# INTRODUCTION

There were no decisive battles in World War II. This might seem a strange thing to say as the war is usually viewed through the prism of its famous engagements. As this book was being completed, the seventieth anniversaries of El Alamein, Stalingrad, Kursk and Midway have been remembered. It has led to a great deal of reflection on this pivotal period of the war.[1] Each battle is usually discussed with superlatives which invariably include how it changed the course of the war or was responsible for leading the Allies to victory.

El Alamein, the famous tank battle in the Egyptian desert in October and November 1942, between Bernard Montgomery's British 8th Army and Erwin Rommel's Afrika Corps, is most remembered in the United Kingdom and parts of what was the British Empire. The destruction of most of Rommel's panzers, which started the German retreat from North Africa that would culminate in the surrender of a large German force in Tunisia in May 1943, is depicted as a crucial marker heralding German defeat.[2] In the words of Winston Churchill, it may not have represented the beginning of the end, but it was "the end of the beginning." Later he would say that before El Alamein the British never had a victory, and after they never had a defeat.

The Battle of Stalingrad, which ended in February 1943, was discussed globally. Newspapers in Europe, the English-speaking world and Asia all reported the widely held view that Stalingrad constituted a devastating blow to Nazi power.[3] In fact, of all the battles of the war, Stalingrad, more than any other, is described as the decisive defeat for Germany.[4] The surrender of the entire German 6th Army in February

1943, with the loss of its equipment, as well as corresponding losses in other German and German-allied armies fighting in support of the 6th Army, are seen as causing irreparable damage to Germany. It left no doubt that the USSR would survive and allowed the Americans and British to change the way that they planned for the end of the war.[5]

The Battle of Kursk on the Eastern Front, which started with the German offensive codenamed "Citadel," on July 5, 1943, is often described as the "greatest" battle of the war or the largest tank battle in human history.[6] With somewhere between 7,000 and 8,000 tanks involved in the fighting, and possibly more than 2 million men, Kursk is seen as the last time the Germans could mount a serious offensive. When their advance ended on July 16, the German army was placed in a state of permanent retreat that would culminate in the capture of Berlin less than two years later.

These superlatives make for dramatic reading, but the truth is, within the context of German production, the losses suffered during each battle were small and easily replaceable. For instance, the German army lost at most 350 armored fighting vehicles (AFV) during the first ten days of the Battle of Kursk, when the fighting was most intense.[7] During all of July and August 1943 on the Eastern Front the German army lost 1,331 AFV.[8] Yet, during 1943 as a whole, Germany produced just over 12,000 AFV. This means that the Germans lost less than 3 percent of the AFV they built in 1943 during the Battle of Kursk, and only 11 percent of annual AFV production during all of July and August. El Alamein was even less damaging. At the start of the battle on October 23, 1942, Rommel's famous Panzerarmee Afrika had 249 German tanks.[9] By November 4, 36 of these were left. The Germans thus lost just over 200 AFV in two weeks.[10] Within the context of German AFV production, El Alamein barely registered. Just looking at the war on land, therefore, it has to be said that it was the daily attritional loss of equipment that mattered more than any great battle. Individual battles might raise the daily loss rates by a few percentage points, but in and of themselves, they destroyed modest amounts of equipment.

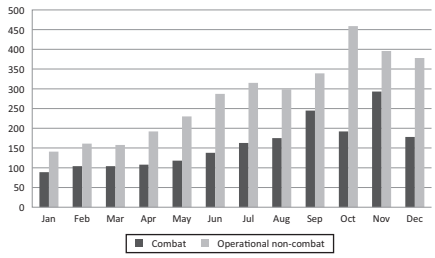
Even more surprising, however, is the minuscule percentage of overall German munitions output that these "great" battle losses represent. One thing that has to be understood about the war is that land armaments were only a small part of munitions output for Germany and Japan – and the USA and UK as well. In 1943 AFV comprised only

7 percent of German weapons output. This means that the losses of AFV during the high point of the fighting at Kursk represented an inconsequential 0.2 percent of German armaments production for the year – and those of El Alamein just a little more than 0.1 percent. Even the losses at Stalingrad, which will be discussed later, were small enough that German production could make them up quickly.[11]

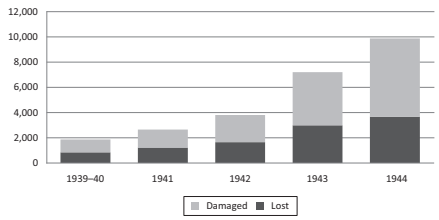
The idea that battle losses represented great blows to German power seems, at best, exaggerated. Far more important to German and Japanese defeat was the engagement of their air and sea weaponry. This is what really constituted national effort in World War II. Industrially and technologically, the war was primarily a competition of aircraft development and construction. In Germany the construction of airframes, air engines, and the weapons and machinery needed to power and arm aircraft made up at least 50 percent of German production every year of the war, and at certain times reached up to 55 percent. In the UK the percentage was even higher. Other elements of the air and sea war took up large percentages of construction, from warship building and merchant shipbuilding, to anti-aircraft artillery (the vast majority of which was used in an anti-aircraft role and not in a ground war role as it is sometimes believed) and all the technological developments that went into the war in the air and sea. In all cases, at least two-thirds of annual construction during the war went to air and sea weapons, and in some cases, such as that of Japan, the proportion was considerably higher. When it came to weapons development, the design, testing and production of air and sea weaponry was also of a much higher order, completely outstripping the cost of developing weapons for the army – which were relatively cheap.

If air and sea weaponry dominated all stages of production, seeing how it was destroyed also leads invariably to the conclusion that battles or the land war as a whole tell only a relatively small part of the story of World War II victory and defeat. Giving just two examples in 1943 demonstrates how both Germany and Japan were losing huge numbers of aircraft outside combat on non-operational duties such as deployment flights. When we look at the losses in 1943 for the Japanese navy (which possessed half of all Japanese air power), what we see is that non-combat losses were a much more crippling drain than those lost in action. (See figure 1.)

This helps put an event like the Battle of Midway into context. Of all the great encounters of World War II, Midway probably comes




1 Japanese naval aircraft losses, 1943
*Note:* The exact figures were 3,355 operational non-combat aircraft losses and 1,907 combat losses.
*Source:* USSBS, Fukamizu Interview, Appendix B. Fukamizu had access to excellent statistics of Japanese naval aircraft losses, and reproduced some invaluable charts for the USSBS, including a monthly breakdown of losses for the entire war.




2 German aircraft: non-operational lost and damaged, 1939–44
*Source:* Spaatz MSS, 116, GAF Aircraft and Aircrew Losses, 1939–1945.

closest to a decisive battle – though even in this case the phrase is too dramatic. Why Midway mattered more than El Alamein or Kursk is that replacing the equipment losses after the battle was considerably more difficult. This had nothing to do with Japanese aircraft losses, which were not especially damaging at Midway since most of the experienced pilots survived.[12] Instead it was the loss of four aircraft carriers, which could not be replaced for a number of years.

German aircraft losses outside combat also became astonishingly large in 1943 and 1944. A digest of Luftwaffe losses on a weekly basis indicates that destruction of aircraft in non-operational duties almost doubled between 1942 and 1943. (See figure 2.) Such losses were much higher than those suffered by the Luftwaffe supporting the German army in any land battle, except perhaps those in western Europe from the summer of 1944 onwards.

The only way to make sense of losses like these is to understand how Anglo-American air and sea power were starting to put unbearable pressure on Germany and Japan's entire war-fighting system. Air

and sea power were decisive because they multiplied exponentially the physical space and conceptual possibilities of the area of battle. This allowed the British and Americans to start destroying Axis equipment long before it ever reached what we have traditionally described as the battlefield. The area of this air and sea battle might be termed a "super-battlefield." It was not only thousands of miles in length, it was thousands of miles in breadth – covering an area that dwarfed the land war (see Maps 1 and 2). The Germans, to counter the threat of strategic bombing, were forced to station expensive equipment from Romania to Norway and from Poland to south-western France, while at the same time flooding Germany itself with aircraft and anti-aircraft weaponry. The Japanese, meanwhile, had to deploy forces from New Guinea to northern China, and from Burma to the Alaskan islands. On the other hand, these air and sea super-battlefields actually offered opportunities to both Germany and Japan. The German U-boat war against trade in the Atlantic forced the Allies to deploy forces from the North Sea to the Gulf of Mexico and caused such a fright in American and British minds that they devoted a large slice of their production in 1942 and 1943 to combating the threat. The Japanese, on the other hand, failed completely to realize the potential of engaging American production in this way and kept their naval and air forces geared towards a battlefield-centric understanding of warfare.

One of the great advantages of the super-battlefield that was created by air and sea power was that it allowed for a much more efficient destruction of German and Japanese equipment. There were three different phases during which this could be achieved, best termed "pre-production," "production" and "deployment." One of the key arguments of this book is that victory and defeat in the war must be analyzed from this perspective.

In the end it is the relationship between the air–sea super-battlefield and the better-known traditional land battlefield that is the primary distinguishing characteristic of "modern" warfare. What happened in the great land battles made almost no difference in the air–sea war. These battles, except in exceptional circumstances, were fought over territory of little or no economic value, the loss or gain of which made relatively little difference to equipment development or production. Moreover, the amount of equipment destroyed during the great land battles was actually rather small within the context of overall production and could be easily replaced. However, the struggle

throughout the air–sea super-battlefield determined the outcome of every land battle in the war. In the first case it determined the vast majority of World War II munitions production. It then limited, in some cases most severely, the types of each weapon that could be built and, just as important, the amount of built equipment that was able to reach the fighting area. Finally, when it came to the land battles, the ability to control or deny control of the air space over the fighting almost always proved decisive.

## The existing vision of victory and defeat in World War II

One of the main purposes of this book is to discuss how the British and Americans came to engage and destroy the greater part of German and Japanese production through the application of air and sea power, and thereby win World War II. It is also to show how air and sea power combined to keep the results of production away from the battlefield as well as determining the course of battles (through its action or absence). By de-emphasizing the importance of land battles, it will pull the focus of the war away from the Eastern Front (as well as the fighting in North Africa and Italy).[13] This is in no way an attempt to denigrate the enormous sacrifices that the USSR made in the fight against Nazi Germany. It is instead an attempt to move away from the traditional notion of the land battle as the greatest focus of national effort or commitment.[14]

So many books and articles have been written which address the question of victory and defeat in the war that it is impossible to discuss them all in detail. However, if there is one constant, it is that the war in Europe was won and lost on the Eastern Front. Paul Kennedy recently published a book on the key adaptations that led to Allied victory in World War II. He ranges widely over the global war, but it is obvious what he considers to be crucial. He describes the Eastern Front war between Germany and the USSR as "clearly *the* campaign of all the major struggles of the 1939–45 war."[15] In 2000, Michael Burleigh, in his thoughtful and engaging history of Nazi Germany, began his chapter on Barbarossa by saying: "The greatest military conflict of modern times erupted amid scenes of utmost normality."[16] This has become so much the orthodoxy that in 2010 Burleigh actually expressed frustration with what he sees as the extraordinary focus on the Eastern Front

as the decisive theater of war. "So much emphasis has been put in recent years on the clash of the totalitarian titans (four out of every five German fatalities occurred on the Eastern Front), not least by British historians of Germany and Russia, that one might imagine that the British were not engaged in a shooting war at all."[17] The core reason for this extraordinary consensus is the underlying assumption that manpower in land armies is the determining measure of national effort. Geoffrey Roberts has claimed that 80 percent of the "combat" in the European war occurred on the Eastern Front.[18] Keith Lowe, while writing a book specifically about the bombing of Hamburg in 1943, feels it necessary to state that during 1943 the USSR was doing most of the "fighting."[19]

This vision of the war has dominated the overall narrative for decades.[20] In 1992, writing a historiographical summary piece, Joan Beaumont said it was a "universal view" among western historians that the Eastern Front was the fundamental reason Germany lost the war.[21] At approximately the same time, two large one-volume histories of World War II were released: Gerhard Weinberg's *A World at Arms: A Global History of World War II* and Peter Calvocoressi, Guy Wint and John Pritchard's *Total War: The Causes and Courses of the Second World War* (this last book was a revised edition of a survey first published in 1972). Both make it clear that the USSR was responsible for doing the heavy lifting in the defeat of Germany.[22]

The best overall general military history of World War II published recently is Williamson Murray and Allan Millett's *A War to be Won: Fighting the Second World War*, released in 2000. Though Murray and Millett see regular improvements in the fighting qualities of all the Allies in the war, it is particularly the USSR that develops the fighting power needed to destroy Nazi Germany. By 1943–4 the Soviets were superior to any other force in the world and capable of dealing the most crushing blows to the Germans.[23]

The view of the dominance of the Eastern Front is found in more popular books about victory in the war such as those written by Max Hastings.[24] Andrew Roberts is even more explicit in his belief that it was the USSR that shouldered the dominant load in victory over Germany.[25] When writing a book devoted to British and American grand strategy, he feels it necessary to mention the supremacy of the Eastern Front.[26] Roberts echoes one of the most important groups of American foreign policy scholars of the past fifty years, the

"Revisionists," on the origins of the Cold War. This group partly base their arguments on the understanding that the USSR contributed far more to the destruction of Germany than did the USA and UK. They argue that it was the supposed reluctance of the United States and United Kingdom to carry their full burden in the war against Germany that validates the Soviet need to dominate eastern Europe after the war.[27]

If the outcome of the land war on the Eastern Front is usually seen as decisive, historical views on the importance of the air war are mixed. There continues to rage an argument about the effectiveness of strategic bombing, that is, the use of air power against targets that were chosen specifically because of the damage to the enemy that would result in advance of any battle, such as factories, cities and transport systems. One large group has dismissed the entire Anglo-American strategic bombing effort as a minor contribution to ending the war, including very well-known air power theorists such as Robert Pape.[28] Others who have minimized the impact of the strategic bombing campaign include Gian Gentile, John Ellis and Stewart Halsey Ross.[29] Some economic historians also tend to downplay the importance of bombing in bringing about the end of the war.[30] Certainly, a number of general histories of the war assume that the strategic air campaign was mostly ineffective and at the same time morally reprehensible.[31]

If there is one relative constant in the strategic air power discussion it is that before the spring of 1944 the bombing efforts that were made by the British and Americans were a failure. The view given is based around the assumption that strategic bombing did little to damage German production while at the same time resulting in large losses. Paul Kennedy titled his section on the subject "The Allied Bombing Offensive and its Collapse, Late 1940 to Late 1943."[32] If anything this idea has been reinforced recently, such as in histories written by Gordon Corrigan and Antony Beevor.[33] Of the two, Beevor's book is a textbook example of a battle-centric history of victory and defeat in the war.[34] Even very recent books that are slightly more complimentary to the impact of strategic bombing are still careful to say that at best it played only a complementary role in ultimate victory, with the land war considerably more important.[35]

This stress on the failures of the campaign in 1943 is to be found in some of the best books about the air war in general. Max

Hastings, in his history of Bomber Command, discusses the RAF's impact on German production and morale in 1943 (and 1944 for that matter) in damning terms, believing that it did little to help win the war.[36] Tami Davis Biddle discusses 1943 mostly in terms of losses to American bombers.[37] Ronald Schaffer actually says little about strategic bombing in 1943, but portrays American efforts as too costly and remarks on how they shifted away from their earlier focus on daylight precision attacks towards a more British-like plan for attacks on large areas.[38] Michael Sherry also discussed the 1943 Combined Bomber offensive in terms of its failures and shortcomings.[39] Only a few surveys tend to say anything positive about strategic bombing in 1943; these include Weinberg, and Murray and Millett.[40] There is one book that takes a different line from almost any other, and that is Adam Tooze's *The Wages of Destruction*. In this book Tooze argues that the British area bombing of Germany in 1943, which is almost always seen as failure by those with a detailed knowledge of the air war, did real damage to German production.[41]

If 1943 is overwhelmingly seen as a failure, the view of the impact of strategic bombing in 1944 is considerably more divided. Here it is important to mention the work done immediately after the war by the United States Strategic Bombing Survey. This body, which included some of the great economic minds of the twentieth century such as John Kenneth Galbraith, was established by President Franklin D. Roosevelt to provide a detailed study of the role of strategic bombing in ending the war.[42] On the one hand, it collected a huge amount of data from German and Japanese primary sources, data which remains invaluable, if underutilized, to this day. So much data was collected that the large bulk of it never made it into the summary reports, but appears in the thousands of pages of subsidiary subject reports which are often ignored. This data, if not the analyses, has generally stood the test of time.[43] Even research done specifically to try and refute the data of the USSBS has found only relatively small areas of difference.[44]

The survey also conducted tens of thousands of pages of interviews with German and Japanese subjects from high policy makers to ships' captains. These interviews contain fascinating observations and obfuscations, but also invaluable insights into what equipment the Germans and Japanese built and how it was destroyed. In the end there was so much material collected and so many different reports written

that the USSBS could be used to support almost any position on the efficacy of strategic bombing.[45] That needs to be said, because it is often assumed that the USSBS claimed clearly that strategic bombing was decisive in winning the war in Europe – when its conclusions were far more nuanced, or confused (depending on your opinion), than that.[46] Its real claim was that air power in its totality was what mattered. This included both tactical and strategic air power and ranged from defending convoys in the North Atlantic to supporting Allied armies in the field. It never claimed that strategic bombing won the war.[47] In fact, the USSBS was rather critical of strategic bombing as a whole in 1943 and dismissive about its impact in damaging German morale throughout the war. The USSBS's summary conclusions specifically on the strategic bombing of Germany would represent a minority view among those studying the subject today.[48]

The USSBS had a far more positive view of the impact of strategic bombing in 1944. For them the key development was the plan to target German oil production, in particular factories within Germany that were converting coal into high-octane aviation fuel. The United Kingdom also, somewhat begrudgingly, set up its own strategic bombing survey.[49] This effort was on a much smaller scale, and actually took a great deal of data from the American effort. Interestingly, as the RAF had led the way in attacking German cities in 1943 and 1944, the UK Bombing Survey was particularly critical of area attacks, seeing them as causing only minor damage to German production. On the other hand, the UKBS, under the intellectual control of Solly Zuckerman, came out strongly in favor of the transportation campaign being decisive in the second half of 1944.[50]

These two campaigns have continued to be the focus of those who believe that strategic air war played a major role in Allied victory in 1944.[51] A number of works claim that one or the other showed that the best way to use strategic air power was now being better understood, but that it just occurred too late in the war for its effects to be registered in isolation. One group, often from an American point of view, clusters around Carl Spaatz's campaign against oil. This goes back to the American official history of the USAAF in the war, but includes others.[52] Another group gives far more credit to the campaign against German transportation which started in the second half of 1944.[53] The great problem for the proponents of strategic air power at this time is that Germany was also collapsing on the battlefield, so