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Charles J. Gross, **American Military Aviation: The Indispensable Arm**. College Station, Texas: Texas A&M University Press, 2002. Illustrations. Notes. Bibliography. Index. Pp. xv + 375. ISBN 1-58544-215-1. \$35.00 (cloth).

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Dr. Charles Gross, the official Air National Guard Historian, has written a history of American air power that will stand as the definitive synthesis for many years to come. Scholars will find this book to be an invaluable one-volume guide to the field; military personnel involved in aviation will revere the book as essential professional reading; and general readers, looking for a critical history of the subject, will find everything they need and more between its covers.

American Military Aviation's thesis, as its subtitle implies, is that air power has emerged as "indispensable" for each of America's armed services. No branch can dare ignore its impact on all levels of conflict, ranging from logistics and intelligence to combat operations on land, sea, in the air, and even space. On the other hand, Gross is quick to point out that air power is not the panacea for all of the United States's military problems. Air power can be limited by geography as well as political constraints. It also cannot always defend the country against asymmetrical threats, as the 9-11 terrorist attacks so vividly illustrated. "In many respects," the author argues, "the central theme of the history of American military aviation has been the continuing struggle to adapt aircraft to the changing operational requirements, doctrines, and competing organizational interests of the armed forces while accommodating evolving national strategies."(293) This sentence also neatly captures the essence of the author's history: a thorough examination of the roles of politics, economics, and technology in shaping air power in each of America's armed services, including the Army and Marine Corps.

For Gross, during the nascent years of American military aviation, air power enthusiasts had to struggle just to be noticed. In 1917, the U.S. aviation industry consisted of just a few struggling firms, and most of its designs were completely out of date by European standards. In fact, American designs did not begin to catch up with European standards until after the war. What transformed U.S. military aviation from a flock of fledgling chickens to an armada of eagles were the demands of World War I and the “incredible notion”(29) held by many U.S. policymakers that aviation would be one of America’s key contributions to the war. In the end, however, U.S. and Allied air power played a “distinctly supporting role to established ground and naval forces.”(298) Observation proved to be the most valuable contribution by aircraft during the First World War. Moreover, most of the planes fielded by U.S. squadrons were designed and built in Europe. The American aviation industry focused most of its attention during this period building trainers, not fighters as popular legend would have it.

The interwar period was the first period of true innovation by American aviation. During this era, technological innovations allowed many American pilots to capture aviation speed and distance records. But with each new development, air power enthusiasts made bolder and bolder claims about its efficacy in future wars. According to Gross, “radical advocates like Billy Mitchell had little real impact on the development of air power, but their inflated claims became yardsticks by which it was measured”(299) later on in World War II.

Unfortunately for these theorists, air power did not live up to their grandiose promises during World War II. Strategic bombing certainly contributed enormously to the economic collapse of Germany and Japan, but it did not provide the decisive, quick, and cheap means of waging war promised by Billy Mitchell and Alexander De Seversky. Where aviation truly proved its worth was in the tactical arena. Tactical fighters played a critical role during the Normandy invasion and the subsequent conquest of Europe by providing troops with close air support and also achieving air superiority over the battlefield. In the Pacific, carrier-based aviation not only allowed the Navy to check the advances of the Japanese fleet at Midway, but also provided critical close air support to ground troops during the Central Pacific offensive. In the Southwest Pacific, Army Air

Forces fighters controlled by General George Kenney also waged “a brilliant campaign of land-based aerial improvisation.”(123)

When examining the successes of tactical aviation in World War II, Gross is careful to give credit only where credit is due. For example in the Pacific, he points out that signals intelligence intercepts from Magic, and also ship-based radar and command and control contributed mightily to the U.S. Navy’s aerial victories. In Europe, he claims that despite the Allies’ “overwhelming mastery of the skies, the Normandy invasion required nearly two months of bloody combat before the Germans were finally defeated and pushed out of the region.”(116) It is a great strength of this book that the author never blindly sings the praises of air power, but always offers balanced appraisals.

In his treatment of the Cold War, Gross focuses on technological innovation and also evaluates its performance during the various “hot” conflicts of the period. Gross sees Korea, overall, as a failure for air power because political and technological limitations did not allow it to secure victory for the United Nations forces. However, Gross does give the air power of the services kudos for maintaining air superiority over the battlefield and also playing a “critical role in preventing the communists from winning the war.”(300)

In terms of innovation, Gross emphasizes that the development of aerial refueling, airlift, helicopters, electronic countermeasures, and precision-guided munitions (PGMs) were as important to the rise of American air power as jets. All of these new technologies were heavily exploited in the Vietnam War. Air refueling allowed Air Force planes based in far away Thailand to conduct operations as far north as Hanoi. Tactical airlift delivered goods and people to critical areas throughout the war, and helicopters carried large waves of assault troops into combat for the first time in American history. Although Gross sees the Vietnam War in its entirety as a tragic defeat for air power, he does note that the arm did achieve some operational successes, especially later in the war. He also points out that this war finally allowed the tactical fighter to assume a preeminent position in America’s air arsenal. “On the operational level,” he writes, “the bombing of North Vietnam showed that air-refueled fighter-

bombers equipped with PGMs, air-to-air missiles, and other conventional munitions had demonstrated greater versatility, survivability, and ability to conduct precision strikes than heavy bombers.”(215) Overall, the gradual ascendancy of tactical aviation over strategic during the Twentieth Century is one of the central themes examined by the book.

During the post Cold War period, air power emerged as “the military instrument of choice among U.S. civilian policy makers,” but as Gross explains, it again did not always deliver everything it promised. In the Gulf War, air power unquestionably softened Iraqi defenses to such a degree that the ground forces only needed 100 hours to topple its demoralized enemy and secure victory in Kuwait. Air power alone, however, did not produce victory, nor did it topple the Iraqi dictator, Saddam Hussein. Air power also could not be applied to achieve decisive results in Somalia and Haiti, although it did succeed to a greater extent in the Balkans. The results of the air power in the current war against terrorism also have been mixed.

As for the future, Gross sees space and information weapons, as well as precision guidance and low-observable technologies mated to Remotely Piloted Vehicles (RPVs) as the next technological revolution. Whatever may be the case, his book provides invaluable insight into the growth and development of American air power. The work is not simply a discussion of aircraft and operations but of doctrine, training, procurement, and inter service rivalries surrounding air power and its rise to preeminence within the American military establishment. It is a big story to tell in a mere 375 pages, but the author rises admirably to the challenge, and the result is a new classic in American air power history.



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