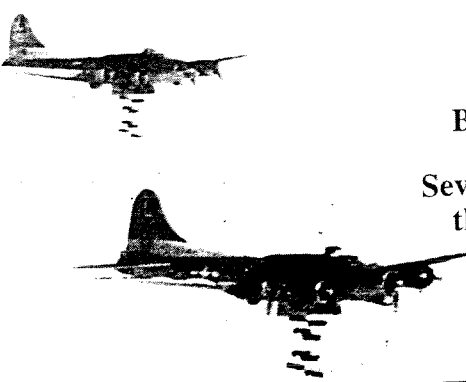




# Strategic Bombing: Always a Myth

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Seventy-five years of praying at the altar of Giulio Douhet—the god of strategic bombing—has proved worthless. We must assess bombing theory and practice analytically, and develop a new model for the future.



To make this a better, safer, and saner world, we must dispel a myth woven around what many regard as an arcane subject: strategic bombing. The myth, begun in sincerity by Italian General Giulio Douhet after World War I has been continually embellished, deepened, and reinforced for 75 years by the U.S. Air Force and by non-analytical historians.

Many politicians make sweeping statements involving military power, unaware of the limitations of that power—especially air power. Much of the confusion is the result of disinformation spread by self-serving individuals. Though U.S. military power is great, it is not all-powerful, is frequently misunderstood, and often fails to resolve many of the world's problems. Decisions to use military power must be made with cool reasoning; be based on our real military capabilities and on real history; and show insight into the art of winning wars together with a proper grand strategy.

To understand strategic bombing we must examine its history, extract its critical lessons, and use these lessons to understand and develop what the future may hold for this weapon.

## World War I

World War I saw only the beginnings of strategic bombing, with the Germans ~~bombing~~ bombing London. This radical operation inspired many to rethink the airplane as a weapon of war. Generals Jan Christian Smuts and Hugh

Trenchard succeeded in making the flying elements a separate military service. Trenchard influenced our brilliant and emotional General "Billy" Mitchell—who crusaded for a separate air force in the 1920s and lost.

But the man most identified with strategic bombing after World War I was Italy's General Douhet. He was bright, and imaginative, and wrote the first treatise on strategic air power, *Command of the Air*, in 1921. He saw that bomber aircraft were unrestricted by mountains, trenches, defenses, and distance. Battles now would affect civilians as well as combatants. He also believed that air forces would dominate surface forces on land and at sea, and that an enemy's ability to sustain a war could be eliminated. He preached the destruction of enemy air power in the air and on the ground: "The need is to not only to kill the enemy's eagles, but also to destroy their eggs and their nests." Enemy aircraft-production plants were defined as prime strategic targets. He believed that bomber attacks were inevitable, and that defense against them were useless. He believed that attacking populations with relatively small amounts of explosives, incendiary, and gas weapons would make populations force their leaders to sue for peace. He believed that a powerful strategic bombing force could deter potential enemies from attacking.

Douhet's enthusiasm was—and remains—contagious. Military commanders and government leaders believed him. Douhet's logic was impeccable, but his theories had not yet seen a proper experiment. The data were missing. A stringent test of his theories was soon to come.

U.S. AIR FORCE

In preparation for the conquest of Europe, Germany created the most powerful air force the world had ever seen. German planners believed Douhet, but tailored much of their bomber force to support their fluid, armor operations on the ground. England, badly wounded in World War I, developed a bomber command to deter a resurgent Germany without the need to place another vulnerable expeditionary force on the continent.

But World War II began. After the *Anschluss* and the dismemberment of Czechoslovakia, Germany attacked and absorbed much of Poland, then overran the Netherlands, Belgium, and France. Germany then turned to the invasion of England, in its first test of Douhet's theories. The Battle of Britain was engaged to gain air superiority for Operation Sea Lion. Britain's Bomber Command had failed to deter the war and the attacks on England, but Germany's bomber fleets also failed to bring England to its knees. The *Luftwaffe* failed to gain air superiority over England. The initially frail fighter force of the Royal Air Force (RAF), under the competent command of Air Marshal Sir Hugh Dowding and using the nascent technology of radar, was able to inflict unacceptable losses on the German bombers and their fighter escorts. After the Battle of Britain was won by England, Hitler turned his aerial weapons on London, to bring the population to its knees. Churchill cheered quietly. The bombing only stiffened the morale of Londoners and brought England's war effort to a higher pitch.

The RAF began intensive daylight bombing of Germany in retaliation. But because of inability to find and hit its targets while its unescorted bomber fleet took serious losses, it changed its strategy to the indiscriminate night bombing of Germany's cities. This too, was generally ineffectual. All of these results stood in total contradiction to Douhet's preaching.

Now the strategic air power of the United States was about to enter the fray alongside the RAF's bomber command, to provide a more serious and complete test. At the Casablanca Conference in 1943, Churchill, eager to see what the U.S. Army Air Corps (USAAC) would contribute, conferred with General Ira Eaker, the Eighth Air Force Commander. General Eaker promised a doubting Churchill that with his multi-gunned B-17 Flying Fortresses, and with the still-secret Norden bombsight (allegedly capable of placing its bombs into a 50-foot diameter circle—pickle-barrel—from an altitude of 25,000 feet) could begin dismembering Germany's industrial power in daylight without the need for fighter escort. Churchill failed to dissuade Eaker, but signed off on the idea that the RAF would mount increasing attacks by night and the USAAC would bomb by day.

The objectives and priorities defined at the Casablanca Conference were to destroy:

- Submarine construction yards and submarine pens, to safeguard the Atlantic shipping lanes
- German fighter aircraft production plants, to establish air superiority
- Rail transportation in France and Germany
- Germany's fuel supply
- Generalized targets in Germany's war industry.

The directive defined their overall strategic objective: "The progressive destruction and dislocation of the German military, industrial, and economic system, a undermining of the German people to a point where capacity for armed resistance is fatally weakened"

These targets and priorities were the result of massive Army Air Corps (AAC) studies conducted by staffs of Generals Kuter and Hansell.

### *The Achievements*

Since everything needed ball bearings, the first targets attacked were the critical node of ball bearing production at Schweinfurt and Messerschmitt fighter production at Regensburg: Operation Double Strike. Pre-dawn daylight bombing began. After losses of 10-35% of the bomber force per mission, the daylight bombing was halted after one month. This was a double failure. Germany's Minister of War, Albert Speer, claimed: "No plane or tank could be built for lack of ball bearings." The ball bearing plants were not only not a critical node, they were even rational military targets. Why? Because Germany had alternative sources of supply: Sweden and Switzerland. Germany had stockpiled a large surplus of ball bearings and had designed around the need for them—substitution. This was a failure both in target definition and target priority. Worse, because it was vulnerable to the Eighth Air Force had become the target!

Attacking submarine pens and submarine production plants with 250- and 500-pound bombs also proved less than successful, because the pens were protected by 20-25 feet of steel-reinforced concrete. Again a failure to define the target properly, and a failure to know the penetrative potential of a bomb unit: A basic and required pre-condition. After the attacks began, Albert Speer modified submarine construction, dispersed the production facilities, and moved final assembly to invulnerable facilities. Improving efficiency of the German submarine industry. Such adaptation is commonplace in war, yet seldom anticipated or countered.

Attacking the rail system in France caused great disruption in the marshaling yards, but failed to stop the flow of supplies because of the many rail lines available. The bombing was too inaccurate to destroy the key points. Nevertheless, rail traffic in France and Germany was nearly stopped by fighter pilots who destroyed the irreplaceable locomotives with the pinpoint accuracy of their guns. This is a "role reversal of the first kind"—tactical aircraft accomplishing a strategic mission that heavy bombers could not.

The famed Ploesti mission flown by Africa-1's B-24s of the Ninth Air Force in September 1944 was poorly planned and poorly executed. Half the aircraft and one-fourth of the valorous crews were lost. Unfortunately we did not persist in attacking the oil refineries because the German petroleum industry was fourth on the list of priorities. It should have been first! This target was the most to hit, vulnerable, and vitally important. But only the first three targets listed in "Point Blank" were receiving the emphasis. When petroleum industry attacks began again in 1944, Germany was in final retreat, its fate sealed. The importance of denying petroleum to a



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starved Germany quickly revealed itself. Its submarines stayed in port, the *Luftwaffe*'s fighters flew much less frequently, and the German Panzer divisions had to capture their fuel.

The serious effort by the U.S. strategic bomber forces (now protected by fighters) to destroy the German aircraft industry only spurred the Germans to increase vastly their rate of fighter production. This bombing venture was a complete failure, mostly for lack of accuracy. But the bombers attracted the *Luftwaffe*'s fighters, and our superior fighter escorts managed to kill the cream of Germany's fighter pilots. Air superiority was gained by the fighters—another role reversal of the first kind.

An unforeseen bombing phenomenon revealed itself in World War II. After the RAF's fruitless attempts at precision bombing, Air Marshal Harris ordered a campaign of terror, inflicting pain by large-scale, indiscriminate destruction of Germany's industrial cities, euphemistically called "de-housing." He intended to crack the German population's will to resist. In conjunction with daylight operations by the USAAC, the bombers generated the awesome new phenomenon of the self-sustaining firestorm. But bombing city populations in Germany had an effect opposite to that predicted by Douhet. Their will to fight was strengthened. Indiscriminate bombing of civilians once again proved counterproductive.

Were heavy bombers ever effective in Europe? Yes—at least once. During the invasion of France, General Fritz Bayerlain's famed elite *Panzer Lehr* armored division was massed and poised to engage American troops moving inland near Saint-Lo. In four hours, a continuous carpet of 1,900 aircraft dropped 4,000 tons of bombs on his insufficiently dispersed tanks and eliminated the division.

The complete litany of failure is too long to relate. Three fundamental reasons for the consistent failures of the bomber forces were completely evident:

- ▶ The bombers lacked sufficient accuracy
  - ▶ The bombers could not survive without fighter escort
  - ▶ The targets and their priorities were ill defined
- This "short list" of reasons never changes, in light of subsequent experience.

Bernard Brodie of the RAND Corporation in his landmark *Strategy in the Missile Age*, concluded:

If one disregards for a moment the over-all vision and considers only specific assertions and theses, one has to conclude in World War II [that] Douhet proved wrong on almost every salient point he made. . . . To assert the reverse, as is often done, is to engage in propaganda, not analysis.

Strategic bombing of civilian targets in Coventry, England, Hamburg, Germany, and Tokyo, Japan failed to break the will of the population. Rather, it only stiffened the will to resist—completely refuting Douhet's theories.

The War in the Pacific reinforced these conclusions. It began with Japan's imaginative and effective strategic action at Pearl Harbor, conducted by naval tactical aircraft—a role reversal of the first kind again. Eventually, brilliant actions by our Navy destroyed the potentially dangerous Japanese naval air power and sea power and ultimately isolated Japan.

General Hansell, commanding and directing bombing attacks on Japan and still unaware—despite his extensive European experience—that precision bombing was a myth, attempted to use it to destroy Japan's military-industrial capacity. After three months of intensive "precision operations," his B-29 bomber force had destroyed none of the designated high-priority targets—a failure that brought about his dismissal.

It was General Curtis LeMay who put Douhet's theories to the ultimate test. All of Japan's major cities, except for Hiroshima and Nagasaki, were burned out with conventional weapons. Jelled-gasoline incendiary bombs, dropped on Japan's highly combustible cities, generated ferocious firestorms called conflagrations. The greatest number of deaths ever generated within six hours came from fire-bombing 15 square miles of Tokyo. Neither nuclear drop matched this. Despite the devastation, however, there still were no solid indications of Japanese surrender. Invasion appeared necessary. After the nuclear drops, the Emperor—not his warrior generals controlling the country—accepted our terms of unconditional surrender.

### *Post-World War II*

The U.S. Air Force became a separate service. Its Strategic Air Command (SAC), with control of both atomic and hydrogen nuclear weapons, became the most powerful destructive instrument in the world. The nuclear-tipped intercontinental ballistic missile became the primary instrument of deterrence and destructive power. Our absolute supremacy in these weapons was reduced by the Soviet commitment to gaining nuclear parity, and then supremacy. Nuclear-age strategy gradually evolved through massive retaliation into mutual deterrence through Mutually Assured Destruction (MAD). U.S. government leaders were too humane to use the weapon except under desperate conditions of national survival. SAC defaulted conventional weapons attacks, both tactical and strategic (deep strike).

to Tactical Air Command (TAC). No precision-guided conventional weapons were developed for SAC's strategic, heavy, global-ranging bombers. They were developed only for smaller strike fighters, using their specialized low-altitude tactics.

It gradually became clear that our preponderant nuclear power could deter only the use of nuclear weapons by other nations. The Soviet Union supported and incited wars against us, using surrogate nations. If the devastation of nuclear war was to be avoided—and as nuclear missiles became more survivable and more effective—the heavy bomber's major role really resided with conventional weapons.

The Korean War saw extensive use of SAC's B-29s. The few strategic targets in North Korea were destroyed very quickly. Precision conventional weapons, Razon and Tarzon, were used effectively—until their supply was exhausted and their production lines discontinued. General LeMay increased the level of pain in North Korea by bombing cities and civilians, causing two million North Korean civilian deaths in three years. Yet North Korea never sought negotiations for peace.

Our valiant B-29 crews, attempting to prevent the Chinese Army from crossing the Yalu River bridges, failed for their lack of accuracy. Heavy bombers were used in quasi-close air support to attack the Chinese forces driving the U.S. forces in retreat. Our World War II propeller-driven fighters and even the new generation of jet fighters proved inadequate in bomb load-carrying capability for this task. This was a role reversal of the second kind—strategic bombers conducting tactical operations that tactical strike aircraft could not.

The Vietnam War saw more bomb tonnage dropped on North Vietnam than was dropped on Germany by a factor of three. We had complete air superiority. Yet, clearly, we lost the war. There were few strategic targets in North Vietnam. General LeMay said he wanted to bomb the North back into the Stone Age, apparently unaware that North Vietnam was not developed much beyond that point. Bombing Hanoi and Haiphong had little effect, other than the usual one of raising the morale of the population and ensuring their will to continue the war. Three relatively unimportant bridges in North Vietnam finally were severely damaged, after five years of strikes and the loss of almost 100 U.S. Air Force and Navy fighter-bombers. Once again, the Air force had inadvertently become the target. All of these bombers were unable to stop the flow of supplies needed to sustain the insurgent war. General William Westmoreland favored using nuclear weapons against the North Vietnamese surrounding our troops at Khe Sanh, because tactical bombers lacked pay-load-carrying ability. However, a new ground-based capability, Sky Spot, which controlled the flight path of our B-52s and their bomb-release points, was devastating in providing quasi-close air support, inflicting heavy North Vietnamese Army casualties. These B-52 Arc Light strikes were a role reversal of the second kind, once again. But this could be done only in a relatively benign environment.

The so-called "match-stick missions"—using B-52s and their impressive tonnage to destroy the Vietcong caves hidden by jungles—were impressive, but not particularly

effective. Long strings of bombs, placed inaccurately, matched up to very few targets. Finally, some believe that Line Backer II, the bombing of Hanoi to force North Vietnam into serious peace negotiations, was a success—but we gained no apparent leverage in the peace negotiations from it.

Ten years of war in Vietnam lead to these familiar conclusions:

- ▶ Strategic heavy bombers are relatively useless in insurgent warfare
- ▶ Bombing disenfranchised civilian populations is either ineffective or counterproductive
- ▶ With external systems to improve accuracy, heavy bombers can do quasi-close air support

### *The Gulf War*

In Operation Desert Storm in Iraq, we had an ideal passive enemy. All the strategic bombing was done by tactical strike fighters and the heavy bombers were relegated to a few tactical operations—a complete reversal in roles; a historic first. The B-52s dropped one-third of the bomb tonnage, to little effect. Heavy bombers were not unleashed over Baghdad because all they could do was cause collateral damage. The B-1B was not fully ready, but it could not have improved on the B-52's accuracy anyway. Strike fighters (now the strategic weapon systems) using precision weapons which were much less effective than claimed, still did enormous damage. The Air Force bombing plan was essentially that of Douhet—to bring Iraq to its knees, using strategic bombing alone. More bombs than necessary were dropped on strategic targets by factors ranging from 3-15—but without complete success.

The real, but unstated objective of preserving Kuwait's oil reserves for use by the United States, our Western allies, and Japan, was a complete success. But Kuwait was liberated mostly by the competence of ground forces, and the mandated increment of attrition of passive Iraqi armor and artillery was essentially accomplished by an aircraft the Air Force had wanted to retire—the A-10. The most precise bomber was the F-117. The selection of deep-strike, strategic targets was reasonably good. The elimination of Iraqi air power, though accomplished competently, was a non-issue. The Iraqi Air Force had demonstrated its lack of effectiveness during the war with Iran. The bombing of Iraq's nuclear industry was effective on the known sites, but intelligence failed to reveal all the sites and the industry still exists today. Similarly, we did not destroy all of Saddam Hussein's chemical and biological manufacturing sites, which still operate today. No mobile Scud missile launchers were destroyed, and the desired removal of Saddam Hussein did not materialize.

The most grievous non-result of the campaign was the failure to effect General Schwarzkopf's order: "To destroy Iraq's Republican Guard; not attack, not damage, not surround, but to destroy their existence as a military organization. Pin their backs against the sea and wipe them out." More than 60% of the Republican Guard escaped, with its equipment intact. The ground forces failed to cut the Guard off in the rear, and the Air Force did not eliminate it on the move. Today, we rationalize the results. The Air force didn't believe that the Republican Guard was the prob-

As the Gulf War demonstrated, tactical aircraft—like the F-117—are more often used for strategic strike missions than are strategic bombers. This is a complete role reversal.

any point on the globe and penetrate, survive, and egress from any inimical country. With relatively few sorties employed in intensive attacks, it must neutralize that country's war-generating capability or halt its aggression. This must be done, regardless of the atmospheric conditions or the availability of local basing.

*The Third Vision* defines a major role that the U.S. Air Force must assume in serving our country: It must be able to resolve major military problems quickly, effectively, and affordably. It must provide the ability to deter rogue world leaders from violating the national interests of the United States and help us bring a semblance of order to a very troubled world, without resorting to nuclear weapons or risking excessive loss of American lives.

How can technology help? All the bombs—500-pound, 1,000-pound, and 2,000-pound bombs—must demonstrate individual accuracy under all reasonable conditions of night, clouds, fog, smoke, and light rain. Their accuracies must approach 25 foot circular probable error, though 50-foot and 100-foot errors still are useful. The bombs must be properly winged for gliding approaches to their targets for many reasons; to provide proper stand-off ranges of 35-70 miles from missile defenses; to allow nearly simultaneous attacks of many targets in concentrated areas; to minimize exposure times; and to eliminate slowly generated re-attacks. Dropping many winged bombs from slowly rotating bomb racks will not do. Bomb racks must be created to allow rapid disgorging of the entire load. Stealthy aircraft are exposed with their bomb doors open, but all three bombers will profit from this feature.

There is little question that the elements of the visions must be made credible by actual battle demonstration. Simulations, war games, and drops on practice ranges are not convincing. Only after some rogue aggressor nations are reduced effectively and humanely to near-subsistence farming may other rogue leaders learn their lessons; only then will deterrence be achieved. Otherwise, deterrence will remain nuclear, or be nonexistent. Only if the weapon systems demonstrate usefulness in foreseeable wars and military operations should they be pursued. The world is in sufficient turmoil to generate the necessary data.

If these capabilities and visions are useful in foreseeable wars of the future; if they are affordable; and if they are made physically realizable—they should fully developed and demonstrated. Otherwise, the preceding 75-year myth will become the 80-year myth, the 90-year myth, and possibly, in due course, attain the venerability of a century-old myth.

Colonel Riccioni retired in 1976, after more than 30 years with the Air Force. An experimental test pilot and fighter pilot, he created air battle doctrines and created the concept for two new fighter aircraft while on the Air Staff at the Pentagon and the Flight Dynamics Laboratory in Ohio. After a second career with Northrop as an analyst and fighter aircraft designer, he still occasionally acts as a consultant to the Air force, Department of Defense, and Government Accounting Office.

lem; the Air Force was too busy destroying facilities in Iraq, in conformance with Douhet. Nonetheless, the Republican Guard remains Saddam's main source of power today.

The data on the value of strategic bombing with conventional weapons are complete enough, and some of the major lessons of the past have been revalidated:

- ▶ Bombing cities and killing the innocents and the disenfranchised in enemy countries—ruled by despots or not—usually is either counterproductive or ineffective.
- ▶ The past failures of heavy bombers are: They were not survivable in autonomous operation. They were inaccurate. And the wrong targets were selected or they were given the wrong priority. The latter was a military intelligence failure—and a human intelligence failure.
- ▶ The commonsense weapons of a sane future are conventional. The need for heavy, global-ranging strategic bombers to carry nuclear weapons has atrophied severely.
- ▶ Strategic bombers will have little effect in wars of religious fervor; in combating undeveloped countries; and in insurgent and guerrilla wars.
- ▶ History has proved Douhet wrong on essentially everything he believed.

### *Visions for the Future*

What are some portents for the future of strategic bombing with conventional weapons? Can technology eliminate the deficiencies and change the future? At present, we have three bomber classes in a very small inventory: 56 slow B-52Hs, 96 B-1s—which cruise subsonically, but are capable of transonic dashes—and 20 slow B-2s, which have quite high radar stealth. All are vulnerable to fighters in daylight. Imaginative penetration paths and very-low-altitude intrusion by night should allow the B-52 and the B-1 to survive; the B-2 can rely on its radar stealth.

Before acceptable weapons are defined, the visions for the bomber force must be presented. They are three perspectives of the same entity.

*The First Vision* for strategic bombing is very general, very short, and very basic—to achieve effective power projection and deterrence using conventional weapons. This vision is parallel to [and an enrichment of] the views SAC held for its nuclear weapons. Extending it to non-nuclear weapons is a sharp change from former operational philosophy.

*The Second Vision* defines the capability of the strategic bombing force: Strategic bomber forces must possess the autonomous capability to launch bombers rapidly to