

STRATEGIC AIR POWER

FULFILLMENT OF A CONCEPT

By General Carl Spaatz

WORLD WAR II might have ended differently had our enemies understood and made correct use of Strategic Air Power.

In the elation of victory it is well for us to remember the year 1942 when the conquests of the Axis Powers reached their apogee. Europe was a Nazi fortress, mined and ribbed with the latest improvements in surface defense, over which the Luftwaffe reigned supreme. In the German view, science had made that fortress impregnable. Astonishing feats of logistics had enabled the Wehrmacht to stretch from the Pyrenees to the Volga and the Caucasus; and Italian contingent armies in North Africa approached the Nile. Japan also was a fortress; and outside it, the Japanese reach extended from Burma in a vast arc to the Aleutians.

The outlook for the Allies was grim. By all time-tested and "proven" methods of warfare the combined might of the Axis Powers seemed unconquerable. Their resources in manpower and matériel were such that they could ward off exhaustion for an indefinite period of time. Sea blockade, therefore, could not be counted on to have the strangling effect it produced in World War I. Our land and sea forces, supported by air, could be expected to contain the most advanced echelons of our enemies, and gradually to drive back their main armies into their heavily fortified citadels. But the essential question remained. How was their military power to be crushed behind their ramparts without undertaking an attritional war which might last years, which would cost wealth that centuries alone could repay and which would take untold millions of lives? The man in the street asked, with reason: "How can we ever beat them? With what?"

The development of a new technique was necessary. Some new instrument had to be found, something untried and therefore "unproven," something to "spark the way" to early and complete victory. The outcome of the total war hung in the balance until that new technique had been found and proved decisive in all-out assault. The new instrument was Strategic Air Power. In 1942 it was already in the process of development.

II. THE GERMAN STRATEGIC FAILURE, 1940

The effectiveness of the new technique had been given negative demonstration by Germany's history-making mistake in 1940. After Dunkirk, Hitler stood on the threshold of his goal, the domination of all Europe. Which way would he strike next? France was prostrate; Spain was not unfriendly. Two trained German parachute divisions were on the alert to drop on Gibraltar, the capture of which would have corked up the western exit of the British Mediterranean fleet. The war on Britain's life stream of shipping could then have been increased to unbearable intensity. On the other hand, there, just across the Channel, lay Britain, without the thousand new field guns which the B.E.F. had left behind in Belgium. Guarding the narrow strip of water were powerful elements of the British Navy, and an unknown number of British fighter airplanes. Hitler made his choice: it was to let Gibraltar wait, and to try for a "knock-out" blow against Britain from the air as a preliminary to turning on Russia. It was his historic opportunity, which was never to return.

Fortunately for us, neither Hitler nor the German High Command understood the strategic concept of air power or the primary objective of a strategic air offensive. The Germans had air supremacy on the Continent. They also had air superiority in numbers over Britain; but they were unable to establish control of the air, and this was essential to carry out sustained operations. The German bombers were lightly armed. The German fighters were used in close support of the bombers. The British had the surprise of radar and eight-gunned fighters. Technically and tactically the R.A.F. was superior. Air control can be established by superiority in numbers, by better employment, by better equipment, or by a combination of these factors. The Germans might have gained control of the air if their fighters had been used in general support instead of close support of the bombers, or if their bombers had done more accurate and effective bombing (e.g. on the British airfields), or if all the German air force had been directed against Britain.

It was apparent to observers in 1940¹ that the German leadership was wedded to the old concept that air power was restricted

¹ *Editor's Note:* General Spaatz, then a Lieutenant-Colonel, was air observer, attached to the American Embassy in London, from May to September 1940. His official report that the Blitz would fail through German misuse of air power was one of the influential predictions of the war.

to support of fast-moving ground troops and that it did not have an independent mission of its own. This tactical concept had been successfully implemented against Poland and France by the Stuka-Panzer combination, under conditions of German air supremacy. The bombing of Britain, on the other hand, was a strategic task, for the successful accomplishment of which German control of the air first had to be established. The Germans disregarded this absolute necessity. First, they had not built heavy bombers which could carry enough armament to be relatively secure. The lightly-armed Ju 88's, He 111's and Do 17's which carried the bombs were no match for the British eight-gunned fighters, aided by the warnings of secret radar. They were shot down in swarms. Second, the German fighters outnumbered the R.A.F. Hurricanes and Spitfires. Their proper function was to destroy R.A.F. fighters. Instead, they kept close formation to cover the inadequately armed bombers — a defensive rôle which could never win control of the air.

Viewed historically, the German failure in the Blitz demonstrated the wrong technique for strategic bombing. The German mistakes were: 1, inadequate armament on the bombers; 2, no capability for precision bombing; 3, use of the fighters in close support of the bombers instead of in general support.

Germany had the industrial capacity and skill to build properly armed heavy bombers before and during the early years of the war. The four-engined Focke-Wulf was in operation, but was used against shipping from Norway and France. The He 177, with two propellers on four motors, was a failure, and wasted two years of effort. Consequently, the Luftwaffe attempted the strategic reduction of Britain from the air with means which could have been successful only through the proper use of German fighter superiority. But the Nazi war leaders (to whom the Luftwaffe was completely subservient, which meant that independent air thinking was in abeyance) did not grasp the strategic concept. If they had understood it, and had built heavy well-armed bombers, and had used their fighters to gain control of the air, they could actually have reduced Britain to a shambles in 1940. Later, by applying the strategic lessons, they probably would have been able to hold the line of the Volga by bombing Russian war plants in the Urals and beyond. Once the success of strategic air warfare had been demonstrated, it is conceivable that Hitler would not have declared war on America when he did. In any case, we would

have been too late for this particular war, and we would have been deprived of the use of the United Kingdom as a base when the time came for us to fight.

The historic penalty paid by the Nazis for their mistake was that they have passed into oblivion and Germany lies in ruins.

III. THE STRATEGIC CONCEPT: THE IDEA AND THE WEAPON

Strategic bombing, the new technique of warfare which Germany neglected in her years of triumph, and which Britain and America took care to develop, may be defined as being an independent air campaign, intended to be decisive, and directed against the essential war-making capacity of the enemy. Its immeasurable advantage over two-dimensional techniques is that its units (heavy bombers and fighter escorts) are not committed to position in battle; on the contrary, they carry out their assigned missions, and then return to base to prepare for fresh assault.

What makes strategic bombing the most powerful instrument of war thus far known is its effective application of:

1. The principle of mass, by its capacity to bring all its forces from widely distributed bases simultaneously to focus on single targets. Such concentration of combat power has never been possible before.

2. The principle of objective, by its capacity to select for destruction those elements which are most vital to the enemy's war potential, and to penetrate deep into the heart of the enemy country to destroy those vital elements wherever they are to be found. These main objectives, reached during hostilities by strategic bombing following the establishment of control of the air, have not been attained historically by surface forces until toward the end of field campaigns.

3. The principle of economy of force, by its capacity to concentrate on a limited number of vital target systems instead of being compelled to disperse its force on numerous objectives of secondary importance, and by its capacity to select for destruction that portion of a target system which will yield the desired effect with the least expenditure of force.

Strategic bombing is thus the first war instrument of history capable of stopping the heart mechanism of a great industrialized enemy. It paralyzes his military power at the core. It has a strategy and tactic of mobility and flexibility which are peculiar

to its own medium, the third dimension. And it has a capacity, likewise peculiar, to carry a tremendous striking force, with unprecedented swiftness, over the traditional line of war (along which the surface forces are locked in battle on land and sea) in order to destroy war industries and arsenals and cities, fuel plants and supplies, transport and communications — in fact, the heart and the arteries of war economy — so that the enemy's will to resist is broken through nullification of his means.

British air leaders had this strategic concept in mind at the beginning of the war. But they lacked the means to carry it out. Their daylight raids on German industrial targets in 1940 resulted in prohibitive losses. Accordingly, the R.A.F. turned to night bombing, which was feasible despite the Luftwaffe's air supremacy over Germany because effective night fighters had not yet appeared. The British developed the most effective heavy night bomber, the Lancaster, which went into action in 1943 and remained the greatest load-carrier of the air war in Europe.

The strategic concept had also been the focus of studies and planning in the United States Army Air Forces in the 1930's. The American version was built around the B-17 for precision bombing by daylight. Daylight bombing was still regarded with skepticism in some quarters because of the German experience in the 1940 Blitz and the British experience over German targets. Both our weapon and our organization remained untried. It was feared that the losses in daylight bombing would be prohibitive. Accordingly, there was an inclination on the part of experienced war leaders to put all Allied strategic bombers on the night run.

The critical moment in the decision whether or not this should be done came on January 21, 1943. On that date the Combined Chiefs of Staff finally sanctioned continuance of bombing by day and issued the Casablanca directive which called for the "destruction and dislocation of the German military industrial and economic system and the undermining of the morale of the German people to the point where their capacity for armed resistance is fatally weakened." To implement this directive there was drawn up a detailed plan, "The Combined Bomber Offensive Plan," which was approved by the Combined Chiefs of Staff, June 10, 1943, and issued to British and American air commanders. Strategic bombing at last had the green light; and it possessed a plan of operations of its own, with an approved order of priorities in targets, to achieve the objectives of the Casa-

blanca directive. That plan called for bombing by night and by day, round the clock.

IV. FULFILLMENT OF THE CONCEPT

As far back as the time of Pearl Harbor the Army Air Forces had the Idea; but the Idea still remained to be worked out by experiment in the grim practice of war. In order to do this we first had to "forge" the weapon, develop the proper technique to make it decisive in battle, prepare the necessary bases within operational range of the proposed targets, and then establish control of the air before proceeding to the all-out assault. All these things took time. The building of the Air Forces with sufficient striking power to carry out the strategic tasks, as ultimately outlined in the Combined Bomber Offensive Plan, required a national effort of unprecedented magnitude, and two and a half years of time. Those years were provided by the unwavering resistance of our Allies to our common enemies.

It took time to "forge" the weapon. The portion of America's industrial power devoted to the manufacture of airplanes and their equipment had already been stepped up by British and French war orders. This capacity was shifted to fulfillment of our own needs. Constant technical research made for improved designs and for modifications, based on experience in battle, to arrive at an all-weather weapon capable of self-defense. At the peak of our strength, in 1944, there were nearly 80,000 airplanes of all types under the control of the A.A.F., of which more than half were in combat. The heavy bombers, the B-17's and the B-24's, along with the fighters (P-51, P-47, and P-38) which provided the long-range escort beginning in the autumn of 1943, accomplished the decisive strategic task in Europe. The B-29, the most powerful airplane ever built, accompanied by the P-51, was equally decisive in destroying Japan's capacities to wage war. The quantity production of the heavy bomber in three types and of the necessary long-range fighter escorts was an achievement which will stand to the historic credit of America's industrial genius in support of air power.

It took time to acquire a new technique for the effective employment of the chosen weapon. There never had been a strategic air war on the scale projected. The proper methods had to be learned by experiment. The Army Air Force, which had 1,300 flying officers of the Regular Army on active duty in 1940, ex-

panded to reach a total of 2,300,000 personnel in 1944. Technical training was necessary in the organization of air and ground crews (the backbone of an air force) to man the 220 groups projected, as well as in intelligence and target selection, in communications, weather, radio, radar, tactical air doctrine, etc. Gradual mastery of the new technique kept pace with production of the weapons.

It took time to prepare bases within operational range of the enemy's vital war potentials, and to build up the supply system and the supplies necessary to sustain operations. In its global war the A.A.F. needed bases in such widely distributed theaters that the allocation of matériel was a constant problem. The European theater was given top priority in airplanes, but circumstances at times dictated diversions to the Pacific. The base in the United Kingdom had to be established in spite of the enemy submarine menace in 1942. The "Torch" operation in North Africa in November 1942 depleted the Eighth Air Force, both as to airplanes and personnel, but led one year later to the creation of a second strategic base in Italy. The activation of the Fifteenth Air Force in Italy in November 1943 made possible the coordination of bombing attacks from two theaters on the same German targets, thus implementing the principle of mass. In the Pacific, bases for the B-29's were first in China, and later were moved to the Marianas and Okinawa as the surface attack on Japanese forces closed in on Japan proper. The A.A.F. operational air bases around the world represented a triumph of American engineering ingenuity, whether by the laying of huge runways for the super-bombers, or by the conversion of swamps and deserts into air strips by means of steel mats.

Finally, it took time to gain control of the air, the absolutely necessary prerequisite for sustained strategic bombing. The German Air Force, although designed primarily to support ground troops, was a formidable defense — a fighting wall in the air. The task was to smash the wall, not only in order to clear the way for our heavy bombers over Germany, but also so as to remove the threat of air attack on our surface forces during and after the planned invasion. The duel with the German Air Force ensued.

In July 1943 an effort was made to get on with the first big task — the destruction of the German fighter system. These battles were a slugging match. A decision might have been forced if the Allies had had enough strength to continue beyond the one

week of concentrated attack. During this period the line of battle was pushed back by whittling tactics of attrition from mid-Channel to the interior of Germany. Toward the end of 1943 there was at last sufficient force in hand. The long-range fighters needed to combat the enemy fighter defenses had been perfected, equipped with additional fuel tanks. Other equipment had likewise been modified under battle conditions. The Strategic Air Forces were ready to smash the German air wall, and then to proceed with the Combined Bomber Offensive.

On February 20, 1944, there began six days of perfect weather which were utilized for a continuous assault on the widely-dispersed German aircraft-frame factories and assembly plants. This sustained attack, called "The Big Week," fatally reduced the capabilities of the Luftwaffe. German aircraft production recovered; but the Allies retained control of the air throughout the remaining 14 months of hostilities.

In the minds of our air leaders the Big Week was the turning point in the war. That is, the success of the Big Week confirmed belief in the strategic concept. What had been in doubt was now a certainty. We knew now that we could destroy the German capacity to make war.

Having achieved control of the air, the Strategic Air Forces were employed on a twofold mission: 1, preparation for D-Day by the systematic destruction of the enemy's transport and communications; and 2, progressive destruction of his synthetic oil plants and other elements immediately vital to his continued resistance.

On April 16, 1945, the Headquarters of the U. S. Strategic Air Forces issued an order ending strategic bombing. The strategic air war in Europe was over; the concept had been fulfilled.

The lessons learned in the air war over Germany were applied with increasing vigor over Japan. The B-29 assault on the war industries in Japan proper began in the summer of 1944 with small attacks from China; these were augmented by attacks of similar weight from the Marianas beginning in November. The all-out mass offensive by the Twentieth Air Force began with the first low-level incendiary attack of March 9, 1945, and continued at accelerated frequency and intensity until Japan's capitulation on August 14, 1945. An invasion by the surface forces was not necessary. This air campaign will remain the classic prototype of the strategic concept as fulfilled in World War II.

V. APPRAISALS

The United States Strategic Bombing Survey, after nearly a year of study and six months of investigations in Germany, issued the following over-all judgment: "Allied air power was decisive in the war in Western Europe." Certain authoritative enemy judgments may be cited in support of this view.

The German reaction was well summed up by Lieutenant General Linnarz, Commander of the crack 26th Panzer Division, when he was interrogated on June 26, 1945, as follows:

The basic conception of winning a war through strategic air power is sound. Historically, the strategic objective of any war has been to destroy the enemy's armies in the field. With increasing technological development, however, and the military fact that wars are no longer exclusively decided by generalship and battles, but by a nation's material might and war potential, it is obvious that in the future the first strategic objective in war cannot be the destruction of the armies in the field, but the destruction of the enemy's resources and war arsenals. Without these, the armies in the field are doomed to eventual defeat. A war might conceivably start with the attempt to destroy a nation's material power through employing a powerful weapon of long-range striking power. In this war, such a weapon was the long-range heavy bomber. In the future war it could conceivably be a type of perfected V-bomb.

In my opinion, you might have won the war through strategic bombing alone — granted adequate bases, tactically secured. Since you wanted to end the war quickly, you did not rely on strategic bombing alone; you fought the war in combined operations on land, sea and air. At the beginning of the war we failed to see that the material power of the coalition against us was strong enough to destroy our war industries by strategic air attacks, even if we took the whole Continent. As our leaders couldn't see this, and as you were unwilling to rely entirely on strategic bombing, you brought the war to an early and successful close by both strategic and tactical use of air power.

Professor Willi Messerschmitt, designer of the famous Me 109, 110, etc., stated when interrogated:

One of the strategic mistakes was the failure to construct a fleet of long-range bombers to supplement submarine warfare in the Atlantic and thereby to deny the United States the ability to set up an operating air force within range of German industrial centers.

Albert Speer, Reich Minister for Armaments and War Production, said:

The planned assaults on the chemical industry (synthetic oil) which began on May 12, 1944, caused the first serious shortages of indispensable basic products and therefore the greatest anxiety for the future conduct of the war. Actually, this type of attack was the most decisive factor in hastening the end

of the war. . . . The attacks on the synthetic oil industry would have sufficed, without the impact of purely military events, to render Germany defenseless. Further targets of the same kind were to be found in the ball-bearing industry and in power stations. . . . The dispersal of important industries from west and northwest Germany to central and eastern Germany was carried out in 1942 and 1943. From 1944 onward, vital key industries were transferred to caves and other underground installations. Production was hindered not so much by these dispersals as by the shattering of transport and communication facilities. Consequently it can be said in conclusion that a bomb load is more effective if it is dropped upon economic targets than if it is expended upon towns and cities.

VI. LESSONS OF STRATEGIC AIR POWER

What are the chief lessons of our experience with the strategic use of air power in this last war? (Note the restricted field covered; consideration of the tactical use of air power in support of ground forces would require additional space beyond the scope of the present article.)

1. One lesson is that the time we were given to make our preparations was an absolutely essential factor in our final success. We had warning in 1939, and by 1941 had made notable progress. Following Pearl Harbor, with the United States actually at war, we had two and a half years more to build the striking force necessary to fulfill the strategic concept. The total time allowed us to prepare for the final all-out assault was four and a half years. It is unthinkable that we should ever again be granted such grace.

The time lag is illustrated by the accompanying chart. Under the A.A.F. expansion program after Pearl Harbor, the total personnel, the number of combat groups and the number of aircraft mounted steadily. On the other hand, the tonnage of bombs dropped in a month did not begin to rise significantly until early in 1944. It reached a peak around D-Day, only to slacken off during the winter fogs of 1944-45, before attaining the all-time high prior to V-E Day. The gap between expansion in planes and personnel and the actual dropping of bombs tells the story of preparation for battle, of training, of technical supply, of adaptation and modification, of experimentation, of winning control of the air. It represents the time lag between the formation of tactical units and their conversion into striking power over the targets.

Had our peacetime air force been maintained during the 1930's at the level it attained even as early as the date of Pearl

Harbor, and had it in consequence been prepared to act in the first year of war on the level it attained in mid-1942, then the tremendous and costly effort of the next two and a half years would have been enormously lessened. We would have struck at the heart of the enemy much earlier. It is even conceivable that the fact of an American air force in being, with full potential in 1939, might have prevented the outbreak of war.

In the next war, should there ever be one, four and a half years will not be allowed us in which to build up an air force, insured by the resistance of our Allies to common enemies. America will be Target Number 1; we will stand or fall with the air force available in the first crucial moment.

2. Air power in this war developed a strategy and tactic of its own, peculiar to the third dimension. It achieved the principle of mass, in the highest degree ever known, by its capacity to concentrate all its available units of striking power from widely distributed bases over one point — the enemy's heart. Any other force, operating in two dimensions, must strike at the periphery, the traditional line of war, and can reach the enemy's heart only after successful field campaigns. Air power at full potential overcomes the advantage of interior lines which centrally located countries previously enjoyed. It is not committed to battle, but returns to its base in preparation for a renewal of the assault. No other instrument of war has equivalent characteristics.

3. The first and absolute requirement of strategic air power in this war was control of the air in order to carry out sustained operations without prohibitive losses. The strategic offensive would not have been possible without the long-range fighter escort.

4. We profited by the mistakes of our enemies. The Germans were land-minded. In planning their aggression they did not allot their air force an independent mission of strategic offensive. Consequently they failed to meet their one historic opportunity to win decisively and quickly in 1940. Possibly their military leaders were fatally handicapped by the Nazi dictatorship. At any rate, they never recovered the advantage of air superiority in numbers over Britain, which later was to become the American base. They discovered too late the fatality of their lack of heavy bombers. They had been diverting plant capacity from making fighters to making V-1's and V-2's. But these arrived too late to affect the course of the war. Had they used the V-1 against ship-

ping in the British ports prior to D-Day the invasion might perforce have been postponed for another year. After our inspection of their underground installations, we realized that their manufacture of jet fighters, and even jet bombers, could have reached dangerous proportions in another six months. These had been assigned first priority on the dwindling German oil supply. Given the super-speed of the jet-fighters, and given a sufficient supply of them (planned production: 1,200 per month), the Germans might have regained control of the air over Germany while we were waiting for our own jet production to catch up. In that contingency anything might have happened. Certainly, the end of the war would have been delayed.

To rely on the probability of similar mistakes by our unknown enemies of the future would be folly. The circumstances of timing, peculiar to this last war, and which worked out to our advantage, will not be repeated. This must not be forgotten.

5. Strategic Air Power could not have won this war alone, without the surface forces. The circumstances of timing did not permit. The full potential of sufficient striking power was attained only in the winter of 1943-44. By 1944 much of German war industry was going underground. Further, the invasion by land was necessary in order to force the diversion of German manpower from production, and even from manning the Luftwaffe. Thus, this war was won by the coördination of land sea and air forces, each of the Allies contributing its essential share to the victory. Air power, however, was the spark to success in Europe. And it is interesting to note that Japan was reduced by air power, operating from bases captured by the coördination of land, sea and air forces, and that she surrendered without the expected invasion becoming necessary.

Another war, however distant in the future, would probably be decided by some form of air power before the surface forces were able to make contact with the enemy in major battles. That is the supreme military lesson of our period in history.

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