, but the claim just made applied no less to the realities of US military power in the 1940s than it does today. The US Navy and Marine Corps "do" airpower of characters and in quantities that the navies of other states cannot even begin to emulate. If such states need to compete with, perhaps even fight, the United States at sea, they must seek means and methods highly asymmetrical to those favored by America's sailors and sailor-airpersons. It may be useful to contextualize my arguments in this article by offering the reminder that it has been unknown in modern times until now for a state to be militarily dominant in all geographies. The United States cannot always translate this dominance into decisively favorable strategic effect for true political victory, but the facts of the current US superiority are both readily grasped and quite politically appalling and unacceptable to the country's major state rivals. Hopes to the contrary are almost certain to be revealed by future events to be just that, only hopes. The point of note is that the United States today is not only the world's first air power, also it is the world's dominant military sea power, and it fields the finest army. The US lead in space power is perhaps of 10 to 20 years' duration, though its neglect of dedicated active means to achieve and sustain space control should be cause for anxiety. As for cyber power and its belligerent exercise in offense and defense, no one really knows how the United States would fare against a skilled opponent. The unarguable success of US cyber warfare against Iraq in 2003 should not be permitted to fuel complacency. In military conditions characterized by overwhelming regular conventional combat, it is much easier and cheaper for America's enemies to wage

effective cyber warfare than for them to pose credible threats in the air, at sea, on land, or in orbit. Quite what an enemy, in state or nonstate form, would do strategically with technical success in cyber disruption is somewhat opaque at present.

To reveal and demolish some fallacies about airpower is not much more challenging than shooting fish in the proverbial barrel. However, because the fallacies examined here generally have contained a germ or two of merit, apparent and otherwise, they warrant description as plausible fallacies. To conclude this analysis on a positive and constructive note, what follows are corrected statements of the fallacies.

1. *All of our geographically specialized military instruments, including airpower, are inherently strategic in the effect that they have upon the course of history.* It makes no more sense to talk about strategic airpower than to discuss strategic land power, sea power, space power, or cyber power. It is the consequences of military behavior that are "strategic," not the forces themselves.

2. *Airpower has never been driven forward by a strategically and militarily mindless technological momentum.* Ideas, theory, and doctrine have always been in the cockpit (whether or not the aerial vehicle was ready to fly).

3. *Airpower is not only about targeting, as anyone who recognizes the variety of essential roles performed by aircraft in warfare should hardly be able to fail to appreciate.* The very nature of airpower ensures that targeting for kinetic effect has to be of prime importance among the instrument's ways to contribute strategically to a conflict.

4. *Whether airpower is subordinate to land power, or vice versa, must depend upon the war's overall military-strategic context.* If its character is largely regular, then today and tomorrow it must be airpower that should be the supported force. The reverse has to be true in war with a largely irregular military character. These key points granted, it is really more sensible not to contrast land power and airpower, but rather to consider them inherently complementary dimensions of variable relative significance within a single military, strategic, and political effort.

5. *The theory of strategic airpower is only flawed if one elects to identify it strictly with the overstated claims of some "classical" writers on airpower.* Sensibly crafted instead, the theory of strategic airpower is entirely sound. It should state that employed either as a weapon independent of land- or sea-focused forces or as an enabling agent for, perhaps even components of,

land power and sea power, airpower generates strategic effect on a conflict. By and large, airpower used independently is not able to deliver decisive military and strategic victories. However, it has demonstrated the ability to decide which combatant will win. It should be noted that there is no reason in principle why airpower can never aspire to secure a decisive victory by its own unaided effort.

6. *The institutional independence of the USAF, in the context of a legally and politically superior Department of Defense, is best described as a regrettable necessity.* It is regrettable that the essential unity of war cannot be matched with a similar unity of military power. The fact is that the skills necessary for warfare vary with geography. It is true that air-minded people are inclined to register military and strategic claims for airpower's potency that may seem to exceed the bounds of plausibility to those of a non-air persuasion. However, the undoubted costs of service partiality fade from sight when they are compared with the price likely to be paid for the misuse of airpower by non-airminded military cultures. Given the primacy of America's aerial tools among its military instruments, there is no prudent alternative to ensuring retention of the US airpower advantage through sustainment of a dedicated Air Force.

7. *In COIN today, airpower cannot be the leading edge to the military dimension, but it will always be quite literally essential.* COIN is inherently land-, indeed ground-centric in nature. But this geostrategic and tactical fact does not mean that the varieties of airpower that support the ground effort can accurately or helpfully be described as being only of minor importance.

8. *The twenty-first century continues the air age that began in December 1903. The appearances of ballistic missiles, spacecraft, and computer-driving cyber power have not and do not threaten to oblige us to retire the airplane.* This new century plainly will be one friendly to UAVs, but this condition does not mean that manned aircraft are facing, or will face, bloc obsolescence as "yesterday's technology." The manned aircraft simply is too useful, too adaptable and flexible, to be abandoned. The future of manned aircraft is completely secure, even though some of its roles in some political and military contexts increasingly will be assumed by UAVs. For the most obvious example, persisting surveillance can be provided far more effectively by UAVs and, of some kinds, by satellites than it can by manned aircraft. This undeniable reality does not ring the death knell for manned aircraft, though,

even in surveillance, reconnaissance, and strike-reconnaissance roles. Stated in the most basic terms, the manned aircraft is just too flexible, and therefore useful, to be phased out of the defense posture. SSQ

Notes

1. In 1852, Leo Tolstoy wrote: "History is nothing but a collection of fables and useless trifles, cluttered up with a mass of unnecessary figures and proper names." Quoted in Isaiah Berlin, *The Hedgehog and the Fox: An Essay on Tolstoy's View of History* (New York: Mentor Books, 1957), 24–25.

2. Carl H. Builder, *The Masks of War: Military Styles in Strategy and Analysis* (Baltimore: Johns Hopkins University Press, 1989), is classic. His later foray into the perilous realm of military culture and ideas is helpfully targeted explicitly on airpower and the value of theory: Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (New Brunswick, NJ: Transaction Publishers, 1994). These are both excellent studies with enduring merit.

3. Phillip S. Meilinger, *Airpower: Myths and Facts* (Maxwell AFB, AL: Air University Press, December 2003).

4. Sun Tzu, *The Art of War* (circa 400 BC), translated by Ralph D. Sawyer (Boulder, CO: Westview Press, 1994), 179.

5. Harold Lasswell, *Politics, Who Gets What, When, How* (New York: Peter Smith, 1950).

6. Colin S. Gray, *The Airpower Advantage in Future Warfare: The Need for Strategy*, Research Paper 2007-2 (Maxwell AFB, AL: Airpower Research Institute, Air University, December 2007), 11–13.

7. Berlin, *The Hedgehog and the Fox*, presents an unrivalled brief discussion of comprehensive theory versus many theories, or no theories. He quotes the words of Greek poet Archilochus: "The fox knows many things, but the hedgehog knows one big thing" (p. 7). Berlin writes: "If we may recall once again our division of artists into foxes and hedgehogs: Tolstoy perceived reality in its multiplicity, as a collection of separate entities round and into which he saw with a clarity and penetration scarcely ever equalled, but he believed only in one vast, unity whole" (p. 62; emphasis added). I must confess to being a strategic hedgehog. See my forthcoming effort to present a comprehensive theory of strategy, *The Strategy Bridge*.

8. See the fine studies in Robin Higham and Stephen J. Harris, eds., *Why Air Forces Fail: The Anatomy of Defeat* (Lexington: University Press of Kentucky, 2006). For a little useful context, it is well to recognize that books can be written with such titles as "Why Armies Fail" and "Why Navies Fail." It is easy for the unwary to believe that failure is somehow more of an airpower than a land power or sea power issue. Such a belief is, of course, ridiculous. Failure happens, period. There needs to be a book with the title "Why Air Forces Succeed."

9. Davic MacIsaac claims plausibly that the authorial parent of "airpower" as a single word, a form that seems to connote a sense almost of incantation, may have been invented by Maj Alford Joseph Williams in his *Airpower* (New York, 1940). "Voices from the Central Blue: The Air Power Theorists," in Peter Paret, ed., *Makers of Modern Strategy: From Machiavelli to the Nuclear Age* (Princeton, NJ: Princeton University Press, 1986), 627.

10. See Carl von Clausewitz, *On War*, ed. and trans. by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 128, 177; and Colin S. Gray, *Modern Strategy* (Oxford: Oxford University Press, 1999), 17–23.

11. See David E. Johnson, *Learning Large Lessons: The Evolving Roles of Ground Power and Air Power in the Post–Cold War Era*, MG-405-AF (Santa Monica, CA: RAND, 2006).

12. See Philip Anthony Towle, *Pilots and Rebels: The use of aircraft in unconventional warfare, 1918–1988* (London: Brassey's, UK, 1989); James S. Corum and Wray R. Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists* (Lawrence: University Press of Kansas, 2003); and Alan J. Vick et al., *Air Power in the New Counterinsurgency Era: The Strategic Importance of USAF Advisory and Assistance Missions* (Santa Monica, CA: RAND, 2006).

13. In a previous publication for the Airpower Research Institute, I deployed contrasting statements on the relationship between ideas and technology for airpower. Gray, *Airpower Advantage*, 8–10.

14. Especially useful overviews of the history of airpower theory include MacIsaac, "Voices from the Central Blue," and the first-rate studies in Phillip S. Meilinger, ed., *The Paths of Heaven: The Evolution of Airpower Theory* (Maxwell AFB, AL: Air University Press, 1997). The latter is essential reading.

15. See Higham and Harris, eds., *Why Air Forces Fail*; James Clay Thompson, *Rolling Thunder: Understanding Policy and Program Failure* (Chapel Hill: University of North Carolina Press, 1980); Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York: Free Press, 1989); and Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca, NY: Cornell University Press, 1996).

16. Stephen Budiansky, *Air Power: From Kitty Hawk to Gulf War II: A History of the People, Ideas and Machines that Transformed War in the Century of Flight* (London: Penguin Books, 2003), is an exemplary popular history that weighs in heavily on airpower's necessarily essential and enabling technological dimension. Budiansky can be complemented by the outstanding scholarly yet practical-minded study by pilot-historian-analyst Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, NY: Cornell University Press, 2000).

17. Lambeth, *Transformation*.

18. Giulio Douhet, *The Command of the Air* (1927; New York: Arno Press, 1972), 50.

19. Ibid., 59.

20. John A. Warden III, "Employing Air Power in the Twenty-first Century," in Richard H. Shultz Jr. and Robert L. Pfaltzgraff Jr., eds., *The Future of Air Power in the Aftermath of the Gulf War* (Maxwell AFB, AL: Air University Press, July 1992), especially 64–69.

21. For the most classic of examples, one illustrating the positive and negative aspects of air mobility, consider the French experience under siege at Dien Bien Phu in March–May 1954. The French deployed by air two parachute brigades (seven battalions) and 11 infantry battalions to this *base aero-terrestre* (air-ground base), but, to their surprise, they lacked the ability to support the besieged garrison or to extract the survivors as the battle went against them. Martin Windrow, *The Last Valley: Dien Bien Phu and the French Defeat in Vietnam* (London: Weidenfeld and Nicolson, 2004), is the most recent and best account. Air mobility enables tactical, operational, and strategic boldness that can, with hindsight, prove reckless. As all prudent air theorists and strategists insist, the exact utility of airpower is always highly situational. General truths are subject to contextual exceptions. A well-executed period piece, written by an officer who served in Vietnam with the 1st Cavalry Division, is John R. Galvin's *Air Assault: The Development of Airmobile Warfare* (New York: Hawthorn Books, 1969). Appropriately enough, the book's foreword was written by Gen James "Jumping Jim" Gavin.

22. Vick, ed., *Airpower in the New Counterinsurgency Era*.

23. To marry two vital points made by Clausewitz: "War, therefore, is an act of policy," but also it is "an act to compel our enemy to do our will" (emphasis in the original). Clausewitz, *On War*, 87, 75. Not all violence is warfare, but all warfare entails violence.

24. See Veist, ed., *Rolling Thunder in a Gentle Land*. Powerful revisionist arguments are presented in Mark W. Woodruff, *Unheralded Victory: Who Won the Vietnam War?* (London: Harper Collins Publishers, 1999); C. Dale Walton, *The Myth of Inevitable U.S. Defeat in Vietnam* (London: Frank Cass, 2002); and Mark Moyar, *Triumph Forsaken: The Vietnam War, 1954–1965* (Cambridge: Cambridge University Press, 2006).

25. See Johnson, *Learning Large Lessons*.

26. See Lambeth, *Transformation*; and *Airpower Against Terror*.

27. This sadly classic lesson in military prudence was demonstrated for all time in Mogadishu, Somalia, on 3 October 1993. See Mark Bowden, *Black Hawk Down* (London: Bantam Press, 1999). From the minor to the major in scale, the worst historical case of the misuse of air mobility was the dropping of the British 1st Airborne Division near the city of Arnhem in Holland in September 1944 for the purpose of seizing and holding the Rhine bridge (Operation Market Garden). It is one thing to insert an airborne force; it can be quite another to lift them out of trouble. Paratroops were popular, even fashionable, in the 1940s and 1950s. The potential for disaster has always been severe for these elite troops.

28. Richard B. Andres, "Deep Attack against Iraq," in Thomas G. Mahnken and Thomas A. Keaney, eds., *War in Iraq: Planning and Execution* (Abingdon, UK: Routledge, 2007), 69–96, presents an impressive case for airpower's enablement of the rapid victory on the ground.

29. It is no direct part of the mandate for this study to discuss the future of US space power. Suffice it to say that I am greatly troubled by the vulnerabilities of our essential space systems. This persisting condition is a gigantic irresistible temptation to any competent state opponent of the United States. Prudent preparation for space warfare in all its dimensions is a vital necessity for US and more general international security in the twenty-first century. See Colin S. Gray and John B. Sheldon, "Spacepower and the Revolution in Military Affairs: A Glass Half-Full," in Peter L. Hays et al., eds., *Spacepower for a New Millennium: Space and U.S. National Security* (New York: McGraw-Hill, 2000), 239–57. Also see Steven Lambakis, *On the Edge of Earth: The Future of American Spacepower* (Lexington: University Press of Kentucky, 2001); and John J. Klein, *Space Warfare: Strategy, Principles and Policy* (Abingdon, UK: Routledge, 2006).

30. See Andres, "Deep Attack."

31. Gian P. Gentile, *How Effective is Strategic Bombing? Lessons Learned from World War II to Kosovo* (New York: New York University Press, 2001), is exceptionally well researched.

32. Douhet, *Command of the Air*; Hugh Trenchard, "The War Object of an Air Force" [May 2, 1928], in Gerard Chaliand, ed., *The Art of War in World History: From Antiquity to the Nuclear Age* (Berkeley: University of California Press, 1994), 905–10; Idem, "Air Power and National Security" [August 1946], in Eugene M. Emme, ed., *The Impact of Air Power: National Security and World Politics* (Princeton, NJ: D. Van Nostrand, 1959), 192–200; William Mitchell, *Winged Defense: The Development and Possibilities of Modern Air Power—Economic and Military* (1925; New York: Dover Publications, 1988); John A. Warden III, *The Air Campaign: Planning for Combat* (Washington, DC: Pergamon-Brassey's, 1989); Idem, "Employing Air Power in the 21st Century." Useful secondary sources include MacIsaac, "Voices from the Central Blue"; Meilinger, ed., *Paths of Heaven*; idem, *Airmen and Air Theory: A Review of the Sources* (Maxwell AFB, AL: Air University Press, 2001; and Tami Davis Biddle, *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas about Strategic Bombing, 1914–1945* (Princeton, NJ: Princeton University Press, 2002).

33. John Keegan, quoted in Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment* (Santa Monica, CA: RAND, 2001), 220, no.4.

34. Warden, "Employing Air Power," 65.

35. See Lambeth, *NATO's Air War for Kosovo*; and Ivo H. Daalder and Michael O. Hanlon, *Winning Ugly: NATO's War to Save Kosovo* (Washington, DC: Brookings Institution Press, 2000).

36. See Builder, *Icarus Syndrome* and *Masks of War*.

37. The US Navy's capstone strategy document refers to the National Fleet Policy as well as to the "Sea Services" as a unitary maritime conception. The Navy, Marine Corps, and Coast Guard are all authors of *A Cooperative Strategy for 21st Century Seapower* (October 2007).

38. No less an Airman than Gen Hap Arnold himself blessed the concept of "airmindedness." Charles J. Dunlap Jr., "Developing Joint Counterinsurgency Doctrine: An Airman's Perspective," Joint Force Quarterly, no. 49 (2nd qtr., 2008): 86–92.

39. Wylie, *Military Strategy*, chap. 5.

40. This claim may seem to be refuted by the capabilities of rotary-wing aircraft. However, even these flexible machines, albeit often locally welcome, have a separating effect in the relationship between civilians and the COIN effort.

41. Mitchell, *Winged Defense*, xii, 3–4.

42. See Corum and Johnson, *Airpower in Small Wars*.

43. It is the opinion of this author that, notwithstanding its many virtues, the new COIN manual of the US Army and Marine Corps is notably thin in its accommodation of the air dimension. Airpower in COIN is relegated to appendix E. This is unfortunate, both for the gratuitous limitation it imposes on presentation of an inherently joint subject and probably even more for the message that it appears to send. A joint, even integrated, COIN capability should not be relegated to an appendix. Perception matters. See US Army and Marine Corps, The U.S. Army and Marine Corps Counterinsurgency Field Manual, U.S. Army Field Manual (FM) No. 3-24, Marine Corps Warfighting Publication No. 3-33.5 (Chicago: University of Chicago Press, 2007). Dunlap, "Developing Joint Counterinsurgency Doctrine," does not pull many punches in its airman's critique of FM3-24.

44. Ralph Peters, "In Praise of Attrition," *Parameters* 34, no. 2 (Summer 2004): 24–32, says what needs to be said, no matter the offense it must cause to decent liberal opinion. War is violence, and COIN, at least in part, is warfare.

45. I pursued the subject of airpower's inherent strengths and limitations in my *Explorations in Strategy* (Westport, CT: Praeger Publishers, 1998), chap. 4.

46. See Andres, "Deep Attack." The cyber dimension to Operation Iraqi Freedom is nowhere near as well known as it deserves to be.