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.

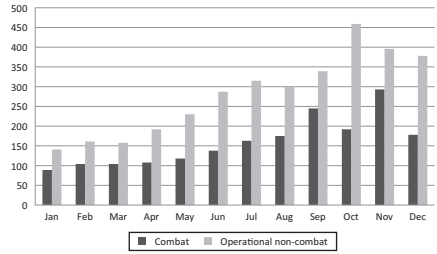
Even more surprising, however, is the minuscule percentage of overall German munitions output that these "great" battle losses represent. One thing that has to be understood about the war is that land armaments were only a small part of munitions output for Germany and Japan – and the USA and UK as well.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

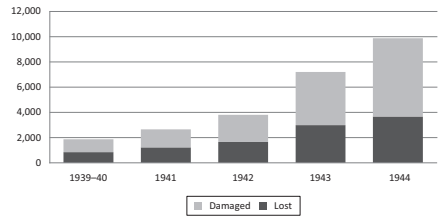
The idea that battle losses represented great blows to German power seems, at best, exaggerated. Far more important to German and Japanese defeat was the engagement of their air and sea weaponry. This is what really constituted national effort in World War II. Industrially and technologically, the war 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

that the effects of bombing are difficult to single out within the overall context of German failure.[54]

If there is one way to summarize the views on strategic air power, it would be to look at one of the truly great historians on the subject, Richard Overy. Overy has produced much important work on the war in general, not just bombing. In his book *Why the Allies Won*, he argues that Anglo-American strategic bombing did play a material role in defeating Germany. On the other hand, he is careful to show that the Russian contribution was more important.[55] "The Soviet Union bore the brunt of the German onslaught and broke the back of German power. For years the western version of the war played down this uncomfortable fact, while exaggerating the successes of Democratic war-making."[56] Before that, in his first book on the air war, Overy was far from enthusiastic about the impact of strategic air power.[57] However, in *War and Economy in the Third Reich*, published in 2002, he claims that in 1944 bombing reduced German military equipment output considerably.[58] Interestingly, in his more recent book *The Bombing War*, published in 2013, he has partly reverted to his earlier position. In this great achievement of scholarship, he argues that strategic bombing in 1943 accomplished relatively little in terms of both production losses and damage to German morale (its two greatest targets).[59]

Overy's evolution is a useful way to summarize the view on the impact of strategic air power on Germany. The more constant refrain is to stress the failures of the campaign, especially in relation to the importance of the Eastern Front. In particular, strategic bombing in 1943 is portrayed as a great failure. On the other hand, some argue that there also seem to have been some significant improvements by 1944 which did have a real impact on the way that Germany conducted the war. However, almost everyone views the land war as much more important in German defeat.

When it comes to the use of strategic air power against Japan, the debate is less developed than that for the war against Germany. A number of books on the war in the Pacific focus on the destruction wrought by the B-29s under the command of Curtis LeMay, without making an assessment of how important it was in American victory or simply implying that because of the destruction it must have played a significant role in compelling Japanese surrender.[60] On the other hand, Ronald Schaffer, who was interested in the ethical question, and is

critical of the impulses which drove the American campaign, argues strongly that American bombing "contributed immensely" to compelling Japan to surrender.[61]

The USSBS was noticeably less coherent about the bombing of Japan. It ended up becoming mired in an inter-service rivalry between the American navy and air force.[62] Some of their findings argue that strategic air power was crucial to Japanese defeat, and others implied that it was more of a contributory factor. The summary report even made a case about strategic bombing damaging Japanese morale, after having dismissed such notions about Germany.[63] Also, some of the arguments about transportation are based around what would have happened more than what did. The problem that the bombing survey had, as it acknowledged, was separating out the impact of strategic bombing from the hammer blows the Japanese economy had received before bombing had begun – in particular the destruction of Japanese trade which had already peaked before LeMay devastated Tokyo.[64]

The somewhat contradictory nature of their conclusions left one of their military advisers, Major General Orville Anderson of the USAAF, to file a separate summary in which air power was given a more concrete role in achieving victory.[65] The American official histories are likewise lacking in clarity. They do discuss the enormous damage inflicted by the B-29s on Japanese cities after March 1945, but they also admit that tying this destruction directly in to a collapse of Japanese production is difficult.[66] Other works, like that of Sherry, tend to minimize the economic impact of the attacks.[67] Still others seem relatively uninterested in the economic effects of LeMay's bombing, preferring to use the destruction involved as part of a larger discussion on the morality and aims of strategic bombing.[68] Richard Frank, in his excellent history of the end of the war in the Pacific, implies that strategic air power was poised to decide the war against Japan, as technology and force structure were about to change to allow the USAAF to move away from LeMay's general destruction of Japanese cities back to the specific destruction of individual targets.[69] In many ways the best shorter summary of the campaign has come in Murray and Millett's *A War to be Won*. They catalogue the destruction meted out to Japanese cities and industries, the effect of which was massive. On the other hand, they stop short of saying that this is what made the Japanese surrender.[70]

There is one other disagreement on the war in the Pacific, and that is on the different drives towards Japan. While American air and sea power are widely recognized as of decisive importance in Japanese defeat, there is disagreement on the way that power was used. During the course of the war the United States developed three different campaigns aimed at Japan (though this is usually unfairly reduced to two). The best-known two were the Southwest Pacific drive headed by Douglas MacArthur and directed towards the liberation of the Philippines, and the Central Pacific drive under the command of Chester Nimitz, which was eventually aimed at the Mariana Islands. The third, which can be overlooked, is the USAAF's campaign from China, which envisaged driving Japan out of the war primarily with strategic bombing from the Asian mainland. There has been a lively discussion over the effects of the Southwest and Central Pacific drives, which revolves about the question of whether both were necessary to defeat Japan.[71]

In summation, certain views have prevailed in the portrayal of victory and defeat in World War II. In most narrative histories of the war in general, the land campaigns are seen as decisive in the victory over Germany – in particular the fighting on the Eastern Front. In such histories the strategic air campaign, as well as the war at sea, are seen as at best active subsidiaries, and in many cases, of little consequence in German defeat. When it comes to those with a strong interest in the air war, there is a general consensus that the strategic air campaign of 1943 was a failure. The picture for 1944 is more diverse, with some arguing that strategic air power, in particular the campaigns against German oil production and transportation, were important in German defeat while others continue to argue strongly that strategic air power was still subsidiary. When it comes to the war against Japan, there is a general assumption that strategic bombing played a crucial part in bringing about the end of the war, though the analysis can be based on levels of destruction alone.

Air and sea power and the control of mobility

Although battles will not be ignored, this is not a book about tactics or brilliant generalship or bravery in the face of the enemy. It will instead address many of its central questions from the point of view of

equipment production and destruction. In particular it will describe how air and sea weapons were prioritized, allocated and used. The first two chapters will outline the overriding economic and strategic importance of air and sea power in World War II. Chapter 1 will show how air and sea weaponry dominated war production in Germany, Japan, the USA and the UK. The similarity in economic profile between the four nations is compelling, and shows how little effort each expended on the land war. It will also show, contrary to a widely held view in the European historiography, that Japan was a much greater economic power than is normally understood. From 1942 to 1944 the Japanese produced at a level almost identical to that of the USSR, only with superior technology and without any meaningful support from its closest allies. Chapter 2 will then outline why the prioritization of air–sea power made sense through describing the process by which it destroyed Axis equipment. The three stages of equipment destruction before it reached the battlefield will be outlined in more detail.

Chapter 3 examines the interwar period and the war itself until the fall of 1940 – the end of the first stage of the Battle of Britain and the re-election of Franklin Roosevelt. This earlier period was actually one in which only a hazy notion existed of the way in which air and sea power would be effectively employed in the war. Chapter 4 will introduce the key British and American grand strategists who made the crucial choices about how the air and sea war developed. These include the war leaders, Winston Churchill and Franklin Roosevelt, and also their service chiefs of staff. Chapter 5 returns to the description of the war, covering the period from November 1940 until the United States entered the war in December 1941. This vital period saw some important choices which materially affected how the air and sea war would be fought in 1942 and 1943, but on the other hand, showed how far things still had to progress. Chapter 6 will examine the crucial grand strategic choices made in the war in 1942 and 1943. These concerned how much Anglo-American equipment should be deployed against Germany and how much against Japan, and then how that equipment should be used in theater. Churchill, Roosevelt and their military chiefs all had different ideas on how the war should be fought, and the air and sea war as developed was necessarily a compromise between them.

The final five chapters will analyze how air and sea power crushed German and Japanese resistance from the end of 1942 onwards. Chapter 7 focuses on the war at sea, in particular the Battle

of the Atlantic in 1942 and 1943. One of the important points here is the need to look at the war at sea, not as a battle of submarine against convoy, but as a battle by the British and Americans to get their merchant ships into convoy. Chapters 8 and 9 will cover the war in Europe in 1943 and 1944, contrasting the war in the air to the war on the land. It will describe the different campaigns waged by the British and Americans against German power and describe the process that led to German collapse. The Germans were forced first to switch the Luftwaffe away from the battlefield, and when this could not stop air attacks, saw their production go into irretrievable decline. Chapter 10 will discuss a similar process in the war against Japan to the end of 1944. The three different American campaigns to defeat Japan will be analyzed, and the decisive importance of the capture of the Mariana Islands underscored. Chapter 11 will start with the war against Japan in 1945, showing how the cut-off of raw materials and the earlier bombing of specific Japanese industries was already leading to a collapse in Japanese production before the United States turned to the incendiary bombing of Japanese cities. It will then cover how Germany and Japan tried to fight when they had completely lost the air and sea war. Finally the chapter will end with a discussion of the ethicality of strategic bombing in general and of the dropping of the atomic bomb in particular – the most extreme example of the dominance of air power.

Many familiar parts of the war narrative will be covered only briefly. While the Eastern Front is discussed in parts of different chapters, it will seem woefully under-represented to those who believe that German power was really broken by the Soviet Union. The role of Italy has also been deliberately minimized. This will be contentious in some circles.[72] From 1943 onwards, Italian production was only important as part of an overall German economic empire. It was not being used in any specifically Italian fashion. Also, even with the collapse of the Mussolini regime, the Germans remained in control of northern Italy, and all the raw materials and industrial plant therein. The United States and Britain, in control of the south, deprived Germany of little that was necessary for the Reich to wage its air and sea death struggle.

Within the Anglo-American world, the role of different parts of the British Empire may also seem under-represented. While the Canadian role in the Battle of the Atlantic is mentioned, on the whole the British Empire's contribution to the air and sea war is folded into that of the United Kingdom. This is partly out of the need for simplicity, but

it is also grounded in reality. Except for the construction of smaller naval vessels and vehicles in Canada, the production of the vital equipment used in the defeat of Germany was undertaken in the United Kingdom (or for the United Kingdom in the United States). Also, it was the British decision-making structure that controlled the allocation and usage of this equipment, and as such they dominated the British Empire's war effort.

Finally, what might be most unusual is that this book on World War II will spend little time discussing combat or human bravery and cowardice – the meat and drink of most war histories. That is a deliberate decision. While the experience of combat is one of the crucial human experiences to be found in war, when it comes to World War II it was not important in understanding victory and defeat. There were great acts of courage and cowardice, sacrifice and atrocity on all sides. In the end, the war was won because the Allies had far more powerful and effectively equipped armed forces than did the Axis, and this equipment, particularly air and sea weapons of war, kept the Germans and the Japanese from moving.

Bravery did not win or lose World War II. Air and sea power did.