

Introduction

IN late September 1941, Prime Minister Winston Churchill was frustrated with Bomber Command, his primary weapon against Hitler's offensive. The first rigorous evaluation of Bomber Command's performance in the war, the Butt Report, was discouraging: on any given night only about one in five crews put bombs within five miles of their targets.¹ This information came as a jolt—indeed, many in the Royal Air Force (RAF) could barely believe it. Sir Richard Peirse, head of Bomber Command, declared, “I don't think at this rate we could have hoped to produce the damage which is known to have been achieved.”² What he “knew” came largely from pilot accounts, and these were now proved to be highly unreliable: Peirse and those under him had engaged in a great deal of wishful thinking.

For Churchill, however, the ramifications had sunk in. He directed his ire at Sir Charles Portal, former head of Bomber Command and, since late 1940, Chief of Air Staff (CAS). Portal had just sent Churchill a paper calling for 4,000 heavy bombers for use in a massive air offensive designed to break German civilian morale. The prime minister received the scheme with skepticism and despondency. Strongly implying that he had lost faith in Bomber Command, he responded to Portal with a note that pessimistically concluded, “The most we can say [about Bomber Command] is that it will be a heavy and I trust a seriously increasing annoyance [to Germany].”³

Portal, not one to shrink from the prime minister's tempests, pointed out that Churchill's own rhetoric and decisions to date had all relied on the strategic air arm—if not to win the war on its own, at least to help prepare the continent for an allied ground invasion. He defended the RAF scheme and then challenged Churchill directly: “We could, for example, return to the conception of defeating Germany with the army as the primary offensive weapon.” Knowing that Churchill would find this distasteful, he continued, “I must point out with the utmost emphasis that in that event we should require an air force composed quite differently from that which we are now creating. If therefore it is your view that the strategic picture has changed since the issue of your original directives I would urge that revised instructions should be given to the Chiefs of Staff without a moment's delay.” Portal thus called the prime

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minister to account with a response that one observer at the time called “masterly” and “audacious.”⁴

Churchill, however, refused to be put on the defensive. Acknowledging the significance of Bomber Command’s role, he nonetheless warned Portal against “placing unbounded confidence in this means of attack.” He argued, “Even if all the towns of Germany were rendered largely uninhabitable, it does not follow that the military control would be weakened or even that war industry could not be carried on.” He lashed out at the RAF’s previous claims about strategic bombing, and the fears that they had aroused in Britain at the time of the Munich crisis: “Before the war we were greatly misled by the pictures [the Air Staff] painted of the destruction that would be wrought by Air raids. This is illustrated by the fact that 750,000 beds were actually provided for Air raid casualties, never more than 6,000 being required.” He charged that “[t]his picture of Air destruction was so exaggerated that it depressed the statesmen responsible for the prewar policy, and played a definite part in the desertion of Czecho-Slovakia in August 1938.”⁵

This was a tense moment. While bold interwar claims about the power of bombers and the vulnerability of enemy societies had helped preserve the RAF’s institutional autonomy, they had also contributed to deep public anxiety about future wars. When he took office in 1940, Churchill had placed faith in Bomber Command’s ability to make good on its claims and to turn them strongly to Britain’s advantage. By 1941, though, those claims seemed empty. What had happened? And what would the future hold?

Just over two months later the United States, attacked at Pearl Harbor and drawn into the global conflagration, would also turn to strategic bombing. But the Americans, too, would encounter vast problems as they tried to fight the war from high altitude. Not only did American bombers fail to achieve a prompt decision, but, in 1942–43, they seemed to have little impact on the enemy. Indeed, by late 1943 the Anglo-American “Combined Bomber Offensive” (CBO) was all but grounded by the strength of German defenses. Allied air planners scrambled for a solution, eventually finding their way to tactical changes that salvaged the air offensive. By 1944 both the numbers and capabilities of Anglo-American bombers had increased dramatically, and a campaign of increasing fury and intensity would, by 1945, lay waste to German and Japanese cities and industry in an unprecedented campaign of death and destruction that has been hotly debated ever since.

The Churchill-Portal debate of September 1941—a short, sharp exchange between two men otherwise trying to cooperate in a larger, more

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consequential battle—evokes the dramatic history of strategic bombing in the Second World War. Controversy and emotional intensity have always surrounded the very concept of long-range or “strategic” bombing. The concept implies that aircraft carrying bombs to an enemy’s “vital centers” can undermine its ability and will to fight. The idea is simple enough, yet few other claims about military power have provoked so many debates, or aroused so much intensity of feeling, both inside and outside the military. Time has neither stilled the controversy nor muted the arguments, which have recently focused on the 1991 Gulf War and the 1999 bombing of Kosovo. As a new century begins, the issue remains as contentious and consequential as it was at the beginning of the last one, when airplanes first took to the skies.

To make sense of these debates (and the emotions they stir), one must understand the assumptions that underpinned the concept itself, and the expectations bound up in those assumptions. This book’s purpose is to trace and compare the development of ideas about long-range bombing in Britain and in the United States—the two nations that relied most heavily on this new form of warfare during the Second World War. I illuminate the factors shaping the evolution of those ideas from the turn of the century through the end of the Second World War. In this I seek not only to explain the development of a central mode of modern war, but also to shed light on the way military organizations think and behave. Obvious questions arise: Why were the British and Americans interested in strategic bombing in the first place? What did defense planners and policymakers expect of it, and why? How were these expectations influenced by experience and by broader debates? Why were many of their expectations ultimately at odds with reality? These in turn pose deeper questions: How do military ideas originate, and how do they establish themselves inside the staffs and organizations that plan for and undertake their implementation? How do expectations affect the way information is perceived and interpreted, and how do these perceptions and interpretations then shape plans, policies, and campaigns? How robust are ideas, once established, and why do they often seem resistant to new information that does not support them?

The development of aircraft in the early part of the twentieth century posed a problem of great significance to the military planners of all modern states. How were these new machines—as yet untested—to be integrated into existing military structures? In particular, how were planners to envision and implement aerial bombing of enemy lands? Examining the way the latter question was answered in two states offers insight into how their military organizations perceived and made sense of the world around them, interpreted experience, and coped with rapid change. It also enables us to examine the extent to which those organi-

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zations were influenced by the wider social and political contexts in which they operated.

Not all militaries, of course, responded to bombers the way the British and the Americans did.⁶ In certain ways, then, this history is case-specific, explaining British and American uniqueness. Geopolitical issues were particularly important: neither the British nor the Americans found it essential to their survival to maintain large standing armies. Indeed, they had both eschewed such structures (and the political problems that often accompany them), and had instead relied on naval power to preserve their territorial integrity and to protect their interests. In relying on navies and exploiting the fruits of the industrial revolution, they reinforced national self-identities that celebrated mastery of science and technology. Over time they came to place the same reliance on new machines, aircraft—for deterrence, defense, and power projection—as they earlier had placed on ships. They came to see bomber aircraft as a means of fighting wars at relatively low cost to themselves, avoiding a repetition of the harrowing experience of the 1914–18 war. As I explain in chapters 2 and 3, this process moved more quickly in Britain than the United States, but both found themselves in essentially the same place by the Second World War.

Not all of the story is unique to Britain and the United States, however. Their thinking, planning, and decision making illuminates patterns generalizable to other military organizations in other places and times. Individuals and institutions have commonalities in the way they perceive new information, interpret experience, and respond to change. This exposes them to similar types of misperceptions, errors, and maladaptations, particularly in times of rapid change. My analysis relies on a few basic concepts borrowed from cognitive psychology.⁷ These shed light on how and why air theorists in Britain and the United States perceived information and interpreted experience as they did.

All decision makers use cognitive processes to make sense of their complicated and stressful environments. Two forms of information-processing bias in particular seem pertinent here. The first derives from the problem of environmental complexity. To organize a vast array of incoming sensory information without being overwhelmed, we all use data-processing shortcuts. Most of the time, these shortcuts serve us well. Sometimes, however, they skew perceptions in ways that can have problematic consequences. For example, we tend to assimilate incoming information to fit existing beliefs and expectations. If all our basic understandings were subject to wholesale revision with every new datum, we would be in constant turmoil, changing direction so often as to become virtually aimless. Remaining impervious to new information would be just as useless. Thus, we are neither fully open nor fully closed

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to the implications of new information. While a preponderance of contrary information can eventually shift our beliefs, any given datum will tend to be interpreted consistent with our original predispositions. The result is that preexisting beliefs, once organized and established, have a staying power in the face of new information that one might not expect, looking only at the new data itself. In general, we also prioritize incoming information according to its emotional vividness. Emotionally remote information, such as written memoranda, statistics, or second- and third-hand reports, carries less impact than first-hand personal experience, especially when the latter is unusually painful, strikingly positive, or uniquely formative. The medium influences receptivity, independent of the analytical merit of the information per se. In particular, early personal experiences of decision makers often have an effect that later analytical input cannot easily match.

A second broad class of information-processing bias relates to the effects of stress on decision making. Few of us respond the same way to stressful and to banal situations. In particular, most people rely on a variety of mechanisms to enable continued functioning in very difficult conditions. For example, choosing between two mutually exclusive goods—or between two apparently unattractive alternatives—is difficult and unpleasant. Either something valued must be given up, or something repugnant must be accepted. Neither is easy to do. We therefore tend to deny that stressful choices really have to be made. Overlooking or discounting the real virtues of one good reduces the apparent scale of loss when both cannot be had; overlooking or discounting the real drawbacks of one bad option moderates apparent costs when one must be chosen anyway. Either strategy, however, leads to a mistaken assessment of at least one choice, and a tendency to overlook potentially important information. The higher the stakes—the more repugnant or the more attractive the options—the greater the stress and the greater the tendency to misperceive.

When a choice between unattractive alternatives cannot be postponed, avoided, or miscast, the result can be especially stressful. The process of such decision making is often so onerous as to create powerful barriers to reconsideration, even when new information casts doubt on the initial choice's validity. Thus, rather than revisit the original choice, decision makers discount, misinterpret, or ignore new information bearing on that choice. Finally, in addition to seeing what we expect to see, and not seeing what we find too stressful to absorb, we often see what it is in our interest to see. Decision makers with powerful organizational goals or self-interests may discount or minimize incoming information that conflicts with those interests, and highlight information that supports them. This may reflect cynicism or deliberate mis-

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representation of the facts, but, more commonly, these strongly felt desires have a subtler effect, coloring our interpretation of data in ways we may not fully recognize.

All of these information-processing biases influenced thinking about strategic bombing in Britain and the United States, and in the narrative that follows I draw attention to the places where their influence and effect are most evident. In writing this book, I have relied on a combination of extensive primary source research, a comparative perspective, attention to the social and intellectual context in which planners and policymakers worked, and a sensitivity to the insights derived from the concepts outlined above. By examining British and American ideas through the whole sweep of time from the pre-World War I period through 1945, I am able to trace the way in which the “lessons” of World War I were interpreted and applied, highlight the differences and similarities in British and American thinking as well as the reasons for them, and offer a critique of the operations and effectiveness of the Combined Bomber Offensive (CBO) of World War II.⁸

In this study, institutional responses to bomber aircraft take center stage. The invention of aircraft prompted important organizational modifications in the military structures of Britain and the United States. In a dramatic wartime reorganization, the British in 1917–18 established a separate air force. Its autonomy was not guaranteed after the war, however, and its new leaders had to find ways to justify its continued existence. The American Air Service did not win organizational independence during the First World War, but its personnel nonetheless had high hopes for autonomy, and sought to hasten its achievement. Thus, the interwar experience of Anglo-American airmen was heavily conditioned by the quest for institutional autonomy, to preserve it or win it. To acquire legitimacy, any institution must make the argument for its existence in reason and in nature.⁹ This is precisely what British and American airmen sought to do, but the process was inherently liable to error and bias.

No institution speaks with a single, wholly unified voice, but, among any group of individuals, particular preferences and views come to be privileged, and these form the basis of what may be called organizational thought. I trace organizational thought by examining the rhetoric used by British and American airmen, in intra- and inter-institutional conversations and in public statements. This rhetoric resides in a variety of places: the minutes of meetings, internal policy and planning documents, speeches, lectures, journal articles, letters, and teaching materials for the air staff schools. All these sources reveal the ways in which two nascent air organizations envisioned and articulated their function as well as their plans for carrying out that function. As new organizations

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dealing with brand-new, rapidly evolving technologies, they faced challenges, but their members brought energy, stubborn determination, and, sometimes, an almost religious fervor and commitment to their work. These qualities helped secure the place of air forces and elevate their status, but they also contributed to problems of conception and rigidity of thought.

My approach is premised on the assumption that articulations of function and policy reveal fundamental ideas within military organizations and that such ideas matter. They matter because they often serve as guides to action, in whole or in part. Thus, to understand actions we must understand the premises on which they rest. And once articulated in a formal way, the premises have consequences outside the institution itself. Of course, public or “declaratory” policy may not be wholly consistent with actual practice. Even if later modified, a declaratory policy promulgated for any length of time not only creates echoes and socializing effects inside an organization, but also produces independent consequences: it conveys information to other organizations, which may then modify their own behavior in response, and—particularly in the case of national institutions within democracies—it sets up public expectations about the future.

My approach is premised as well on the assumption that fundamental ideas are not formed in a vacuum, but rather in a specific temporal context. In order to understand how the British and American air forces became interested in strategic bombing and formed expectations about it, we must understand the context in which the organizations’ members lived and worked, and the early experiences that helped mold their beliefs and predilections. This means beginning the story early in the century, when initial conceptions about aircraft in war were being articulated in response to the long-anticipated arrival of heavier-than-air flight. A body of ideas about long-range aerial bombing began to take shape, based on assumptions about and perceptions of the behavior of modern societies. I argue that these helped determine how World War I aerial experience of aerial bombing was interpreted and, in turn, affected subsequent thinking and planning. While much of the strategic bombing literature has tended to overlook or minimize the World War I experience, I argue that it played an important role in determining what came afterward.

A fundamental assertion that became central to Anglo-American thinking about long-range bombing was that modern, complex, urban-based societies are fragile, interdependent, and therefore peculiarly vulnerable to disruption through aerial bombing. This idea took slightly different but essentially overlapping forms in Britain and the United States. It involved not only political and military concerns about the

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steadfastness and political reliability of civilians (particularly urban dwellers) in modern, increasingly “total,” war, but also concerns about the structure of modern economies and their susceptibility to disruption. This assumption derived from a particular historical context: the anxieties felt by Edwardian-era politicians and military planners who looked with increasing trepidation on the forces transforming their societies.

Arguments about enemy vulnerability gave validity to air force claims for existence and continued (or increased) autonomy; they gave weight to assertions about air power as a coercive tool in war.¹⁰ If modern states were in fact highly vulnerable to long-range bombardment—which took war directly to industry, political leaders, and populations—then it made sense to maintain an organization that might either deter wars or win them in what promised to be a direct, expeditious way. Indeed, any state wishing to survive in the great contest of nations would be obliged to maintain an air force, not only to deter potential enemies, but to prevail against them should deterrence fail. Ultimately it was this argument that sustained the postwar RAF and gave credence to those voices calling for an independent U.S. air force. But ideas about vulnerability rested more on assumptions and assertions than established fact. The World War I experience seemed to confirm notions undergirding arguments about social and economic vulnerability, but the interpretation of that experience had been conditioned by preexisting expectations, individual and organizational interests, and a general lack of analytical rigor in methods of assessment.

During the interwar years, bold claims for the power of bombers were combined with a lack of focused attention to how, precisely, they would operate in war, and how, exactly, bombing an enemy might lead to its political capitulation. This inattention to what, in hindsight, seems like crucial and essential detail stemmed from several important causes—but most powerfully, perhaps, from the way in which airmen perceived their world and made assumptions about it. Even where effort and good intentions were apparent, problems often crept in.¹¹ For instance, both the British and the Americans carried out interwar exercises and field trials, but they ran them with rules and premises that skewed the results to match prevailing assumptions about the power of bombers and the frailty of those under the fall of bombs. Likewise, both the British and the Americans observed the air battles of the late 1930s, particularly those of the Spanish civil war, but they largely discounted results that did not accord with their preexisting beliefs. They did this principally by dismissing the wars (and whatever insights they may have offered) as largely irrelevant: they were not “first-class” wars between major states.

In Britain the consequences were particularly acute given the nation’s

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proximity to Germany. The RAF's declaratory policy had long been far ahead of its capabilities with respect to long-range bombing. While this did not matter so much when there were few real enemies, it mattered a great deal when a resurgent Luftwaffe appeared to threaten everything in its range. Bomber Command was unready for war, but the British people had heard, for nearly two decades, about the vast power of bombers. The RAF's earlier bold claims now had a deterrent effect on Britain itself in a time of crisis. Adding to the problem was the tendency to assume that the German air force had been designed and built not as a predominantly army-oriented force (as it in fact was), but primarily for the purpose of independent long-range bombing. The uncertainty and fiscal stringency of the 1930s complicated Britain's existing problems, and Bomber Command would enter the war still in the opening phases of a hurried and onerous effort to close the distance between its claims and its capabilities. Ironically, British air defenses, which had received far less attention in RAF declaratory policy, were in much better shape.

Although the Americans had invested somewhat more effort than the British in working out the details of long-range bombing, they nonetheless fell victim to a range of similar problems. Like the British, they failed to analyze the World War I experience as rigorously as they might have; they underestimated the difficulties in finding and bombing targets from high altitude; and they overestimated the ability of bombers to penetrate enemy airspace. They also failed to heed the warnings inherent in Britain's traumatic experience of 1939–42. Thus, they too entered war unready. And they failed—even more than the British—to realize just how unready they were.

During World War II, British and American air forces sought to prove the soundness of the central claim of the interwar years: that modern societies and economies are vulnerable to aerial bombardment. The claim proved weaker than expected. From the start its proponents faced two major problems: the vulnerability of bombers themselves to enemy defenses, and the inaccuracy of bombers operating in wartime conditions. But the limited power of bombers in the early years of the war was not the only undermining factor. Modern economies and societies proved to be surprisingly robust, capable of coping, responding positively to stress, and, ultimately, withstanding tremendous punishment. In trying to produce the outcome they sought, British and American airmen made modifications that took them steadily toward heavier, less discriminate bombing. By 1944–1945 this trend was reinforced by another: Allied leaders' desire to end the long war as quickly as possible. The result was nothing less than a form of aerial Armageddon played out over the skies of Germany and Japan.

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The first three chapters that follow treat the early development and evolution of Anglo-American ideas about aerial bombing; the fourth and fifth chapters discuss the way in which their adherents attempted to implement them in the Second World War. The first chapter begins by reviewing some of the earliest conceptions of strategic bombing and explaining how these ideas developed, within British and American military institutions, during the First World War. It traces the history of long-range bombing in the war, and concludes by summarizing the British and American post-armistice bombing surveys. The second chapter examines the RAF during the interwar years, revealing how arguments about long-range bombing were developed and presented in the 1920s, and how they were (or were not) modified in the tense and uncertain years leading up to 1939. The third chapter, on the American Air Service (later Air Corps) in the interwar years, shows how American thinking about strategic bombing evolved through the 1920s and 1930s, and contrasts this with British developments.

The fourth chapter covers the early World War II years, 1939–42. It focuses on the crises faced by British and American airmen, and the decisions that they made in response. It reveals the abrupt clash between interwar assumptions and wartime realities. The fifth chapter examines the the British and American “Combined Bomber Offensive” of 1943–45, detailing the sometimes desperate Anglo-American quest to make bombing into an effective tool of war against Germany, and how this quest ultimately led to the kind of aerial onslaught both predicted and deeply feared in the interwar years. This chapter also covers the American strategic bombing campaign in Japan—a campaign that, though an extension of the trajectory of strategic bombing begun in the early part of the century, also began a new chapter in the history of warfare through its climax at Hiroshima and Nagasaki. Chapter 5 ends by examining the many contested claims about Anglo-American strategic bombing in World War II. In the conclusion, I bring together the main themes of the narrative and suggest ways in which they influenced thinking about air warfare in the second half of the twentieth century.