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## ABSTRACT

Airborne forces are light forces, deployed by air, prepared to fight upon landing. The very nature of airborne operations and the vision of specific leaders largely determined the development of airborne forces and continues to influence their employment. Identifiable characteristics affect airborne forces and operations. These characteristics are common to the planning and execution of airborne operations and affect their success or failure. Integrated planning and detailed intelligence; a favourable air situation, including meteorology; and tactical mobility, contribute to the success of airborne operations. Surprise, firepower and logistic sustainment are of pre-eminent importance.

Success in airborne operations is predicated, above all else, on the characteristics of surprise, firepower and sustainment. These characteristics operate in conjunction, as indicated in the following extract from Australian airborne doctrine:

*An airborne force has limited combat power once landed because the force is lightly equipped in comparison to other combat units. They rely on offensive support to a greater degree than other forces, particularly anti-armour weapons and indirect fire support. This limitation is partially offset by surprise. ... Nevertheless, airborne forces should be employed in the knowledge that they require dedicated offensive support and resupply and that they will lack mobility on the battlefield once landed. (ADFP 39)*

An overview of the nature of airborne forces, soldiers and leaders establishes the context for an examination of the historical development of airborne forces. The potential of the airborne concept was first realised by the Europeans. Italy first developed practical means of deploying soldiers by parachute. Russia expanded upon this to insert significant numbers and included gliderborne troops. Germany, led by *Generaloberst* Kurt Student, established the capability to deploy viable formation with the requisite air transport and fire support all contained within the *Luftwaffe*. Student had gained air combat experience during the infancy of offensive military air power and infantry command experience at battalion level. His knowledge and vision played were key in the development and subsequent command of Germany's airborne forces. Great Britain and the United States were relatively slow to embrace the airborne initiative, but rapidly progressed to surpass their European counterparts. General James Gavin was an important figure in development and operational command of the United States' airborne forces. General 'Boy' Browning commanded Great Britain's airborne forces from 1941 and was a qualified pilot but lacked the airborne experience of either Student or Gavin. Each of these generals influenced the development, employment and operational success of their nations' respective airborne forces.

Airborne forces are capable of achieving strategic or operational level effects by undertaking operations from the tactical to the operational level. They may employ forces from individual to corps size using various methods of insertion for their deployment, each of which has its own relative advantages and disadvantages. Airborne forces may undertake a range of tasks, separately or within a single operation. Airborne operations are typically, but not exclusively, offensive in nature; and well suited to achieving the characteristics of offensive

operations: surprise, concentration, audacity and tempo. Similarly, airborne forces are capable of achieving each of the decisive, shaping and sustaining operational effects.

Airborne operations share specific characteristics because of their very nature, regardless of their role, mode of deployment, size, or operational effect. These characteristics are common to the planning and execution of airborne operations and affect their success or failure. The general characteristics of airborne operations are integrated planning and detailed intelligence; a favourable air situation, including meteorology; and tactical mobility. Surprise, firepower and logistic sustainment are of pre-eminent importance. Historical examples illustrate the role of each of these characteristics in past airborne operation. The examples help demonstrate the evolution of airborne forces and operations, and the reasons for their success or failure. The characteristics of surprise, firepower and sustainment are the most important. Contemporary doctrine reflects the knowledge gained from experience and incorporates technological advances. It confirms the critical importance of surprise, firepower and sustainment.

Operation Mercury as a case study provides an example of a successful large-scale airborne operation. Other operations help illustrate the role of particular characteristics. The German airborne force prevailed on Crete but took heavy casualties. Analysis of the operation in terms of surprise, firepower and sustainment demonstrates their effect on the outcome. German preparations for the assault failed to achieve surprise, but the Allies were incapable of taking significant measures to counter the German plans and defences were stretched to meet assessed airborne and amphibious threats. The land component of the airborne force relied heavily on the *Luftwaffe* for offensive air support. Land and air components co-operated effectively at the tactical level, despite serious intelligence failings in planning, so that air component support to land forces was generally effective, compensated for the airborne force's lack of organic firepower, and outgunned Allied defenders. The Allies were unable to challenge Germany's air superiority. This exacerbated Allied preparations for the defence sustainment problems before the assault, already thwarted by early lack of commitment. Allied sea control denied effective re-supply by sea; however, the Germans overcame stiff opposition to establish an airhead and aerial re-supply contributed to their eventual success.

Operation Mercury was a costly success. It was a decisive airborne operation, the analysis of which bears out the enduring characteristics of airborne operations. Other historical examples and current doctrine reinforce their role and, in particular, the critical importance of surprise, firepower and sustainment.

## INTRODUCTION

Airborne forces are light forces, deployed by air, prepared to fight upon landing. The very nature of airborne operations, and the vision of specific leaders, largely determined the development of early airborne forces and continues to influence their employment. Analysis of historical examples and current doctrine identifies characteristics common to the planning and execution of airborne operations that affect their success or failure.

Successful airborne operations are predicated upon the characteristics of surprise, firepower and sustainment. Integrated planning and detailed intelligence; a favourable air situation, including meteorology; and tactical mobility, contribute to the success of airborne operations.

Actions within land force operations are described as ‘decisive,’ ‘shaping’ or ‘sustaining.’<sup>1</sup> The American, British, Canadian, Australian (Armies) (ABCA) agreements list five phases of an airmobile operation: staging, loading, air transport, air assault or landing, and the ground tactical phase.<sup>2</sup> The ground tactical phase is decisive in the outcome of airborne operations. Airborne forces and operations can achieve decisive results at the strategic, operational and tactical levels of war.<sup>3</sup>

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<sup>1</sup> United States Army Field Manual 3-0, *Fundamentals of Full Spectrum Operations*, Chapter 7, Offensive Operations, 7-21.

<sup>2</sup> Commonwealth of Australia, *Operations Series: Australian Defence Force Publication 39: Airborne Operations*, (Canberra, 1995), 2-3.

<sup>3</sup> For definitions of the Operational and Tactical levels of war see Canadian Forces College. *Combined and Joint Staff Officer's Handbook*, Glossary, VI-2-9/14 and 11/14.

Airborne forces emerged as a military capability immediately before, and during, World War II. Specific European and Allied leaders were responsible for their development. In particular, Germany's *Generaloberst* (General) Kurt Student was the leading proponent of airborne operations. Student's military and air force experience was crucial in the development and leadership of Germany's airborne forces. His doctrine, organisation and tactics shaped modern airborne forces. Student's contemporaries, specifically General James Gavin of the United States and General Richard Browning of Great Britain, were significant figures in the establishment and employment of their nations' respective airborne capabilities.

Historical examples demonstrate the roles played by the above characteristics; and in particular surprise, firepower and sustainment, in airborne operations. The World War II German Operation *Merkur* (Mercury) in Crete on 20 May 1941 illustrates the role of the above characteristics in a large-scale airborne assault. The strategic context of the operation was at the nexus of the North African and Balkan campaigns while Germany, with Axis partner, Italy, contested Britain and her Allies at sea and in the air for control of the Mediterranean. Operation Mercury was a decisive, rather than a shaping or sustaining, operation. At its time it the largest airborne operation launched. Operation Mercury was successful but, ultimately, very costly.

Hitler's remained convinced of airborne forces' value in spite of disenchantment after Crete. He authorised planning for numerous subsequent airborne operations, including two in the Mediterranean, which benefited from lessons learned on Crete. German airborne troops were used as *elite* infantry on the Eastern Front during the winter of 1941 then withdrawn to France to re-group and re-train. Operation 'Felix' was a plan to seize Gibraltar by an airborne assault,

cancelled due to unacceptable conditions imposed by Spain for use of their airbases.<sup>4</sup> Operation ‘Hercules’ was the plan to seize Malta as a base from which to interdict Allied shipping in support of the Auchinleck’s fight against Rommel in North Africa.

Operation Hercules was planned in far more detail than Operation Felix with reconnaissance and intelligence superior to that of Operation Mercury; for example, “Intelligence staffs even knew the calibre of the coastal guns and measured the effect they would have if turned inwards on the invaders.” Operation Hercules and came close to execution in June 1942 but the *Luftwaffe* was heavily committed to Operation Barbarossa and fuel was at a premium and logistics in general were stretched. The 2<sup>nd</sup> Parachute Division was raised under *Generalmajor* Ramcke in late 1942 and the Germans planned to use airborne troops in bold strategic manoeuvre: “As part of their contingency planning for the defence of Western Europe, the Germans established special assembly points for parachute and gliderborne troops at airfields in the South of France. The role of the airborne battalions was to land across lines of supply in the rear of enemy bridgeheads.”<sup>5</sup> Germany’s airborne troops were not used in this role but rather as a mobile reserve and found themselves fighting against their Allied counterparts in Operations ‘Overlord’ and ‘Market Garden.’

Analysis of Operation Mercury and comparison to others illustrates the role of the characteristics of airborne operations, particularly surprise, firepower, and sustainment, in their success or failure. The first operation used for comparison is Operation ‘Colossus,’ the British sabotage raid on an aqueduct at Tragino, near Monte Vulture in Italy on 10 February 1941. Its

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<sup>4</sup> Roger Edwards, *A Macdonald Illustrated War Study: German Airborne Troops 1936 – 1945*, (Morrison and Gibb: London, 1974), 109.



objective was accomplished but the raid included many costly failings and the mission was, at best, a qualified success. The German attack on Fort Eben Emael at the confluence of the River *Maas* (Meuse) and the Albert Canal in Belgium on 10 March 1941 was a highly effective surprise attack. It was one of a number of simultaneous glider and parachute operations whose success validated the tactic of vertical envelopment. The United States' airborne operations in Sicily on 9 July 1943 and in Salerno on 12 September 1943 were the first major airborne operations after Crete, and the first US airborne operations on such a large scale. They showed the continued development of airborne tactics, including the implementation of lessons learned from Operation Mercury.

The airborne component of the Allied Operation 'Overlord' in France on 6 June 1944 was an operation in which British (with the Canadian Airborne Battalion) and United States airborne forces were both deployed in similar roles but separate areas of operation, defending the flanks of their respective forces' amphibious landings. The Allied Operation 'Market Garden,' launched in the Netherlands on 17 September 1944, incorporated the next major airborne operation: the component codenamed 'Market.' Both the British (with the Polish Airborne Brigade) and United States airborne forces were again deployed, this time as part of the same line of operation.

Analysis of the above operations and of the contemporary doctrine of armies with conventional airborne forces shows the enduring critical importance of surprise, firepower and sustainment in the planning and conduct of modern airborne operations.

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<sup>5</sup> Ibid., 112.

## LITERATURE SURVEY

The bulk of literature pertaining to airborne operations consists of historical studies; the remainder is predominantly doctrinal. A third, less authoritative, source is the Internet or ‘world wide web.’ Historical studies tend to focus on a single airborne operation or force. There are relatively few comparative studies; rather, material that incorporates multiple operations or forces tends to take a narrative approach. Some doctrine is available as ‘open source’ material, which is to say it is unclassified by its parent nation for the purposes of national security; otherwise, it is classified ‘Secret’ or higher and not available for use. As a general observation, material available on the Internet varies widely in its quality and reliability. For the purpose of historical study, such material must be used judiciously; however, some of the open source doctrine described above is available through this means.

In the case of Operation Mercury, there are two principal sources of primary material: official histories and personal accounts. Official histories are based upon information available to a given side at the time of the event in question or shortly thereafter. They therefore tend to portray a single perspective in detail but their accuracy as to alternate perspectives is necessarily limited by intelligence and battlefield estimates. The historian must therefore collate information from official histories of all parties involved if these are to be used as principal sources. The official histories pertinent to Operation Mercury include Australia, Great Britain and New Zealand from the Allied perspective; and Germany and Italy (the Italian role was limited to supplementation of the *Luftwaffe* by the *Regia Aeronautica* and convoy escort by the destroyers *Lupo* and *Sagittario*) from the Axis perspective. The second source of primary material, personal

accounts, is available in two forms, autobiographical and historical, which is to say by historians' interviews with the protagonists. Autobiographical material represents an insightful record from the perspective of the author and is limited, like official histories, by the information available at its time of writing. Historians' interviews of protagonists represent a different analytical perspective.

James Gavin's *Airborne Warfare* is not autobiographical but rather an analytical treatise influenced heavily by his experiences and vision of the future. *Airborne Warfare's* utility lies in revealing how the nature of airborne operations influence their planning and execution, and offering other operations as bases for comparison to Operation Mercury. His examples clearly emphasise surprise, firepower and sustainment are critical among the characteristics of airborne operations. Gavin provides valuable insight to the planning and execution of numerous major operations, particularly major operations in the Mediterranean and later Allied invasion of France; but his own role in the development of the United States airborne forces is understated, except by William Lee in the foreword. B.H. Liddell Hart deals with an even more important figure in the development of airborne forces, namely *Generaloberst* Kurt Student.

B.H. Liddell Hart's *The Other Side of the Hill: Their Rise and Fall, with Their Own Account of Military Events, 1939 – 1945*, is an example of an historian's analysis using interviews with leading German generals and admirals before, as Liddell Hart put it: "... memories had begun to fade or become increasingly coloured by afterthoughts." His interviews with Student are particularly illustrative as they explain the context of Operation Mercury, the process by which the operation was authorised and planned, and Student's response to events as

they unfolded. The utility of *The Other Side of the Hill* is otherwise limited as its scope is so broad, covering the whole war, that it contains little detail regarding the operation. More detail on the German perspective is contained in Roger Edwards' *A Macdonald Illustrated War Study: German Airborne Troops 1936 – 1945*. Edwards gives a summary of the development and employment of German airborne forces throughout World War II. He provides great detail in some areas, particularly in terms of equipment, training and key figures such as Student. The level of detail directly related to Operation Mercury is good, however, the analysis of the battle, as one of a number of German airborne operations in World War II, is limited.

A similar level of analysis is found in Bruce Quarrie's *Airborne Assault: Parachute Forces in Action, 1940 – 91*. Quarrie, like Edwards, reviews Operation Mercury in the broader context of a number of airborne operations; however, where Edwards' focus is exclusively on the German airborne forces, Quarrie deals with different forces in each operation. Quarrie's broader purview provides numerous examples for comparison, whose collective analysis helps identify the general characteristics of airborne operations and the critical importance of surprise, firepower and sustainment. Quarrie's examples include Operation Market, the famous airborne component of Operation Market Garden, to which Martin Middlebrook's *Arnhem 1944: The Airborne Battle* is devoted. Middlebrook's very thorough and detailed history provides a major Allied airborne operation to which Operation Mercury can be compared. His study and final analytical chapter 'The Reckoning,' validate the general characteristics of airborne operations and the critical importance of surprise, firepower and sustainment.

These characteristics are again borne out in Alan Clark's specific analysis of Operation Mercury, *The Fall of Crete*. Clark provides a thorough explanation of the context of Crete, particularly from the perspective of its place in the Mediterranean theatre and the interplay between Churchill, Wavell and Freyberg. *The Fall of Crete*, like others, relies heavily upon official histories and contemporary correspondence. Clark's focus is clearly the Allied experience and is illustrative of the characteristics of airborne operations as studied from the defenders' perspective. The same perspective is included in Gavin Long's *Australia in the War of 1939 – 1945, Series One: Army, Volume II: Greece, Crete and Syria*. Long places his emphasis clearly upon the Australian experience but provides a comprehensive background to the operation and its relationship to the Balkan and North African campaigns. His analysis reinforces the defenders' perspective of airborne assault given by Clark in *The Fall of Crete*.

Australian and United States airborne doctrine reflect the lessons learned from previous operations and show the enduring nature of airborne operations. They provide a current perspective that incorporates technological innovation. The consistency between the doctrine of these two countries may be attributed to two factors: their formal agreement to interoperability (ABCA) and the features that characterise airborne forces and their operations.

## **CHAPTER ONE**

### *Airborne Forces, Evolution and Leaders*

## **AIRBORNE FORCES**

### **General**

Airborne forces may be loosely defined as including all forces whose principle means of insertion is from the air. In Australian doctrine an airborne force is defined as: “A force composed primarily of ground and air units organised, trained and equipped for airborne operations.”<sup>6</sup> A number of features are common to airborne forces worldwide. Some features, particularly those associated with force structure and equipment, are necessitated by the forces’ method of insertion and these are analysed later in further detail. Other features are attributed to the characteristics of airborne soldiers, ostensibly by virtue of the nature the operations they undertake. This focus on the soldier is reflected, for example, in United States doctrine, which states: “The strength of airborne forces comes from the skill, courage, and discipline of the individual paratrooper.”<sup>7</sup>

### **Airborne Soldiers**

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<sup>6</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 1-1.

<sup>7</sup> United States Army Field Manual 90-26, *Airborne Operations*, Chapter 1: Introduction, <http://www.globalsecurity.org/military/library/policy/army/fm/90-26/Ch1.htm>, Internet, accessed 15 December 2004, 2.

A common feature of airborne forces worldwide is that airborne soldiers volunteer for the role and then undergo some form of selection or testing process. This was required of all American, British and German paratroops involved in the above battles; and remains the case for these forces and for Australian paratroops, whose doctrine is also considered. Student, in his foreword to Roger Edwards' 'German Airborne Troops,' described the German paratrooper's qualities as "idealism, initiative and courage."<sup>8</sup> The act of parachuting requires courage and physical fitness. It is the emphasis on airborne soldiers' immediate readiness to fight that demands individual initiative and independence. Roger Edwards notes that in raising the original German airborne units: "Personal qualities demanded were toughness, physical fitness and mental alertness; preference was for specially [sic] aggressive volunteers whose training was primarily intended to bring out qualities of initiative and independence."<sup>9</sup>

Aspects of the same general philosophy survive in the selection and training of modern airborne soldiers, particularly in emphases on their levels of training and discipline. These issues are consistently reflected in modern airborne doctrine. For example, Australian doctrine states: "Paratrooping [sic] necessitates high levels of training, confidence and morale at all levels."<sup>10</sup> Its United States counterpart shows remarkable similarity: "Airborne forces require specially selected, trained, and highly disciplined soldiers and leaders."<sup>11</sup> Leadership is of particular importance during the 'airborne assault' or 'landing' phase of airborne operations.

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<sup>8</sup> Kurt Student, foreword to Roger Edwards, *German Airborne Troops...*, 7.

<sup>9</sup> *Ibid.*, 55.

<sup>10</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 15-1.

## Airborne Leaders

Leadership, in conjunction with the soldiers' requirement for initiative and independence as identified by Student, is especially necessary to overcome the potential confusion and disorientation of airborne forces immediately after insertion. Alan Clarke notes the Allied defenders' observations of precisely this effect on some of the German paratroops on Crete, who clearly suffered from a lack of leadership when "... the chain of command, the concept of the battle as a whole, existed only in obscurity."<sup>12</sup> Units are inevitably in some degree of disorganisation on the drop zone, so soldiers must quickly orient themselves to the situation and rally to form cohesive units. The typical drop zone, flat and open terrain, is poor ground for light infantry to be exposed to the enemy. It is therefore particularly important, especially in opposed landings, for leaders in airborne operations to make a quick appreciation of the situation, reach timely decisions and take charge of their men.

The demand for leadership has resulted in a relatively high proportion of officers and senior non-commissioned officers in some parachute missions and organisations. The British Operation 'Colossus,' for example, comprised "... seven officers and 31 other ranks ..."<sup>13</sup> Such a force is roughly equivalent in size to an infantry platoon, normally commanded by a Lieutenant, notwithstanding additional expert personnel; but in this case the mission was commanded by Major Trevor Pritchard. The requirement for leadership was reflected in the manning of the battalions of the British Parachute Regiment when it was formed: "There was an

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<sup>11</sup> United States Army Field Manual 90-26, *Airborne Operations* ..., 4.

<sup>12</sup> Alan Clark, *The Fall of Crete*, (Anthony Blond Ltd: Dublin, 1962), 66.

<sup>13</sup> Bruce Quarrie, *Airborne Assault: Parachute Forces in Action, 1940 – 91*, (Patrick Stephens Limited, 1991), 39.



unusually high proportion of sergeants; the three sections in a platoon were each commanded by a sergeant or lance-sergeant instead of a normal corporal.”<sup>14</sup> Such a structure compensates for disorganisation on the drop zone by providing the stabilising influence of additional leadership at the base level, within rifle platoons. And it mitigates against casualties among leaders so that those whom survive can assume command.

Cohesion in airborne units is enhanced by mutual respect when leaders and soldiers of all ranks face the same challenge and share the danger inherent in the method by which they join battle. Leadership of airborne soldiers therefore continues to place a particularly high emphasis on ‘leading from the front,’ as exemplified in Student’s order of jumping for Operation Mercury: “... first, Regimental commanders. Then, Battalion and Company leaders, then junior officers and first-class parachutists. After them descended an immense stream of young parachuters [sic].”<sup>15</sup> The Germans lost many important leaders very quickly during the airborne assault: *Generalmajor* Wilhelm Sussman of the 7<sup>th</sup> Division and Group Centre and the senior commander, was killed; *Generalmajor* Eugen Meindl, commander of the Assault Regiment and Group West, was wounded and replaced by *Oberst* Ramcke.<sup>16</sup> Such leadership, though it places senior officers at risk, greatly contributes to the ‘confidence and morale’ to which Australian doctrine refers; and the high level of discipline to which United States doctrine refers.

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<sup>14</sup> Martin Middlebrook, *Arnhem, 1944: The Airborne Battle, 17 – 26 September*, (Penguin Books: London, 1995), 23.

<sup>15</sup> Kurt Student, “Kommando,” quoted in Alan Clark, *The Fall of Crete*, 59.

<sup>16</sup> Roger Edwards, *German Airborne Troops...*, 91-95.

## **THE EVOLUTION OF AIRBORNE FORCES**

The evolution of airborne forces shows the effects of those features that define the nature of airborne operations: light forces, deployed by air, ready to fight immediately upon landing; and of the of the leaders whose vision and knowledge influenced the development of contemporary and modern airborne operations.

Airborne combat forces first developed in Europe, specifically in Russia, Italy and Germany. Great Britain and the United States were initially slower to develop airborne capabilities; however, they eventually surpassed their European counterparts to become the pre-eminent exponents during World War II. The early development of European airborne forces, especially in Germany; and the corresponding Allied forces, both British and American; demonstrates significant disparity in their respective levels of investment and consequently in capability at the outbreak of World War II.

### **EUROPEAN AIRBORNE FORCES**

#### **Italian and Russian Airborne Forces**

The Italians first brought into reality the potential of the parachute as a means of inserting whole units, making a collective drop near Milan as early as 1927; however, it was the Russians who developed the highest level of capability prior to World War II. The operational

concept of vertical envelopment was sufficiently well-developed in Russia that Soviet Marshal Mikhail Schtscherbakov, during a pre-war inspection of the Maginot Line, remarked to French *Marechal* (Marshal) Henri Petain: “Fortresses like this may well be superfluous if your enemy ... parachutes over them.”<sup>17</sup> Schtscherbakov thus envisioned airborne operations on a scale sufficient to render redundant fortified static defences such as the Maginot Line.

Schtscherbakov’s comment demonstrates how Russian military thinking, at least, had already formed an appreciation of the potential strategic and operational effects of airborne tactics. The Russians sought to exploit this potential when they became the first to drop men in combat near Petsamo in November 1939 and then at Bessarabia in 1940 during the Russo-Finnish War.<sup>18</sup>

The Germans had witnessed a demonstration of the Soviet capability to parachute a complete, cohesive combat unit, the 1<sup>st</sup> Paratroop Landing Unit, as early as 1931.<sup>19</sup> The Soviets further showed the extent of their progress in a demonstration open to more foreign military observers at Kiev in 1935, during which “Altogether 1,500 troops were successfully dropped with light arms and equipment.”<sup>20</sup> This exercise demonstrated the viability of quickly deploying large numbers of soldiers using aerial transport. Among the witnesses were the British Major General, later Field Marshall Earl Wavell, and the German *Oberst* (Colonel), later *Generaloberst* (General) Student. Each formed his own appreciation of the future of such operations. The latter was sufficiently convinced of the potential of airborne forces to devote the greater part of his professional career to their development.

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<sup>17</sup> Mikhail Schtscherbakov, quoted in Bruce Quarrie, *Airborne Assault...*, 31.

<sup>18</sup> James Gavin, *Airborne Warfare*, Infantry Journal Press, Washington, 1947, vii – viii.

<sup>19</sup> Mikhail Schtscherbakov, Bruce Quarrie, *Airborne Assault...*, 29-30.

## German Airborne Forces and *Generaloberst* (General) Kurt Student

*When the future Field-Marshal Earl Wavell returned to Britain after witnessing the Soviet military manoeuvres in 1935, he displayed no real interest in the air-landing and parachute exercises conducted by the Soviet army and air force at Kiev. Consequently no one in Britain gave much thought before 1939 to the new and exciting concept of airborne warfare. A small band of Germans, however, thought otherwise and we it was who developed this new weapon, often in the face of the ignorance and indifference of our own arch-conservative military establishment. Even so, in the early war years, German airborne forces achieved military success that caused the world to gasp.<sup>21</sup>*

Student was crucial in the genesis of German airborne forces, including their organisation and doctrine. He is arguably the ‘founding father’ of modern airborne operations and was certainly responsible for leading development of the German airborne capability: “... Student was to contribute more than any other to the leadership, organisation and effectiveness of German airborne forces.”<sup>22,23</sup> Student’s education, training and experience gave him the wherewithal; and his vision gave him the impetus, to develop the German airborne capability and lay the foundations for modern airborne operations. His unique combination of military and air force experience: in modern parlance, ‘joint;’ allowed him to appreciate their respective attributes. Student’s knowledge placed him in a position to integrate their strengths and

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<sup>20</sup> Roger Edwards, *German Airborne Troops...*, 65.

<sup>21</sup> Kurt Student, foreword to Roger Edwards, *German Airborne Troops...*, 7.

<sup>22</sup> *Ibid.*, 67.

<sup>23</sup> Bruce Quarrie, *Airborne Assault...*, 29.

weaknesses in capability development and operational planning. Integrated planning remains a characteristic of significant importance in airborne operations.

Student's early education and training followed the traditional Prussian military model. Born in 1890, he commenced his schooling in a military school aged eleven. In 1909 he joined a *Jager* (infantry) battalion, the 1<sup>st</sup> Battalion *Graf York von Wartenburg*, in which he was commissioned in 1911. Student was thus set upon the well-travelled path of the career infantry officer. This path took a dramatic turn from 1913, when he trained as a pilot. Student joined XVIII Corps on the Eastern Front at the outbreak of hostilities and was promoted to *Oberleutnant* (First Lieutenant) in 1914. He was selected to test Fokker aircraft fitted with machineguns and on his first combat sortie in 1914 he engaged four Russian aircraft and shot down a Morane. Student moved to the Eastern Front with XVIII Corps in the autumn of 1915 and by July of 1916 he had been appointed *Staffelfuhrer* (Squadron Commander) of *Jasta 9*, a combat squadron in the newly-formed *Jagdwaaffe* (air arm), promoted to the rank of *Hauptmann* (Captain). He remained in this role until badly wounded in air combat against a French ace in 1917. Student thus quickly became an experienced officer in air power, an evolving military capability, and continued to become an increasingly important part of the fledgling air arm of the German forces.

Student's appointments between the wars further shaped his experience while he, in turn, began to shape the German air forces and especially the airborne capability. He held key developmental and staff appointments in the *Fliegerzentrale* (Central Flying Office) while Germany's military forces and their development were suppressed under the conditions of the

Treaty of Versailles, which capped the total force under arms at 100,000 men and specifically prohibited development of military aircraft, submarines, artillery and tanks.<sup>24</sup> It should be noted that at this time there was no German air force *per se*, and therefore Student remained ostensibly an army officer, notwithstanding his employment in the development of the air arm. In 1928 he returned to his military origins: the infantry. Student was promoted to *Major* in 1929 and then commanded a battalion of the distinguished *Infanterie-Regiment 2* until 1932 – a significant appointment that enhanced his military credentials and broadened his experience.<sup>25</sup>

After his tenure as a battalion commander, Student reverted to what had become his new field of expertise: the air arm. He became the Director of Air Technical Training Schools and then Inspector General of *Luftwaffe* schools, promoted to *Oberstleutnant* (Lieutenant Colonel) in 1933 and *Oberst* (Colonel) in 1935, and “rigidly enforced the highest standards of training at the parachute school at *Stendal*.”<sup>26</sup> Hermann Goering issued orders on 29 January 1936 to raise *Fallschirmjager-Regiment 1* (parachute regiment) commanded by *Oberst* Bruno Brauer and the army established a parachute infantry company, soon expanded to a battalion, *Fallschirm-Infanterie-Bataillon*, under *Major* Richard Heidrich who later excelled at Fort Eben Emael. Student realised the potential of airborne operations lay beyond the scope of raiding parties and represented a means of rapidly inserting significant land forces by the tactic of vertical envelopment.

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<sup>24</sup> *Ibid.*, 28.

<sup>25</sup> Roger Edwards, *German Airborne Troops...*, 145-146.

<sup>26</sup> *Ibid.*, 146.

Student was promoted to *Generalmajor* (Major General) in June 1938. Soon after, “... the ambitious concept of a parachute division developed into practical reality” when he assumed from Brauer field command of all German airborne forces to form the conglomerate 7<sup>th</sup> Air Division on 1 July 1938.<sup>27</sup> In this capacity Student was responsible both for development, operational training and field command of the German airborne forces. He combined his operational experience as a pilot with his intimate knowledge of infantry tactics, until the outbreak of World War II.

The doctrine, structures and tactics Student developed were validated, and continued to evolve, in the early years of the war. He commanded the Air-Landing Corps and personally led the 7<sup>th</sup> Air Division on 10 May 1940 during the invasion of the lowlands, and was wounded again at Rotterdam. This was the first airborne operation attempted on such a scale – it proved the concept at the strategic level: “The success of the airborne troops and their immense contribution to German victory in the West was clearly evident; their unique capacity for speed and surprise was amply demonstrated.”<sup>28</sup> Furthermore, the invasion gave the Germans an enormous advantage in operational experience and created an enduring psychological effect that also influenced Britons during the defence of their isles.<sup>29</sup> Throughout this time, the extent of Student’s influence over the development of the German military’s air arm; and in particular its

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<sup>27</sup> “... a battalion from the Herman Goering Regiment, 16<sup>th</sup> Infantry Regiment [air-landing], the contingent from the SA [*Sturmabteilung*] Regiment *Feldernahalle*, together with ancillary artillery and medical units.”  
Ibid., 66.

<sup>28</sup> Ibid., 77.

<sup>29</sup> John Campbell, *Facing the German Airborne Threat to the United Kingdom, 1939 – 1942*, War in History, Great Britain, 1997, available from <http://serials.abc-clio.com/active/go/ABC-Clio-Serials>, Internet, accessed 27 April 2005.

airborne capability, should not be underestimated: “*Generalmajor* Student had been given a free hand to build up the newest kind of formation in the German armed services.”<sup>30</sup>

## **ALLIED AIRBORNE FORCES**

### **United States Airborne Forces**

General George Marshall, Chief of the General Staff, commissioned a study into the paratroop infantry concept in 1939. The Parachute Test Platoon was formed at the School of Infantry at Fort Benning, Georgia, in April 1940 and made its first demonstration before senior officers, including Marshall, on 29 August. Major (later Brigadier General) William ‘Billy’ Mitchell was the United States Army officer given the responsibility to establish whether the airborne method was feasible for the deployment of ground forces. He had been an early and avid but unsuccessful proponent of airborne operations, conceiving a bold initiative in mid-1918 to parachute a division behind the Hindenburg Line.<sup>31</sup> Mitchell’s plans were not endorsed at the time by the then United States Commander-In-Chief, General Pershing. Nor were his post-war efforts supported: to develop the potential of strategic bombardment from the air; or his thesis on vertical envelopment, promulgated during the 1920’s. The United States established an airborne capability in response to developments during World War II. Mitchell’s vision was only matched by the commitment of significant military resources after 7 December 1941, when Japan brought the United States into World War II.

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<sup>30</sup> Roger Edwards, *German Airborne Troops...*, 146.



Development of the United States' airborne capability "...was slow until after the German occupation of France and did not really begin to gain momentum until after the Japanese attack on Pearl Harbour ..."<sup>32</sup> It then proceeded apace, invigorated by both the noteworthy success of early German airborne operations and by the shock of the affront to the United States' sovereignty. The United States' airborne forces expanded rapidly. The order to establish four regiments of 1,958 men each; with associated glider pilot training and tenders, was raised on 30 January 1942. The force grew so fast that on 15 August 1942 the decision was taken to split the

Plans and Training Section, and later as a staff officer in the Airborne Command.<sup>35</sup> He went on to become one of the most famous of the United States' airborne commanders. His vision and leadership had been instrumental in the development of the capability: "No one man or no small group of men can be credited with this achievement. Many men and many elements made the project successful ... These were the architects and not the least of them was Gavin."<sup>36</sup> His unparalleled role in development of the United States' airborne capability and subsequent operational experience, in particular the Mediterranean campaign, eventually made Gavin and Rigdway, his long-standing colleague, natural choices to later command the United States component of the Allied airborne forces on D-Day, 6 June 1944.

It is pertinent to note the extent to which Gavin and other planners in the United States learned from their British allies' experiences and from their German airborne opponents. Gavin states that detailed consideration was given to aircraft formation, coordination with the amphibious assault, and whether to jump in darkness or daylight during planning for the 82<sup>nd</sup> Airborne Division's Sicily drop. For example, in 'Airborne Assault' he recalls planning aircraft formations: "Should the transports fly in formation as other American combat aircraft were being flown, or should they fly 'bomber-stream' as the British were flying?"<sup>37</sup> It is apparent, although Gavin makes no direct mention of it, that this discussion included consideration of the experience of the British defenders on Crete and the effectiveness of the German aircraft formations. The German formations had been tight and had suffered in daylight, against even under-equipped Allied air defences, as reported by the defenders:

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<sup>35</sup> Ibid., ix.

<sup>36</sup> Ibid., ix.

<sup>37</sup> Ibid., [2].

*The aircraft came in very low, under 400 feet, and the defending New Zealand infantry could plainly see the gunners in the turret amidships. They were in tight formation, three or five at a time, below the elevation of the 3.7" AA guns, but easy targets for the Bofors, which kept up a continuous fire, slamming out alternate tracer and incendiary rounds until the barrels jammed with heat. 'They were sitting ducks' a sergeant of the Royal Marines said afterwards.*<sup>38</sup>

Thus United States airborne planners learned lessons from the British defenders on Crete. Yet the decision was taken after the Sicily drop to modify the paratroops' personal loads with a view to improving their readiness for immediate combat upon landing: "It was decided after the heavy loss of equipment containers in the Sicily operations that more weapons would have to be jumped on the person so that they would be immediately available. In particular the troopers would jump with more grenades and less food."<sup>39</sup> This decision could have been informed by the observations and experience of the British defenders at Crete two years earlier, where they had seen the Germans' reliance on their canisters. The Germans had already been learned this costly lesson during Operation Mercury and had undertaken to remedy the deficiency.<sup>40</sup> In particular, inadequate personal water supplies under the harsh Cretan sun had seriously affected some soldiers, who "... after wandering helplessly for 48 hours, more or less

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<sup>38</sup> Alan Clark, *The Fall of Crete*, 59.

<sup>39</sup> James Gavin, *Airborne Warfare*, [18].

<sup>40</sup> "Dangerous delays, often fatal for the parachutists, were experienced in recovering their containers on the dropping zone. Consequently experiments were made in carrying machine-carbines, mortars, machine-gun ammunition and other equipment attached to the men in flight; thus improving the ability of the platoon to move off quickly into action."

Roger Edwards, *German Airborne Troops...*, 25.

gave themselves up with cries [sic] of ‘Give me water!’”<sup>41</sup> Similarly, the British had observed the Germans’ vulnerability until they were able to gain access to their weapons and ammunition.<sup>42</sup> It is thus apparent that the United States’ airborne forces might have benefited more than appears to have been the case from their British allies’ experience and observations on Crete. The Allies’ collective knowledge may, therefore, have been incorporated during the United States’ planning for the Sicilian drop.

### **British Airborne Forces**

The Prime Minister of Great Britain, (later Sir) Winston Churchill, is widely credited with the establishment of British airborne forces. He is reported to have shared Mitchell’s early interest “... both credited with advocating the use of parachute troops in World War I ...”<sup>43</sup> however; his first tangible decision was taken following the success of German airborne operations in the Low Countries. Churchill’s guidance was contained in a memorandum dated 22 June 1940, in which he identified the need to quickly raise a British airborne force: “... of at least 5,000 parachute troops ... I hear something is being done already to form such a corps, but only, I believe, on a very small scale. Advantage must be taken of the summer to train these forces, who can nonetheless play their part meanwhile in home defence.”<sup>44</sup>

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<sup>41</sup> Buckley, quoted in Alan Clark, *The Fall of Crete*, 66.

<sup>42</sup> *Ibid.*, 70.

<sup>43</sup> William Lee, foreword to James Gavin, *Airborne Warfare*, vii.

<sup>44</sup> Winston Churchill, quoted in Bruce Quarrie, *Airborne Assault...*, 37.

The first British airborne unit raised under Churchill's mandate was the 11<sup>th</sup> Special Air Service Battalion (No 2 Commando).<sup>45</sup> Its first operation in enemy territory, albeit against an undefended objective, was Operation Colossus. It was a minor sabotage operation launched on 10 February 1941 to cut water supply through an aqueduct at Tragino, near Monte Vulture, Italy, which serviced the naval ports at Taranto and Brindisi.<sup>46</sup> The sabotage was successfully accomplished but there were serious failings in the mission including basic navigational errors on insertion; and part of the force was compromised, leading to its capture *en route* to extraction. Operation Colossus was a minor raid with a limited objective, rather than an airborne assault. Nonetheless, it struck a small blow for Britain's psychological need to launch tangible offensive action from 'Fortress Britain;' and provided invaluable lessons applicable to subsequent larger, strategic operations.

Lieutenant General F.A.M. 'Boy' Browning commanded Britain's airborne forces from 1941 and later commanded the British Airborne Corps during Operation Market Garden. Martin Middlebrook notes: "... his had been the guiding hand in the major build-up of this new arm of the British Army."<sup>47</sup> Browning had served with distinction in the Grenadier Guards during World War I, awarded both the Distinguished Service Order and the *Croix de Guerre*. He had not, however, seen action in World War II until Operation Market Garden and had no combat experience in airborne operations.

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<sup>45</sup> Roger Edwards, *German Airborne Troops...*, 64.

<sup>46</sup> Bruce Quarrie, *Airborne Assault...*, 39-40.

<sup>47</sup> Martin Middlebrook, *Arnhem, 1944...*, 11.

Browning's appointment until Operation Market Garden was as deputy commander of the First Allied Airborne Army. In this capacity he was the senior British officer in an army commanded by a United States Air Force officer, Lieutenant General L.H. Brereton. Brereton's staff was responsible to prepare the plans for Operation Market Garden. Browning held his own doubts as to the prudence of the plan and to him is dubiously accredited the infamous description of Arnhem as "... a bridge too far" during a conversation in which Major General Richard 'Windy' Gale, Commander of 1<sup>st</sup> British Airborne Division, voiced his objections to the plan.<sup>48,49</sup> The implications of Brereton's staff's decisions, specifically the decisions pertaining to aircraft allocation and the distances from drop- and landing-zones to objectives, were apparent to Browning's subordinate commanders and the subject of their objections. It has been suggested (by authors such as Ellis Plaice and Martin Middlebrook) that Browning's lack of experience led to his acceptance, at great cost, of the flawed plan for Operation Market.<sup>50,51</sup> His enthusiasm to personally join battle led to the inclusion of what proved to be the largely ineffective British Airborne Corps Headquarters, a decision that deprived the first airborne assault wave of 38 gliders.

Browning was clearly a capable and courageous officer but perhaps ill equipped for his role as commander of the Airborne Corps. He may have overseen their establishment and training in the early days of Britain's airborne forces, but he was not possessed of the combination of operational and developmental experience to stand as a British equivalent to the United States' Gavin, much less Germany's Student.

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<sup>48</sup> Ellis Plaice, editor, *Red Berets '44*, (The Illustrated London News: London, 1994), 74.

<sup>49</sup> Martin Middlebrook, *Arnhem, 1944...*, 19.

<sup>50</sup> Ellis Plaice, *Red Berets '44*, 70-74.

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<sup>51</sup> Martin Middlebrook, *Arnhem, 1944...*, 10-11, 443, 444.

## **CHAPTER TWO**

### *Airborne Operations, General and Critical Characteristics*

#### **AIRBORNE OPERATIONS**

An airborne operation is defined in Australian doctrine as one that involves “... the movement of combat forces and their logistic support into an objective area by air for execution of a tactical or strategic mission, when the forces involved may be required to engage in combat immediately on leaving the aircraft.”<sup>52</sup> This definition emphasises two important features of airborne operations: the whole force, including its combat power and organic logistics, is inserted by air; and the force must be ready to fight upon arrival. These abiding features of airborne operations lead to a number of characteristics; and are applicable to the various methods for deployment of airborne forces.

#### **Methods of Insertion**

The methods of insertion available to airborne forces vary significantly. Each option affords different inherent advantages and disadvantages, discussed here briefly to establish context. Forces may ‘airland’ in either fixed or rotary wing aircraft (the latter commonly referred to as ‘airmobile’). In this case, the ground force has the highest chance of landing intact – which

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<sup>52</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, xvii.



is to say with individuals uninjured and groups together. The viability of the airland option depends upon the availability of suitable landing sites and on the anti-air threat. Soldiers may rapel or ‘fastrope’ from rotary wing aircraft in the hover. This method allows insertion of small coherent groups into restrictive landing sites with relatively low risk of personal injury; however, both soldiers and aircraft are vulnerable during insertion.

The massed static-line parachute option allows large numbers of soldiers and quantities of weapons and equipment to be delivered rapidly. Parachutists may drop from either rotary- or fixed-wing aircraft (many armed forces also train paratroops using hot air balloons). The risk to paratroops – excepting the minor risk of injury inherent in any parachute descent – is dependent upon the anti-air threat during the air transport and air assault or landing phases, and opposition on the ground on the drop zone during the rally. The risk to aircraft from ground-based anti-air fire can be mitigated in part by aircraft formation, run-in speed and altitude. It should be noted this generic description applies to mass, typically static-line, drops. Alternately, it is possible to despatch smaller numbers of soldiers from higher altitudes at significant distances from their drop zones; however, this option is typically reserved for specialists such as pathfinders, reconnaissance, and observer teams; or special forces. Such forces typically deploy without supplementary loads such as the fire support weapons, tactical mobility assets or additional stores deployed as part of mass drops.

Some of these methods, based upon key capabilities, have developed into specialised organisations such as the United States’ heliborne airborne assault; High-Altitude High -Opening (HAHO) and High-Altitude Low-Opening (HALO) advanced parachuting techniques typically

employed by special forces. It should be noted that sustainment and firepower requirements vary widely in the case of special forces and clandestine operations (the latter are defined as “... activity to accomplish intelligence, counterintelligence or other similar activities sponsored or conducted in such a way as to ensure secrecy or concealment.”)<sup>53</sup> An airborne force may consist of both conventional and special forces components, in which case it is referred to as a ‘composite’ force.<sup>54</sup> The range of options available, in terms of deployment and force composition, lend airborne forces great utility, as exemplified by the wide range of tasks they are capable of undertaking. Current United States doctrine lists fourteen tasks for airborne forces and its Australian counterpart identifies eight.<sup>55,56</sup>

## **Tasks**

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<sup>53</sup> Ibid., xvii.

<sup>54</sup> Ibid., 1-2.

<sup>55</sup> {The full range of tasks is:

- a. Provide a show of force.
- b. Seize and hold important objectives until linkup or withdrawal.
- c. Seize an advance base to further deploy forces or to deny use of the base by the enemy.
- d. Conduct raids.
- e. Reinforce units beyond the immediate reach of land forces.
- f. Reinforce threatened areas or open flanks.
- g. Deny the enemy key terrain or routes.
- h. Delay, disrupt and reduce enemy forces.
- i. Conduct economy-of-force operations to free heavier more tactically mobile units.
- j. Exploit the effects of chemical or nuclear weapons.
- k. Conduct operations in all four categories of low intensity conflict:
  - (1) Support for insurgency and counter-insurgency.
  - (2) Peacekeeping operations.
  - (3) Peacetime contingency operations.
  - (4) Combatting [sic] terrorism.

United States Army Field Manual 90-26, *Airborne Operations* ..., 3.

<sup>56</sup> {The full range of tasks is:

- a. seize and hold key terrain;
- b. attack the enemy’s command, control and communications systems;
- c. divert or block enemy reserves;
- d. protect flanks;
- e. capture landing areas for subsequent operations;
- f. delay or cut off an enemy’s retreat;
- g. reinforce, relieve or extract ground troops; or

Brigadier General James Gavin commanded the airborne operation by the 505<sup>th</sup> Parachute Combat Team (reinforced) of the United States' 82<sup>nd</sup> Airborne Division on Sicily on 9 July 1943. The force was tasked to: seize key terrain for a future airhead; block enemy movement; destroy enemy communications; and deny the enemy use of an airfield.<sup>57</sup> This single operation provided examples of the employment of an airborne force to undertake three of the tasks specified in contemporary United States doctrine: to “seize and hold important objectives until linkup or withdrawal” (the second role); “deny the enemy key terrain or routes” (the seventh role); and “delay, disrupt and reduce enemy forces” (the eighth role). The 505<sup>th</sup> Parachute Combat Team thus demonstrated within a single operation the potential versatility of airborne forces.

The Sicilian operation has been criticised for its problems with troop dispersion and casualties on landing. In ‘Airborne Assault,’ Gavin cites Student’s assessment of the operation’s effectiveness, in particular with respect to its role to “delay, disrupt and reduce enemy forces:”

*The Allied airborne operation in Sicily was decisive despite widely scattered drops which must be expected in a night landing. It is my opinion that if it had not been for the Allied airborne landings blocking the Herman Goering Armoured Division from reaching the beach-head, that division would have driven the initial seaborne forces back into the sea. I attribute the entire success of the Allied Sicilian operation to the delaying of German reserves until sufficient forces had been landed by sea to resist the*

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h. assist with the evacuation of Austrlian citizens or foreign nationals.}  
Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 1-1.

*counterattacks by our defending forces (the strength of which had been held in mobile reserve).*<sup>58</sup>

Student described the operation as highly effective and went so far as to state that the airborne operation was decisive in preventing the Germans from defeating the beachhead and repelling the amphibious assault. His analysis shows that the right airborne forces, at the right time and in the right place, can achieve decisive military effects. Airborne operations may be undertaken on any scale and may be decisive, shaping or sustaining.

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<sup>57</sup> James Gavin, *Airborne Warfare*, 1.

<sup>58</sup> Kurt Student, quoted in James Gavin, *Airborne Warfare*, 16.

## DECISIVE, SHAPING AND SUSTAINING OPERATIONS

The scale of airborne operations can vary from the insertion of individual clandestine agents or small groups such as special forces patrols; to corps operations composed of multiple divisions such as the Normandy invasion. Soviet doctrine, for example, identifies four levels of airborne operation described as strategic, strategic operational, strategic tactical and tactical. These are directly related to the size of the airborne force involved, from corps to battalion, and are consistent with Soviet deep operations doctrine. Airborne forces provide options for rapid decisive military action: “Airborne forces provide a means by which a commander can decisively influence operations.”<sup>59</sup> Historical examples illustrate the definitions of decisive, shaping and sustaining operations; and demonstrate how airborne forces of various sizes may achieve each of the effects described.

### Decisive

Decisive operations “... directly accomplish the task ...” and, in the case of offensive operations, are defined as “... attacks that conclusively determine the outcome of major operations, battles and engagements.”<sup>60,61</sup> The German attacks on Fort Eben Emael and Crete, although they differed enormously in scale, may both be considered decisive. Neither force operated in isolation – in the former case, rapid relief from larger ground forces was required due to the size of the airborne force compared to the garrison; in the latter case, extensive logistic

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<sup>59</sup> United States Army Field Manual 90-26, *Airborne Operations* ..., 2.

<sup>60</sup> United States Army Field Manual 3-0, *Operations*, 4-84.

<sup>61</sup> *Ibid.*, 7-22.

sustainment and fire support from the air force were required. However, in both cases the airborne force carried out the decisive act of the operation.

### **Shaping**

In contrast, the airborne element of Field Marshall (later Sir) Bernard Montgomery's Operation Market Garden, though vast, was a shaping operation. Operations are defined as shaping when they "... create and preserve the conditions for the success of the decisive operation;" and, in the case of offensive operations, are defined to "... include attacks in depth to secure advantages for the decisive operation and to protect the force."<sup>62,63</sup> The airborne element of Operation Market Garden; codenamed 'Market,' was intended to "... lay a carpet of airborne troops ..." for the ground element, codenamed 'Garden,' so that Lieutenant General (later Sir) Brian Horrocks' XXX Corps of General Miles Dempsey's Second British Army could lead the Allied 21<sup>st</sup> Army Group through Holland into the German heartland and thereby foreshorten World War II.<sup>64</sup> Market, the airborne element, was thus a shaping operation whose purpose was to facilitate Garden, the decisive ground manoeuvre.

### **Sustaining**

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<sup>62</sup> Ibid., 4-86.

<sup>63</sup> Ibid., 7-25.

<sup>64</sup> Ellis Plaice, *Red Berets '44*, 70.

Sustaining operations are those whose purpose is to “... generate and maintain combat power.”<sup>65</sup> Student’s XI *Fliegerkorps* (Air Corps) on Crete was sustained by air support; the force was both inserted and supplied from the air. And it relied almost completely on offensive support from the air, particularly during the drop and in the first days thereafter. These were clear examples of sustaining operations in the offence, defined as those that “... ensure freedom of action and maintain momentum.”<sup>66</sup> A different example of a sustaining operation is reinforcement of other units. The Russians, for instance, used airborne forces to reinforce salients, isolated groups and major offensives on the Eastern Front during the winter of 1941-1942. Some of these operations were foiled by adverse weather. For example, the drop of the 201<sup>st</sup> Brigade of IV Corps at Medzyn on the night of 2 January 1942 was afflicted by a blizzard; but two of its battalions and the 250<sup>th</sup> Regiment were successfully dropped at Vyazna on 18 January 1942.<sup>67</sup> Sustainment operations in the airborne context may take many forms, which – like reinforcement – are included among the task options in current doctrine.<sup>68,69</sup>

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<sup>65</sup> United States Army Field Manual 3-0, *Operations*, 4-90.

<sup>66</sup> *Ibid.*, 7-27.

<sup>67</sup> Bruce Quarrie, *Airborne Assault...*, 45.

<sup>68</sup> United States Army Field Manual 90-26, *Airborne Operations ...*, 3.

<sup>69</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 1-1.

## CHARACTERISTICS OF AIRBORNE OPERATIONS

Airborne forces are capable of achieving operational or strategic level effects through tactical level action. Airborne operations bear certain characteristics whose influence will vary from operation to operation but which are prevalent regardless of the method of insertion and task, and whether the effect required is decisive, shaping or sustaining. The principle historical examples were predominantly parachute and glider operations, however, the characteristics identified pertain to other forms of airborne operations. Similarly, the operations analysed were predominantly offensive and it is appropriate to recognise that airborne operations are predominantly, though not exclusively, offensive in nature.

### **Offensive Operations**

Airborne operations may be decisive, shaping or sustaining, of which the paper is focused upon the decisive. “The offense [sic] is the decisive form of war” and airborne forces are typically employed in offensive operations.<sup>70</sup> The best-know airborne operations were planned to achieve strategic or operational effects by the rapid seizure of critical objectives or key terrain: an offensive action. The 82<sup>nd</sup> Airborne Division’s Sicilian operations in July 1943 were an exception, in which its objectives were secured as part of a shaping operation – later judged by Student to have proven decisively successful in its effect – however, the preponderance of airborne operations are offensive in nature. It is therefore pertinent to analyse the capabilities of airborne forces in the context of offensive operations. Contemporary United States doctrine (as

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<sup>70</sup> United States Army Field Manual 3-0, *Operations*, 7-1.



used by the Canadian Forces College) defines the generic characteristics of offensive operations as surprise, concentration, tempo and audacity.<sup>71</sup>

Airborne forces' capacity for vertical envelopment can achieve surprise and the rapid concentration of forces. The effects of surprise differ at the tactical and operational levels; and airborne forces are particularly well suited to its achievement: "Airborne, air assault and special operations forces (SOF) attacks ... create disconcerting psychological effects on the enemy."<sup>72</sup> Airborne forces can achieve rapid concentration through mass drops that deliver large forces intact onto or near their objective so the force achieves local numerical superiority. The German airborne force deployed to Crete was approximately 22,000; roughly equivalent in number to the Allied garrison, which numbered approximately 30,000 (not including partially armed local militias).<sup>73,74</sup> The Germans were able to achieve superior combat power at selected points by a combination of surprise, localised weight of numbers and *Luftwaffe* firepower. "An airmobile capability enables commanders to concentrate combat power rapidly over inaccessible terrain, obstacles or into the enemy's rear areas."<sup>75</sup> Mobility in the third dimension thus allows airborne forces to achieve surprise and concentration; and gives scope for bold manoeuvre.

Airborne forces afford potential for audacity in the manoeuvre plan. They offer scope to project cohesive forces over great distances in a short time by strategic, operational or tactical manoeuvre in the third dimension. The rapidity with which forces can be deployed by air allows

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<sup>71</sup> Ibid., 7-8.

<sup>72</sup> Ibid., 711.

<sup>73</sup> Bruce Quarrie, *Airborne Assault...*, 17.

<sup>74</sup> Alan Clark, *The Fall of Crete*, 37.

<sup>75</sup> Commonwealth of Australia, *Manual of Land Warfare Two, Employment of Artillery*, (Canberra, 1995), 16.7.

the force to achieve relatively higher operational tempo than the enemy: “The mobility of forces using fixed or rotary wing aircraft allows them to move rapidly from a remote location to the vicinity of an objective. This enables a commander to operate within the enemy commander’s decision-making cycle ...”<sup>76</sup> The potential for bold and rapid action makes airborne forces especially suitable for offensive operations.

The generic capabilities of airborne forces thus fulfil the defining characteristics of the offensive operations in which they are generally employed. Airborne forces facilitate the achievement of surprise; rapid concentration of forces; audacious manoeuvre by vertical envelopment; and ability to defeat the enemy’s operational tempo by operating within his decision-making cycle.<sup>77</sup> The characteristics of airborne operations may be gleaned from the experiences of history and the potential of emergent capabilities as incorporated into doctrine.

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<sup>76</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 2-1.

<sup>77</sup> The decision cycle as described by Lieutenant Colonel Boyd, United States Air Force is: ‘Orientation, Options, Decision, Action.’

## GENERAL CHARACTERISTICS OF AIRBORNE OPERATIONS

Historical analyses of previous airborne operations, and the study of current doctrine, show significant consistency in their general characteristics. Australian doctrine emphasises strategic mobility and surprise.<sup>78</sup> Both Australian and United States doctrine recognise the joint nature of airborne operations as a defining characteristic.<sup>79,80</sup> Consequently, airborne operations require integrated planning including detailed intelligence. United States doctrine explicitly acknowledges the potential complexity of airborne operations and therefore a demand for “...robust, flexible command and control that emphasizes [sic] mission-type orders ...”<sup>81</sup> This approach to command and control at the higher levels works in conjunction with the simplifying effect of standard operating procedures (SOP), especially important at the tactical level. United States airborne doctrine places high importance upon the link-up with follow-on forces, critical in the context of sustainment. The offensive nature of airborne operations is emphasised in both United States “... aggressive, rapid seizure of the assault objective”<sup>82</sup> and Australian doctrine: “... rapid action to seize objectives.”<sup>83</sup> These characteristics are interrelated - they effect airborne operations in conjunction. A thorough understanding allows planners to balance their effects and mitigate risk. These characteristics of airborne operations are consolidated for detailed analysis.

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<sup>78</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 2-1.

<sup>79</sup> *Ibid.*, 2-1.

<sup>80</sup> United States Army Field Manual 90-26, *Airborne Operations ...*, 4.

<sup>81</sup> *Ibid.*, 4.

<sup>82</sup> *Ibid.*, 4.

<sup>83</sup> Commonwealth of Australia, *MLW 2, Employment of Artillery*, 16.20.

Airborne operations are joint and combined efforts that require integrated planning, including command and control measures. Detailed intelligence is especially important to ensure the timing and location of the operation is effective; and also due to the light and therefore potentially vulnerable nature of the force once deployed. Airborne forces undertake land operations when air power alone is incapable of achieving the aim. A favourable air situation is a prerequisite for the air transport phase and for subsequent support from the air such as fire support, reinforcement and re-supply. The air element's planning must include the effects of weather. Tactical mobility once deployed, t

process.”<sup>84</sup> Reverse planning is particularly demanding for joint staffs as it requires clear direction early in the planning process for preparations to proceed, balanced with sufficient flexibility to accommodate unforeseen contingencies. This balance affects the interests of the components involved and tests their co-operation from planning through to execution.

In airborne operations, joint co-ordination must extend from a plan’s initiation to its tactical level execution. According to Gavin: “The whole success of an airborne operation depends more than anything else on ... co-operation and teamwork ... They must work together as often as possible. And the team should be changed as seldom as possible.”<sup>85</sup> Current airborne doctrine emphasises the importance of effective integration in planning and execution: “Airborne operations are complicated by the need to coordinate the actions of a force that is functionally disparate and whose mission and tasks are complex.”<sup>86</sup> Complexity in joint and combined operations is simplified in part by standardised joint phasing and further mitigated by clear command and control measures.

Joint phases help synchronise actions at the component level. In the case of airborne operations, standardised phases provide coherence to the plan so that air and land components’ roles – and those of maritime, special forces’ and information operations as applicable – are clear during each part of the operation. Joint command and control status is delineated by phase. The same joint phases may also be used within components. In the air component, for example, reconnaissance; transport; deep strike; counter-air and offensive support tasks differ per phase.

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<sup>84</sup> United States Army Field Manual 90-26, *Airborne Operations* ..., 4.

<sup>85</sup> James Gavin, *Airborne Warfare*, 53.

<sup>86</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations*..., 4-1.

Similarly, joint phases are used to co-ordinate elements of the land plan such as ground reconnaissance, pathfinder operations, land manoeuvre and fire support (considered further in analysis of the air situation and firepower).<sup>87</sup> Separate phases may be incorporated within the ground tactical phase at the discretion of the land component commander. These phases apply solely to the land component, with exceptions such as co-ordination of joint fire support.

Analyses of Operation Mercury and Operation Market on the issue of the selection of drop- and landing-zones show juxtaposed levels of co-operation between land and air components. Student's assault plan for Operation Mercury was very direct, with airborne forces landing on or proximate to their objectives. This approach exposes the airborne force to the objective and must therefore be considered in the context of tactical surprise and fire support available to suppress defenders. Urquhart's landings achieved tactical surprise in Operation Market; yet, despite tactical level commanders' protests, the distance from drop- and landing-zones to objectives did not accord with the land component's capabilities and limitations and thereby jeopardised the operation. This is an important issue during joint operational level planning.

Strategic decisions in Operation Market reflected concern for the preservation of air assets; however, they were at odds with the priorities and abilities of the tactical land component. Plans pertaining to aircraft allocation and drop- and landing-zones were made in part with a view to aircraft survivability based on German anti-aircraft defences. There were insufficient aircraft available to support the deployment plan. The tactical land forces' preferred allocation,

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<sup>87</sup> Commonwealth of Australia, *MLW 2, Employment of Artillery*, 16.29-16.45.

especially important to the 1<sup>st</sup> British Airborne Division, was more akin to that envisaged for Operation ‘Comet’ (which had contributed much to the genesis of Operation Market Garden). Major General P.L. Williams of the United States Air Force, supported by Brereton, was responsible for separation of the assault waves over three days. Air Vice Marshall Hollinghurst, Royal Air Force, allocated drop- and landing-zones.<sup>88</sup> Majors General R.E. ‘Roy’ Urquhart, Commander 1<sup>st</sup> British Airborne Division, Gale of the 6<sup>th</sup> Division, and S.F. Sosabowski of the Polish Parachute Brigade voiced their objections. Gale’s advice to Browning was unequivocal.<sup>89</sup> Resolution between strategic and tactical interests sits at the operational level of command. Browning’s Corps Headquarters must, therefore, be held at least partially accountable. Numerous airborne operations had recently been cancelled or postponed and there was pressure to proceed “Sunday 17 September dawned a little misty, but with every prospect of a fine day to follow. There was much relief among the various commanders; they need give no thought to cancellation.”<sup>90</sup> That the operation proceeded as planned, notwithstanding other issues, is a reflection of poor integration of air and land component interests in planning, and arguably inadequate leadership, at the operational level.

Browning’s lack of airborne operational experience contributed to the execution of a plan in which the potential implications of key decisions by planners had been recognised by commanders with better airborne credentials. By contrast, Student possessed personal airborne

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<sup>88</sup> Martin Middlebrook, *Arnhem, 1944...*, 443.

<sup>89</sup> {“‘At the very least,’ Gale advised, ‘there should be a *coup de main* brigade drop to hold the bridge until the main force arrives. Without such a drop, the chances of success are slim.’ Browning pressed further. ‘What would you do if you *had* to accept the plan?’ ‘Then, Sir,’ Gale relied, ‘I should resign.’ Browning did not resign, but he realised the peril his men were facing. ‘We can hold the Arnhem Bridge for four days,’ he told advisers [sic]. ‘But I think we might be going a bridge too far.’”}

Ellis Plaiice, *Red Berets '44*, 74.

<sup>90</sup> Martin Middlebrook, *Arnhem, 1944...*, 5-19, 75.

operational experience and an intimate knowledge of air and ground forces. And, importantly, the forces deployed during Operation Mercury were predominantly *Luftwaffe* with the exception of reinforcements such as the 22<sup>nd</sup> Mountain Division. This allowed him to better integrate the air and land components to exploit their respective strengths and mitigate against their weaknesses. XI Air Corps sought to replicate on Crete the tactic that had proven so successful in Holland by landing on or near its objectives. Student referred to his variation on this theme as the ‘oil-spot’ method: “... dropping units in complete groups over a wide area and assembling them for action as rapidly as circumstances would permit.”<sup>91</sup> The operation was ultimately successful but highly costly and the Germans took heavy casualties on landing. This failure at the level of tactical implementation may be largely attributed to flawed German intelligence of the ground and the Allied defences.

## **Intelligence**

Intelligence is a principle of war that is of particular importance to airborne forces because their effectiveness depends greatly upon the timing and location of their action; and they are potentially vulnerable during and after insertion. “In major conflict airmobile forces can be extremely effective when deployed behind the FEBA [Forward Edge of the Battle Area], however, the operation requires particularly good intelligence, planning and priority of available fire support.”<sup>92</sup> Neither the Allies nor Germans were able to gather a complete intelligence picture in Operation Mercury; yet some of the failures are surprising, notwithstanding the benefit

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<sup>91</sup> Roger Edwards, *German Airborne Troops...*, 61.

<sup>92</sup> Commonwealth of Australia, *MLW 2, Employment of Artillery*, 16.7.



of hindsight. Intelligence staff at Lohr's VIII Air Corps Headquarters and at Student's XI Air Corps failed badly in two fundamental areas of military intelligence: the ground and the enemy.

*Assessments of the strength of the garrison were conflicting and the morale and efficiency of the defenders had been underestimated. Geographical features and detail had been wrongly interpreted from air reconnaissance photographs; the result, men and gliders were sent crashing headlong into terraced hillsides whereas comparatively smooth landings had been expected.*<sup>93</sup>

Failure by the German Intelligence Services to assess correctly the enemy, in conjunction with the direct assault approach, led in some cases to airborne troops descending literally on top of Allied defenders. Many consequently became casualties before they hit the ground. Some who survived landed among defended locations and were isolated from their colleagues, effectively encircled. Flawed terrain analysis led to selection of poor drop zones and glider landing sites. The combination of landing on defended locations and of poorly selected drop- and landing-zones led to heavy initial losses: "... 4,000 killed and missing, apart from wounded, out of 22,000 men we dropped on the island – 14,000 of these were parachute troops and the rest belonged to the Mountain division. Much of the loss was due to bad landings ..."<sup>94</sup> The failure of German intelligence is remarkable given the relative impunity with which they were able to undertake aerial surveillance and reconnaissance. Part of the explanation may lie in the Allies' static defence, which they were forced to adopt due to their strictly limited ground

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<sup>93</sup> Roger Edwards, *German Airborne Troops...*, 93.

<sup>94</sup> Kurt Student, quoted in B.H. Liddell Hart, *The Other Side of the Hill: Germany's Generals: Their Rise and Fall, with Their Own Account of Military Events, 1939 – 1945*, (Taylor, Garnett, Evans and Co. Ltd.: Watford, 1951), 242.

mobility and the *Luftwaffe*'s air supremacy. Alan Clark quotes Student as saying: "our information about the enemy was scanty. Sometimes British strength was put as high as 100,000 yet our pilots reported that the island appeared lifeless."<sup>95</sup> Allied troop movement by day was limited due to German air superiority and as a consequence the effectiveness of aerial reconnaissance was reduced. This hampered the Germans' ability to assess the Allies' strength and dispositions with sufficient accuracy.

Intelligence must be both accurate and timely if it is to be useful. Among some serious failures, there were examples of accurate and timely intelligence on both the Allied and German sides during the Cretan campaign. The Allies had correctly assessed the likely objectives of prospective German airborne and amphibious assaults. The Allies predicted with some accuracy the German capability and intent for an airborne operation, to the extent that a detailed assessment was made of aircraft within range and their lift capacity. The Allied intelligence assessment pertaining to the airborne element of Operation Mercury (codenamed 'Scorcher') proved remarkably accurate:

*On the 16<sup>th</sup> [May, 1941] Intelligence reports predicted that Crete would be attacked on the 17<sup>th</sup>, 18<sup>th</sup> or 19<sup>th</sup> by the XI German Corps including the 22<sup>nd</sup> Airborne Division, 25,000 to 35,000 men coming by air and 10,000 by sea. The objectives would be Maleme, Canea and the valley south-west of it, and Retimo. There would be a sharp attack by some 100 bombers and fighters and then 600 troop-carrying aircraft would drop waves of paratroops.<sup>96</sup>*

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<sup>95</sup> Student, quoted in Alan Clark, *The Fall of Crete*, 54.

<sup>96</sup> Gavin Long, *Australia in the War of 1939 – 1945, Series One: Army, Volume II: Greece, Crete and Syria*, (Australian War Memorial: Canberra, 1953), 219.

Where a threat is defined as consisting of capability and intent, the Italian naval threat was limited in its capability due to the Royal Navy's sea control in the Mediterranean. The *Luftwaffe* and *Regia Aeronautica* (Italian Air Force) denied the British fleet freedom of manoeuvre during daylight hours, particularly in the narrow straits among the island chains, but the British were clearly the dominant naval power. The Germans therefore lacked the ability to generate significant amphibious lift capacity without running the risk of serious interference at sea unless they were prepared to dedicate aircraft to escort the amphibious group. The Allies had

advances.<sup>97,98</sup> Gavin states “Coordination for bombing and fighter support is especially vital and air supply may be equally so.”<sup>99</sup> Command and control for Student was simplified by the fact that the whole force was composed of *Luftwaffe* forces or *Wehrmacht* formations assigned for the operation. The Assault Regiment established radio communications from Crete to Greece immediately upon landing so that Student had some ability to co-ordinate land and air component operations.

The emphasis on co-ordination remains in modern doctrine. Australian airborne doctrine, for example, prefaces the air component’s tasks by stating that the “Air Element Commander (AEC) air force’s support to the airborne force requires the co-ordination of: ... [six roles are listed]”<sup>100</sup> Air element co-ordination with land forces is especially important in the last three joint phases of airborne operations: air transport; air assault or landing; and ground tactical.<sup>101,102</sup>

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<sup>97</sup> {US doctrine identifies the US Air Force’s support to airborne operations as including:  
a. Airlift.  
b. Counterair [sic].  
c. Close air support.  
d. Tactical air reconnaissance.  
e. Air interdiction.  
f. Special air warfare operations.  
g. Electronic warfare.  
h. Suppression of enemy air defense.}

United States Army Field Manual 90-26, *Airborne Operations* ..., 2.

<sup>98</sup> {Australian doctrine specifies that the Air Element Commander (AEC) air force’s support to the airborne force requires the coordination of:

- a. air transport,
- b. fighter escort for the air transport,
- c. close air support,
- d. naval gunfire support,
- e. indirect fire support, and
- f. integration with any battlefield air interdiction, strike or dedicated electronic warfare support aircraft. }

Commonwealth of Australia, *ADFP 39: Airborne Operations*..., 7-3 – 7-4.

<sup>99</sup> James Gavin, *Airborne Warfare*, 19.

<sup>100</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations*..., 7-3.

<sup>101</sup> {The ABCA (Armies) agreements list five phases of an airmobile operation:

The air situation required for insertion pertains not only to transport aircraft that deliver the paratroops but also to supporting aircraft, whether command and control; electronic warfare; fighter escort; ground attack; or bombers. Modern airborne force packages typically include some or all of these supporting aircraft. In the case of a surprise operation, the attack aircraft may be in ‘overwatch’ and their support may be enacted at the behest of pathfinders on the ground, the airborne force or on their own initiative. Airborne operations are normally preceded by the Joint Suppression of Enemy Air Defences. In the case of a surprise operation, it may be performed at the last minute or even held until enemy air defence activity is identified in order to maintain the maximum benefit of surprise. Enemy air defences may be suppressed by a variety of assets, be lethal or non-lethal; and may employ kinetic or other means such as radar and radio jamming, directed-energy weapons, decoys or dazzling. This is a specific application of firepower in order to provide a favourable air situation.

Airborne forces require a favourable air situation for successful insertion. Air forces must therefore be prepared to establish and maintain a favourable air situation, including offensive counter-air and air defence. The favourable air situation necessary for successful insertion of airborne forces must subsequently be sustained, which is to say air forces must be prepared to maintain a favourable air situation in order to continue to provide fire support and

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- a. staging;
  - b. loading;
  - c. air transport;
  - d. air assault or landing; and
  - e. ground tactical.

Australian doctrine combines the staging and loading phases into a single phase termed ‘mounting.’<sup>102</sup> Ibid., 2-3.

<sup>102</sup> {Similarly, US doctrine identifies four phases, using the term ‘marshaling’ [sic] in lieu: “marshaling, air movement, landing, and ground tactical.”}

sustainment to the airborne force on the ground. Modern airborne operations typically follow a pattern of air support including photographic reconnaissance; insertion of pathfinders; convoy escort; preparatory or supporting fire and extraction.

The *Luftwaffe*'s support during Operation Mercury incorporated many of the roles played by the air component in modern airborne operations, including: reconnaissance, fighter escort, preparatory fire interdiction and close air support. The Allies suffered badly from the Germans' air superiority over the Mediterranean and Crete, not only in the period leading up to the airborne assault but also in the days of fierce fighting that followed. The combined effect of German success on the ground and in the air inexorably reduced Freyberg's options so that by 24 May 1941 he had decided that "... the defence of Crete was no longer feasible. One of his biggest problems was that the *Luftwaffe* and *Regia Aeronautica* enjoyed almost total air supremacy, making daylight counter-attacks hazardous in the extreme."<sup>103</sup> Clear skies contributed to Germany's ability to exploit their air superiority. The impact of weather on airborne operations is now examined in more detail.

Freyberg recognised the threat posed by German air superiority and made considerable efforts to secure protective air cover for the garrison. Wavell's competing priorities stretched his resources to the limit, but the matter was raised at the highest possible levels, from Middle East Headquarters to the Chiefs of Staff Committee and Churchill. The theatre air component commander, Air Marshal Longmore, inspected Crete. His conclusion countered the Joint Planning Staff's recommendation for two fighters with a third in reinforcement, to conclude

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United States Army Field Manual 90-26, *Airborne Operations* ..., 4-5.

<sup>103</sup> Bruce Quarrie, *Airborne Assault*..., 25.

“Suda Bay could be held open by a squadron of Hurricanes at 90% strength, and with 100% replacement rate and a reserve of pilots.”<sup>104</sup> There was no Allied air component on the island by the time of Operation Mercury, and the Germans were able to exploit fully air superiority.

## **Weather**

Parachute operations are susceptible to the vagaries of meteorology, particularly high winds and cloud cover: “All airborne operations, and paratroop operations in particular, are subject to weather conditions, not only in the objective area but also to a lesser extent at the mounting airfield and en route.”<sup>105</sup> High winds increase dispersion of paratroops under canopy during the landing phase, causing dispersion of operational groupings and disorientation of individuals, consequently exacerbating the difficulties of assembling into unit groups (‘rallying’) after landing.<sup>106</sup> Cloud or fog cover reduces visibility for aircrew of transport aircraft and dispatchers, which thus interferes with the delivery of airborne troops where it is necessary to visually identify the drop zone or associated markers. Improved aircraft navigation and communications may largely negate the requirement for visual identification; however, obscuration over the drop zone continues to present difficulties for paratroops during the descent and while preparing for landing. These conditions therefore increase the risk of casualties before battle is joined with consequent reduction in the concentration of forces.

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<sup>104</sup> Alan Clark, *The Fall of Crete*, 39.

<sup>105</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 4-8.

<sup>106</sup> *definition from ADFP 39*

Poor weather can effect air operations performing the full range of tasks in support of the land component and at either end of the air link. For example, the Canadian war correspondent Bob Francis joined a re-supply mission to Arnhem on 19 September 1944. He refers to the impact of poor visibility caused by local weather: “After a delay caused by bad visibility, the aircraft took off in the early afternoon.”<sup>107</sup> The problem for aircraft was at the opposite end of the flight during Operation Mercury, when dust about the runways in Greece affected visibility in a manner similar to fog or cloud. The lack of visibility seriously interfered with transport and glider pilots as they sought to establish correct formations with consequent disruption to the run-in over Crete: “... pilots found it impossible to make formation and effect properly co-ordinated approaches to their dropping zones.”<sup>108</sup> Ironically, this disruption provided Student with a force of 550 uncommitted parachutists, which he was subsequently able utilise as a situational reserve and employ at Maleme to sway the battle for the airfield in favour of the assault.<sup>109</sup>

Innumerable airborne operations have been postponed or cancelled due to inclement weather. The Germans modified airborne operations in their plan seize the lowlands, specifically plans to capture Belgian bridges over the River Maas (*Meuse*) and Albert Canal, due to the prevalent conditions: “... HQ and 2<sup>nd</sup> Companies under Walther himself were supposed to have parachuted on to Oslo’s Fornebu airport but were prevented from jumping because of fog over the target.”<sup>110</sup> Weather can seriously interfere with the airborne force due to its reliance on the air in the last three joint phases. The latter example pertains to an inherent potential vulnerability

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<sup>107</sup> Martin Middlebrook, *Arnhem, 1944...*, 387.

<sup>108</sup> Roger Edwards, *German Airborne Troops...*, 91.

<sup>109</sup> *Ibid.*, 93.



of airborne forces: reliance on the air component for strategic mobility. Another inherent potential vulnerability is tactical mobility in the decisive ground phase.

### **Tactical Mobility**

Airborne operations are examples of strategic manoeuvre and, as such, employ strategic movement assets during insertion. However, the force has very limited capacity for manoeuvre once deployed. Manoeuvre on the battlefield is defined as “... movement in combination with fire, or fire potential, to achieve a position of advantage in respect to the enemy ...”<sup>111</sup> The means by which battlefield movement is performed in close proximity to the enemy (or at the lower levels of war) is referred to as ‘tactical mobility.’ Airborne forces become, in effect, dismounted troops after their insertion and are typically composed principally of light infantry with limited combat support (artillery, armour, engineers) and combat service support (logistics, transport, medical services). “Airborne forces can only conduct independent operations for limited periods. Sustained operations require supplementation in mobility, combat support and logistics support.”<sup>112</sup> Combat and service support elements are limited largely in consequence of airborne forces’ paucity of mobility assets.

Airborne forces lack assets to re-deploy troops when they have landed: “Once on the ground, the airborne force has limited tactical mobility. That mobility depends on the number

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<sup>110</sup> Bruce Quarrie, *Airborne Assault...*, 33.

<sup>111</sup> Canadian Forces College, *Combined and Joint Staff Officer's Handbook...*, VI-2-8/14.

<sup>112</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 11-4.

and type of vehicles and helicopters that can be brought into the objective area.”<sup>113</sup> Ground transport assets inserted with the airborne force are likely to be predominantly dedicated to command and control; deployment of heavy weapons and ammunition; and logistic support. Lack of mobility for troop movement increases the difficulty for airborne forces of achieving tactical surprise through manoeuvre. There is therefore a relationship between the characteristics of tactical mobility and surprise in airborne operations. Limited tactical mobility is a potential vulnerability, as surprise is a potential advantage.

An obvious solution to the tactical mobility problem is to land the airborne force on or near the objective and thereby obviate the requirement for tactical mobility. “The aim of paratroop [sic] insertions is to land a force and its equipment either overtly or clandestinely on, or near, an objective area.”<sup>114</sup> An additional benefit of insertion proximate to the objective is the achievement of tactical surprise. The challenge in planning airborne operations is to strike a balance between the limitations of tactical mobility; the exploitation of tactical surprise; and the risk, posed by defenders, during insertion on or near the objective. Two historical examples by different forces: the Allies at Arnhem and the Germans at Fort Eben Emael; illustrate opposite ends of the spectrum in the proximity between drop zone and objective, and tactical surprise. From these examples it can be seen that the consideration of tactical mobility can have a significant effect on the outcome of airborne operations and it is a factor whose relevance must be considered during integrated planning.

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<sup>113</sup> United States Army Field Manual 90-26, *Airborne Operations* ..., 4.

<sup>114</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations*..., 1-3.

The Allied landings during Operation Market Garden left long distances between unit and formation drop- and landing-zones and their objectives. Urquhart's 1<sup>st</sup> Airborne Division's drop zones were some five to eight miles from its objectives in Arnhem. The British were thus unable to take immediate decisive offensive action. Rather, they were forced to commence a slow and costly approach towards their objectives. The paratroopers met relatively small Panzer forces, with armoured firepower and mobility, during their approach and were badly outgunned. In 'The Reckoning,' the final analytical chapter of his study of Arnhem, Martin Middlebrook cites as contributing to the operation's failure: "... refusal to consider a night drop or to land at least parts of the force as coup-de-main parties closer to the two bridges, and the failure to land any part of the force at both ends of the bridge objectives, all of which threw away an airborne force's most valuable asset: surprise."<sup>115</sup> The relationship between tactical mobility and surprise is inverted in an analysis of the German surprise attack on Fort Eben Emael in Holland on 10 May 1940.

The German plan showed careful consideration of tactical mobility and surprise. It negated the former and exploited the latter by landing directly upon the objective: "The surprise attack on Fort Eben Emael was carried out by a Lilliputian detachment of 78 parachute-engineers ... This small detachment made a completely unexpected landing on the roof of the fort, overcame the anti-aircraft personnel there, and blew up the armoured cupolas and casements of all the guns ..."<sup>116</sup> In this operation, seven gliders landed directly on their objective while simultaneous parachute operations seized other crossing points on the Albert Canal and Meuse River. Student assessed the effectiveness of the raids as a whole by the fact that their objectives

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<sup>115</sup> Martin Middlebrook, *Arnhem, 1944...*, 443.

were, in the main, seized intact: "... in the Belgian-Dutch area the only bridges that were not blown up by the defenders were those that the parachute troops attacked; all the other bridges were demolished according to plan"<sup>117</sup> The German operation at Fort Eben Emael serves as an example of a strategic effect achieved through offensive action at the tactical level by a small airborne force. Success in the lowlands emboldened the Germans to later undertake more ambitious airborne operations. The tactic of vertical envelopment, and in particular the arrival of troops on or very near to their objective with the advantage of tactical surprise, had demonstrated the potential of airborne forces.

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<sup>116</sup> Kurt Student, quoted in B.H. Liddell Hart, *The Other Side of the Hill...*, 165.

<sup>117</sup> *Ibid.*, 164.

## CRITICAL CHARACTERISTICS OF AIRBORNE OPERATIONS

The airborne forces in both of the above operations achieved initial tactical surprise. The Germans used it to maximum advantage at Fort Eben Emael whereas the Allies, specifically the British, forfeit its benefit on the approach to Arnhem. The British were dropped too far from their objectives without tactical mobility. They were badly outgunned by the 9<sup>th</sup> (Hohenstaufen) and 10<sup>th</sup> (Frundsberg) SS Panzer Divisions because of their light scale organic weapons and failure to exploit Allied offensive air support. They quickly exhausted limited ammunition supplies in the fighting to their objectives and were not adequately resupplied or reinforced to hold the gains they made. This simplistic analysis demonstrates the critical value of surprise, firepower, and sustainment in Operation Market. Each of these critical characteristics plays a distinct role, but one that must be considered in the context of the whole operation.

### Surprise

The value of surprise is a principle of war and by no means unique to airborne operations.<sup>118</sup> Surprise is intangible, hard won and easily lost, and of vital importance in airborne operations for two reasons: it maximises the effect of the rapid delivery of large numbers in coherent combat units through vertical envelopment; and it partially compensates for their inherent lack of firepower and mobility. Airborne operations allow the commander to achieve surprise at the strategic, operational or tactical level, according to the situation and the force

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<sup>118</sup> {This is the case in: Australia, The People's Republic of China, France, Great Britain, Russia (Former Soviet Union), US Army and US Navy}  
W.T. Johnsen; D.V. Johnson II; J.O. Kievit, D.C. Lovelace, Jr; and S. Metz , *The Principles of War in the 21<sup>st</sup> Century: Strategic Considerations*, Strategic Studies Institute, US Army War College, 2003.

deployed. The relationship between tactical and operational surprise is captured in current United States doctrine for offensive operations: “Operational and tactical surprise complement each other. Operational surprise creates the conditions for successful tactical success ... But tactical surprise is fleeting.”<sup>119</sup>

Airborne forces that are ready to fight immediately upon landing are best able to take maximum advantage of this temporary state of uncertainty. Airborne forces that achieve surprise are able to exploit the enemy’s confusion and thus negate some of their inherent disadvantages in firepower and manoeuvre. The Germans exploited tactical surprise in the attack on Fort Eben Emael to capture the fortification and its garrison. This operation exemplified the advantages of surprise and speed: “The role of airborne troops as foreseen in those early days by Oberst Bassenge lay in their capacity for surprise and in the speed with which they could strike at targets beyond the immediate reach of ground troops.”<sup>120</sup> The level of co-operation between the air and ground forces enhanced surprise. The glider pilots’ excellent skills made possible rooftop landings with pinpoint accuracy. The use of vertical envelopment rendered the fort’s defences largely ineffective and allowed a force of 78 to overwhelm an estimated garrison of 1200, of whom approximately 500 were on leave or billeted in local villages so that the Belgian force captured approximated 700.

An Allied example of the exploitation of tactical surprise to secure an operational objective is the seizure of the bridge at Benouville, now known as Pegasus Bridge, in the first hours of D-Day, 6 June 1944. To put this action into perspective it is appropriate to summarise

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<sup>119</sup> United States Army Field Manual 3-0, *Operations*, 7-10.

selected operations by which British and Allied airborne formations co-operated to secure the northern, or left, flank of the D-Day landings. It is noteworthy that Major General Richard ‘Windy’ Gale, commander of the 6<sup>th</sup> Airborne Division, had studied German glider assaults on the Corinth Canal and Fort Eben Emael when he was forming plans for this crucial initial phase.<sup>121</sup>

Major John Howard’s D Company of the 2nd Battalion, Oxford and Buckinghamshire Light Infantry, seized the bridge at Benouville to secure vital crossing points for the Allied advance. The first of D Company’s gliders landed at 0025 hours. Five minutes later the main landings were preceded by pathfinders of the 22<sup>nd</sup> Independent Parachute Company, accompanied by Brigadier Nigel Poett, commander of the 5<sup>th</sup> Parachute Brigade. The main drop started within 30 minutes. The 5<sup>th</sup> and 3<sup>rd</sup> Brigades (the latter, commanded by Brigadier James Hill, was the foundation upon which the Airborne Division had been raised) parachuted in with Gale’s Headquarters to clear landing grounds for the gliders of the 6<sup>th</sup> Airlanding Brigade, commanded by Brigadier Hugh Kingsley. Lord Lovat’s 1<sup>st</sup> Special Service Brigade commandos fought through from Sword Beach to the 6<sup>th</sup> Airborne Division by 1330 hours and Kingsley’s gliderborne troops completed the beachhead when they landed that evening.<sup>122</sup> The net effect of all these formations landing in such quick succession was that the 6<sup>th</sup> Airborne Division (which included the 1<sup>st</sup> Canadian Parachute Battalion) was able to exploit its initial advantage to rapidly build up forces and achieve local numerical superiority. Even with its light scales of weapons

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<sup>120</sup> Roger Edwards, *German Airborne Troops...*, 68.

<sup>121</sup> Ellis Plaice, *Red Berets '44*, 29-30.

<sup>122</sup> *Ibid.*, 16-19.

and equipment, it was able to hold off German counter-attacks until 26 August 1944.<sup>123</sup> This operation demonstrates that large airborne organisations can exploit initial success with thorough co-ordination and rapid action.

Larger-scale airborne operations have certain generic requirements that can increase the difficulty of achieving surprise. Simple examples are the requirements of drop zones (DZ) and the limitations of large troop transport aircraft. Ideally, drop zones for large-scale parachute operations are capable of accommodating the entire force in one pass so that aircraft exposure is minimised. Australian doctrine identifies fifteen factors to be considered in the selection of drop zones, of which the first three are “enemy dispositions and capabilities; command and control; and proximity to objectives.”<sup>124</sup> It must be assumed that the enemy also knows these factors and may therefore identify drop zones as readily as the planning staff.

The challenge in planning airborne operations, therefore, is to balance the interrelated characteristics of tactical mobility and surprise in selecting a suitable drop zone with acceptable proximity to the objective. The troop transport aircraft that deploy airborne troops in large numbers are typically limited in their speed and manoeuvrability. Selection of formations, run-in direction and altitude can help mitigate against these limitations to enhance aircraft survivability and reduce casualties to the airborne force prior to the ground tactical phase. These simple considerations; drop zones and aircraft limitations, illustrate the difficulty in either achieving tactical or operational surprise.

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<sup>123</sup> Bruce Quarrie, *Airborne Assault...*, 75.



The Germans failed to achieve surprise in Operation Mercury yet achieved overall success; however, they did so at such a high price that Hitler never again committed troops to an airborne operation. In this regard, the *Fallschirmjager* won a Pyrrhic victory on Crete.

## **Firepower**

Firepower is one of three components of combat power: firepower, manoeuvre and morale. Ground forces operate using a combination of fire and manoeuvre. Airborne forces characteristically lack organic heavy fire support assets and tactical mobility assets for fire and manoeuvre respectively. They therefore depend upon fire support and are limited to dismounted manoeuvre. Airborne forces may employ direct and indirect fire support from organic and supporting weapons systems, including joint and combined assets. “The primary source of fire support for airborne assaults is the US Air Force. US Navy / Marine Corps air assets and NGF [Naval Gunfire] if available will also be used.”<sup>125</sup> Airborne forces tend to rely more heavily on fire support from the air, particularly in the critical period immediately after landing.

The force is especially vulnerable to local counter-attacks during the period from the time that it rallies until its organic assets can be brought into action. “FA [Field Artillery] and mortars will provide fire support for the airborne force within 15 minutes after the beginning of the assault.”<sup>126</sup> Offensive air assets are likely to be used in Close Air Support (CAS) or Battlefield Air Interdiction (BAI). Aerial platforms may be used to enhance situational

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<sup>124</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, Annex A to Chapter 12.

<sup>125</sup> United States Army Field Manual 90-26, *Airborne Operations ...*, 6.

<sup>126</sup> *Ibid.*, 6.

awareness by utilising their sensor array and communications. Ideally, Airborne Early Warning and Command Systems (AEWACS) will be available to support the airborne operation. “Both communications and offensive support for airborne operations require the integration of single Service communications assets, tactical and strategic communications systems ...”<sup>127</sup> This level of joint co-operation depends upon a high degree of co-ordination, previously examined as part of integrated planning. Planning must include an analysis of organic and external fire support available.

The airborne force will be tailored for the environment, threat and tactical task. Complex terrain (jungle, mountainous, urban) may limit the employment of some heavy calibre direct and indirect fire systems. Regardless of terrain, the physical limitations of the method of insertion preclude some weapons systems due to their weight or bulk. In some cases, the weight or bulk of ammunition alone may preclude deployment. Airborne forces’ lack of organic transport exacerbates the difficulty of manoeuvring vital firepower assets during the ground operations phases; and for ad hoc deployment or redeployment for contingencies such as local counter-attack. Examples are anti-armour and indirect fire weapons; however, heavy machineguns and even breaching equipment may also be subject to the same limitations.

The choice of which weapons to deploy in a given instance is influenced by many factors, but principally the nature of the objective and of the enemy likely to be encountered. Major Brian Farquhar’s timely intelligence pertaining to the presence of German Panzer divisions in the Arnhem area is an oft-cited example of poor utilisation of tactical information.

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<sup>127</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 9-2.

Prior to the Arnhem jump, Lieutenant Colonel John Frost was not privy to intelligence of German Panzers in the area of the British 1<sup>st</sup> Airborne Division's drop zones and objectives. Frost's reaction was "... his battalion would still have been quite happy to carry on with the operation, but could have benefited from a warning by taking more anti-tank weapons and ammunition and possibly leaving such heavy items as mortars behind."<sup>128</sup> The Allies may have alleviated some of the ground forces' lack of heavy weapons, had they exploited their air superiority. By contrast, the Germans made good use of their air superiority to interdict, isolate, and suppress the Allied defenders on Crete.

### **Sustainment**

Insertion through vertical envelopment necessitates that airborne forces operate without conventional land- or sea-based lines of communication. They thus inherit the characteristics of light infantry with the additional feature of isolation upon insertion – they effectively find themselves in non-contiguous area of operations until they marry up with ground forces or are extracted. They are required to operate, until resupplied, with whatever resources can be deployed in upon insertion. Typically, this represents a few days' supplies – somewhere between three and seven, depending upon the size of the force and its task: "Initial operations will normally be executed and maintained on austere scales, with only essential equipment, supplies and personnel being moved into the objective areas."<sup>129</sup> Airborne forces' sustainment is therefore more difficult than that of infantry operating in contiguous battlespace, with lines of

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<sup>128</sup> Martin Middlebrook, *Arnhem, 1944...*, 67.

<sup>129</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 11-2.

communication for re-supply, replenishment, recovery, evacuation, and all the usual functions of the logistics tail. Sustainment is thus a critical vulnerability for airborne forces.

*After the initial airdrop, the sustained combat power of airborne forces depends on resupply by air. Any interruption in the flow of resupply aircraft can cause a potential weakening of the airborne force. Enemy air defense [sic] fires against resupply aircraft and long-range artillery and mortar fires in the DZ can hamper the delivery, collection, or distribution of critical supplies.<sup>130</sup>*

All but the smallest and most brief airborne operations require sustainment after deployment. The German force deployed to capture Fort Eben Emael is one example of an airborne force whose operation did not require re-supply; however, it is atypical. Larger forces and longer operations place great demands on their supporting forces, particularly the air element. The logistic problem is exacerbated when the airborne force is isolated during its mission, as was the case for Operation Giant (I), the US 82<sup>nd</sup> Airborne Division operation planned for August 1943 to hold the Volturno River, northwest of Naples:

*To keep this force able to operate continuously, we would need a daily tonnage of supplies of all classes amounting to 175 tons. This minimum of food and ammunition had to be delivered to us in one way or another, for an airborne force is, like any other,*

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<sup>130</sup> United States Army Field Manual 90-26, *Airborne Operations* ..., 4.

*dependent on supplies, and usually more so because it operates completely within the enemy's area.* <sup>131,132</sup>

Ridgway, the divisional commander, presented his detailed analysis of the logistic support required. The sheer number of aircraft needed “approximately three groups of troop carrier transports, about 145 ships in all, would be needed to bring in our daily re-supply by parachute.”<sup>133</sup> The demand on transport aircraft was worsened by the fact that they would be required to make the last part of their re-supply run beyond the range of fighter coverage. In this case, the operation was cancelled because of the unacceptable risk associated with its re-supply.<sup>134</sup> The limitations imposed by airborne insertion dictate the application of ruthless priorities in allocation of scarce lift capacity. The requirement for sustainment is more urgent when the airborne force is not expected to link up with ground forces, but rather to remain in the objective area to develop the situation, or await extraction. In such cases, both mission accomplishment and the survival of the force rely upon sustainment.

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<sup>131</sup> The assault force in question was: two regiments of parachute infantry, a battalion of parachute field artillery, two companies of parachute engineers, and two batteries of 57 mm. antitank guns, and medics, signal and reconnaissance units.

James Gavin, *Airborne Warfare*, 21.

<sup>132</sup> *Ibid.*, 21-22.

<sup>133</sup> *Ibid.*, 22.

<sup>134</sup> *Ibid.*, 24.

## **CHAPTER THREE**

*Crete: Defenders; Attackers; Surprise, Firepower, Sustainment*

### **CRETE**

#### **The Strategic Importance of Crete**

*Crete was of immense strategic importance. It lay, like a gigantic barrier reef, across the southern approaches to the Aegean. Its bulk allowed the construction of many airfields and the switching of aircraft from one to another so that some would always operate freely. It offered complete control of the narrow seas and the oilfields of Ploesti were only four hours away. Suda Bay, protected from the north by the Akrotiri peninsula was the finest anchorage in the Mediterranean and surrounded by hills that offered perfect siting for Anti-aircraft guns.<sup>135</sup>*

Crete exemplified a successful large-scale airborne operation. It was, at the time, by far the largest and most ambitious airborne operation launched. A brief synopsis of the circumstances leading to the battle establishes the context in which it took place. Key parts of the battle can then be analysed in order to examine the importance of critical characteristics.

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<sup>135</sup> Alan Clark, *The Fall of Crete*, 24.

## Allied Preparations for the Defence of Crete

Early allied preparations for the defence of Crete were poor. The defences that were prepared lacked cohesion. Command of the Cretan garrison changed six times from the time the first British troops landed there on 1 November 1940 until Lieutenant General (later Major General) Weston, Royal Marines, assumed command on 26 April 1941.<sup>136</sup> In his report on the defence of Crete, submitted on 15 April 1941, he considered the German amphibious invasion that would become possible if Greece were overrun; however, General Wavell's staff was concerned with a different prospect, namely, the threat of an airborne assault supported from the sea.<sup>137</sup>

*Three days later General Wavell warned Weston of the possibility of attack by airborne troops. On the 24<sup>th</sup> April, Wavell's joint planning staff reached the conclusion that airborne attack would probably be delayed until it could be sustained by sea – perhaps three or four weeks after the mainland had been overrun – and that, ultimately, a garrison of three brigades would be required.<sup>138</sup>*

Crete is particularly illustrative of the logistic challenge of sustaining an isolated force, because the isolation applied to both attacker and defender. The Allied garrison was poorly equipped and supplied as a result of pressure on the throughout the Mediterranean and North African theatre, compounded in this case by developments in the Balkans. The net effect was

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<sup>136</sup> {Succession of commanders: Brigadier O.H. Tidbury. M.C., 1 November until 8 January; General Gambier-Perry until 2 February; Lieutenant Colonel C.H. Mather until 19 February; Brigadier Galloway until 7 March; Lieutenant Colonel C.H. Mather (again) until 21 March; Brigadier B.H. Chappel, D.S.O., until 26 April; Lieutenant General E.C. Weston, C.B.}

Alan Clark, *The Fall of Crete*, 25.

<sup>137</sup> Gavin Long, *Australia in the War of 1939 – 1945...*, 204-205.

<sup>138</sup> Gavin Long, *Australia in the War of 1939 – 1945...*, 205.

that the succession of Allied commanders during 1940 and 1941 identified sustainment as a critical vulnerability for the defence of the island. When General Wilson assumed command from Weston on 29 April 1941, he reported:

*I consider that unless all three services are prepared to face the strain of maintaining forces up to strength, the holding of the island is a dangerous commitment, and a decision on the matter must be taken at once.*<sup>139</sup>

Similarly, General Freyberg, the erstwhile New Zealand divisional commander who was recommended by Churchill to command the defence of Crete, was concerned as the garrison's capacity to defeat the threat of a combined airborne and amphibious assault. He addressed his concerns in telegrams through his military chain of command to Wavell, his Commander-in-Chief; and through his national chain to Mr Fraser, Prime Minister of New Zealand, to whom he reported: "Recommended you bring pressure to bear on highest plane in London either to supply us with sufficient means to defend island or to review decision Crete must be held."<sup>140</sup>

There is every indication that 'the highest plane in London' became increasingly aware of both the threat to Crete and the means necessary to defend it. Churchill was particularly interested in the efforts to provide armoured reinforcement, to the extent he tried on a number of occasions to ensure tanks were landed from Mediterranean convoys. Churchill had already devised and executed Operation 'Tiger,' by which he decisively changed the tank ratio in the Theatre. He was, however, unable to convince the Chiefs of Staff to redirect the Clan Lamont to deliver a potent tank force to Crete. In this regard, Churchill showed his understanding of the vulnerability of the German paratroops to heavy weapons and in particular to armour.

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<sup>139</sup> Ibid., 206.

<sup>140</sup> Ibid., 209.



*My expert colleagues, while agreeing that the tanks would be of special value for the purpose I had in mind, deemed it inadvisable to endanger the rest of the ship's valuable cargo by such a diversion.*<sup>141</sup>

Unfortunately for the allied defenders, Wavell was sorely pressed to provide such an asset from within his own resources, and may have doubted the merits of making a heavy commitment in such precious resources as tanks and guns to a battle whose outcome was by no means sure.<sup>142</sup> Another factor to be considered is the role of 'Ultra,' the British system by which the 'Enigma' code had been broken. Its role is the subject of some controversy: "... it was obvious to Freyberg even without assistance from the 'Ultra' cryptanalysts at Bletchley Park, where the Germans would concentrate their attacks, for the three airfields and the naval base were the inevitable prime targets."<sup>143</sup> However, maintaining the advantage of 'Ultra' may have influenced Freyberg's defensive dispositions on the island in order not to reveal British success to the Germans during their preparatory phase.

### **German Preparations for the Attack on Crete**

Hitler was originally reluctant to be drawn into the Mediterranean, though the Commanders-In-Chief of his navy, Admiral Reader, and air force, Reichsmarchal Goering, both foresaw the advantages of removing this long-held pillar of British strength while simultaneously

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<sup>141</sup> Alan Clark, *The Fall of Crete*, 43.

<sup>142</sup> *Ibid.*, 42-47.

<sup>143</sup> Bruce Quarrie, *Airborne Assault...*, 17.

avoiding decisive commitment against Russia.<sup>144</sup> Hitler's hand was largely forced by the actions of his ally, Italy. Mussolini's belligerence in late 1940, and later developments in the Balkans, led Hitler into a position from which he could no longer ignore the potential strategic importance of Crete. *Il Duce's* surprise invasion of Greece on 28 October 1940 immediately forfeited the neutrality of Hitler's Eastern Mediterranean flank. A second major factor was increasing British success against the Italians in North Africa. And, finally, Hitler was planning his invasion of Russia, emboldened by rapid success in Yugoslavia and Greece. The cumulative effect of these factors increased the importance of Crete and Hitler made the decision to secure it.

*When the occupation was completed the 'National Defence' had orders from Jodl [chief of Hitler's personal staff], emanating from Hitler, to investigate from a strategical [sic] point of view whether Malta or Crete should be taken. Our judgment was in favour of Malta. To Hitler, however, Crete seemed much more important – because this island closed the Aegean Sea, and offered a link in a further advance to the Suez area.<sup>145</sup>*

The Italians had successfully seized the Greek island *Cephalonia* when the 2<sup>nd</sup> Battalion captured it in April 1940 in a minor airborne operation as an adjunct to the German invasion of the Balkans.<sup>146</sup> Hitler had considered a number of major parachute operations in the Mediterranean, first Gibraltar, then Malta and finally Crete. Of these, Gibraltar was envisioned as a strategic vertical envelopment manoeuvre necessitated by Spain's neutrality but abandoned upon Student's advice. Malta was recommended by the *Oberkommando der Wehrmacht* (Armed

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<sup>144</sup> Kurt Student, quoted in B.H. Liddell Hart, *The Other Side of the Hill...*, 232-233.

<sup>145</sup> Warlimont, quoted in B.H. Liddell Hart, *The Other Side of the Hill...*, 238.

<sup>146</sup> Bruce Quarrie, *Airborne Assault...*, 44.

Forces High Command) in favour of Crete, as the latter was not believed to offer the sought benefits as a base for the Luftwaffe and to supply Rommel's army in North Africa.<sup>147</sup> Yet General Halder, Chief of the General Staff, had suggested on 25 October 1940: "mastery of the Eastern Mediterranean was dependent on the capture of Crete, and that this could best be achieved by an air landing."<sup>148</sup> Eventually, Crete's command of the Aegean Sea and relative proximity to both the Suez and the Balkans made it Hitler's preference.

Hitler had yet to be convinced that an airborne operation was the best method of securing Crete. Student understood the importance of Crete from the strategic perspective and also as an opportunity to demonstrate the potential of larger scale airborne operations. When briefed by Student, with Goering's support, Hitler opined: "It sounds all right, but I don't think it's practicable."<sup>149</sup> Hitler understood the risks faced by the proposed airborne force:

*An opposed air assault is a landing where opposition is known or expected and should only be undertaken when no other option is available. In most circumstances, opposed landing areas are also objective areas. Opposed air assaults which expose transport aircraft to action by enemy fighters, air defence missiles or ground fire during the landing/air assault phase should only be chosen as an option of last resort. This is particularly important when the same aircraft are required to complete the remainder of the air assault, conduct air maintenance or extract the ground force.<sup>150</sup>*

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<sup>147</sup> B.H. Liddell Hart, *The Other Side of the Hill...*, 233-239.

<sup>148</sup> Alan Clark, *The Fall of Crete*, 49.

<sup>149</sup> Adolf Hitler, quoted in B.H. Liddell Hart, *The Other Side of the Hill...*, 239.

Goering commanded the aircraft required to provide the above-mentioned support. He was smarting from the *Luftwaffe*'s defeat in the Battle of Britain, saw the opportunity for the *Luftwaffe* to demonstrate its capability to succeed within its own means: "Goring gave his full support to the plan, seeing in it the *Luftwaffe*'s opportunity to win the laurels so emphatically denied to him in the Battle of Britain."<sup>151</sup> He eventually persuaded Hitler, who issued Directive 28 for Operation *Merkur* (Mercury) "An operation to occupy the island of Crete (Operation *Mercury*) is to be prepared with the object of using Crete as an air base against Britain in the Eastern Mediterranean."<sup>152</sup>

Student explained to Liddell Hart that he was disappointed not to have been given command of all the air and land forces necessary for the operation, particularly von Richtofen's fighters and dive-bombers. However, he planned Operation Mercury in detail: "... I worked out all the plans for the operation – and was allowed a free hand in this respect. The 8<sup>th</sup> Air Corps was excellent, but its action would have been more effective if it had been placed under my direct control."<sup>153</sup> Student's actions in 1941 as the operational planner foreshadowed current Australian doctrine, in which commanders who do not exercise direct control of airborne forces may nonetheless commence planning for airborne operations then seek endorsement of their plans and subsequent force assignment:

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*have the required assets, a concept of operations or an appreciation would be forwarded to a superior headquarters for consideration and assignment of assets under the appropriate degree of operational authority.<sup>154</sup>*

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<sup>153</sup> Student, quoted in B.H. Liddell Hart, *The Other Side of the Hill...*, 239.

<sup>154</sup> Commonwealth of Australia, *ADFP 39: Airborne Operations...*, 4-2.

## OPERATION MERCURY

### Surprise

Operation Mercury failed to achieve tactical, strategic or operational surprise. The Allied defenders expected a German airborne and amphibious operation to secure the Cretan airfields; however, the Germans had the initiative in choosing the timing and magnitude of the operation. Their efforts to achieve surprise were included in detailed planning and extensive measures were taken to disguise units' movements and identity; "... even the singing en route of their special regimental songs was banned."<sup>155</sup>

*The airborne force must capitalize [sic] on surprise. The commander must carefully select the time, place, and manner of delivery for the attack. Everyone concerned must maintain strict security.*<sup>156</sup>

Parts of Student's operational orders had been carried by a German unit into its assault against the Ypenburg aerodrome in Holland. They were passed to the British by the Dutch resistance and widely disseminated in a British manual prior to Operation Mercury with particular emphasis on defence against airborne *coup-de-main* operations to seize airfields.<sup>157</sup> Student rued this breach of security for the resultant high German casualties: "They were one of the most important causes for the heavy German losses in Crete;" and stated he would have

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<sup>155</sup> Alan Clark, *The Fall of Crete*, 55.

<sup>156</sup> United States Army Field Manual 90-26, *Airborne Operations ...*, 6.

<sup>157</sup> Alan Clark, *The Fall of Crete*, 60.

designed the attack differently if he had known his methods had been compromised. B.H. Liddell Hart suggested Student might have accorded too much value to the British manual, given the pragmatic approach taken by the defenders with their limited means. However, he conceded Student may have used different tactics had he known his orders had fallen into his enemy's hands.

*Planning the attack, at the beginning of May, I had at first the idea of dropping the paratroops south of Maleme and Heraklion, or the whole mass south and south-west of Maleme only, and making an ordinary ground attack on the airfield – with the help of the air force. There were large plateaux suitable for dropping zones 'outside' the enemy. This method would have been employed by me had I known of the British defence booklet.<sup>158</sup>*

Two months after Crete, bitterly disappointed by its heavy casualties, Hitler told Student: “the day of the parachutist is over. The Parachute arm is a surprise weapon and without the element of surprise there can be no future for airborne forces.”<sup>159</sup> This begs two interrelated questions; if surprise is vital to the success of airborne operations, yet the Germans failed to achieve it during the landing on Crete, is surprise actually necessary for success in airborne operations? And, if so, how did the Germans succeed without the advantage of surprise?

That surprise is necessary for the success of airborne operations has become something of a truism. The logical question is: ‘Why?’ And the answer lies in the type of advantage

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<sup>158</sup> Kurt Student, quoted in B.H. Liddell Hart, *The Other Side of the Hill...*, 241.

afforded by surprise. Surprise achieves a psychological effect on the enemy disproportionate to the combat power employed. In the case of airborne operations, this factor compensates for the lack of inherent combat power of airborne forces. Simply put: combat power is made up of firepower, manoeuvre and morale. If it may be assumed, as emphasised in airborne doctrine and training, that the airborne force has high morale; then the airborne force's lack of firepower and tactical mobility is countered because the enemy's morale is severely undermined by surprise. The net effect is to the advantage of the airborne force.

The answer to the second question lies in part with the Allied preparations. The advantage of surprise is lies in doing the unexpected and therefore that for which the enemy is unprepared – in effect, the opposite of the adage 'fore-warned is fore-armed.' The defenders on Crete, however, were poorly equipped to take advantage of an understanding of their attackers' tactics. Despite the succession of commanders' reports and assessments, there remained a paucity of the weapons and equipment necessary to defend against airborne troops: layered air defences, including air interdiction from fighter aircraft; co-ordinated artillery fire support; long-range sustained-fire machine-guns; robust communications; and the like. And despite Churchill's personal intervention, the defence lacked the mobile counter-attack afforded by an effective tank force "... the one weapon against which the parachutist had no answer."<sup>160</sup> These tanks were never 'brigaded' into a coherent counter-attack force and were eventually used piecemeal to negligible effect.

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<sup>159</sup> Adolf Hitler, quoted in Roger Edwards, *German Airborne Troops...*, 96.

<sup>160</sup> Alan Clark, *The Fall of Crete*, 72.



The Allies' lack of co-ordination in the employment of valuable armoured assets must be considered in the context remembered their preparations for the assault, which resulted in serious dispersion despite sound assessments of the likely German objectives. A telling example is the disposition of 22<sup>nd</sup> Battalion of New Zealand's 5<sup>th</sup> Brigade, responsible to defend the Maleme aerodrome. The infantry strength on the vital 107 spot height "... was fewer than 140 rifles – out of a garrison of nearly thirty thousand."<sup>161</sup> This allowed the Germans, even if at great cost, to achieve local numerical superiority: 'quantity has its own quality.' The generally linear Allied defences eventually allowed the Student to adjust his plan after the disappointments of the first day. He held his nerve, realised where the *schwerpunkt* must be, modified the tasks for 5<sup>th</sup> Mountain Division, and committed his modest situational reserve of 550 parachutists to the battle at Maleme.

*After careful deliberation, later confirmed by reports gathered directly from Maleme by a lone reconnaissance officer, Hauptmann Kleye, the General decided to redeploy the 5<sup>th</sup> Mountain Division to give greater weight to the attack on the new Zealanders there ...*<sup>162</sup>

Student's adjustment to his plan of attack was transmitted at four in the morning of 21 May. The new approach, coupled with Freyberg's defensive dispositions, allowed the Germans to prepare for a series of battles, 'rolling up' the defensive positions sequentially from west to east.

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<sup>161</sup> Ibid., 37.

## **Firepower**

The critical vulnerability of light infantry, especially airborne forces, to armour due to their lack of anti-armour firepower had been well-established: “Crete emphasised the need for ‘heavy’ backing in the shape of armour and artillery, the latter requirement being partially met by the introduction of ‘light’ guns; but a tank that could be carried on airborne operations never materialized.”<sup>163</sup>

The *Luftwaffe* provided the preponderance of firepower in support of the German attackers on Crete, particularly during the early days. The *Luftwaffe*'s support, as in Operation Barbarossa, was closely co-ordinated with ground forces – indeed, it may be surmised that air-to-ground cooperation was the more effective because all forces operated under Lohr's unified command.

German doctrine for close cooperation between ground and air forces was well established and its effectiveness was witnessed in different forms during Operation ‘Barabarossa,’ launched on 22 June 1941 soon after Operation Mercury. The *Luftwaffe*'s actions during Operation Barbarossa were closely co-ordinated with the tactical land battle in roles such as “... air-to-air combat, close support of ground formations, battlefield interdiction, [or] aerial reconnaissance.”<sup>164</sup> The *Luftwaffe*'s effectiveness facilitated the rapid German advance and supported bold manoeuvre by the *Panzers*, commanded by such notable generals as Guderian,

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<sup>162</sup> Roger Edwards, *German Airborne Troops...*, 90.

<sup>163</sup> *Ibid.*, 27.

<sup>164</sup> R.D. Hooker, “*The World Will Hold Its Breath*”: *Reinterpreting Operation Barbarossa*, <http://carlisle-www.army.mil/usawc/Parameters/99spring/hooker.htm>, Internet, accessed 7 February 2005.

Hoth and Von Manstein. Transport was provided by ten air transport groups and three glider transport groups attached to Student, commanded by *Generalmajor* (Major General) Conrad. Fighter and bomber support was provided by approximately 150 dive-bombers reinforced by three groups of bombers and six groups of fighters under VIII *Fliegerkorps* (Air Corps), commanded by *Generalleutnant* (Lieutenant General) Freiherr von Richtofen.<sup>165</sup>

### **Sustainment**

Sustainment of both attackers and defenders on Crete was a joint effort that involved all three components. Only sea- or air- lines of communication could supply the island. The Royal Navy exercised control of the Mediterranean Sea and the Germans had established air superiority. The Allies were unable to take full advantage of their ascendancy at sea due to the threat from the *Luftwaffe* and *Regia Aeronautica* over the Mediterranean. The Germans, in turn, were thwarted in their plan to establish air lines of communication by the hard fight at Maleme, but were able to drop some supplies.

German planning had foreseen logistic requirements for the force once it had landed. Assault groups were specifically tailored to their objectives according to intelligence that proved eventually to be faulty. Yet planning and grouping for each task sought to anticipate every possible detail, including an initiative to alleviate the lack of tactical mobility: “This thoroughness extended even to providing for containers of captured vehicle spares, taken from

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<sup>165</sup> Roger Edwards, *German Airborne Troops...*, 82.

dumps during the [Allied] retreat in Greece, to be dropped in the first morning.”<sup>166</sup> The Germans had anticipated their requirements to establish quickly an aerial replenishment chain, but fighting around Maleme had been harder and longer than anticipated. The German airborne force began to feel the effects of its own isolation immediately upon insertion and its need for re-supply seriously affected its combat capability as early as the night of 20 May:

*If the enemy [Allies] had made an organised counter-attack during this night or the morning of May 21<sup>st</sup>, he would probably have succeeded in routing the much battered and exhausted remnants of the Assault Regiment – especially as these were badly handicapped by shortage of ammunition.”<sup>167</sup>*

The Germans succeeded to the extent that “At 8.10 a.m. in spite of heavy fire ... an aircraft landed on Maleme airfield, unloaded and took off again ... later several troop carriers landed and took off at the west end of the field.”<sup>168</sup> Aircraft casualties began to exacerbate the German logistic problem as crippled aircraft became unavailable for subsequent re-supply runs and further congested what was already limited landing space. Desperate efforts were made to clear the airfield for the supply aircraft; including the use of a captured Bren gun carrier to tow wreckage; but, in the end, the supply runs had to be made at great cost: “... transports flew their precious cargoes of men and supplies into an inferno of blazing planes and exploding shells. Transport planes were piled up everywhere, even one on top of another.”<sup>169</sup> There they were

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<sup>166</sup> Alan Clark, *The Fall of Crete*, 56.

<sup>167</sup> Kurt Student, quoted B.H. Liddell Hart, *The Other Side of the Hill...*, 241.

<sup>168</sup> Gavin Long, *Australia in the War of 1939 – 1945...*, 231.

<sup>169</sup> Roger Edwards, *German Airborne Troops...*, 93.

exposed to the effects of the composite British artillery disposed about Maleme, especially in the areas of the 22<sup>nd</sup> and 23<sup>rd</sup> Battalions of the 5<sup>th</sup> New Zealand Infantry Brigade.

The Germans were then faced with the prospect of relying upon support from the sea: “If the following day were to bring further losses of landing space the problem of supplying the defenders would become acute. Already a number of officers in the Quartermaster’s department of the General Staff were of the opinion that reinforcements and supplies should strictly be seaborne ...”<sup>170</sup> This proposition was very difficult given the Royal Navy’s superiority in the Mediterranean, emphasised by earlier German losses at the hands of Admiral Cunningham’s fleet. Success at Maleme eventually secured the airhead for immediate re-supply to sustain the assault force until more substantial supplies could be brought in by sea.

Timely and accurate support from the *Luftwaffe* also provided relief to isolated pockets, such as *Major* Scherber’s 3<sup>rd</sup> Battalion of the Assault Regiment, which had been dropped east of Maleme to capture the bridge over the coastal road north of Modhion. The German aerial bombardment and glider landing had failed to silence the Bofors AA battery at Pírgos, so the battalion suffered very heavy casualties during its approach flight and during descent under canopy. It was ineffective except for the 10<sup>th</sup> Company, which suffered 60% casualties on landing from a composite battalion-sized group of New Zealand Engineers in the infantry role reinforced by local Cretan militia. Here the group, contained by the defenders, were sustained by

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<sup>170</sup> Von der Hydt, quoted in Alan Clark, *The Fall of Crete*, 123.

three flights of Ju 52's that dropped weapons and ammunition, including for the M1928A1 Thompson sub-machine guns ('tommy-gun') captured from defenders.<sup>171</sup>

The Allied defenders on Crete experienced Germany's air superiority throughout their occupation and force build-up, significantly impacting upon supplies. The Germans effectively denied the Allies use of the port facilities at Suda Bay during daylight hours and thus seriously interfered with unloading and delivery. "In the first three weeks of May, over 27,000 tons of munitions were sent to Crete, but of these under 3,000 were landed."<sup>172</sup> Crete offered limited ports for offloading and an inadequate road network for distribution. These logistics factors exacerbated the impact of the German air campaign to add to the difficulties of the burgeoning Allied garrison preparing its defences. The Allies sought to compensate, exploiting the Royal Navy's superiority in the Mediterranean by making fast supply runs to the island from Alexandria during the hours of darkness.

The British fleet later made a significant impact upon German plans when it intercepted two flotillas of transport cutters, escorted by Italian torpedo boats, bearing German reinforcement, guns and tanks. The Germans had put to sea in the mistaken belief that the British ships were still at anchor in Alexandria, however, they Royal Navy had already sailed. This failure in German intelligence was to prove costly. The first flotilla was intercepted, attacked and largely destroyed by Rear-Admiral Glennie's force of three cruisers and four destroyers. This action, two and a half hours' duration, denied the German attackers reinforcement by 2,331 embarked troops (the final number killed was determined to be 309), guns, tanks, other heavy

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<sup>171</sup> Ibid., 63.

weapons and trucks.<sup>173</sup> The second convoy was also sighted, by Rear-Admiral King's force of four cruisers and four destroyers; but at a range that the Admiral judged to be beyond the limits of his capability. The second flotilla, which bore 5,000 troops plus further support weapons, thus escaped the fate of its sister but returned to port. In epilogue, the two Royal Navy groups subsequently concentrated at sea to consolidate, only to have various stragglers picked off and sunk by the *Luftwaffe* during its daylight command of the sky.<sup>174</sup> But the British fleet's actions seriously affected German plans to reinforce the airborne assault from the sea with manpower, firepower and a mobile strike force.

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<sup>172</sup> Ibid., 32.

<sup>173</sup> Ibid., 114.

<sup>174</sup> Alan Clark, *The Fall of Crete*, 116-120.

## CONCLUSION

Airborne operations have the potential to achieve strategic, operational and tactical level outcomes. Airborne forces are capable of achieving the full range of operational effects, decisive, shaping and sustaining. The decisive phase of airborne operations, regardless of the operational effect, is the ground tactical phase. The nature of airborne operations is determined by the nature of airborne forces. The ground tactical phase drives planning in airborne operations as it does in amphibious operations. The plan is limited to include those assets that can be deployed by air and the force must be prepared to fight immediately upon deployment. Airborne soldiers must therefore be physically and mentally prepared. They must be possessed of initiative to take independent action when required and their leaders must be ready to take charge quickly in an environment of potential uncertainty.

The nature of airborne operations is therefore largely determined by airborne forces' methods of insertion, which, although they vary, rely on forms of air mobility. The co-operation of air and land components makes airborne operations inherently joint and demands integrated planning. Deployment by air facilitates bold manoeuvre by vertical envelopment. It therefore offers the potential to do the unexpected tactical and thus achieve operational level surprise. But deployment by air also implies limitations. It necessitates light forces, precludes many of the heavier weapons available to other forces, and denies organic tactical mobility. Combat power consists of firepower, manoeuvre and morale. Airborne forces must exploit the potential of surprise to compensate for their lack of organic heavy weapons and manoeuvre assets. The deployed force is light and vulnerable to counter-attack, especially by armour. Similarly, they



typically lack the heavy weapons necessary to break into hardened defences by conventional approaches. Airborne forces are thus increasingly reliant upon fire support, including from the air. They also rely more heavily upon sustainment from the air as they are isolated once deployed and lacks the air- or sea lines of communication normally available.

Airborne forces and operations are thus, by their nature, characterised by integrated planning, intelligence, a favourable air situation, the weather, tactical mobility, surprise, firepower and sustainment. Each of these characteristics contributes to the success of airborne operations, however, surprise, firepower and sustainment are the most critical in the decisive ground tactical phase. The characteristics of airborne operations combine to effect their success or failure, and must be considered in the planning phase.

Integrated planning is a precursor to airborne operations. Planning is inherently joint due to the requirement to co-ordinate air and land components, and combined within the land component. The light nature of the force makes it vulnerable on the ground so it relies upon timely and accurate intelligence, particularly pertaining to the ground and the enemy. The force cannot deploy without a favourable air situation. The air component is likely to be called upon to fulfil a range of tasks through all phases of the operation, many of which can be adversely affected by prevalent weather conditions at either the mounting base or objective end of the air link.

Deployment by air represents use of strategic or operational mobility assets, but airborne forces lack tactical manoeuvre assets. There is therefore an important link between drop- and

landing-zones' proximity to the objectives; and the inherent requirement for ground manoeuvre; and value of surprise. Surprise is of critical importance in the ground tactical phase as it helps to compensate for airborne forces' limited firepower and lack of tactical mobility. Organic firepower; namely artillery and mortars for indirect fire, and anti-armour fire, is a combat multiplier. The force is likely to require additional firepower, particularly from the air of critical importance because it is the combination of firepower and manoeuvre upon which the land component relies in the ground tactical phase. The force relies also upon sustainment. Airborne forces are light, isolated, without conventional lines of communication. Supplies are deployed with the assault force at the expense of soldiers, heavy weapons and mobility assets. The supplies with which airborne forces deploy must therefore be replenished quickly or the force risks destruction.

Surprise, firepower and sustainment are thus the most critical of the characteristics of airborne operations in the decisive ground tactical phase. Airborne operations are typically, although not exclusively, offensive in nature. Operation Mercury was an example of such an operation. Its analysis, in conjunction with analyses of other historical operations and of contemporary doctrine, validates the importance of these characteristics. Its planner and leader, *Oberstgeneral* Kurt Student, had been the man most responsible for the development of airborne forces and the operation reflected his understanding of the importance of the above characteristics. Paradoxically, the German airborne force failed to achieve operational or tactical surprise yet prevailed because the Allied defenders were unable to react appropriately to counter the airborne threat and because the Germans, despite heavy casualties, were able to achieve local concentration of force. The Germans were well supported by offensive fire support from the

*Luftwaffe* throughout the operation, which compensated significantly for their lack of organic firepower. Similarly, they were reinforced and re-supplied by air, albeit at high cost, so the attacking German airborne force maintained its limited advantage and was able to progressively defeat the larger defending Allied garrison.

Operation Mercury thus provides an example of a decisive large-scale offensive airborne operation in which the interrelated characteristics of airborne operations may be examined during the decisive ground tactical phase.

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