

Allied Airpower Comes of Age: The Roles and Contributions of Air Power to the Italian Campaign

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*"The eventual success of the Allied air forces ... rested on two major developments. The first was the development of a sound doctrine of how to win and hold air superiority. The second was in developing a satisfactory system of co-operation both between the Allies and between services."*¹

*"The Mediterranean theatre has been the primary crucible for the development of tactical air-power and the evolution of joint command between Allies."*²

Lt. Gen. Ira C. Eaker, USAAF, commander of the Mediterranean Allied Air Forces (MAAF)

The Italian campaign of World War II remains controversial almost 60 years later regarding its strategic significance, operational effectiveness, and tactical difficulties. Despite this debate, many of the assumptions used in planning modern joint and combined military operations have their foundations in the Italian campaign, especially the roles and contributions of airpower to joint warfighting. Although the American and British air forces developed airpower doctrine throughout the inter-war years, it was in the inferno of Italy this doctrine evolved into workable realities that significantly contributed to eventual victory. Indeed, the general pattern of airpower application in use today was developed, tested, and refined by the Allies in the life and death struggle for Sicily and the Italian mainland. As the US Air Force historian Richard Hallion elaborated, "The Italian campaign was characterized by a range of air support operations that were to become commonplace in subsequent fighting elsewhere."³ Airpower played 4 main roles in the Allied Mediterranean strategy, as described by Air Vice Marshal J. H. D'Albiac, the Deputy Commander of the Tactical Air Forces in Italy in 1945. They were: air superiority, interdiction, close air support (CAS), and strategic bombing.⁴ This essay will analyze the fight for air superiority during Operation HUSKY (the invasion of Sicily) and the subsequent impact of the ability of Allied airpower to contribute to the land offensives. It will then examine Allied interdiction operations in 1943-1944; specifically, through airpower's efforts to interdict the German evacuation of Sicily, to delay the German counterattacks during Operations AVALANCHE (the invasion at Salerno) and SHINGLE (the invasion at Anzio), and then to deny German freedom to maneuver during Operations STRANGLE and DIADEM. It will subsequently evaluate the CAS innovations developed by the Allies in Italy, and finally consider the strategic bombing effort launched from the Italian mainland.

Air Superiority

The Italian campaign illustrated the requirement for armies to have air superiority in order to conduct successful offensive ground operations yet also showed air superiority does not guarantee success on the ground. Incorporating lessons learned in North Africa, Allied commanders understood the first priority for air forces was gaining air superiority. The 33rd USAAF Fighter Group commander acknowledged, "The first priority of our air strategy was to gain control of the air. Then we concentrated our efforts on isolating the battlefield and providing close air support. This air strategy provided flexibility to the Allied armies in their ground

campaigns and guaranteed a minimum of interference from the German Air Force."⁵ Although the Allies achieved air superiority quicker in the Mediterranean than in North-West Europe, the struggle for air superiority over Italy required significant effort. In July 1943, there were 1850 Axis aircraft in Sicily and Italy, while the Allies had 4920 (2900 fighters or bombers). During the battle for Sicily, the Axis lost 740 aircraft in aerial battles and another 1100 on the ground. By 1 April 1945 the Luftwaffe had 147 serviceable aircraft while the MAAF had 12,482 aircraft in theater (4393 front-line aircraft).⁶ Instead of conceding the struggle for air superiority, however, the Axis used robust anti-aircraft artillery (AAA) defenses to counter Allied numerical aircraft superiority. During 1944, AAA destroyed 713 Allied aircraft, prompting the truism that air superiority involves "more than just shiny aeroplanes."⁷ While the struggle for air superiority was a continual process, Allied success during HUSKY wrested "the initiative in the air [from the Germans, who were] never, except locally in the Aegean for a short pause, to regain it in the Mediterranean."⁸

The Allied preparations for and invasion of Sicily reveal a determined Allied effort to defeat the Axis air forces. Prior to invading Sicily, the Allies needed to 'reduce' two smaller islands, Pantellaria and Lampedusa. From 18 May to 11 June 1943, concentrated air attacks and naval gunfire on Pantellaria resulted in the island surrendering *before* amphibious forces reached the shore. When the Allies switched the air effort to Lampedusa, it "surrendered as soon as it could establish contact with [the Allies], and it was known afterwards that it had been wishing to surrender before the attack commenced."⁹ These successes showed airpower's potential, yet they possibly also contributed to unrealistic expectations of airpower's role later in the Italian campaign. With the air assault on Sicily the Allies prevented any Axis reconnaissance aircraft from discovering the invasion force of 2,800 ships, thus giving the Allies "complete tactical surprise."¹⁰ Allied commanders expected to lose around 300 ships to air attacks, but Axis air forces sank only 12 ships due to Allied air superiority. Because of the primacy of air superiority, when the invasion forces assaulted Sicily on 10 July 1943 the Allies directed the air effort to establishing air supremacy as quickly as possible, leaving no sorties available for CAS for the Seventh Army for the first 48 hours.¹¹ Axis air forces flew 275-300 sorties per day in the first two days of the invasion but thereafter only flew 150 sorties per day.¹² By contrast, the capture of airfields on Sicily on 10 July allowed the Allied air forces to fly up to 1200 sorties per day,¹³ providing protection and support of the land forces.

The air superiority contest in the skies over Sicily reveals three lessons applicable to airpower today. First, as Generalmajor Hubertus Hitschold, the Luftwaffe's last General der Schlachtflieger, reflected, "The prerequisite for successful and lasting operations of ground attack units is air superiority."¹⁴ With air superiority after Sicily, the Allies were able to use airpower primarily to support land forces. Second, Sicily showed air superiority does not guarantee successful land operations. Despite Allied air superiority, the German Army's characteristic of "resolution in adversity" allowed it to fight delaying actions, successfully extending the battle for Sicily.¹⁵ Subsequent operations on the Italian mainland would further prove the ability of a determined army on the defensive to continue fighting regardless of air interdiction, much like the Viet Cong would during Operation ROLLING THUNDER. Conversely, Sicily also provided the first indication of what would be born out in the rest of the Italian campaign; that modern armies cannot win without air superiority. The Germans would

continue to learn this devastating lesson throughout the Italian and North-west Europe campaigns, as would the Iraqi army during the Gulf War of 1991.

Interdiction

"That was the only hostile aircraft I saw in eighteen months ... Our armies simply ploughed up Italy in nose-to-tail convoys. Had the Germans been able to allocate one-quarter of their air resources to the close cooperation with their army that they had previously, the Italian campaign would have been a great deal tougher even than it was."¹⁶
Sir Michael Howard

"Unremitting Allied fighter-bomber activity makes movement or troop deployment almost impossible ... fighter-bombers maintain constant patrol over all roads ... daytime movement is paralysed"¹⁷ German 10th Army War Diary, May 1944

After gaining air superiority, the Allies were able to dedicate a significant portion of their air assets to interdicting German lines of communication. One author defined the purpose of interdiction as preventing "men, equipment, and supplies from reaching a place of combat when the enemy needs them and in the quantities he requires."¹⁸ The mixed results of Allied efforts to interdict the Axis armies during the Italian campaign are seen in the Axis evacuation from Sicily at Messina, the Allied invasions of Salerno and Anzio, and Operations STRANGLE and DIADEM. Producing less than anticipated effects, these operations reveal a lack of effective joint planning as a common theme of these interdiction campaigns.

The successful Axis evacuation of Sicily across the Straits of Messina is sometimes viewed as a failure of interdiction, but it should primarily be viewed as a failure of joint planning and leadership. Allied planning effort focused on securing the beachhead, with a dearth of planning for follow-on operations to conclude the campaign. General Alexander, the Allied commander in the Mediterranean, told his air and naval component commanders on 3 August 1943, "Indications suggest that the Germans are making preparations for withdrawal to the mainland ... We must be in a position to take immediate advantage of such a situation by using full weight of the Naval and Air Power. You have no doubt co-ordinated plans to meet this contingency."¹⁹ In fact, they had *not* made plans to prevent the German evacuation, nor did they after this 'suggestion.' The Axis armies would successfully evacuate Sicily due to "the failure of the Allied commanders to view the interdiction of a German retreat from the island as a fundamental strategic requirement that had to be integrated into the plans of all three services."²⁰ The difficult terrain around Messina allowed small numbers of soldiers to hold the advance of Allied Armies during the evacuation, and the Navy had legitimate concerns about mines and shore batteries while operating in the Straits of Messina. The resulting reliance upon airpower *alone* to prevent the evacuation did not consider the 150 x 88mm and 333 x 20mm Axis AAA pieces along the straits.²¹ On 1 August, Air Vice Marshal Arthur Coningham (Commander of the Tactical Air Forces) informed Air Chief Marshal Arthur Tedder (MAAF Commander), "The Messina area 'flak' was now practically prohibitive for all aircraft except the heavy bombers."²² Although AAA shot down only 3-5 aircraft, it damaged 28 of 96 (29%) of the bombers on 15 August and 44 of 96 (45%) on 16 August, plus over 30 fighter-bombers.²³

Coningham's release of the Strategic Air Forces from the commitment to attack the evacuation beaches also shares responsibility for the failure to interdict the evacuation.²⁴ He released the bombers to hit the backlog of strategic targets and to start preparations for invasion of Italy. When the evacuation was detected, however, it was too late to request the bombers, as they had just attacked Rome. Furthermore, the Strategic Air Forces were busy preparing to receive B-17s from England following the Schweinfurt-Regensburg mission of 17 August.²⁵ However, even if Coningham had used the bombers, airpower *alone* could not prevent the German evacuation. The results were a successful evacuation of 38,846 German soldiers, 10,356 vehicles, and 14,949 tons of supplies and an Italian evacuation of 62,000 soldiers, 277 vehicles, and 41 artillery pieces.²⁶ The escape of the Axis armies meant the Allies would fight these soldiers on mainland Italy, extending the duration and increasing the cost of the Italian campaign. If the Allies had countered the evacuation through a joint plan, the successful interdiction of the Axis armies may have been the 'Stalingrad' of the Italian campaign.

Allied interdiction efforts during Operation AVALANCE, the invasion at Salerno on 9 September 1943, had mixed results. Joint planning problems still plagued the Allies, specifically planning to invade beaches near the maximum range of their fighters. Interdiction's objective was to prevent the Germans from concentrating their forces faster than the Allies could land theirs.²⁷ To do this, however, required continual Allied air attacks on German lines of communication. The distance of the airfields in Sicily presented a "grave obstacle," since covering the landings with single-engined fighters would be "difficult to provide."²⁸ Notwithstanding the use of Spitfires and P-38s with long-range fuel tanks and Navy Seafires from carriers, Allied airpower could only provide, on the average, 54 aircraft over the Gulf of Salerno at any time during the first few days.²⁹ Even with air-to-air refuelling today, long distances from airfields to the battlespace means more assets are required to support land forces.

When the Allies landed at Salerno, the Germans responded immediately. Allied air interdiction, however, hindered their efforts to swiftly push the invasion forces back into the sea. For instance, the 29th Panzer Grenadier Division entered combat near Salerno on 12 September 1943, but they had expected to reach the battlefield on the night of 9-10 September. Attributed by Generalfeldmarschall Albert Kesselring's (commander of German forces in Italy) headquarters to "the interference with road and rail transport ... brought about by the Allied air forces," fuel shortages immobilized the division.³⁰ Afterwards, German General von Vietinghoff, 10th Army Commander, said the delay of LXXVI Panzer Corps was "perhaps decisive" to the outcome of the battle.³¹ When these forces started arriving, the Allied armies called for all available support. As a result,

Almost the entire strength of the Allied air forces—heavy bombers, medium bombers, fighter-bombers and strafing fighters—carried out a mass bombardment of the communications behind the enemy lines and the German troop concentrations. ... The most critical day on the ground, 14th September, was also the day of the greatest air effort. The Luftwaffe was able to put up almost no opposition by then and the German troops had to take, day and night, the full bombing strength which we could bring to bear.³²

Figure 1 shows the surge of Allied sorties on 14 September, attributable mainly to the capture of airfields near the beaches that allowed aircraft to be located near the battle. During this aerial flood, the Germans experienced the difficulty of concentrating land forces without air superiority; the Allies, however, seemed to

learn airpower alone could protect invasion forces from counter-attack. This belief would prove costly during Operation SHINGLE.

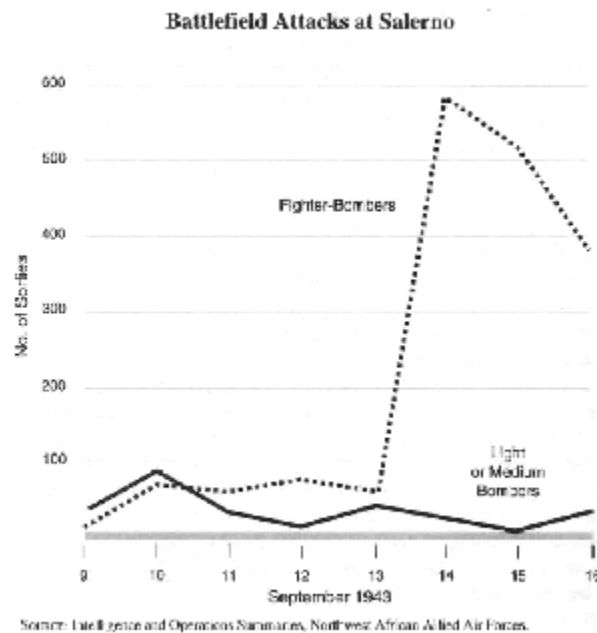


Figure 1. Allied Battlefield Attacks at Salerno³³

Allied planners for Operation SHINGLE, the invasion of Anzio on 22 January 1944, expected airpower would delay German reinforcements from reaching the beachhead. In fact, General Alexander's Allied Force Headquarters counted on airpower *alone* to slow the movements of the 29th and the 90th Panzer Grenadier Divisions, in reserve near Rome, making them unable to effectively oppose the SHINGLE landing.³⁴ Major General Wolf Hauser, the German 14th Army Chief of Staff, believed the Allies "had not reckoned on meeting resistance from more than advanced German units" because they had "relied too much on the effectiveness of their air attacks on railways."³⁵ Instead of being a failure of airpower's capabilities, SHINGLE's failure reflected inadequate operational research. Allied intelligence estimated German static divisions needed 4,000 tons of supplies daily, meaning the railroads could meet the 10th Army's logistical requirements functioning at only 5% capacity!³⁶ In addition, during the German build-up at Anzio from 24 January to 4 February, the Germans re-opened marshalling yards in 1-3 days, whereas the average interval between Allied air attacks on marshalling yards was 12.2 days.³⁷

While unable to prevent German reserves from reaching the Anzio beachhead, interdiction did logistically constrain the German army. Attacks on bridges and marshalling yards forced German railheads back from the front, straining the inadequate motor transport. Further, strafing fighters roaming behind the

battlefield during daylight hours obliged German convoys to travel at night, effectively doubling motor transport requirements.³⁸ Simultaneous with the Anzio invasion, the Allied offensive at Cassino increased demands on the German supply system. The result of interdiction combined with this increased demand was "logistical constriction, the chief manifestation of which was a critical shortage of artillery ammunition."³⁹ At Anzio, the Germans estimated they fired one artillery round for 12-15 Allied shells.⁴⁰ The reduced artillery support, along with a complete lack of CAS, gave the Allies enough breathing room to survive at Anzio and Cassino.

The Allied air interdiction campaign from 19 March to 10 May 1944, Operation STRANGLE, represented an unrealistic enthusiasm of airpower capabilities based on its prior successes. Attempting to break the stalemate in Italy *solely* through airpower, STRANGLE's objective was to force a German withdrawal by interdicting supply lines, inflicting shortages, thus leading "to a contraction of the German war machine."⁴¹ Although STRANGLE had some success, its biggest failure was in operational research and intelligence. First, the Allies overestimated airpower's impact on German railroads. The Germans were building locomotives so fast they could throw them away at the end of each trip; neither were they short of rolling stock with an estimated 2,000,000 cars on the continent.⁴² In addition, the Allies miscalculated German logistic requirements, estimating they required 4,500 tons of supplies daily (7% of normal railway capacity). Since the Germans were defending static positions, however, they only needed 1,350 tons daily (1-2% of peacetime railway capability).⁴³ In the first week of the operation, Allied air attacks on railroads successfully reduced daily capacity from 80,000 to 4,000 tons.⁴⁴ This reduction of logistic support did not force a German retreat, but it prevented the re-supply of consumed supplies and the stockpiling of fuel and ammunition to counter the Allied spring offensive, DIADEM.⁴⁵

As a result, STRANGLE "contributed immeasurably to the defeat of the German armies by denying them the tactical mobility which was essential."⁴⁶ In response to Allied interdiction, the Germans ordered all supply columns after 5 April to move only at night, meaning convoys could no longer make round trips in one day.⁴⁷ Subsequently, Kesselring's headquarters reported in May 1944, "In the face of Allied air superiority it was impossible to make any computation of the time factor in movements."⁴⁸ A lack of joint planning, however, precluded STRANGLE from conclusively constraining the German forces. Ironically, in a reversal of normal criticisms, General Eaker complained in a 7 April 1944 letter to General 'Hap' Arnold, USAAF Commander, "Actually, what we now need more than anything is some Army support ... What we ask the Army to do is to put enough pressure on the enemy to force him to discharge some ammunition and further reduce his reserve."⁴⁹ Air Marshal Slessor (MAAF Deputy Commander), in a 16 April letter to Air Chief Marshal Portal (Chief of the Air Staff), stated, "We have now made it impossible for the Hun to act offensively, as he did against the [Anzio] beachhead in February. But we have not yet succeeded in making him pull out, and I don't think we shall by air action alone: what we

have done ... is to make it impossible for him to resist successfully a determined and sustained offensive by the ground forces."⁵⁰ Operation DIADEM attempted such a decisive joint air-ground offensive.

From 11 May to 10 June 1944, the Allied joint air-ground offensive called Operation DIADEM aimed at ending the stalemate in Italy and recapturing Rome. DIADEM's key difference from STRANGLE was the synchronization of air and ground offensives.⁵¹ This combination aimed to limit German freedom to maneuver by creating ammunition and fuel shortages. Between 12 and 25 May 1944, 10th Army expended 7,499 tons of ammunition but received only 3,818 tons of re-supply.⁵² By 6 June, fuel shortages allowed the German Army to only move short distances before stopping to wait re-supply.⁵³ Despite Allied air supremacy, the German Army was occasionally forced to move in daylight. In one instance at the end of May 1944, the Hermann Goering Division moved toward the Anzio beachhead. General von Greffenberg, the Division Commander, stated ruthless air attacks during its journey to the front between 23 and 27 May made his division arrive piecemeal and with only 18 of its 60 tanks. Most of the tank losses were likely due to increased wear and tear from making long detours and shortages of spare parts and fuel. Consequently, only 8-10 tanks were serviceable at any one time, and they had negligible effect on the battle.⁵⁴ Notwithstanding such limitations, German logistics were not put in crisis because the Allied assault along a narrow front. This allowed German concentration of motor transport assets to the critical section of the front⁵⁵ and prevented whole-scale collapse of their lines, in contrast to that experienced during the broad-front Allied offensives into Germany.

Although interdiction matured during the Italian campaign, it did not make the Germans withdraw but instead denied the German Army essential freedom to maneuver. Operation STRANGLE's failure to force a German withdrawal "proved the necessity of closely integrating any interdiction attempt with ground operations."⁵⁶ As ground offensives force enemy armies to maneuver and consume fuel, ammunition, and spare parts, interdiction becomes increasingly effective. As German General von Senger und Etterlin, the commander of XIV Panzer Corps, bitterly observed, "In a battle of movement a commander who can only make the tactically essential movements by night resembles a chess player who for three moves of his opponent has the right to make only one."⁵⁷ The Allied interdiction campaigns in Italy laid the foundations of the successful joint operations of North-west Europe, but these principles were soon forgotten in interdiction campaigns in Korea and Vietnam.

CAS

Like many airpower roles, close air support also came of age in the Italian campaign. Several aspects of CAS taken for granted in modern air forces were developed in the mud and skies of Italy. The Allies experienced problems in air-ground coordination, communications, and identification of friendlies, but also

implemented several solutions that survive in today's battlespace. One solution was a daily meeting between Army and Air Force staffs to review the day's activities and the Army representatives would nominate the targets they wanted to have attacked the next day.⁵⁸ This meeting was the forerunner of today's Joint Coordination Board, at which similar issues are still discussed. Another solution was "prearranged CAS" sorties, missions over the next 24 hours initiated at division level (brigade level for the British). These requests made their way to a joint army-air force group that created an air program (now called an Air Tasking Order, or ATO) conforming to the army's overall tactical plan.⁵⁹ In addition, some fighter-bomber squadrons were reserved for "Call Missions" which took into "account changes in the battle situation that favored attacks against targets of opportunity."⁶⁰ Two further CAS developments forged in Italy were the Rover system and 'Horsefly.'

The Rover system significantly improved CAS effectiveness and army-air force cooperation. Named Rover David and Rover Paddy (after 2 fighter pilots and originators of the idea) for the RAF and Rover Joe (as in G.I. Joe) for the USAAF,⁶¹ it was the pioneer of today's FACs (Forward Air Controllers). The Rover system paired air controllers and army liaison officers to 'rove' the battlefield calling fighter-bombers to attack targets of opportunity.⁶² To respond to these CAS requests, fighters were 'Cabranked,' whereby flights of aircraft arrived at 30-minute intervals. Prior to take-off, the fighter-bomber pilots planned for alternate targets they would attack if they received no call after 20 minutes on-station. If, however, the Rover had a suitable target, he would talk the flight onto the target through grid coordinates, terrain description, and artillery-fired colored smoke.⁶³ The only noticeable change in today's CAS missions in Afghanistan is the use of technology (specifically, Global Positioning Satellite (GPS) and laser-designation) to mark targets. Operational Analysis of fighter-bomber support for British V Corps operations in Italy between October and December 1944 showed 100 fighter-bomber attacks (equal to about 500 sorties) equated to 60-90 fewer troops killed and 200-300 fewer wounded by German artillery shellfire. The cost to the RAF was 2.6 pilots killed or missing, 0.3 pilots injured, and 4.5 aircraft lost.⁶⁴ Sufficient CAS, then, can help win battles and save friendly soldiers' lives. This level of CAS support, however, is only possible with air superiority, as previously discussed.

Another innovation in Italy that improved Allied CAS effectiveness was 'Horsefly,' a precursor of today's Airborne FACs. An artillery spotter pilot flying a Piper L-5 'Grasshopper' suggested the concept for 'Horsefly' when he realized an L-5 could also "direct fighter-bombers onto a target when artillery was unavailable to mark the target with smoke shells."⁶⁵ Accordingly, fighter-bomber pilots on assignment with the Corps flew modified L-5s as Airborne FACs. Each L-5 also carried "an infantry observer to help distinguish friendly from enemy forces, and if operating with armored forces, would carry an observer expert in identifying friendly and enemy armor."⁶⁶ Ranging as far as 15-20 miles behind enemy lines, 'Horsefly' FACs marked their targets by dropping small smoke

bombs. Indeed, the 'Horsefly' FACs of the Italian campaign "may be considered the predecessors of the Mosquito FACs of Korea, who, in turn, anticipated the FACs of Southeast Asia,"⁶⁷ and the OA-10 FACs over Iraq, Kosovo, and Afghanistan.

While the Italian campaign produced many CAS innovations that still apply in today's complex battlespace, it also confirmed ideas fundamental for maximizing joint synergies. The sophisticated Allied CAS systems and procedures greatly enhanced air-ground cooperation, but they could not substitute for hard fighting on the ground. Conversely, a modern army cannot single-handedly defeat an enemy army, especially a well-organized, disciplined army fighting in difficult terrain. Undeniably then, air and ground forces needed to cooperate during the Italian campaign, and they need each other's capabilities even more to effectively fight today's wars.

Strategic Bombing

The ground campaign in Italy resulted in the capture of airfields crucial to the Allied strategic bombing efforts. Airfields near Foggia allowed Allied heavy bombers to attack targets previously too distant to hit. With these airfields, "in November, 1943, the big two-way bombing of Germany's war production started. ... [T]he damage inflicted on such targets as the Ploesti oilfields, the aircraft factories at Augsburg and Klagenfurt, the ball-bearing and other factories in northern Italy and southern France, and many marshalling yards in Germany and her satellites have been a very real and important contribution towards victory and shortening the length of the War."⁶⁸ Although the army viewed the heavy bombers as a logistical strain,⁶⁹ strategic bombing against Axis oil production caused a severe shortage of fuel for the Germans in 1945. Further, the Italian campaign showed the need for shrewd apportionment of heavy bomber sorties when confronted with army requests for heavy bombers for CAS. Despite the failure of the ground offensives at Cassino, bombers could be effective in CAS if the army rapidly followed up the air strike with a ground attack.⁷⁰ However, this coordination proved difficult in World War II due to technological limitations in communications and accuracy. With today's technology of GPS-guided bombs, this coordination is still subject to the 'fog of war' and human error, as seen in tragic fratricides in Iraq and Afghanistan. Air Chief Marshal Sir Arthur Tedder, commander of the MAAF and later Deputy Supreme Allied Commander Europe, compared the British Army's continual requests for heavy bomber support to "having been drugged with bombs, [and] it is going to be a difficult process to cure the drug addicts."⁷¹

Conclusion

The Allied experiences in Italy were fertile proving grounds for the maturation of airpower. Airpower's roles in today's joint campaigns (air superiority, interdiction, CAS, and strategic bombing) were refined during this struggle, and

many of the procedures and systems cultivated in Italy still exist in doctrine manuals and tactics pamphlets used in Air Forces throughout the world. First, the invasion of Sicily, as well as the rest of the Italian campaign, underlined the essential requirement for air superiority. As the NATO air forces relearned in the skies over Serbia during 1999's Operation ALLIED FORCE, the air superiority struggle requires a continual effort, a significant allocation of resources, and consideration beyond 'shiny airplanes' in order to be successful. Gaining air superiority also requires joint synergy, as the Allied air forces in the Italian campaign required the capture of airfields in order to provide more sorties to support the land offensives. In fact, John Terraine called the entire African campaign and the invasion of Sicily a "war for aerodromes."⁷² Interdiction operations in Italy established the need for appropriate intelligence efforts to identify enemy vulnerabilities and also confirmed that only joint campaigns can succeed. Also, the CAS systems and procedures formulated in Italy still flourish in the form of today's FACs. The strategic bombing efforts from Italy, combined with the aerial armadas launched from England, revealed strategic bombing is a long-term effort but can yield long-term effects on the enemy. However, the Italian campaign effectively demonstrates the dangers of over-reliance on airpower capabilities rather than conducting joint campaigns, especially when confronting a determined enemy willing to fight on in the face of overwhelming odds.

9; Notes

1. Overy (1980), p. 67
2. Hallion (1989), p. 186
3. Ibid., p. 181
4. D'Albiac (1945), p. 324
5. Momyer (1978), p. 1
6. Brookes (1996), p. 56, 60
7. Ibid., p. 61
8. D'Albiac, op. cit., p. 327
9. Ibid., p. 325
10. Ibid., p. 327
11. Hallion, op. cit., p. 178
12. Terraine (1997), p. 574
13. Mark (1994), p. 61
14. Hallion, op. cit., p. 180
15. Terraine, op. cit., p. 576
16. Brookes, op. cit., p. 60. While a soldier at Salerno, he saw 1 German aircraft.
17. Hallion, op. cit., p. 186
18. Mark, op. cit., p. 1
19. Ibid., p. 66-7
20. Ibid., p. 51
21. Ibid., p. 66

22. Terraine, op. cit., p. 579
23. Mark, op. cit., p. 74
24. Ibid., p. 72
25. Id.
26. Ibid., p. 76
27. Ibid., p. 81
28. D'Albiac, op. cit., p. 330
29. Mark, op. cit., p. 86
30. Ibid., p. 97
31. Ibid., p. 98
32. D'Albiac, op. cit., p. 331
33. Mark, op. cit., p. 106
34. Ibid., p. 114
35. Ibid., p. 129
36. Ibid., p. 119
37. Ibid., p. 133
38. Ibid., p. 131
39. Ibid., p. 109
40. Ibid., p. 137
41. Hallion, op. cit., p. 185
42. Mark, op. cit., p. 149
43. Ibid., p. 165 & Gooderson (1998), p. 210
44. Brookes, op. cit., p. 61
45. Mark, op. cit., p. 161
46. RAND analyst F. M. Sallager, in Hallion, op. cit., p. 185
47. Mark, op. cit., p. 168
48. Gooderson (1998), p. 212
49. Mark, op. cit., p. 182
50. Terraine, op. cit., p. 594
51. Hallion, op. cit., p. 186
52. Mark, op. cit., p. 203-4
53. Ibid., p. 206-7
54. Gooderson (1998), p. 215
55. Mark, op. cit., p. 179
56. Gooderson (1998), p. 210
57. Mark, op. cit., p. 207
58. Wilt (1990), p. 206
59. Id.
60. Ibid., p. 207
61. Ibid., p. 208
62. Brookes, op. cit., p. 59
63. Wilt, op. cit., p. 209
64. Gooderson (1998), p. 192
65. Hallion, op. cit., p. 182
66. Id.
67. Id.

68. D'Albiac, *op. cit.*, p. 332
69. Richards and Saunders, in Terraine, *op. cit.*, p. 586
70. Gooderson (1992), p. 369
71. *Ibid.*, p. 368
72. Terraine, *op. cit.*, p. 569-570