Air Lines:
Anglo – American Tactical Air Operations in World War II

Air Marshal Arthur Coningham *left* **and American General Carl Spaatz**

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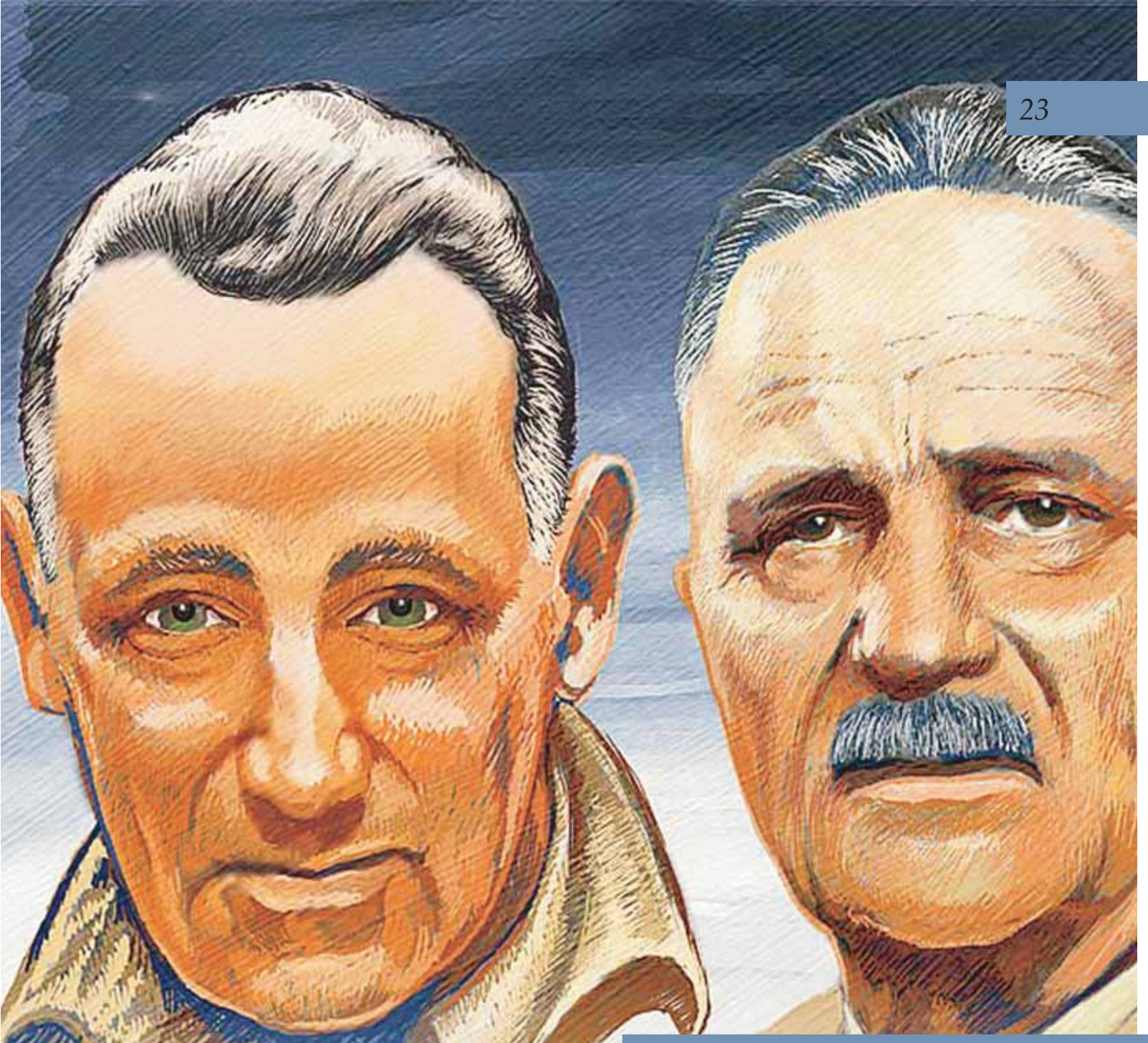

By Dr Thomas Alexander Hughes

In the Anglo-American tradition, aviation enthusiasts have championed airpower's inherent 'flexibility and versatility' as one important advantage airmen enjoy over their brethren on the ground and at sea.[1] Soldiers and sailors, the thinking goes, must face war's challenges bound by two-dimensional geometry and the slow algebra of surface movement. For them, demarcations like army-unit boundaries and naval vanguards not only rationalize the battlespace, but also limit the elasticity of military options. To draw loosely from the great theorist Henri Jomini — to the man with a bayonet or the skipper on the

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foredeck, strategy is on a map. But flyers fight wars free of such earthly limits. Liberated from the tyranny of terrain and unfettered by maritime matters, pilots retain a capacity to move quickly and freely, complicating the enemy's action and defeating his strategy.

Or so the thinking goes. Undoubtedly more flexible and probably more versatile than other combat arms, airpower is both informed and constrained by the same map that influences ground and sea operations — partly because air forces are often used in joint and combined contexts. Furthermore, airmen themselves have been unwilling to free operations from the boundaries of battle that emerge from ground or sea perspectives. Airpower's flexibility and versatility depend to some extent on a seamless battlespace, yet air leaders have often demonstrated an inclination to draw lines in the sky to codify the airspace, coordinate actions of different units, and manage coalition air operations. In other words, instead of implementing true integration that capitalizes on the wide open sky, airmen have often opted merely to deconflict one air operation from another — and in the process have fragmented their battlespace like their comrades in armies and navies have done.

Anglo-American tactical aviation in World War II serves as a case study in the tantalizing promise of integration and the eventual triumph of deconfliction to orchestrate airpower among services and between nations. Great Britain and the United States began their Allied effort in World War II with a strong common purpose and sufficiently similar views of aviation. In the laboratory of North Africa and Sicily, air leaders moved to amalgamate different air forces and to demark the sky along functional, not geographic or national lines. Human, strategic, and political matters, however, made this objective too difficult. By the time of the invasion of Normandy, the Anglo-Americans had settled on strict air boundaries marked not only by national identity but also by army, corps, and division demarcations. This inclination to draw lines in the sky carried forward through the Cold War and beyond, suggesting that despite the rhetoric of airpower's flexibility and versatility, Airmen themselves sometimes adopt operational concepts that hinder the elasticity of military aviation.[2]

Tactical aviation before World War II

The United States and Great Britain came to World War II with comparable if not uniform ideas about the proper development and application of airpower. Their respective aerial traditions from the Great War were operationally analogous, even if the British had more experience. In the war's last year, aviators from both countries participated in embryonic bombardment missions that fired the imaginations of airpower enthusiasts and fueled debate about its future on both sides of the Atlantic. In broad terms, flyers advocated inventive, independent bombing missions for aviation while more conservative adherents in ground and sea uniforms envisioned a role for aviation in support of traditional forces. In the interwar period, these points of view became associated with strategic or tactical airpower, respectively. In Great Britain and the United States, notions of strategic aviation grabbed airmen, despite differences in national circumstance and the organizational status of their respective air arms. Over time, airpower thought in Britain and America charted similar courses as pilots championed strategic aviation and situated tactical airpower in an important, though clearly subordinate, role.

A disposition toward strategic aviation led Airmen in both nations to similar assessments of military operations elsewhere. Royal Air Force (RAF) officers denounced the tactical character of air operations during the Spanish Civil War as "a prostitution of the Air Force" and warned that the conflict did not fit expected conventions of general European warfare.[3] In America, Brig Gen Henry Arnold added that the fight had seen airpower used "promiscuously and indiscriminately to supplement artillery actions" instead of employing it behind enemy lines, "where it can exert power beyond the influence of your other arms, to influence the general action rather than the specific battle."[4] Pilots in America and Britain held steadfast to these beliefs, even after German blitzkrieg operations in Poland revealed tactical aviation's potential prowess. Air Marshal Arthur Coningham, the great British practitioner of tactical

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operations, recalled how the RAF refused to imitate the Luftwaffe's use of the Stuka, despite its status as "the pin up weapon of modern warfare. . . Our Air Marshals were criticized at times but they knew the Stuka was a most inefficient aircraft of value only as a specialized weapon under selected conditions."[5]

Anglo-American air arms did not entirely ignore aviation's tactical functions. After Britain decided to raise an army capable of campaigning on the Continent, officers there had to work out a system of air support. Pilots and soldiers agreed on air superiority as airpower's first priority before it turned to three other tasks: tactical reconnaissance, air transport, and air attack, including interdiction and close air support (CAS). But air and ground leaders floundered on arrangements for the command and control (C2) of air forces in a tactical role, in part because Airmen held little confidence in a soldier's ability to orchestrate airpower in modern war. In the end, before their baptism of fire in North Africa, the British could muster only an "awkward and complicated" arrangement whereby both an "air component" under the direct command of a soldier and an "air contingent" under the control of an Airman participated in the battle.[6] Such fragmentation did not effectively leverage the flexibility of airpower, but at least the tactical use of aviation had attracted some attention in Britain before the war.

In America, where the air arm remained under Army control, tactical aviation remained a standard Air Corps function. Although many airmen championed strategic concepts, ground officers who ran the Army insisted on a force structure and doctrine that enabled tactical airpower. The 3rd Attack Group became the world's first peacetime unit dedicated to CAS, and throughout the interwar period the Army Air Corps's makeup reflected a formal insistence on tactical aviation. In fact, during the two years before Pearl Harbor, heavy bombers constituted less than two percent of the Air Corps' aircraft purchases. As for doctrine, successive iterations of War Department Training Regulation (WDTR) 440-15,

Employment of the Air Forces of the Army, generally identified aviation's primary mission, after air superiority, as destruction of "the most important enemy forces on the surface of the land or sea" (1923 version), and adhered to the age-old dictum that the "land campaign" was "the decisive factor in winning war" (1935 update).[7]

Even as both nations drew closer to tactical aviation with the approach of World War II, they left for the battlefield the difficult and delicate matter of command relationships among ground and air leaders — in many ways the nub of tactical air operations. In Britain teasing out the nuance between 'contingent' and 'component' aviation fueled bickering among air and ground leaders until Prime Minister Winston Churchill proclaimed the situation 'helpless'. In the end, however, even his forceful persuasion could not broker a solution.[8] In the United States, disputes over the C2 of air did not reach the White House, but prewar doctrine reflected nearly untenable compromise on the issue: WDTR 440-15 allowed for independent air operations when ground troops were not in close contact with the enemy but made no provision for the detachment of air units from ground control for such missions.[9] Just how one might conduct independent operations within dependent command arrangements was a matter apparently left for soldiers and flyers to clear up during some future debut in war.

But the fact that armies in the Sahara Desert needed support placed enormous, unanticipated demands on tactical air operations in the war's early going

Supermarine Spitfires over North Africa

Up until they found themselves together in World War II, then, Britain and America had similar enough experiences and ideas about airpower to suggest a reasonable chance of integrating their air forces into one team for the fight. Certainly, variation existed, but both nations came to World War II with doctrinal and cultural expressions of airpower well recognized by the other. Once the war began, not even the Japanese attack on Pearl Harbor dissuaded the Allies from a common strategic cause to defeat Germany first. Side by side politically and strategically, akin in the beliefs and methods of war, and analogous in the orchestration and execution of military aviation, the Anglo-Americans entered the war with high expectations of building an integrated team, knowing only partially the great challenges that attended their journey.

Operations in North Africa and the Mediterranean

No prewar strategist in either Britain or America had thought of the Mediterranean Sea's south coast as a likely place for a clash, despite its awesome history as a battleground between civilizations. This lack of foresight proved especially true of air officers busy developing the ideas and machinery of strategic airpower. The North African sand harbored no large enemy populations to bomb, no vital enemy infrastructure to destroy, and no important enemy capital to level. But the fact that armies in the Sahara Desert needed support placed enormous, unanticipated demands on tactical air operations in the war's early going. Each nation faced a steep learning curve for such tasks.

The British came first to the war and first to Africa, where they encountered Field Marshal Erwin Rommel's famed Afrika Corps. The Desert Fox, as the British called Rommel, schooled the British Army in modern mobile warfare, nearly pushing Commonwealth forces from the continent. In August 1942, Lt Gen Bernard Montgomery inherited command of the dispirited, defeated British Eighth Army and in October brilliantly evened the battle ledger with the Germans at the Second Battle of El Alamein. There then ensued a series of seesaw battles as the British marched from Egypt to Tunisia. Haltingly at first, the drive gained momentum with each passing week until Axis forces occupied a shrinking piece of African real estate by January 1943. This turn of fortune had many fathers, including a refusal in Berlin to reinforce German troops on the continent. But growing British competence in tactical air operations played a part. One man's contributions in that regard stand to this day as a signal achievement of the war in the west.

Raised in New Zealand on the edge of the empire, Arthur Coningham had in some ways operated on the periphery of the RAF during his prewar career. While students attending courses at RAF Staff College in Andover devised — and officers in the Air Ministry championed — strategic bombing theory, Coningham was busy in the field. "Of all the RAF's senior commanders in the Second World War," wrote Coningham's biographer, "he was unique in that he received no formal, theoretical service education. By the end of the war, he was inordinately proud of the fact that he had neither served in the Air Ministry nor studied at Andover. His entire career was practical."[10] Unencumbered by prewar notions, Air Vice-Marshal Coningham came to North Africa in the summer of 1941 with a relatively open mind, able to counter the challenges of the desert with creative innovation.

The problems were legion, many of them stemming from material shortages or the lack of battle experience — conditions that would right themselves with the passage of time. Others were squarely the product of inter-service cooperation and doctrinal ambiguity. Keenly aware of the tensions in Britain that had attended efforts to develop tactical aviation, Coningham nevertheless believed that these labors had suffered from peacetime malaise and "could only be done on an academic basis" until war came.[11] Now, in the thick of the fight, he used the desert tableau as an anvil on which he shaped the machinery of CAS.

Heeding the advice of Air Marshal Arthur Tedder (his immediate superior in the air war) to "get together" with the Army, Coningham swiftly established a joint headquarters with ground commanders in the Western Desert. Looking back after the war, Coningham believed that collocating headquarters "was of fundamental importance and had a direct bearing on the combined fighting of

A re-creation of the American disaster at the Kasserine Pass

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the two Services until the end of the War".[12] From there he fleshed out the mechanisms of tactical airpower. Deficiencies existed in the tactics for air support, techniques in the placement of bomb lines, and procedures in the allocation of targets. As always, the C2 of aircraft underlay all other matters because soldiers wanted to divvy up air units to ground commanders, and pilots insisted on a more unified approach to the conduct of the air war.

With success at El Alamein came recognition for Coningham's ideas, which included a trinity of exhortations to guide air operations: "The strength of air power lies in its flexibility and capacity for rapid concentration; it follows that control must be centralized in an Air Commander and command exercised through Air Force channels; [and] Air forces must be concentrated in use and not dispersed in penny packets" — the British expression for soldiers' preference to assign specific air units to specific ground commands.[13] In time, prominent generals such as Montgomery came to parrot Coningham's ideas, and the notions found expression in the widely circulated Air Ministry pamphlet *Air Power in the Land Battle*.[14]

British prestige and Coningham's ideas rode high as the Americans experienced their battle debut in Africa. Operation Torch brought US and British forces under the command of Gen Dwight Eisenhower to the continent in November 1942. Like the previous efforts of the British, early operations produced despair and defeat: the Americans' failure to reach Tunisia before the winter rains and a debacle in air-ground operations at the Battle of Kasserine Pass ensured a long, hard campaign in the spring of 1943.

Axis shortages of materiel were so acute that some high-ranking Wehrmacht officers could make their escape only after finding a lone barrel of aviation fuel that had washed in from the sea

Fortunately, by then Montgomery and Coningham had completed their march from Egypt and were south of Tunis, ready to join hands with Eisenhower in an Anglo-American vise to squeeze the last Axis troops from Africa.

This linking required a combined command, to be led by Eisenhower, whom President Franklin Roosevelt and Churchill had agreed upon. As supreme commander, Eisenhower tended to view unity of command from a theater point of view, a position that dovetailed with Coningham's notions of a single Airman leading all air operations within a given theater.[15] A consensus builder by inclination and willing, at first, to look to the more experienced British, Eisenhower also accepted the British concept of dividing air-mission responsibilities by function rather than nationality. Hence, when he created the Mediterranean Air Command and named Tedder its leader, Eisenhower worked to ensure truly combined air organizations. Below Tedder's command sat the Northwest African Air Forces, commanded by the American General Carl Spaatz, who in turn split his force into five subordinate commands: Strategic Air Force, led by the American general James Doolittle; Tactical Air Force, led by Coningham; Coastal Air Force, led by the British Air Vice-Marshal Hugh Lloyd; Training Command, led by the American General Joe Cannon; and a reconnaissance wing commanded by President Roosevelt's son Elliot. Each of these forces, in turn, consisted of units from both nations. By mixing US and British forces up and down the chain of command, the Northwest African Air Forces set a radical precedent in Allied cooperation—one not mirrored in either the ground or naval commands. It was a bold move but one that, in theory anyway, best leveraged the flexibility of airpower. Time alone would tell how well the arrangement worked.

Initial air operations went well. Enough doctrinal similarity existed between US Army Field Manual (FM) 31-35, *Air Ground Operations*, and British Army Training Instruction Number 6 regarding air-support control centers and liaison parties to ensure smooth procedural operations within and among lower-echelon units.[16] Although some national cleavage developed in Doolittle's Strategic Air Force, integrated air operations existed in both Coningham's Tactical Air Force and in Lloyd's Coastal Air Force. In those units, air assets often took on tasks regardless of nationality and always in close coordination; Coastal Air Force, for example, did not always delineate nationality on its daily operations orders.[17] Late in the campaign, in April and May 1943, the US Twelfth Air Force began to concentrate on support to American troops, but this was an *ad hoc* exception to the emerging, if still newborn, pattern of amalgamated air operations. By early May, Allied troops had cornered the last of the enemy soldiers in the port of Tunis, and on 10 May the remaining Germans surrendered. Air-support operations, especially interdiction missions, played a part in the triumph. In the end, Axis shortages of materiel were so acute that some high-ranking Wehrmacht officers could make their escape only after finding a lone barrel of aviation fuel that had washed in from the sea.[18]

Continuing to follow British footsteps, the Americans refined US aviation doctrine, encouraged by their success in the desert. Based in part on British practices, the new doctrine — FM 100-20, *Command and Employment of Air Power* — "acknowledged Coningham's emphasis on the flexibility of air power and the need for centralized control under a knowledgeable air force commander".[19] It embodied many lessons of desert warfare, especially the importance of joint planning, liaison officers, and adequate communications. Although much of the document's innards reiterated earlier doctrine, FM 100-20 included a novel clarion call for airpower equality in joint warfare: "LAND POWER AND AIR POWER ARE COEQUAL AND INTERDEPENDENT FORCES; NIETHER IS AN AUXILIARY OF THE OTHER" (capitalization in original).[20] American pilots, conditioned by the struggle for air autonomy in the interwar years, saw in the document independence for the air force, with one future four-star general calling it the "emancipation proclamation of air power".[21]

Viewed in the context of its birth, however, the new doctrine was not a scheme to widen the gulf between pilots and soldiers but a move toward better and greater air-ground cooperation, based in part on experiences gained in North Africa.

In the summer of 1943, the Anglo-Americans hastened to chase the Axis powers across the Mediterranean, invading Sicily in July and Italy proper in September. Spaatz's combined Northwest African Air Forces bore the brunt of air responsibility for these assaults, and air tasks fell into an increasingly familiar categorization for tactical aviation in support of amphibious operations: neutralize the enemy air force, destroy enemy communications, isolate the battlefield, and provide close support to invading ground troops. Consistent with views of airpower's flexibility, plans for the Sicilian invasion called for aviation integration and a

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Italian soldiers toss the gun bolts of their rifles to the ground after the fall of Sicily

"high degree of coordination" among Spaatz's air forces. This was especially true for Coningham's tactical and Doolittle's strategic air commands, since "depending on the situation, either force might come under control of the other".[22] This daring design required respective commanders to work effectively without regard to national insignia on shoulder boards or national boundaries on battlefields. More than anything, the success of combined commands in North Africa fostered beliefs that such a fluid arrangement maximized airpower's versatility and optimism that it could work elsewhere.

But success does not always translate from one circumstance to another. By the summer of 1943, the Americans constituted an increasing share of the Allied force structure. Moreover, having acquired combat experience of their own, they were less likely to accept a role subordinate to that of the British in the wartime partnership. This shift influenced relationships and affected decisions at every level of war, including the matter of air organization in the Mediterranean. Lt Gen George Patton, the senior American field soldier for the Sicilian invasion, believed that British air leadership was now disproportionate to their rank-and-file strength, starting with Spaatz's British superiors in the Mediterranean Air Command: "Tedder controls the air with Spaatz, a straw man, under him," Patton complained to Eisenhower. "Conyngham [sic] commands the tactical air force [while] . . . our close support force is commanded by a colonel." Although Patton was wrong about a colonel controlling American CAS, he forcefully pressed his point home, concluding that "the U.S. is getting gypped."[23]

Patton was not alone. Other Americans increasingly believed that the British pushed for integrated air commands in order to retain positions of leadership that their force structure alone could no longer support. This view was at once cynical and somewhat true, challenging even Eisenhower's consistent inclination to find harmony among his subordinates: "The American Air Force and principal commanders," he reported in July, "do not have that prestige that should be theirs" in the current command setup.[24]

More than prestige was at stake. The international flavor of air commands in North Africa may have heightened airpower's operational elasticity, but it complicated the administrative lines of control that must necessarily pass through national channels. This problem became especially apparent in the Coastal Air Force, where disciplinary action within an assigned American fighter group became entangled in RAF legalities.[25] To remedy this deficiency and appease bruised egos, Eisenhower formulated plans to make Spaatz the commanding general of all US Army Air Forces (AAF) units in the Mediterranean and give him responsibility for the administrative oversight of US flyers. Eisenhower felt that doing so gave Spaatz the "strength, prestige, and influence" he deserved and provided for the "absolute continuity of American command of all American units from top to bottom".[26]

As long as the new arrangement was limited to administrative command prerogatives, it did not violate the animating spirit of the Allied admixture of forces in the operational and tactical conduct of the war. But Spaatz soon set his sights on wider authority. In the middle of July 1943, he moved to ensure his influence over US sorties via a separate, secret communications net known as Redline, telling his principal subordinate US commanders "to have officers in training so that you will have them ready to take over . . . [when] the Americans are in complete control".[27] A close examination of Redline suggests it "grew into a swift and effective all-American communications system" used to circumvent Coningham's control of US units in the Tactical Air Force.[28] If Redline did not quite constitute a wholesale repudiation of combined air commands, it was at least a rascal's way of undercutting their effectiveness.

National and personal pride motivated Spaatz, but he also acted out of sincere concern for the effective running of the air campaign. He established Redline only after a British practice of bypassing him became clear, especially in messages between Tedder and Coningham. Moreover, Spaatz hoped that Redline would not so much usurp Coningham as encourage him to act more decisively in the employment of his command and in his coordination with Doolittle's

Winston Churchill's belief that fighting without allies was the only thing worse than fighting with them

Strategic Air Force. Operational effectiveness had become a real issue late in the Sicilian campaign, when German troops retreated en masse across the Strait of Messina to Italy. Instead of implementing aggressive action to interdict a fleeing enemy, Coningham moved cautiously and with great reluctance to synchronize his fighter planes with Doolittle's bombers. In a curious rejection of his own ideas of airpower's adaptability, Coningham never thought much of interchanging fighters and bombers when circumstance demanded, and even his sympathetic biographer refused to muster much of a defense for Coningham's failures late in the Sicilian campaign.[29]

British commanders had always believed that the fusing of the RAF and the AAF had "been a very tricky job" requiring delicate hands and deft politics. Now, in the late summer of 1943, they felt that "nationalism has reared its ugly head".[30] Under such conditions, they foresaw a time when national identity trumped function in the organization and employment of airpower. No doubt, Americans would have agreed. That summer represented a signal moment in the history of combined air operations. For a brief time above the North African sand, the promise of integrated coalition air operations lived in an embryonic stage. But it was stillborn over Sicily's rugged terrain, unable to overcome powerful personal and national forces. After the war, Coningham tried to put a happy face on this death, telling audiences that Mediterranean operations had bequeathed to the Anglo-Americans "processes of Allied Command, staff structure, [and a] dove-tailing of the three services of each nation into a team".[31] In further retrospect, members of the Western Alliance undoubtedly grew in strength and prowess in the years before the invasion of Normandy, but their combined efforts also testified to Winston Churchill's belief that fighting without allies was the only thing worse than fighting with them.

D-Day and Operation Overlord

There was a slight pretense of integrated air operations by the time the Anglo-Americans began planning in earnest for the liberation of France. Many principal commanders from the south, including Eisenhower, Tedder, Spaatz, and Coningham, came to Britain in the winter before D-day to participate in Operation Overlord. They brought from the Mediterranean their collective competence and great experience. Each amphibious landing in Europe occupied a distinct point on a learning curve for the Anglo-Americans, and Normandy represented the pinnacle of commander expertise. Despite their success, however, these leaders also brought heavy baggage with them to Britain. In Overlord's planning and execution, they failed to shake emergent patterns of organizational and operational conflict in the conduct of air war. Moreover, their scheme of air support for the invasion actually compounded difficulties in the integration of air operations and accented differences among men and nations.

A thin facade of Allied integration shrouded the air setup for Overlord. Reprising his role as supreme commander, Eisenhower again tapped Tedder as his deputy. In the normal fashion, Eisenhower's command had major land, sea, and air components. The British Air Chief Marshal Trafford Leigh-Mallory, one of the few senior leaders in Overlord who had not seen experience in the Mediterranean, commanded the Allied Expeditionary Air Force (AEAF). As had been the practice in the south, his deputy was an American, Maj Gen Hoyt Vandenberg, who had only very limited experience in North Africa. Leigh-Mallory's force consisted of units from both nations organized into two air forces: the US Ninth Air Force and the British Second Tactical Air Force, commanded by Lt Gen Lewis Brereton and Coningham, respectively. In the weeks before and after D-day, Coningham, working directly for Leigh-Mallory, exercised supernumerary authority over both tactical air forces in an effort to maximize coordination across national boundaries.[32] In appearance, all this looked like the beginnings of a renewed effort to integrate air operations.

It was not. The Leigh-Mallory/Vandenberg pairing was designed to further delineate operations rather than conjoin national forces. Spaatz — who now led American strategic air forces in the bombing of Germany and who remained the senior administrative air commander throughout Europe — had lobbied for Vandenberg's appointment

computer generated image

On D-day, 1,200 Eighth Air Force bombers blasted Omaha Beach with a faulty plan: the planes dropped undersized bombs, and most bombardiers delayed their bomb drops over the coast anywhere from five to 30 seconds, ensuring that most ordnance fell far inland of aiming points

because Vandenberg could be trusted to safeguard 'the interests of the American component' and protect 'the operational use' of US planes. In Spaatz's scheme, Vandenberg would also become the conduit through which Spaatz might exercise de facto control over Brereton's Ninth Air Force, rendering Leigh-Mallory a nominal commander of American forces.[33] Eisenhower's tacit agreement to this bit of skullduggery eliminated any chance that the AEAF could integrate air operations across national lines. After that, air integration became only a red herring, obscuring more realistic hopes of deconflicting air operations, which became the true purpose of Leigh-Mallory's command. This objective was manifest in his command's internal structure: the US Ninth Air Force would provide support to the Americans landing in France; the British Second Tactical Air Force would concentrate on Commonwealth troops wading ashore; and the two would meet only in extraordinary circumstances. Down the chain of command, air operations were delineated further by linking specific air units to specific ground commands, a procedure that basically repudiated Coningham's ideas and the notions enshrined in FM 100-20.

The role of strategic air forces in support of Overlord complicated the whole matter of air synchronization for the Normandy campaign. Although Spaatz and Air Chief Marshal Sir Arthur Harris, commander of RAF British Bomber Command, recognized their obligations to assist in the invasion, they were deeply committed to strategic bombing and refused to cede command prerogatives to Leigh-Mallory, whom they did not trust to direct bomber forces. Since the bomber forces were attached and not assigned to Eisenhower's command, the supreme commander had to step lightly in efforts to coordinate the various air organizations. Weeks of intense negotiations and a threat to resign bought for Eisenhower an informal scheme of control centered on his deputy. "I will exert direct *supervision* of all air forces— through you", he explained to Tedder, "authorizing you to use headquarters facilities now existing to make your control effective. L M's [Leigh-Mallory's] position would not be changed so far as *assigned forces* are concerned but those *attached* for definite periods or definite jobs would not come under his *command*" (emphasis in original).[34]

Eisenhower had managed to place the strategic air forces within his orbit yet beyond the reach of Leigh-Mallory — but at a high price since this scheme left Eisenhower without a single air commander. Henceforth, the supreme commander coordinated his air operations through three clearly independent air organizations: US Strategic Air Forces in Europe, RAF Bomber Command, and the AEAF. The absence of a single air commander resulted in an air plan that integrated various invasion tasks in an uncertain and tentative manner. A mere week before the invasion, Leigh-Mallory felt obliged to remind Spaatz of the D-day targets "which it is desired you attack", recalling that "you or one of your representatives have agreed" to supply convoy cover and armed reconnaissance for the land forces. Furthermore, Leigh-Mallory understood that Spaatz had "agreed" to participate in deception operations and "weather permitting" had acquiesced to striking railroad centers in the three days prior to D-day.[35] Such language resembled treaty negotiations among sovereign entities — not military commands under unified direction.

This command setup sometimes led to ineffective performance. On D-day, 1,200 Eighth Air Force bombers blasted Omaha Beach with a faulty plan: the planes dropped undersized bombs, and most bombardiers delayed their bomb drops over the coast anywhere from five to 30 seconds, ensuring that most ordnance fell far inland of aiming points. Although many people understood that such a plan would render the bombing impotent, Overlord had no airman who could leverage command authority to change it or cancel the bombers' participation. As a result, "the immediate beach areas showed only limited evidence of bombing damage", and the strike failed to impair seriously the first line of German defenders — its professed objective.[36]

After Allied forces reached the far shore, each nation's tactical air operations worked well as long as sorties conformed to national boundaries. In the weeks after D-day, Coningham used his supernumerary authority over the tactical forces to deconflict missions, and both tactical air forces developed an awesome capacity to assist ground troops. Free from issues of national pride and prejudice, each air force concentrated on increasingly successful battlefield interdiction and CAS operations. By late June, Allied fighter-bomber effectiveness had led to a rare confluence of views at all levels of the German field command: the senior German commander in France, Field Marshal Gerd von Rundstedt, described his rear areas as a "traffic desert"; Rommel, his immediate subordinate, told Berlin "there was simply no answer" to Allied airpower in Normandy; and rank-and-file Wehrmacht soldiers took to calling Allied fighter-bombers the "most terrible weapon".[37] To anyone who cared to look, tactical air operations in Normandy gave the lie to the idea that only heavy bombers could exert a strategic influence on the course of the war.

Two young flag officers working along the seams between operational and tactical command made much of this possible. In the British zone, Air Vice-Marshal Harry Broadhurst, who commanded the No 83 Group within Coningham's air force, was instrumental in smoothing air-ground relationships that had soured among Commonwealth commanders. Leigh-Mallory, who

Canadian troops who had marked their positions with red smoke were bombed by American aircraft because in the US scheme, such a signal denoted enemy targets

never gained the confidence of fellow air leaders, felt that Tedder and Coningham often bypassed him in a conspiracy to deny the British Army the air support it deserved. That perception was a stretch, but Overlord's convoluted air setup made it difficult to keep strict faith with the chain of command, even within a national sector. For his part, Montgomery, who now commanded the 21st Army Group, sometimes blamed poor air support for his troops' sluggish pace of advance, eventually concluding that Coningham was "a bad man [and] not genuine and terribly jealous". In Montgomery's view, all this bickering usually came to naught, but not before "several hours a day are wasted in argument with the opposing camps, and in ensuring that the air jealousies do not lose us the battle".[38] More often than not, it fell to Broadhurst to smooth over these quarrels. A fighter pilot of great experience, Broadhurst "earned the affection and respect of all" with whom he worked. He was as responsible as anyone for the effective marrying of air and ground operations in the British sector.[39]

Maj Gen Elwood R. 'Pete' Quesada was Broadhurst's analog along the American front. Like Coningham, he had come to the European fighting with an open mind about airpower's place in war. Once there, he fostered myriad innovations in tactical aviation, including the development of armored-column cover that aided Patton's breathtaking pursuit of retreating Germans in August. Like Broadhurst, Quesada nurtured good relations with ground commanders. Lt Gen Omar Bradley, the senior American ground soldier in Normandy, believed that Quesada was a 'jewel' and others agreed: "Nothing conventional about Quesada", remembered one soldier. "When he talks power, he means everything but the kitchen sink". Three weeks into the Normandy fighting, the consensus within the American Army in Normandy was that "Quesada was a fine unpretentious field soldier who has done more than anyone else to bring air and ground closer together in this operation".[40]

Broadhurst and Quesada were responsible for one of the very few instances of effective air integration in Normandy. In early August 1944, as Patton raced into Brittany, the Germans nearly cut his supply lines at Arromanches. Reacting to the emergency, Broadhurst and Quesada devised a plan whereby British Typhoons interdicted German armored columns and American P-47s provided close support to US troops suddenly surrounded near the small town of Mortain. Together with dogged determination from the soldiers, Allied fighter-bombers succeeded in safeguarding Patton's communications. Looking back, Coningham believed that the battle constituted one of the war's best examples of tactical aviation: "It proved that a Tactical Air Force may be a decisive battle-winning factor, and it showed the smooth coordination of air effort which could be achieved at short notice by the teamwork which had been perfected between the 9th Air Force and the 2nd [Tactical Air Force]."[41]

Yet the battle at Mortain represented an emergency demanding an Allied reaction; in battles of their own choosing, the Anglo-Americans rarely integrated their tactical air forces in Western Europe. This neglect sometimes had disastrous consequences. In the middle of August, the Allies tried to bag a large salient of German forces near Falaise. Tightening the noose around the Germans required Patton's force to swing around and come up against Montgomery's Commonwealth troops, a delicate move that flirted with fratricide on a large scale. Because Anglo-American pilots had worked side by side rather than together, the British and American CAS schemes were different enough to court tragedy as the Allies closed on each other. On 16 August, Canadian troops who had marked their positions with red smoke were bombed by American aircraft because in the US scheme, such a signal denoted enemy targets. Two days later, a British unit reported 40 instances of accidental attacks by American flyers. With no effective integration of air forces, the Allies proved incapable of pressing the air battle into the salient. Partly for this reason, Allied leaders called off attempts to cut retreat routes and capture the Germans. As a result, nearly 100,000 enemy soldiers escaped to fight another day.

Integrated aviation could have mitigated this debacle by blurring the seam between national boundaries. Instead, air operations based on deconfliction made airpower as sensitive to army boundaries as ground combat, and the potential

A USAF Phantom over Vietnam

In Korea and Vietnam, the Air Force, Navy, and Marine Corps divvied airspace among them in a manner that denied airpower's flexibility

for mistaken killing in the air became as great as that from friendly fire across infantry units — in this case, more real. After the war, Coningham deemed it "unfortunate that a national Army Group boundary coincided with the pocket".[42] But failure at Falaise was not so much a matter of fortune as design. Air leaders codified their operations along national lines, just as the soldiers had done, in a misguided attempt to provide effective close support. In the process, pilots made airpower more — not less — like ground power, robbing the joint and combined campaign of the synergy that overlapping instruments of war can bring to the battlefield.

The Allies never did fix this problem in World War II. Instances of close cooperation occurred, as during missions supporting Operation Market Garden or during the Battle of the Bulge, when Montgomery took command of an entire American army and its supporting air forces. But these were either failures or emergencies — sometimes both. As a matter of method and design, the Anglo-Americans hewed to the belief that separating tactical air forces along national lines best leveraged airpower. Throughout the war, the Allies never had a mechanism by which the broad and varied activity of an air campaign was centrally conceived, planned, executed, and assessed. The RAF's official historian believed that the air setup in place demonstrated "the weakness of the committee technique".[43] According to official American chroniclers, the system worked "not so much because of its structure as because of the good sense and proper spirit of top British and American commanders".[44]

Conclusion

This view is overly sympathetic. Certainly, tactical aviation was important to Allied success in World War II — it is hard to imagine victory without it. Still, air operations in support of ground forces could have been better, especially when circumstances required operating across national boundaries. Perhaps this amounts to quibbling with success, but nations with traditions of military victory must nitpick if they hope to learn from the past.

Unfortunately, in the case of tactical air operations, neither country did so in the years following World War II. The emergent Cold War put a premium on strategic airpower and consigned practitioners of tactical aviation to backwater commands. In Britain the Air Ministry made Coningham head of RAF Flying Training Command, a move that many commentators found curious. Opined the *London News Chronicle*, "One of the greatest air generals Britain has produced is being relegated to a comparatively minor command and will not have a voice on the Air Council" — the RAF's policy body.[45] In the United States, Pete Quesada held a succession of gratuitous, dead-end jobs after a brief stint leading Tactical Air Command. He finally resigned his commission in frustration after the newly independent Air Force assigned him the suicidal task of folding the Air National Guard and Air Reserves into one organization.

Throughout much of the Cold War, the air forces in Britain and America hewed fast to the idea of deconfliction in air operations. For the United States, this inclination extended to joint as well as combined operations. In Korea and Vietnam, the Air Force, Navy, and Marine Corps divvied airspace among them in a manner that denied airpower's flexibility. More recently, technology promises both to enable and deny integrated operations: the digital battlespace potentially makes air operations more malleable by making airspace more seamless, but the technological divide between prospective coalition partners fosters an enduring practice of nation-specific air tasking orders in the manner of World War II's Redline.

Today, it is commonplace to proclaim airpower's inherent adaptability in war, and flexibility and versatility are ubiquitous in descriptions of airpower. But the history of tactical air operations in World War II suggests that this elasticity is not intrinsic to airpower — even as it is undeniably one of aviation's great capacities. Flexibility and versatility do not reside naturally or inherently in air operations. They must be nurtured within sound C2 arrangements, appropriate organizational forms, relevant concepts of operations, and suitable applications of technology. Airpower has great adaptive facility, but it is not innately adaptive. That connection must be made purposefully.

Notes

1 Both US Air Force and British Royal Air Force doctrine use these terms. In the American view, flexibility and versatility are fundamental 'tenets of airpower'; for the British, they are 'enduring factors' of military aviation. Air Force Doctrine Document (AFDD) 1, Air Force Basic Doctrine, 17 November 2003, iii; and AP3000, British Air Power Doctrine, 3rd ed, 1999, 1.2.3-1.2.4

2 Generally, in this article tactical aviation refers to air operations in support of ground forces, a definition common in the 1930s and 1940s. Specifically, the article concerns itself with close air support and interdiction missions — less so with airborne, troop-transport, air-supply, and reconnaissance operations.

3 John Kennedy, The Business of War: The War Narrative of Major-General Sir John Kennedy, ed. Bernard Fergusson (London: Hutchinson, 1957), 107; and memorandum for record, 21 November 1939, Air 35/214, Public Record Office, Kew, England (hereafter PRO).

4 Arnold cited in Lee Kennett, Developments to 1939, in Case Studies in the Development of Close Air Support, ed Benjamin Franklin Cooling (Washington, DC: Office of Air Force History, 1990), 48. The US Army Air Corps also largely ignored the US Marine Corps's rich and varied experience with air support in Nicaragua during the interwar period.

5 Arthur Coningham, The Development of Tactical Air Forces, Royal United Services Institute for Defence Studies (RUSI) Journal 91 (1946): 212.

6 Will Jacobs, Air Support for the British Army, 1939-1943, Military Affairs, December 1982, 174.

7 Both versions of WDTR 440-15 cited in Frank Futrell, Ideas, Concepts, Doctrine: Basic Thinking in the United Sates Air Force, vol 1, 1907-1960 (Maxwell AFB, AL: Air University Press, 1989), 41, 77. Similarly, the last peacetime version of Field Manual (FM) 1-5, Employment of Aviation of the Army, 15 April 1940, stressed

operations designed to "defeat important elements of the enemy armed forces" (quoted in Col Phillip S. Meilinger, USAF, retired, Airpower: Myths and Facts [Maxwell AFB, AL: Air University Press, 2003], 19. For a close explication of prewar US Army doctrine relating to aerial operations, see Daniel R. Mortensen, A Pattern for Joint Operations: World War II Close Air Support, North Africa (Washington, DC: Office of Air Force History and US Army Center of Military History, 1987).
8 Churchill cited in Will Jacobs, Air Support for the British Army, 1939-1943, Military Affairs, December 1982, 179.
9 Mortensen, Pattern for Joint Operations, 7, 20.
10 Vincent Orange, Coningham: A Biography of Air Marshal Sir Arthur Coningham (Washington, DC: Center for Air Force History, 1992), 34.
11 Coningham, Development of Tactical Air Forces, 213.
12 Ibid.
13 Ibid, 215.
14 Orange, Coningham, 134.
15 Mortensen, Pattern for Joint Operations, 63.
16 Ibid, 50.
17 Notes on Africa, photo album, box 1722, Hugh Lloyd Papers, RAF Museum, Hendon, England.
18 Thomas Alexander Hughes, Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II (New York: Free Press, 1995), 94.
19 Mortensen, Pattern for Joint Operations, 78.
20 FM 100-20, Command and Employment of Air Power, 21 July 1943, 3.
21 William Momyer, Air Power in Three Wars (Washington, DC: Department of the Air Force, 1978), 10.
22 Wesley Frank Craven and James Lea Cate, eds, The Army Air Forces in World War II, vol 2, Europe: Torch to Pointblank, August 1942 to December 1943 (1949; new imprint, Washington, DC: Office of Air Force History, 1983), 444.
23 Martin Blumenson, The Patton Papers, vol 2 (Boston: Houghton Mifflin, 1972-1974), 254.
24 Alfred D. Chandler Jr et al, eds, The Papers of Dwight David Eisenhower, vol. 2, Eisenhower to Marshall, July 18, 1943 (Baltimore: Johns Hopkins University Press, 1970), 1263-64.
25 Notes on Africa. See also Hughes, Over Lord, 87-94; and Minutes of the Air Officer Commanding, Northwest African Coastal Air Force, nd, Air 24/1239, PRO.
26 Chandler et al, eds, Papers of Dwight David Eisenhower, vol. 2, Eisenhower to Marshall, 1263-64.
27 Spaatz cited in Richard G Davis, Carl A Spaatz and the Air War in Europe (Washington, DC: Smithsonian Institution Press, 1992), 248.
28 Ibid.
29 Orange, Coningham, 166-68.
30 Ibid, 165.
31 Coningham, Development of Tactical Air Forces, 216.
32 Orange, Coningham, 187.
33 Davis, Carl A. Spaatz, 355.
34 Alfred D Chandler Jr et al, eds, Papers of Dwight David Eisenhower, vol 3, Eisenhower to Tedder, 29 February 1944 (Baltimore: Johns Hopkins University Press, 1970), 1755-56.
35 Leigh-Mallory to Spaatz, letter, 1 June 1944, US Air Force Historical Research Agency, Maxwell AFB, AL (hereafter AFHRA), 521.451, June 1944.
36 After-Action Report, Eighth Air Force: Tactical Operations in Support of Allied Landings in Normandy, 2 June-17 June 1944, 9, AFHRA, 521.451, June 1944. This and the preceding three paragraphs are drawn largely from Dr. Thomas Alexander Hughes, Normandy: A Modern Air Campaign? Air and Space Power Journal 17, no. 4 (Winter 2003): 16-29.
37 Rundstedt cited in POW Interviews, Rundstedt, 20 May 1945, Sheffield Edwards Papers, US Army Military History Institute, Carlisle Barracks, PA; others cited in Hughes, Over Lord, 151.
38 Montgomery cited in Nigel Hamilton, Master of the Battlefield: Monty's War Years, 1942-1944 (New York: McGraw-Hill, 1983), 692-93.
39 Max Hastings, Overlord: D-Day and the Battle for Normandy, 1944 (New York: Simon and Schuster, 1984), 271.
40 All cited in Hughes, Over Lord, 157.
41 Coningham cited in Orange, Coningham, 208.
42 Coningham, Development of Tactical Air Forces, 216.
43 Hilary St George Saunders, The Royal Air Force, 1939-1945, vol 3, The Fight Is Won (London: Her Majesty's Stationery Office, 1954), 82.
44 Wesley Frank Craven and James Lea Cate, eds, The Army Air Forces in World War II, vol 3, Europe: Argument to V-E Day, January 1944 to May 1945 (1951; new imprint, Washington, DC: Office of Air Force History, 1983), 83.
45 London News Chronicle, 31 July 1945, cited in Orange, Coningham, 240.