

Book Essay

Airpower: Two Centennial Appraisals

Karl P. Mueller

Airpower for Strategic Effect by Colin S. Gray. Columbia University Press, 2011, 398 pp., \$55.00. (Air University Press hardbound edition may be ordered by military members at no cost or downloaded in PDF format at <http://aupress.maxwell.af.mil>.)

The Age of Airpower by Martin van Creveld. Public Affairs, 2011, 512 pp., \$35.00.

For airpower enthusiasts who enjoy commemorating anniversaries of historically significant dates, 2011 has been a big year.¹ It is the decennial of Operation Enduring Freedom, when US, British, and allied airpower and special operations forces joined with the Northern Alliance to topple the Taliban regime in Afghanistan and drive al-Qaeda's leadership out of the country in an unexpectedly rapid campaign, as well as the 20th anniversary of Operation Desert Storm—the defeat of Iraq and the liberation of Kuwait by air and ground forces of a US-led coalition in an even swifter war. Seventy years ago, 1941 saw not only Japan's naval air attack on Pearl Harbor, but also the establishment of the US Army Air Forces as a military arm formally equal in status and independence to Army ground forces. This year also marks the 90th anniversary of the sensational sinking of the battleship *Ostfriesland* by Billy Mitchell and his team of Army Air Service airmen. Finally, perhaps least familiar of all these events, airplanes were first employed in combat 100 years ago by Italy in Libya during the Italo-Turkish War, making 2011 arguably the centennial of military airpower.²

A century later, another war for control of Libya is winding down as I write this essay. It is a very different conflict and one in which airpower has played an infinitely more important part, though like its predecessor it merits greater attention than it has received. However, there are more powerful factors than historical coincidence that make this a good time to take stock of the past and the potential of airpower. The ongoing US military withdrawal from Iraq and the gradual waning of NATO's presence in Afghanistan portend a future in which major, land-power-centric counterinsurgency operations will no longer

Karl Mueller is a senior political scientist at the RAND Corporation in Washington, DC, and a visiting professor at Georgetown and Johns Hopkins Universities. The opinions presented in this article are his own and do not reflect the views of RAND or any component of the US government.

dominate US and allied defense activity. Meanwhile, shrinking European and, almost certainly, American defense budgets are forcing leaders to make difficult choices about how much and what types of military capabilities to retain in the future. It is therefore timely that two major books about airpower writ large by prominent and prolific authors have appeared on the scene in recent months. Martin van Creveld's *The Age of Airpower* and Colin S. Gray's *Airpower for Strategic Effect*³ each combine a survey of the history of airpower with an examination of its nature and an assessment of its current state and future prospects. Yet, the two reach strikingly different conclusions about their common subject, and in the end, it must be said, only one of the books makes a genuinely useful contribution to our knowledge about airpower.

Attacking without Precision

The Age of Airpower is an engagingly written account of the evolution of airpower since its inception but not the sort likely to appeal to contemporary airmen. The story that van Creveld presents is of a relatively brief era, roughly from the late 1930s to the late 1960s, when airpower achieved its greatest prominence before being left behind by the tide of history and its own gradual loss of essence. Since World War II, he declares, "Far from growing, the power of airpower has undergone a slow but steady decline" (p. 424).

This is likely to strike many as a remarkable thesis given the things that airpower has done in the past several decades, so it is worth unpacking van Creveld's arguments in some detail. These involve two principal themes. The first is that airpower is very important in major conventional wars—"no large scale conventional campaign is feasible in the teeth of enemy command of the air" (p. 398)—but such conflicts have become a thing of the past, principally because the spread of nuclear weapons makes major powers unwilling to fight each other lest doing so lead to cataclysmic escalation. They have been supplanted by "wars among the people" involving irregular enemies, van Creveld argues (crediting Gen Rupert Smith for both the idea and the label),⁴ and "the use of airpower in such wars has been the record of almost uninterrupted failure" (p. 338).

Van Creveld's argument that airpower has become largely irrelevant to today's and presumably tomorrow's wars is noteworthy mainly for the extreme terms in which he makes it (including his failure to acknowledge that many categories of military forces, not only airpower, matter much less if major war is obsolete). Others before him have argued more compellingly that major conventional war is disappearing. It is certainly true that since 1945 wars among modern industrialized states have been very rare; however, which of a number of possible explanations for this pattern are actually driving it has been the subject of much debate.⁵ Nuclear proliferation is not a very satisfactory explanation, at least in isolation from others, for a number of reasons, the most obvious being that the number of nuclear-armed states still remains in the single digits. Yet van Creveld could be correct about the phenomenon, even if his explanation for it is

Book Essay

unpersuasive. The questions that follow are whether such conflicts are so impossible that preparing for them is no longer desirable, whether their unlikelihood is due in significant part to the deterrent effects of airpower, and whether it is really true that airpower is irrelevant in subconventional conflicts.

The basic idea that airpower is, by its nature, not merely a supporting actor but indeed a big player in counterinsurgency is all too widespread.⁶ It is certainly true that the need for face-to-face contact with local populations when fighting insurgencies tends to make forces on the ground in substantial numbers indispensable and to cause such campaigns to be naturally more “ground centric” than comparable conventional wars.⁷ The challenges of identifying irregular targets mingling with civilian populations or located in complex or urban terrain also limit what airpower (and also naval power, though van Creveld does not mention this) can achieve from stand-off ranges. Yet, airpower tends to be invaluable in such conflicts and has often contributed notably to success in them.⁸ How then can van Creveld make the claim of “almost uninterrupted failure”? Remarkably, in addition to overequating airpower with ground attack, he declares that “had airpower been as dominant as some people have claimed, then the outcome ought to have been the rapid and complete defeat of the insurgents . . . In practice, things turned out quite differently” (pp. 337–38). In other words, airpower persistently fails when fighting irregulars because it does not lead to easy victories—just as ground power does not.

Where *The Age of Airpower* truly breaks new polemical ground is with its second argument that the age of airpower is behind us—that setting aside whether or not it is a relevant tool in today’s security landscape, airpower is actually degenerating—becoming less and less potent as its costs rise, its numbers fall, and its effectiveness fails to grow. This would seem to be no easy claim to make in light of developments over the past 45 years in precision-guided munitions (PGM), airborne sensors, stealth, and electronic warfare,⁹ and in the face of the improving performance of airpower as an instrument for attacking land forces during the 1972 Easter Offensive, the 1991 Gulf War, and the recent invasions of Afghanistan and Iraq, among other conflicts.¹⁰ The author rises to the challenge by examining airpower out of context, making unsupported assertions, and citing bogus evidence.

Van Creveld discusses at length the rising costs of buying and maintaining aircraft and the resulting decline in their numbers, and much of what he says is correct: Western air forces have been shrinking for decades as emphasis shifts from quantity to quality (as well as for other reasons), and even the Russian and Chinese air forces have more recently been following suit.¹¹ Although van Creveld exaggerates in saying that aircraft are now nearly as expensive as naval combatants, they have certainly tended to become dearer to their owners. However, it is important to note that this trend toward less-numerous, more-expensive systems is not peculiar to airpower, applying as well to ships, submarines, armored fighting vehicles, and other systems.¹² Similarly, the rise of missiles and remotely piloted aircraft to supplement and, in some cases, supplant manned

Book Essay

aircraft is an important trend (though not everyone would agree with van Creveld that a drone is less representative of airpower than is a fighter) but needs to be accompanied by recognition that aerial systems, both manned and unmanned, are also taking business away from terrestrial providers as sensors and weapons improve.

The typical military response to complaints about the rising costs of weapons and platforms is that the effect of declining numbers of systems is offset, and indeed more than made up for, by the improving capabilities of individual aircraft or weapons. Here van Creveld avidly and consequentially differs, insisting that newer systems are not in fact much more capable than their predecessors, so a decline in numbers really does mean a decline in value. In air-to-air combat, he argues, technological progress cancels out, so that while a modern fighter is more capable than one from World War II, an F-15 that has to fight a MiG-29 is no more useful than a Spitfire that has to fight a Bf 109 (p. 202). This is wrong on several levels, but even if it were not, it applies no less to other weapons that are designed to fight against their peers, such as tanks. Most significantly, van Creveld claims that PGMs and other modern aerial weapons are not much more lethal than older and unguided ones: “A Stuka was quite as capable of knocking out a World War II tank as an A-10 Warthog is of doing the same to a present-day one. Similarly, P-47 Thunderbolts in 1944–45 did not take many more sorties to bring down a bridge or hit a locomotive than an F-16 did six-and-a-half decades later” (p. 431).

These claims, which as generalizations are patently incorrect—consider that F-4s armed with primitive PGMs in 1972 were vastly more efficient at destroying targets like bridges than were F-105s with iron bombs a mere few years earlier—are offered without reference to any sources. Van Creveld similarly argues that modern fighters are no more effective at providing close air support than their World War II predecessors, simply because both need to loiter near the battlefield to have very rapid response times.

In short, van Creveld argues that all that PGMs really accomplish is to allow aircraft to attack their targets from farther away, where it is safer. Even if this were true, the implication is militarily nonsensical. It is equivalent to insisting that a snub-nose pistol is as accurate as a sniper rifle because either one will consistently hit if it is pressed against the target’s forehead before firing—or that bourbon is no stronger than beer because either one can make you drunk.

Analytically, *The Age of Airpower* misses its target quite badly, substituting shaky assertions for solid logic and relying on dubious or mischaracterized evidence for much of its empirical support. But does it nevertheless constitute a worthwhile history of airpower if one sets aside its policy-related arguments? It is certainly sweeping in its scope, aside from giving rather short shrift to a number of recent conflicts, such as the wars in the Balkans in the 1990s and the 2001 campaign in Afghanistan, and van Creveld provides detailed discussions of some usually neglected topics, including the 1911–12 war in Libya.

Book Essay

Alas, no. In fact, the book's history is saturated with scores of errors, giving the strong impression the author does not have a deep knowledge of his subject, and his preference for quantity over quality extends to research and writing, at least in this case. Many of the mistakes relate to details that are not essential to the main arguments, but collectively they undermine quite significantly the reader's confidence in anything the book has to say, not least when they turn out to be due to misreading the Wikipedia articles that are so often cited in the end-notes. These minor errors run the gamut from characteristics and designations of aircraft¹³ and their armaments,¹⁴ to details of naval vessels,¹⁵ to dates and descriptions of events,¹⁶ to orders of battle.¹⁷ But other historical errors are quite relevant to van Creveld's arguments, such as claiming that in 2001 no land-based fighters could fly sorties over Afghanistan (p. 265; in fact, F-15Es and other jets flew hundreds of sorties from bases in the Middle East), that strategic airlifters do not fly directly into Afghan bases (p. 417), and that modern bombers are so inefficient for delivering conventional bombs that using them in this role almost amounts to "a bad joke" (p. 196). Elsewhere, details that are central to making sense of the strategic history are missing, particularly with respect to some important recent conflicts.¹⁸

Perhaps most disturbingly, van Creveld concludes the book with a brief but caustic coda in which he blames increasing numbers of women in uniform beginning in the 1970s for emasculating macho air force culture, driving strippers from their traditional and proper place in officers' clubs, and undermining pilots' attitudes that had once made airpower great (pp. 439–41). This tirade reaches its lowest point when van Creveld suggests that women are underrepresented in combat roles in the US Air Force relative to other specialties not because of long-standing prohibitions on their serving in combat, or even biologically based physical disadvantages, but because they are not courageous.

Of course, there is a great deal of history in *The Age of Airpower*, and most of it is not incorrect, but there are few historical books about which that much cannot be said. A history of the American revolution that was mostly accurate but claimed that rifled muskets were not more accurate than smoothbore ones, confused Sam and John Adams with each other, described Valley Forge as being in New Jersey, and attributed the absence of women in the Continental Congress to the fairer sex's indifference to politics would not be welcomed on military or civilian college syllabi and neither should this book, with its far more pervasive inaccuracies, great and small.

Thinking Strategically

On a superficial level, Colin Gray's *Airpower for Strategic Effect* has much in common with *The Age of Airpower*—a survey of airpower history from its beginnings to the early twenty-first century, arguments about the relationship between airpower and other categories of military power, and historically based policy prescriptions. Yet a comparison of the two works is a study in profound contrasts.

Book Essay

Perhaps the most obvious difference between the volumes is that Gray's assessment of contemporary airpower is considerably more positive than van Creveld's, though it is not an unalloyed panegyric: "In the global strategic history of the past 100 years, airpower probably has been the greatest success story." Gray's book also gives proportionately greater emphasis to airpower after 1945; more consistently pays attention to aspects of airpower other than fixed-wing, air-to-air and air-to-surface combat; and, it must be said, as a rule it gets its facts right.

Airpower for Strategic Effect gives the impression of being a considerably more disciplined book than the sometimes rambling, and occasionally ranting, *Age of Airpower*. The first three chapters are a deliberately theoretical examination of strategy, airpower, and the relationship between the two; this is the unifying theme of the entire volume, which Gray declares is intended "to reset the theory of airpower." Here Gray establishes himself as a Clausewitzian student of strategy as science and art—as it happens, exactly the sort of mind-set van Creveld spent much of his previous book criticizing.¹⁹ Throughout the next five chapters, which constitute the historical narrative, Gray remains focused on the strategic dimension of the story, frequently addressing technical and tactical details but only to the extent that they bear on the strategic level, as his title suggests. Readers interested in an encyclopedic, descriptive history of airpower will find much of value here but will also encounter topics that are deliberately elided.

The resulting history is perhaps unexpectedly humanistic after the intellectual formality of the opening chapters and given the scientific emphasis of the project. Gray repeatedly emphasizes the importance of recognizing that strategy is made by people who are far from omniscient and whose choices should be evaluated with the limitations imposed by their circumstances kept firmly in mind—"Context rules!"—and that when airpower fails to achieve an impossible goal it does not constitute a strategic failure (at least for those who had no say in choosing the objective). He notes the costs that airpower has suffered from its more extreme advocates promising more than it could realistically deliver—as exemplified by van Creveld berating it for not fulfilling the most extravagant promises made on its behalf, and even a few that were never made at all—while acknowledging the compelling political and organizational imperatives that often led them to oversell their product. Similarly, Gray is quite sympathetic to John Boyd and John Warden for their contributions to reinvigorating strategic thought about airpower while also pointing out the considerable shortcomings in their theories, including the inappropriate application of Boyd's OODA loop to the strategic level of war and the overly Jominian, rigidly mechanistic aspects of Warden's targeting concepts.

It is a testament to Gray's execution of his project that a reader not inclined to tackle three chapters of rather heavy-going theory could easily start reading with the first historical chapter—about airpower during and after World War I—and by the end of the book would have missed out on relatively little of its value. As a history of its subject this is an outstanding work, presenting the experience of airpower in the world wars, Korea, Vietnam, and the wars of the past 11 years in

their broader strategic context and with plenty of insights. There are places with room for debate—for example, like van Creveld, Gray aptly credits the Combined Bomber Offensive with the all-important destruction of the Luftwaffe but has relatively little to say about the destruction of the German war economy that the bombers ultimately achieved.²⁰ But such quibbles are minor when placed beside a history that has so much that is worthwhile to say in an account of relatively modest size for the scale of its subject.

Airpower for Strategic Effect culminates with a presentation of Gray's general theory of airpower, embodied in 27 strategic dicta. These merit close attention by both students and practitioners of airpower, strategy, or both. They do not represent the final word in airpower and strategy but rather a set of principles that may serve as a basis for further efforts in the field. Being focused on making strategy for the real world, there is much that emphasizes the timeless strategic bedrock, "it depends" (which a decade and more ago at the School of Advanced Airpower Studies [as it was then], we used to say was the only SAAS "school solution"). Thus, for example, Gray emphatically, and in my view correctly, rejects the shibboleth that airpower is inherently offensive in favor of recognizing that it has the potential to be strategically useful in a variety of offensive and defensive roles.

This is not to say, however, that Gray recognizes no enduring, prescriptive principles. Notably, he is quite emphatic about the importance of strategic education, observing that "the effectiveness of airpower is highly dependent upon the quality of (variably joint) air strategy that directs it, and that quality rests on the quality of strategic education absorbed, understood, and applied by air strategists." Moreover, "It is paradoxical that air forces willing and able to spend billions of dollars on technical and tactical education typically devote a trivial amount to understanding what they do or might do strategically and why they are asked to do so by their political owners." As the US Air Force and those of its allies decide how to tighten their belts in the coming years, this is guidance that should be kept very much in mind.

Odyssey Dawn's Early Light

So here we stand a century after Italian aircraft in Libya flew the world's first aerial reconnaissance and bombing missions as the dust settles from another war in the same place. If the past decade was sometimes labeled as the beginning of the "post-post-Cold War" era to distinguish it from the years of peace dividends, peacekeeping, and peace enforcement in the 1990s, the NATO intervention in Libya can fairly be said to represent the first "post-post-9/11" war for the United States. It was also the first major use of airpower since van Creveld and Gray finished writing their recent works on the subject, so it provides something of a test case against which to apply their theories.

Van Creveld's arguments do not fare well in this case. The Libyan conflict was very much a war among the people (albeit one in which geography was relatively

Book Essay

favorable for airpower), yet the aerial intervention by France, Great Britain, the United States, and their partners was no strategic failure. Instead a relatively modest deployment of forces succeeded in achieving its objectives (though dynamic at best and ill defined at worst) of preventing the Qaddafi regime from crushing its opposition and then enabling the tide in the conflict to turn in a matter of months from seemingly inevitable defeat for a weak rebel movement to the overthrow of a well-funded, heavily armed government. As in Iraq, Bosnia, Kosovo, Afghanistan, and Iraq again, the enemy was far from being a top-flight adversary, but given that the intervention was conducted at a cost in resources that paled beside the ongoing expense of the war in Afghanistan and involved no NATO casualties at all, its success is very far from insignificant.

In contrast, the Libyan intervention was all about airpower for strategic effect and helps to illustrate the soundness of a number of the arguments Gray proffers. We see an improvisational, politically untidy strategy nevertheless leading to game-changing results, with airpower operating as a prominent player on a joint battlefield. NATO's initial and ultimately most significant success came in using airpower on the strategic defensive to protect the Libyan rebels at their time of greatest vulnerability. In the latter stages of the conflict, the strategic effect of helicopters—with which Gray is much taken—was greatly in evidence. If there is a place where Gray's dicta come up short in comparison to the evidence from Libya, it is in the extent to which the conflict points out the importance of airpower's capacity to apply force with relatively little risk of casualties among its operators. Although one might debate the extent to which this is truly an enduring property of airpower, a good case for it becoming the basis of a 28th dictum could certainly be made.

At the time of writing, much remains uncertain about the results of the Libyan war, and it may yet appear in the long run to have been a strategic misstep, although that possibility appears relatively unlikely. Whether it will turn out to be a harbinger of future US military operations to come in an era where neither major wars nor large occupations appear strategically enticing is also yet to be determined—and may depend in no small part on how the preceding uncertainty resolves itself. But however these questions turn out, the intervention should be reckoned as a case of airpower successfully achieving the strategic effect it was directed to pursue and, once again, defying traditional military expectations.

Notes

1. Among other airpower commemorations that could be added to this list are the 30th anniversary of Israel's tactically brilliant but strategically counterproductive Osirak raid; the 35th anniversary of Operation Entebbe, the air landing of Israeli commandos in Uganda to rescue the passengers of a hijacked airliner; the 50th anniversary of the cancellation of the B-70 Valkyrie bomber program; the 75th anniversary of the first Chain Home radar station on the English Channel coast; and the centennial of the first landing of an airplane on a naval vessel.

Book Essay

2. For an alternative dating, see Air Vice Marshal Tony Mason, *Air Power: A Centennial Appraisal* (London: Brassey's, 1995).

3. In the text that follows, page numbers are provided for references to *The Age of Airpower* but not to *Airpower for Strategic Effect*, as the final pagination of the latter was not yet available at the time of writing.

4. Rupert Smith, *The Utility of Force: The Art of War in the Modern World* (New York: Knopf, 2007).

5. See among others, Richard N. Rosecrance, *The Rise of the Trading State* (New York: Basic Books, 1986); John Mueller, *Retreat from Doomsday: The Obsolescence of Major War* (New York: Basic Books, 1989); Michael E. Brown, Sean M. Lynn-Jones, and Steven E. Miller, eds., *Debating the Democratic Peace* (Cambridge, MA: MIT Press, 1996); and John Mueller, *Atomic Obsession* (New York: Oxford University Press, 2009).

6. The relegation of airpower to a brief appendix in FM 3-24, *Counterinsurgency*, is often cited—including by van Creveld himself—as one indicator of this pattern.

7. This is true even if one does not subscribe to the paradigm of population-centric counterinsurgency. Strategies that focus on attrition against irregular enemies—Israelis refer to this as “mowing the grass” in the West Bank—generally depend heavily on local presence for intelligence collection.

8. James S. Corum and Wray R. Johnson, *Airpower in Small Wars* (Lawrence: University of Kansas Press, 2003).

9. Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, NY: Cornell University Press, 2000).

10. David E. Johnson, *Learning Large Lessons: The Evolving Roles of Ground Power and Air Power in the Post-Cold War Era* (Santa Monica, CA: RAND, 2007).

11. The one genuinely bizarre part of van Creveld's argument on this point is a claim that air forces have become smaller in part because national leaders have “without exception” pursued a policy of deliberately emasculating their generals to reduce their ability to drag their nations into wars that might lead to nuclear escalation (p. 427).

12. “There are historical grounds for suspecting that the combination of very high quality and very small numbers is a typical sign of military degeneration” (p. 433). This assertion is promptly undermined, however, when van Creveld illustrates it with two examples drawn from naval history, the evolution of Hellenistic oared warships and of armored battleships, both of which he mischaracterizes to a startling degree.

13. For example, van Creveld confuses the Spitfire and the Hurricane (p. 99), credits the B-17 with an enormous 17,600-pound bomb load, says that the B-24 was already approaching obsolescence when it entered service (p. 120), indicates that the Bear and Bison were the same Soviet aircraft (p. 196) rather than two completely different (and competing) bombers, and describes India's “Sabre Slayer” Gnat fighters as jet trainers (p. 286; the Gnat trainer, famously flown by the Red Arrows, was a different and larger aircraft that India never operated), among many other errors.

14. Van Creveld notably confuses the characteristics of radar-guided and infrared-homing air-to-air missiles and of optically guided and laser-guided bombs (p. 301).

15. The text describes HMS *Glorious* as being considerably larger than HMS *Courageous* (they were actually sister ships; the author compared the tonnage of one before her conversion from battle cruiser to aircraft carrier to the postconversion displacement of the other); says World War II merchant aircraft carriers had to lift their planes from the sea with cranes (p. 133; they did not); and purports that Argentina's *Venticinco de Mayo* was a former escort carrier converted from a merchantman (p. 269; she was not).

16. “What was definitely not a figment of the imagination was a Viet Cong attack on the air base at Bien Hoa, near Saigon, on November 1, 1963, which destroyed many U.S. and South

Book Essay

Vietnamese aircraft, including 13 B-57s and six A-18s [*sic*]" (p. 382). The attack in question was actually on 1 November 1964 and is reported to have destroyed five B-57s; the larger number of B-57s and A-1Es to which the book refers was destroyed in an accidental explosion and conflagration at Bien Hoa on 16 May 1965.

17. Van Creveld describes the North Vietnamese air forces as having routinely launched fighter sorties from Chinese airfields during Operation Rolling Thunder (p. 391; they did not) and says they used SA-3 missiles against US aircraft (p. 391; these entered service after US forces left).

18. Van Creveld notes the interwar belief that "the bomber will always get through" without explaining why theorists of the pre-radar era believed that effective defense against bombers was impossible. In noting that most military cargo is still moved by sea and land transport, van Creveld says that these are not only cheaper but also more secure than airlift—a remarkable generalization to make following years of road convoy attacks in Iraq and Afghanistan (pp. 321–22). There is much disdain for the conduct of the air campaign against Serbia in 1999, but no explanation of why van Creveld does not consider it ultimately to have been a significant success for airpower, and little attention to the 2001 air campaign in Afghanistan beyond noting that the Taliban were a weak adversary and that a lack of sufficient ground forces allowed enemy leaders to escape at Tora Bora.

19. Martin van Creveld, *The Culture of War* (New York: Ballantine, 2008).

20. For more on this subject, see Adam Tooze, *The Wages of Destruction: The Making and Breaking of the Nazi Economy* (New York: Viking, 2007).