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**The Airborne Illusion:
Institutions and the Evolution
of Postwar Airborne Forces**

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Introduction

Much of the academic literature on military innovation is either directly or indirectly concerned with how militaries develop and perfect radically new methods of conducting battlefield operations. According to authors such as Clayton Christensen, extant organizations are unable to take advantage of these “disruptive” technological changes because their primary focus is on accomplishing current missions better, rather than on devising entirely new approaches to achieving their objectives.¹ The institutional format associated with waging war in a particular way is rarely compatible with its successor. As a result, successful armed forces fail to respond to whatever the next great military innovation has to offer.



The airborne way.

Theoretically, the best way of solving this problem and ensuring the flexibility of armed forces is to establish an autonomous service or sub-division dedicated to exploring future ramifications of a new doctrine or technology. Because developing a particular innovation would be the *raison d'être* of the new organization or sub-division, the autonomous entity will push the limits of what a technology or organizational format promises.

In land warfare, examples abound where this institutional strategy succeeded in producing useful new military capabilities. The development of armored forces prior to the Second World War is a case in point. During the inter-war years, states where existing branches developed a doctrine of armored operations, such as France and the United Kingdom, were less innovative than those, such as Germany, where a dedicated panzerwaffe or armored branch explored the potential applications of the tank to modern warfare. Whereas tanks and half-tracks were grafted onto the organizational structures of infantry and cavalry formations in the former cases, in the latter case the German Wehrmacht started with a clean slate and fashioned a revolutionary mobile combined-arms formation—the panzer division.

In contrast to the attention lavished on the role that autonomous organizations play in generating successful military innovations, considerably less research has addressed the flip side of this strategy. Namely, what happens when a state establishes a service or branch within a service for the expressed purpose of engendering military innovation, but the resultant “innovation” fails once exposed to the vicissitudes of war? Drawing on the history of twentieth-century airborne operations, this essay will attempt to fill this gap in the academic literature on military innovation.

The fundamental paradox examined in this paper is why the post-war evolution of airborne forces varied markedly from country to country, while their wartime records were extremely similar to one another. Although all airborne forces performed dismally during the war, some suffered enormous force reductions after the war while others managed not only to survive, but also monopolized considerable human and material resources throughout the Cold War. Why, for example, did the United Kingdom virtually dismantle its airborne forces while those of the Soviet Union underwent a post-war boom in terms of size and resources?

By examining the British and Soviet cases, this paper will attempt to explore a theoretical framework for understanding why the evolution of airborne forces has followed the lines it has since 1945. This involves what could be termed a “degrees of institutionalization” argument. In this context, the extent to which airborne forces survived and prospered in the post-war era depended on the degree of autonomy and the access to manpower and materiel they were granted prior to the Second World War. In effect, airborne forces suffered cutbacks in countries, such as the United Kingdom, where they did not enjoy a high level of institutional strength or autonomy to begin with. Contrarily, they prospered after the war in the Soviet Union, where they possessed a great deal of organizational clout and independence before the war.

Anatomy of a Failed Innovation

Between the two world wars, armed forces developed a host of innovative ways of waging war.² One of these was airborne warfare. Facilitated by the development of large transport aircraft and reliable parachutes, airborne operations promised an alternative to the static battles of the First World War. In theory, aircraft and gliders would henceforth swoop over enemy lines to land specialized infantry in rear areas. Once delivered on or near their targets, paratroops and glider infantry would seize enemy headquarters and pinch off the supplies destined for units at the front—bringing about the demise of an adversary’s heavy forces.

The first airborne enthusiasts saw the marriage of parachutes with infantrymen as a revolution in warfare. When Colonel Billy Mitchell proposed that the United States should drop an infantry division behind German lines at Metz in 1919, he claimed this would create such chaos behind German lines that Allied soldiers would advance against a crumbling adversary. Although the end of the First World War prevented Mitchell’s Metz operation from being carried out, his vision of airborne troops outflanking larger ground forces gained currency in the post-war decades.³

By the 1920s Soviet military theorists independently arrived at conclusions similar to those of Mitchell.⁴ Later, as airborne thought matured, paratroop formations became an integral part of Soviet military theories on how to envelop large enemy ground forces. During an offensive, paratroops would seize targets deep in the enemy’s rear and hold onto them until relieved by mobile tank and cavalry forces. One of the founding texts of Soviet blitzkrieg theory, the Red Army’s 1935 “Instructions on Deep Battle,” posited that “in coordination with forces attacking along the front, parachute landing units can go a long way in producing a complete rout of the enemy.”⁵

In a slightly different vein from the Soviet theorists, German General Kurt Student argued that, “Paratroops, if we succeed in making them operational, can be the key to our victory.”⁶ For Student, the role of airborne forces was not to participate in enormous terrestrial envelopments but to serve as an independent arm capable of paralyzing and destroying an enemy’s ability to wage war. German paratroops would simultaneously seize many small areas and advance from them until a single large gain would be consolidated.⁷ Conceptually, an attack of this nature would resemble scattering drops of ink on a piece of paper. At first drops remain fragmented, but over a short period of time they spread and interconnect.

Soon officers in Japan, the United Kingdom, the United States, France and Italy also were speculating on the future use of airborne forces. In France, Air Force Captain Fred Geille began making the case for France to develop a paratroop force in 1935, and within a year, Air Minister Pierre Cot committed himself to

creating divisions of “Infanterie de l’Air” or paratroops.⁸ Italy, lagging slightly behind France, produced its first theoretical works on airborne operations in 1937 and its first operational airborne unit in 1938.⁹ Finally, in 1940, the United Kingdom, the United States and Japan followed suite in the creation of operational airborne units.¹⁰

This leap from theorizing about airborne operations to building units capable of executing them was costly and fraught with mistakes and false turns. Inevitably, the first attempts to deliver infantrymen by parachute were laden with risk and uncertainty. Germany’s first airborne demonstration ended with the lone parachutist being carried from the drop zone on a stretcher and early Soviet jumps involved paratroopers riding to their targets in one-man cradles, resembling stretchers, slung underneath the wings of TB-1 bombers.¹¹

Although initiating work on airborne forces several years after the Soviets and Germans, early British jump procedures were also fraught with danger. At first, British paratroopers jumped through a hole in the floor of the Royal Air Force’s Whitley bombers.¹² More often than not, as his legs exited the aircraft, a parachutist’s upper body and head would fly forward and hit the opposite edge of the jump hole. This phenomenon, known as “ringing the bell,” inflicted a steady stream of casualties on British airborne forces.¹³

While devising suitable jump procedures was difficult, it was not the only obstacle to developing airborne forces. Another impediment was the need to tailor almost every element of equipment a soldier wore or carried to the airborne role. Distinctive rimless helmets, side lacing or higher topped boots, camouflaged smocks and rifles with folding stocks were all indispensable accessories to airborne operations, and as such, had to be developed and tested. Parachutes, too, required considerable forethought and experimentation. Britain went through three distinct parachute designs, the United States, five, and Germany developed four between its first airborne experiments and the end of the Second World War.¹⁴

Perhaps the most formidable impediment to states acquiring airborne forces was the lack of specialized fleets of transport aircraft and gliders capable of transporting airborne forces to their objectives. Because transport aircraft were as small as they were—able to carry fewer than 20 fully equipped paratroopers—World War II-era airborne invasions required vast armadas of aircraft and gliders. For example, the British 6th Airborne Division used 355 gliders and 733 transport aircraft for its jump into 1944 Normandy and the 7th Flieger Division needed 300 gliders and 500 transport aircraft for its 1941 assault on Crete.¹⁵

While most of the transport aircraft used in an airborne assault could also be used in future missions, gliders were less durable. Built of canvas and wood, most gliders broke up when they touched solid ground. During the Normandy invasion more than half of the United States 82nd Airborne Division’s gliders broke apart while landing and the remainder suffered damage so severe that they could never be used again.¹⁶ Such an expenditure of gliders was costly—the 5,000 gliders built by the United States during the war cost the government more than \$15,000 apiece.¹⁷

Given the substantial costs and considerable experimentation involved in their creation, it is remarkable in retrospect that all of the world’s great powers developed airborne forces between 1928 and 1940. Aircraft carrier-based naval warfare, strategic bombing and armored warfare all took longer to adopt and did not propagate so widely as airborne warfare. Whereas all six great powers created paratroop units, only three built aircraft carriers and only two built strategic bombers.

The utility of airborne forces was therefore one of the few issues of military doctrine on which the General Staffs of all great powers agreed and all of the great powers entered the Second World War expecting airborne forces to play a decisive role in the proceedings. Almost no offensive plan was without its share of paratroop drops. In 1938, the Germans planned to use them to seize the Sudetanland region of Czechoslovakia, and in 1940, the Soviets actually did employ them against Finland. This was only the beginning. Soon the most of the war’s important campaigns included airborne jumps.

To the chagrin of many pre-war military thinkers, most wartime airborne operations were either costly successes or bloody failures, and the few genuine airborne successes, such as the German paratroop operations against Norway, Denmark and the Netherlands, were won against weak opponents.¹⁸

The first problem facing airborne operations, even before they get off the ground, is the need to collect timely intelligence on drop zones tens, if not hundreds of miles behind enemy lines. Over the course of World War II, faulty intelligence condemned many lightly armed airborne forces to destruction. Before attacking Crete in 1941, Admiral Canaris, chief of German intelligence, assured the armed forces that few enemy soldiers remained on the island and that “the governor of the island and all of its notables would greet the Germans with open arms.”¹⁹ Instead, 40,000 well-armed British and Commonwealth forces were available to inflict 6,650 casualties on the Germans.

Even more disastrously, Soviet intelligence failed to spot the movement of the German 19th Panzer Division towards the Dnepr River in 1943. When three unfortunate brigades of Soviet paratroopers jumped directly in the path of the oncoming panzer division, half of the paratroops were killed or captured within a day, and the rest fled into the forests of the Ukraine.

During the Second World War, even nations with the best intelligence gathering capabilities were unable to determine what enemy units were stationed near a drop zone. Despite the efforts of photoreconnaissance aircraft, the Dutch resistance, and teams of cryptographers reading German military codes, British intelligence failed to note the presence of two SS Panzer divisions near Eindhoven and Arnhem in September 1944.²⁰ This intelligence failure led to the destruction of the British 1st Parachute Division.

Even with perfect intelligence, adverse winds and navigational errors can scatter paratroops haphazardly across the battlefield and thereby ruin paratroop operations. In fact, during the Second World War any unit parachuting onto an objective lost the lion’s share of its combat power to the vagaries of winds and navigational errors. During the Allies’ 1943 airborne invasion of Sicily, only one-eighth of the paratroopers assigned to seize the high ground above the Gela-Niscemi road landed anywhere near their objective and only two of the 129 gliders dispatched to capture the Ponte Grande bridge landed near it.²¹

Elsewhere, the Soviets faced similar problems. Of the 7,373 Soviet paratroops dropped behind German lines during the Viaz’ma operation, some fell directly into German garrisons where they were killed, while others landed in forested areas so remote that they struggled for months to find their way back to Soviet lines. In total, only 5,000 paratroopers eventually assembled to operate as a cohesive unit, signifying that the Soviet airborne force dropped near Viaz’ma lost one-third of its combat power before a single shot was fired.²²

Even the most minutely planned airborne operation in history—the night drop of three divisions in Normandy—proved susceptible to the same dispersion effects as the less rehearsed drops on Sicily and Viaz’ma. Only 150 of the 635 paratroops of the United Kingdom’s 9th Battalion of the Parachute Regiment landed anywhere near the battalion’s objective, the German Merville Battery.²³ And only 180 of the 600 men of the 8th Battalion of the Parachute Regiment were able to assemble for the battalion’s attack on the Bures and Troarn bridges.²⁴ Overall, dispersion effects cost the British 6th Airborne Division 60 percent of its effective combat-power before its paratroops touched terra firma in France.²⁵

Because paratroop units are both scattered and intermingled when they arrive on the battlefield, commanders could rarely assert much authority over them. As General Ridgeway observed of his own experiences at Normandy, “There was little I could do toward exercising division control; I could only be where the fighting seemed the hottest, and thereby help my battalion commanders.”²⁶ Needless to say, command-and-control was often non-existent during airborne operations. Based on his experience of this problem, Ridgeway quipped that “never have so few been commanded by so many.”²⁷

Besides the intelligence problems and dispersion effects, paratroop operations failed because airborne formations lacked firepower. The requirement of airborne units to pack all of their equipment onto airplanes

and drop it on the battlefield places limits on the weight of the weapons paratroopers can use. During the Second World War, the largest item in a paratroop division could not exceed seven tons.²⁸ This meant that airborne units could not carry medium tanks—of which the lightest weighed between 20 and 25 tons—or artillery pieces with bores larger than 80 mm. Bereft of heavy equipment, airborne divisions lacked the firepower of even standard infantry divisions and were invariably destroyed when confronted by hostile armored divisions.

The Dnepr airdrop is a case in point. During this operation armed Soviet paratroops were dropped behind enemy lines to prevent German reinforcements from reaching the Dnepr River.²⁹ Lacking towed antitank guns, entrenching tools or armored vehicles of their own, the paratroopers were excruciatingly vulnerable to German artillery and tanks the moment they hit the ground on September 25, 1943.

Almost immediately, these dispersed and lightly armed Soviet paratroops bumped into the German 19th Panzer Division, which slaughtered them. As the chief of operations of the 19th Panzer Division observed, “Our devastating defensive fire and the brilliant white flares that were zooming everywhere clearly unnerved the Soviets Split up into smaller and smaller groups, they were doomed. They tried to take cover in narrow ravines, but were soon winkled out; they were killed or taken prisoner.”³⁰ Out of the 4,575 Soviet soldiers that parachuted behind the Dnepr, more than 2,400 became casualties in their first 24 hours on the ground.³¹

Despite better planning, British airborne forces at Arnhem suffered the same fate as their Soviet cousins on the Dnepr. Cognizant of the armored threat to airborne forces, British planners devised new lighter antitank weapons and novel ways of delivering existing antitank guns by air. Whereas the Soviet paratroopers only had inadequate PTRD antitank rifles, their British counterparts were equipped with 70 6-pounder antitank guns delivered by gliders, P.I.A.T. antitank missile launchers and large numbers of antitank hand grenades called Gammon Bombs.³²

Regardless of having better equipment than the Soviets, British paratroops were still too poorly armed to accomplish their mission. In the final analysis, only so much firepower can be crammed into a glider or parachutable container. As a consequence, soon after landing in Arnhem and the neighboring town of Oosterbeek, 10,000 British paratroops were overwhelmed by two under-strength German armored divisions, with a combined force of 7,000 men and a score of tanks at the beginning of Operation Market Garden.³³

The destruction of airborne forces by armored units occurred with such regularity that the mere threat of armor caused airborne commanders to cancel their plans. For example, Lieutenant General F.A.M. Browning cautioned that “we might be going one bridge too far” when he heard that German armor was near Arnhem.³⁴ Later, during a German airborne operation in support of Adolf Hitler’s ill-fated Ardennes offensive, the paratroop commander, Colonel von der Heydte, disbanded his forces and sent them back towards German lines once he became aware of an oncoming American tank force.³⁵ In this case, the possibility of his regiment bumping into tanks was enough to convince Heydte to abandon his mission.

A Failure Survives

The tribulations involved with possessing insufficient intelligence on potential drop zones, having paratroops scattered by the act of the drop itself and suffering disastrous losses in combat with an adversary’s heavy forces combined to doom many World War II airborne operations to failure. In fact, as illustrated by the table below, only four of the 16 major airborne operations conducted in Europe during World War II can be qualified as “successes,” and all but one of these were achieved against small, previously neutral countries.³⁶

The remainder, including most of the war’s largest operations, were either disastrous failures or pyrrhic victories. In either case, many of the paratroopers and much of the materiel landed at a target was lost. While on average less than one-third of the airborne forces engaged in failed operations survived to fight again, even

**Table I:
World War II Airborne Operations in Europe**

Disasters	Indecisive Operations or Pyrrhic Successes	Successes
Viaz'ma	Crete	Denmark/Norway
Demiansk	Tragino Aqueduct	Eban Emal
Dnepr	Sicily	The Netherlands
Operation Market Garden	Normandy	Bruneval
The Ardennes	Drvar	
	Provence	
	The Rhine	

the most successful airborne operations involved high body counts. For example, the German 22nd Air Landing Division suffered 28 percent casualties over the course of its five-day battle for the Netherlands.

In fact, the losses suffered by airborne forces during the Second World War were so severe that Germany and the Soviet Union consciously foreswore their use before the conflict was over. After his paratroopers won a bloody victory on Crete, losing more than a quarter of the men engaged, Hitler and his closest military advisors observed that “the hour of paratroopers is past.”³⁷ Arriving at this conclusion in 1941, the German High Command cancelled all further attempts to use airborne forces. Paratroopers played no role in the invasion of Russia, the campaign in North Africa or the disastrous Stalingrad offensive, and only reemerged at the end of the war to make a few desperate combat jumps into the Ardennes and onto Yugoslav partisan leader Joseph Broz Tito’s headquarters at Drvar.³⁸

Like the Germans, the Soviet High Command deliberately abandoned its use of airborne forces after worthlessly squandering the lives of tens of thousands of paratroops to accomplish nothing on the battlefield. After the bloodbaths suffered at Viaz'ma, Demiansk and the Dnepr, airborne forces played no role in the victorious offensives that carried Soviet arms from the Byelorussia to Berlin. Only in 1945, after the end of the war in Europe, did Soviet paratroops return to take part in the Manchurian offensive against Japan’s moribund Kwangtung Army.³⁹

Throughout the Cold War, prospects for successful airborne operations continued to decline as armored vehicles and surface-to-air missiles proliferated. As already noted, Second World War-era airborne forces were acutely vulnerable to enemy tanks and self-propelled guns. Fortunately for 1940s paratroopers, armored divisions constituted only between 5 and 20 percent of great power armies during World War II.⁴⁰ The Cold War, however, saw armored vehicles proliferate. Soon, between 80 to 95 percent of divisions in great power armies were either armored or mechanized, increasing the likelihood of lightly equipped airborne troops encountering large tank units.⁴¹

While the spread of armored vehicles increased the risk of airborne forces being crushed on the ground, the development and proliferation of surface-to-air missiles (SAM) barred them from reaching potential drop zones. Beginning in 1957 and 1959 with the Soviet Union and the United States respectively unveiling SA-2 and HAWK missiles, mass produced and exported SAMs provided even second-rate powers with the ability to shoot down large slow transports carrying paratroopers to their destinations. As military historian John

Keegan observed, once states possessed “ground- and air-launched missiles . . . no general anywhere would consider sending formations [of paratroops] *en masse* against prepared positions, and the role of the parachutist would dwindle to that of the clandestine interloper.”⁴²

As the table below demonstrates, the negative experiences of World War II, combined with the spread of armored vehicles and SAMs, has deterred states from dropping airborne forces behind the lines of anything but the most primitive opponents.

Year	Location	Launching State	Size of Force	Opponent
1964	Belgian Congo	Belgium	545 men	Congolese Rebels
1967	South Vietnam	United States	1 battalion	Viet Cong
1970s	Rhodesia	Rhodesia	platoons	Rebels
1978	Zaire	France	400 men	Congolese Rebels
1984	Grenada	United States	2 battalions	Grenadan Army
1989	Panama	United States	6 battalions	Panamanian Defense Forces

In each case, small airborne forces faced poorly armed and frequently incompetent adversaries and in no case did the forces opposing airborne units have SAMs or tanks.⁴³

No great power has dropped airborne forces on even a second-rate military since 1960. The Israelis did not conduct a parachute drop during the 1967, 1973 or 1982 Arab-Israeli conflicts, Britain demurred from launching an airborne assault during its 1982 war with Argentina over the Falklands, neither the Indians nor Pakistanis used paratroops in their wars against each other, and the Serbs did not employ airborne forces in their conflicts with Croatia or Slovenia.

During this time, the United States and France deliberately rejected proposals to use their airborne forces in the 1991 Gulf War or to save the Bosnian Muslim enclave of Srebrenica in 1995.⁴⁴ When questioned about his lack of enthusiasm for the latter operation, French Minister of Defense François Léotard responded that “While we could have done an airborne operation . . . I know that we would have lost a lot of men” and “it would have been difficult, very difficult.”⁴⁵

In retrospect, it is astonishing that paratroop forces survived at all given how costly they were to create, how disappointing they were in combat and how the Cold War proliferation of SAMs and armor heightened their vulnerability. Yet survive they did. In fact, the size of the victorious great powers’ airborne forces remained unaffected by the legacies of their wartime operational performance or the emergence of new threats to their existence.⁴⁶

For example, the country whose airborne forces performed the worst during World War II—the Soviet Union—maintained eight airborne divisions, more than the rest of the world combined, despite its wartime decision not to use paratroops in combat. Contrarily, the United Kingdom, whose paratroopers enjoyed a mix of successes and failures during the war, all but eliminated its airborne forces during the thirty years following victory. As illustrated in Table III, the American example lies between these two poles.⁴⁷

Thus, the paradox emerges that airborne forces survived and prospered after the Second World War in countries where they had failed in battle, while, conversely, they were disbanded by a state whose paratroop operations were relatively more successful. This illogicality can only be accounted for by the varying degrees of institutionalization that characterized different countries' airborne forces prior to the Second World War. In effect, the ability of paratroop units to oppose force reductions and budget cuts is a product of the degree of institutional autonomy they enjoy within the armed forces as a whole. In this context, highly autonomous airborne forces staved off attempts to lessen the volume of resources at their disposal, while less autonomous ones proved more vulnerable to the challenges of critics and the competing claims of other groups within the armed forces.

The following pages will examine how the degree to which airborne forces were initially institutionalized affected how they evolved after World War II in the two countries where their evolutions diverged the most markedly, namely the United Kingdom and the Soviet Union, and in a third, the United States, where the size of airborne forces fluctuates widely.

<p>Table III Evolution of Great Power Active Airborne Forces</p>			
Country	1945	1965	1985
Soviet Union	10 “corps”	7 divisions	8 divisions
United States	5 divisions + 1 regiment	2 divisions + 3 brigades	1 division + 1 brigade
United Kingdom	3 divisions	1 brigade	1 battalion

The Soviet Union:

Survival of an Airborne Army

The Soviet Union's experience with airborne forces demonstrates the benefits and pitfalls associated with a high degree of institutional autonomy. In the case of Soviet paratroop forces, otherwise known as the *Vozdushno-Desantnaya Voyska* or VDV, autonomy both spurred innovation and prevented the validity of airborne operations from being seriously rethought or questioned. As such, it developed the Janus-faced quality of sparking creativity within the VDV, while at the same time stultifying thought outside of it and within the armed forces as a whole as to whether or not airborne operations remained feasible.



Russian paratroopers train.

When the Soviet Union first set about building an airborne force in the early-1930s, Marshall Mikhail Tukhachevskiy and the Soviet High Command adopted strategies similar to those advocated by modern organizational theorists. Namely, they granted the airborne forces as much autonomy as possible and endowed them with a substantial resource base with which to train and conduct experiments. This resulted in the Soviet Union's airborne forces acquiring the unique status of a service-within-a-service, rather than being institutionalized as regular field units, such as divisions or regiments, as occurred in other countries.

To begin with, the VDV was afforded its own supply of recruits, circumventing the normal allocation system providing Red Army units with their conscripts. Whereas most Soviet divisions received personnel allocations based on standardized criteria, such as armed forces test scores and the geographic location and category of the unit in question, the VDV had its pick of the young members of the Soviet Union's *Ossoaviakhim*—an aerial sports organization for young communists.⁴⁸ As a consequence, every conscript entering the VDV was a de facto volunteer who had already undertaken rudimentary parachute training at one of a thousand jump-towers strewn across the Soviet countryside.⁴⁹

Besides possessing an independent recruitment base, the VDV also controlled its own service academy—the Ryazan Higher Airborne School. Once this school was running, every officer cadet with aspirations of entering the VDV attended the same service academy where they were surrounded by other airborne officer candidates and segregated from the rest of the armed services.⁵⁰ Understandably, this distinctive system of professional higher education fostered an exclusive esprit de corps within the Soviet Union's airborne forces' officer corps.

In addition to having their own discrete system of officer education, the Soviet Union's airborne forces also provided officers with distinctive career paths, allowing them to climb to the highest echelons of the Red Army without ever serving in non-airborne units. As is rarely the case with other armed services, this meant that Soviet airborne officers could devote themselves entirely to understanding and mastering airborne operations, while ignoring other developments affecting the outcome of wars.⁵¹

In sum, the Soviet VDV acquired most of the attributes of a separate service during the formative years between 1930 and 1941. With respect to organizational autonomy, there are many fruitful parallels to be drawn between the relationship of the Soviet airborne forces with the Red Army, to that of the United States Marine Corps with the United States Navy. In both cases, the sub-services in question manage their own recruitment and training, provide distinct career paths to officers within them and prepare to conduct high-risk military endeavors. Moreover, in each case the sub-service maintained a privileged relationship with part of the parent organization—as the VDV did with the Air Force’s Military Transport Aviation branch or as the Marines do with the Navy’s amphibious “Gator Navy.”⁵²

In some respects, Soviet airborne forces were even more autonomous than the United States Marine Corps—especially insofar as professional education and operational independence are concerned. Whereas the Marines lack their own service academy and accept officers from the United States Naval Academy, the VDV maintained the aforementioned Ryazan Higher Airborne School which served all of its officer training needs. Similarly, while Marine units are regularly subordinated to naval fleets or regional commands, Soviet airborne forces were only answerable to the Defense Ministry and the Kremlin’s highest authorities.⁵³

During the first years of its existence, this unprecedented degree of organizational autonomy fostered the innovative environment the Soviet High Command hoped to create. Large, independent and amply funded, the VDV prior to World War II led the way in developing such novelties as gliders, mass parachute drops, air-dropped tanks and recoilless rifles—all of which later became integral parts of successful airborne operations.

Such was the innovative spirit of the VDV’s early halcyon days, that by 1935 it was widely regarded as the most sophisticated airborne force in the world and probably the only one able to mount a combat jump. During the Kiev exercises of that year, the VDV stunned foreign military attachés and observers with a cutting edge demonstration of airborne warfare. When the maneuvers began, fifty TB-3 heavy bombers parachuted 1,188 infantrymen onto an airfield and its environs, after which a second wave of TB-3s landed on the airfield with an air landing force of 1,765 men armed with recoilless rifles, ten artillery pieces and a light tank.⁵⁴

Many who witnessed the Kiev maneuvers regarded the VDV’s aerial delivery of 3,000 infantrymen to a target as a revolution in warfare. After viewing these exercises, the deputy chief of the French General Staff observed, “I am impressed with the success of the airborne force. Western Europe is lagging behind.” In a similar vein, an Italian general remarked, “I am literally amazed by the employment of such airborne landing forces.”⁵⁵

Unfortunately for many of those responsible for the VDV’s incipient dynamism, neither foreign accolades nor the VDV’s organizational wealth or autonomy could shield officers from Premier Joseph Stalin’s wrath during his purges of the Soviet Union’s officer corps in 1937 and 1938. This was all the more true because the VDV’s close association with Marshall Tukhachevskiy stoked the flames of Stalin’s paranoia, prompting him to kill an exceptionally high percentage of the VDV’s officers during the purges.⁵⁶ Predictably, Stalin’s slaughter of airborne officers robbed the VDV of much of its youthful vigor and brought an end to its period of innovation.

Regrettably, the Soviet Union and the VDV went to war within two years of Stalin ravaging its officer corps.⁵⁷ And although all airborne operations were risky endeavors during the Second World War, the Soviet ones were especially catastrophic. Indeed, as illustrated by Table IV on the following page, four out of five major airborne assaults conducted by Soviet paratroopers between 1940 and 1943 ended in utter disaster.

In no case, except in Manchuria, did Soviet paratroops seize and hold their objectives, and in each case the vast majority of the men dropped behind enemy lines never returned. In fact, only a quarter of the paratroopers dropped during Soviet airborne operations usually managed to make their way back to Red Army lines.⁵⁸

Table IV
Soviet World War II Airborne Operations

Disasters	Indecisive Operations or Pyrrhic Successes	Successes
Finland Viaz'ma Demiansk Dnepr		Manchuria

In light of the abject failure of Soviet airborne operations during World War II, the question emerges as to why such large airborne forces were retained after the war. The answer does not appear to be based on any sort of rational calculation about the future value of airborne forces. For one thing, the Soviet General Staff recognized that its own airborne operations, as well as those of other powers, were fiascos. In fact, one post-war Soviet assessment of airborne operations concluded that “with the exception of the German use of paratroopers in Holland and Belgium in 1940, wartime airborne operations were either failures or had no impact on the conduct of army operations.”⁵⁹

If Soviet assessments of World War II airborne operations left little room for optimism, neither did their analyses of future wars. When it emerged under the guidance of Marshal Vasily Sokolovsky between 1952 and 1960, Soviet nuclear strategy anticipated the obsolescence of infantrymen in the event of a third world war. According to Sokolovsky, future wars would be nuclear wars, in which the blast and radiation effects of nuclear weapons would quickly kill any infantrymen not encased in sealed steel vehicles.⁶⁰ On the face of it, this appreciation of nuclear war should have signaled the death knell of the VDV and its lightly equipped paratroopers.

Yet despite its failure in World War II and the development of the so-called Sokolovsky nuclear doctrine, the VDV continued to prosper throughout the post-war years. In a sense, the organizational autonomy accorded it before World War II shielded the VDV after that war to such an extent that rather than defending itself from critics, the VDV could concentrate on the task of reconstituting the Soviet Union’s shattered airborne forces. Perhaps there is no greater testament to the success of this endeavor than the fact that by the mid-1950s the Soviet Union’s VDV was bigger than it had been in 1941 and larger than the rest of the world’s airborne forces combined.⁶¹

Many are tempted to look for other non-institutional explanations for the VDV’s survival and growth following World War II. Stephen Rosen, for example, suggested that the Soviet high command retained airborne forces after World War II as a “counter-coup force” or praetorian guard.⁶² Although Rosen’s postulate is rational and intellectually appealing, there is no proof that the Soviet high command thought of using the VDV to prevent a coup d’état.⁶³ On the one hand, airborne training and vehicles are superfluous and expensive for a counter-coup force. On the other hand, the Soviet Union possessed other NKDV (later KGB) and Ministry of the Interior forces specially designed and tasked with repressing internal discontent and protecting the government from a military coup.⁶⁴

Another argument for the VDV’s size and continuity following World War II emphasizes the small size and slight cost of airborne forces when compared with Soviet ground forces as a whole. Steve Zaloga, for

example, contends that maintaining airborne divisions was a “cheap” gamble for the Soviets because there were only seven airborne divisions out of a total of 140 divisions. In fact, the gamble was not as cheap as first appears to be the case. Most of Zaloga’s “140 divisions” were reserve units. Stalin’s active postwar army consisted of only 60 active category-one divisions, and these were manned at only 70% capacity.⁶⁵ Far from a cheap gamble, the VDV comprised more than 12 percent of the active Soviet armed forces in the early 1950s.

Finally, in light of their role during the 1973 Arab-Israeli War, it is tempting to attribute the post-war survival and renaissance of Soviet airborne forces to a political decision to develop power projection capabilities.⁶⁶ Unfortunately, such an analysis puts the cart before the horse. While Stalin and Khrushchev ruled from the Kremlin, the Soviet Union pursued a “continental” or “Eurasian” strategy, which expanded Soviet influence over contiguous states. Projecting power by air or sea played little role in Soviet grand strategy between 1945 and 1964. Only with Khrushchev’s ouster in 1964 did Soviet foreign policy acquire a global orientation.⁶⁷ By this time the Cold War size and status of the VDV was already established and the Soviet Union’s first air-droppable armored vehicles were in service.

In short, the VDV used its autonomous position and surfeit of resources to tackle the problems associated with mounting airborne operations in a high threat environment. Soviet innovation in these areas was both costly and ran contrary to the tenets of Soviet foreign policy and nuclear doctrine during the 1950s and early 1960s.

Whereas World War II-era airborne forces were acutely vulnerable to armored or mechanized attacks, the VDV sought to build a well-armed airborne force capable of staving off assaults of this genre. In addressing this issue, the post-war VDV proved every bit as innovative as it had been during the 1930s.

To begin with, the VDV concentrated on manufacturing self-propelled airborne assault guns, a type of turret-less lightweight armored vehicle capable of mounting an antitank gun.⁶⁸ The first such vehicle was the diminutive ASU-57. Weighing just three tons and mounting a 57mm antitank gun capable of perforating one hundred millimeters of armor at a thousand meters, the ASU-57 could be parachuted from a transport aircraft and would, it was hoped, give the VDV the armored punch it so lacked during World War II.⁶⁹

Later, in 1961, the ASU-57’s successor, the heavier ASU-85, appeared. Whereas the ASU-57 weighed barely three tons, the ASU-85 tipped the scales at 14 tons, making it the largest airborne armored vehicle developed up to that time. This extra weight accommodated a larger antitank gun and more armor, making the ASU-85 a much improved weapons system.⁷⁰

While the introduction of the ASU series of assault guns undoubtedly augmented the firepower of Soviet airborne forces, these vehicles fell short of solving the VDV’s fundamental problems. For one thing, the assault guns did nothing to reduce the vulnerability of Soviet paratroopers to the effects of nuclear or chemical environments, or to augment their mobility once on the ground. For another, the increased firepower conferred on airborne divisions by their ASU guns barely kept pace with the improved capabilities of regular infantry divisions. For at the same time as Soviet airborne divisions were adding 18 assault guns apiece to their inventories, American infantry divisions were acquiring battalions of armored personnel carriers and helicopters.⁷¹

The VDV’s answer to these unsolved challenges was both radical and unique. It involved transforming the VDV’s hitherto infantry divisions into a totally mechanized airborne force, which in theory was no different from conventional army units. As its capstone, the VDV’s new airborne mechanized divisions acquired the world’s first and only airborne infantry fighting vehicle. This vehicle, designated the BMD, crammed all of the capabilities of the army’s top-of-the-line 14-ton BMP infantry fighting vehicle into a compact 7-ton unit that can be delivered by parachute.⁷² As such, the BMD is proof against a nuclear, biological or chemically contaminated environments and mounts a 73mm low-pressure gun and AT-3 “Sagger” antitank guided missiles.

The development, deployment and employment of the BMD were major technical and industrial achievements.⁷³ One of the difficulties encountered in developing this vehicle was getting the BMD's weight down to the point that it could be dropped from an airplane. Whereas infantry fighting vehicles typically weigh between 14 and 29 tons, the BMD could not exceed seven, which was only achievable through a host of weight-saving engineering solutions such as the introduction of a unique variable suspension system.⁷⁴ In addition to being light, the BMD also had to be easy to mass-produce. Requiring some 2,500 of these vehicles to meet its needs, the VDV's demand for BMDs exceeded those of many major powers for their basic infantry fighting vehicles.⁷⁵

Once all of these problems were solved, paratroop officers excusably claimed that the BMD rectified the difficulties posed by airborne forces' perennial lack of firepower. As one 1976 article proclaimed, "The combat vehicle *desant* [BMD] substantially raised the tactical capabilities of the subunit; its firepower and maneuverability was increased, allowing them to deliver a decisive surprise attack, completing the destruction of the enemy before he was able to render organized opposition."⁷⁶

In addition to developing and producing ASU assault guns and BMD airborne infantry fighting vehicles, the VDV elaborated innovative procedures for delivering paratroopers and their vehicles to their destinations. In this context, new tactics and procedures were written, tested and refined through a series of lavish exercises and experiments.

For example, the Soviet Union's Operation Dnepr war game of 1967 witnessed the world's largest airborne combat jump since the 1944 Arnhem operation and the first one involving the delivery of a substantial armored force by air.⁷⁷ During the airborne component of the Dnepr maneuvers, all 8,000 men of the 76th Guards Chernigov Airborne Division participated in the airborne assault.

After reconnaissance patrols secured the drop zones, the first elements of the airborne division to touch ground were the antitank companies with their ASU-57 assault guns. These light-weight vehicles were parachuted to their destinations on cargo pallets equipped with unique retrorocket systems designed to slow their descents.⁷⁸ Following this, the rest of the division's paratroops jumped as well. Finally, the airborne portion of Operation Dnepr culminated in the landing of the heavier ASU-85 assault guns by AN-12 "Cub" transport aircraft.

In many ways, Operation Dnepr demonstrated the VDV's burgeoning capacity to deliver armor by air and integrate it into a broader scheme of operations. Although only ASU assault guns were available at the time of the Dnepr exercises, further exercises and experiments were conducted once BMDs started reaching combat units. In fact, beginning in 1968, the VDV launched Projects Kentavr (Centaur) and Reaktavr (Rock-eteer), with the aim of developing techniques for dropping BMDs with their crews already inside.

Whereas the parachute delivery of armored vehicles results in unavoidable delays as vehicles and vehicle crews land far apart from one another, the objective of these projects was to invent techniques whereby armored vehicles could be dropped both fueled and crewed, and therefore ready for immediate action. After seven years of development and many harrowing experiments, the VDV deployed the materiel and instituted the standard operating procedures necessary for dropping crewed BMDs.⁷⁹

Thus, by the 1970s, the introduction of the ASU airborne assault guns and the BMD airborne infantry fighting vehicles had transformed the VDV from a light-infantry organization to a mechanized airborne force such as the world had never seen. Concomitantly, cutting-edge parachute techniques enabled Soviet airborne forces to deploy this force by parachute in remarkably short order. In the articulation of this airborne mechanized force, the VDV demonstrated an innovative spirit on par with that it evinced in the 1930s.

However, the VDV's inventiveness in augmenting the capabilities of airborne forces should not obscure the question of whether large-scale airborne operations were at all feasible in the event of war. For one thing, the VDV's creation of an airborne mechanized force geometrically increased the difficulties of airlifting an

airborne division to its drop zone. With nearly 400 armored vehicles apiece, the VDV's airborne divisions in 1970 required three times as much lift as they had during the 1950s.⁸⁰ In concrete terms, this meant that all of the Soviet Union's airlift—military or civil—would have been required to drop a single airborne division on its target.

Even if the Soviet Union used its airlift assets in this way, it is not at all certain whether the VDV would have succeeded in dropping a division on a target. Because ground based air defenses continued to evolve and thicken throughout the Cold War, the large numbers of lumbering transports associated with an airborne operation would have been acutely vulnerable to surface-to-air missiles and radar directed gun systems.

Although information is lacking on what the VDV thought of this threat, NATO countries invariably came to the conclusion that airborne operations were impossible in a high-threat environment. As Germany's Major General G. Bernhard remarked in 1989, "a parachute assault can take place only in a low-intensity operation."⁸¹ In a similar vein, Spain's Paratroop Brigade concluded that, "parachute operations are vulnerable to enemy aircraft and air defenses, even under conditions of air superiority."⁸² Indeed, considerations of this type led to the abandonment of proposed combat jumps in the Persian Gulf and Bosnia.⁸³ In this context, it appears dubious as to whether enough Soviet transport aircraft would have penetrated NATO's integrated air defense network.⁸⁴

Finally, even if the VDV managed to establish an airborne bridgehead in NATO's rear, its ability to defend this zone is doubtful. The weight limits imposed on the VDV's assault guns and infantry fighting vehicles by the requirement of airlifting them meant that these vehicles were much less capable than their counterparts in NATO mechanized and armored divisions. In this context, small Soviet ASU-85s would be pitted against NATO tanks weighing between 36 and 55 tons, and 7-ton BMDs would face Bradleys, Warriors and Marders weighing between 23 and 29 tons.⁸⁵ Inevitably, the weaponry and armor of the airborne vehicles would be found wanting compared to those of their heavier terrestrial counterparts.

Unable to airdrop more than a single division and probably incapable of penetrating NATO airspace, Soviet airborne operations were probably even less feasible in the 1970s and 1980s than they had been prior to the VDV's creation of mechanized airborne divisions. In fact, the VDV's flare for innovation had only solved the narrow problem of giving airborne forces more firepower, but ignored the broader issue of whether mass paratroop combat drops were even possible. In this context, the institutional autonomy accorded the VDV produced a sort of bounded rationality whereby the strength and inventiveness of airborne forces was maximized, but the transcendent question of what role these forces would play lay unexamined. As such, airborne forces, as a failed innovation, were not only able to soldier on, but also innovatively pursue their organizational essence at great cost to the Soviet Union and the rest of its armed forces.

The United Kingdom: Rationally Reduced

If the Soviet Union's paratroop forces constitute an extreme case of organizational autonomy, the United Kingdom's airborne forces lie at the opposite end of the spectrum. Possessed of little organizational autonomy within the British Army, the United Kingdom's airborne forces were neither as innovative nor as persistent after the war as the Soviet VDV. In fact, once World War II ended and they had lost the patronage of Prime Minister Winston Churchill, British airborne forces' institutional weaknesses militated against their continued existence as a major military entity. As a consequence, three airborne divisions rapidly shrunk until only a single operational paratroop battalion was left.



WWII-vintage British paratroopers.

Unlike the Soviet Union, which set about developing airborne forces in the early-1930s, the United Kingdom was one of the last great powers to develop paratroop units. In fact, the United Kingdom's armed forces evinced little interest in parachute assaults until Germany's successful use of airborne forces in the battles for Norway, Denmark, Holland and Belgium prompted Prime Minister Churchill to order the creation of the United Kingdom's first paratroop units.⁸⁶ Accordingly, Churchill drafted a memorandum to the Military Wing of the War Cabinet Secretariat on June 22, 1940, proclaiming that, "We should have a corps of at least five thousand parachute troops."⁸⁷

Acting on Churchill's instructions, the armed forces assigned Army Major John Rock and Royal Air Force Squadron (RAF) Leader L.A. Strange to the task of developing parachuting equipment and training procedures. At first, Rock and Strange had little to work with, their command having neither men nor aircraft at its disposal.⁸⁸ Yet, somehow, scrounging for men and equipment, they managed to acquire six obsolete Whitley bombers and American designed Irvin parachutes from the RAF, and Number 2 Commando and captured German jump gear from the Army.

From these meager beginnings, the United Kingdom set about constructing airborne forces. To begin with, the efforts of Rock, Strange and others like them to put the Prime Minister's order of June 22nd into practice ran up against administrative foot dragging and stonewalling from both the Air Ministry and the War Office. As such, although 2 Commando had been assigned to the Airborne Forces training school since July of 1940, it did not formally become an airborne unit until the 21st of November. And even then, its designation as a "Special Air Service Battalion" robbed it of the administrative clout or organizational security that came with incorporation as a regiment.⁸⁹

Denied even a modicum of autonomy and starved for resources, the United Kingdom's airborne forces mustered less than one active battalion a year after Churchill wrote his famous memorandum. Things might have continued to evolve at this glacial pace had Germany not overwhelmed Crete with a massive airborne assault in May of 1941.⁹⁰ Indeed, Churchill took a much more proactive role in Britain's development of

airborne forces after the German conquest of the Mediterranean island. On 27 May, days after the Battle of Crete, Churchill wrote the Chiefs of Staff of the armed forces complaining that the United Kingdom needed a German-style airborne division and that obstructionism on the part of the Air Ministry and the War Office must cease.⁹¹

The United Kingdom's nascent airborne force received a needed boost from Churchill's intervention on their behalf. Soon after this occurred, the 11th Special Air Service battalion acquired regimental status as the 1st battalion of the Parachute Regiment and volunteers were solicited to form two additional Parachute Regiment battalions. Later, in September 1941, the decision was taken to eventually combine these three battalions in an airborne brigade, with the perspective of forming still larger airborne units.⁹²

While these measures entailed a marked increase in the size of the United Kingdom's paratroop units, they did little to boost the organizational autonomy or importance of these forces. And although the United Kingdom eventually produced three airborne divisions, the institutional strength of these forces was limited by the fact that only a single Parachute Regiment existed. Within the British Army, divisions are ephemeral creations formed for specific purposes and disbanded once these are accomplished.⁹³ By way of contrast, regiments have permanent administrative existences, each possessing its own peacetime training facilities and many boasting histories dating back to the seventeenth century.⁹⁴

In this context, the existence of three airborne divisions is a feeble metric for judging the autonomy of paratroop forces within the United Kingdom's armed forces.⁹⁵ Rather, the fact that all of these divisions were formed from supernumerary battalions of a single regiment points to their institutional weakness.⁹⁶ As such, although the United Kingdom eventually formed 24 parachute battalions, these tactical formations all depended on an administrative unit whose peacetime size would theoretically not exceed three battalions and their associated clerical and technical staffs.⁹⁷

No greater contrast exists than that between the organizational formats of the United Kingdom's Parachute Regiment and that of the Soviet VDV. Whereas the VDV was a service within a service and possessed independent channels of recruitment, officer training facilities and an autonomous position under the Minister of Defense, the British Parachute Regiment was, in organizational terms, a regiment like any other. In this context, Parachute Regiment officers matriculated from the Royal Military Academy at Sandhurst and other Officer Candidate Training (OCT) courses along with those assigned to every other regiment. And, rather than possessing an autonomous position within the Ministry of Defense, British paratroop units were regularly subordinated to field commanders.

During the Second World War, this weak institutional structure did not negatively impact British airborne forces as it might have done. Because mobilization for total war and United States Lend-Lease assistance provided the British armed forces with ample manpower and materiel, the airborne forces were never really starved for resources. They received more than enough British manufactured Sten submachine guns and P.I.A.T. antitank missile launchers—weapons that were not specific to airborne units, but which suited them handily—and were flown to their destinations in United States produced C-47 transports.

With Churchill's patronage, the United Kingdom's airborne forces also procured specialized airborne equipment. One such device, the "Gammon Bomb," provided British paratroopers with a close-range antitank weapon sufficiently small and cheap for every paratrooper to carry at least one.⁹⁸ Even more remarkably, British airborne forces received limited numbers of light Tetrarch tanks during World War II.⁹⁹ Weighing a mere 8 tons, these tanks could be delivered to targets by the largest World War II-era gliders, as seven in fact were on D-Day in 1944.¹⁰⁰

Armed and equipped in this fashion, the United Kingdom's paratroops undertook eight distinct airborne operations, during which they performed comparably to other states' airborne forces. Neither as successful as Germany's paratroops nor as unfortunate as the Soviet VDV, Britain's airborne soldiers boasted a record akin

Table V
British World War II Airborne Operations

Failures	Indecisive Operations or Pyrrhic Successes	Successes
Arnhem	Tragino Aqueduct Operation Torch Sicily Normandy The Rhine	Bruneval Rangoon River

to those of their American allies or Japanese adversaries. As Table V illustrates, besides a couple decisive victories and a single unmitigated disaster, British airborne endeavors were mostly bloody and inconclusive affairs.¹⁰¹

In spite of a wartime record comparable to those of foreign airborne units, the United Kingdom's paratroop forces endured deeper and more persistent cuts than those of any other major power. Within months of conducting their final and most successful parachute assault—a battalion size combat jump to seize Japanese cannons and bunkers guarding the Rangoon River Delta in May 1945—the United Kingdom's airborne forces were rocked by a series of drastic force reductions. To begin with, the British 1st Airborne Division was dissolved in November of 1945. And in the next three years Britain's remaining airborne divisions and brigades were whittled down to almost nothing, such that only a single parachute brigade remained by February 1948.¹⁰²

Even once these cutbacks were made, the residual 16th Parachute Brigade lacked the funding and institutional clout to rectify problems plaguing wartime airborne operations. To begin with, the United Kingdom's airborne forces were unable to influence how the RAF designed its transports and managed its aircraft fleet. As a consequence, RAF transports lacked rear-loading freight doors for dropping oversized cargoes, such as artillery pieces or vehicles—a capacity that the United States, Soviet Union and France all possessed in one way or another.¹⁰³

Furthermore, the United Kingdom's parachute brigade experienced difficulty convincing the RAF to fly training flights and by the mid-1950s British paratroopers were, on average, jumped only once a year. Understandably, these forces were not as prepared for combat as their French and American counterparts, who jumped respectively once a month and once every three months.¹⁰⁴

This low priority accorded the United Kingdom's 16th Parachute Brigade became obvious in 1956 during Operation Musketeer, when British and French paratroopers leapt into the Suez Canal zone. In every respect, French paratroops proved better armed and trained than their British colleagues throughout this assault. Whereas “sticks” of seventeen French paratroopers emptied their aircraft in ten seconds—ensuring they were spread over no more than half a mile—British paratroops exited their transports at a leisurely pace. Requiring twenty seconds for fifteen to jump from a transport, the United Kingdom's airborne forces were hopelessly scattered over miles of desert terrain.

Besides being more dispersed than the French, British paratroops were also less well armed and equipped. In fact, while French paratroops jumped with specially designed rifles and submachine guns slung

across their chests, British paratroopers parachuted unarmed, with their weapons arriving in separate canisters. Needless to say, the first minutes on the ground were a harrowing experience for these men. Equipped with only knives or pistols, they scrambled to locate and dig rifles out of weapons containers. Under such conditions, one British paratrooper was reduced to throwing a weapon container at an Egyptian soldier attacking him with a knife.¹⁰⁵

In addition to their inferior training and weapons, the British 16th Parachute Brigade also suffered from a dearth of heavy equipment. The aforementioned deficiencies affecting RAF transport aircraft meant that the only vehicles that could be dropped near the Suez Canal were small World War II jeeps. Because of this, British paratroopers were compelled to leave their new Austin Champ vehicles behind and comb Cyprus for outmoded jeeps and their trailers. Once this was accomplished, they set about searching warehouses for the obsolete World War II “dropping beam” devices needed to parachute these jeeps, one of which they actually commandeered from a museum.¹⁰⁶

In short, during the Suez operation British paratroops were found wanting in every regard save individual courage. Under-trained and saddled with old equipment, the British 16th Parachute Brigade was less skilled and no better armed than their predecessors had been at Normandy. Had it not been for Egyptian incompetence and French savoir-faire, the airborne assault on the Suez Canal could have turned out to be a disaster reminiscent of Arnhem. As one author so aptly put it, “What had atrophied were the unglamorous skills of the planner and logistician.”¹⁰⁷

While Suez highlighted the neglect of British airborne forces, it in no way constituted their nadir. For the next 21 years the 16th Parachute Brigade lingered on, demonstrating little inventiveness and accomplishing nothing in terms of revitalizing Britain’s parachute assault capabilities. Finally, on March 31, 1977, the 16th Parachute Brigade was dissolved, killed by the menace of improved air defenses and the rest of the Army’s competing demands for resources. Henceforth, Britain would maintain only a single parachute battalion in the airborne role, with two others serving as regular infantry units in the Army.¹⁰⁸

For all intents and purposes, the dissolution of the 16th Parachute Brigade marked the end of Britain’s parachute assault capability. In effect, since 1977 the United Kingdom’s vestigial airborne forces have been smaller and less capable than those of small states such as Belgium, Yugoslavia and Portugal, and infinitesimal compared those of great powers such as China, Japan or France.¹⁰⁹ Although British airborne forces recovered some of their luster during the Falklands War, where two of the United Kingdom’s three remaining parachute battalions fought as ordinary infantry, neither the resources nor the attention devoted to maintaining a parachute assault capability have increased.

In this context, the resurrection of an airborne brigade—the 5th Airborne Brigade—consequent to the Falklands War was more symbolic than real.¹¹⁰ The actual number of parachute battalions within the British Army has not increased and two-thirds of the 5th Airborne Brigade is composed of non-parachute trained infantry battalions.¹¹¹ As such, while there is once again a parachute brigade on the United Kingdom’s order of battle, only a single battalion is capable of filling the parachute role at any point in time and there are doubts as to whether the United Kingdom would use even this small force. As Brigadier D. Chaundler, commander of the 5th Airborne Brigade, confessed, “I cannot envisage mounting a parachute assault in anything but a low threat scenario. A parachute stream of aircraft is a slow-moving and large target. Thus, it is very vulnerable.”¹¹²

Given the gradual elimination of the United Kingdom’s paratroop forces, the question arises as to why British airborne divisions, which performed better than the Soviet VDV and similarly to the other great powers’ airborne forces during World War II, fared so much worse in the post-war budgetary battles? As has already been alluded to, the answer to this question lies in the comparatively low degree of organizational autonomy accorded British airborne forces during the war.

In effect, British paratroop forces lacked the institutional strength to defend anything like their World War II force structure. With 24 parachute battalions and three air landing brigades tied to a permanent administrative structure designed for a regiment, the United Kingdom's airborne forces were acutely vulnerable to the attacks of critics and the competing claims of other parts of the armed forces. Furthermore, Churchill's electoral defeat at the end of the war robbed the airborne forces of a steadfast ally who might have supported them in the post-war budget battles.

Under these circumstances, the United Kingdom's paratroop forces were unable to justify the continuing validity of the parachute assault mission. The bloody nature of Second World War airborne operations combined with the evolving threat of ground based air defenses, everywhere militated against the existence of large airborne forces. In the United Kingdom, institutional weaknesses and lack of organization made it impossible for airborne advocates to deny this reality, as their Soviet homologues so successfully did. This made it easier for Britain to devalue and gradually abandon its parachute assault capabilities, and shift resources to other, more promising military assets.¹¹³ In this context, the pitiful performance of British paratroopers at Suez finds its antipode in the revolutionary use of 22 helicopters to deploy 45 Commando, Royal Marines during the same operation.¹¹⁴ As was borne out in this case, a lack of institutions can be a godsend when it comes to scrapping a failed innovation.

The United States: Fighting for a Role

The story behind American airborne forces is different from those of the Soviet Union or United Kingdom. American airborne forces—the second largest in the world—have remained large since World War II. They have, however, shrunk since 1945 and their size and organizational formats have fluctuated considerably. Why did United States airborne forces evolve more erratically than their British or Soviet counterparts? The answer to this question is complex and involves not only the degree of institutional autonomy accorded to airborne forces, but also the way that airborne institutions competed with other American military organizations and services for roles, missions and a share the national defense budget. In effect, possessing a high degree of organizational autonomy, but not so much as the Soviet VDV, American airborne forces fought continually to justify their large size by embracing new roles and missions, and lobbying to include airborne operations in most American military enterprises.

Strategically, the United States' development of airborne forces made logical sense during World War II. Because Germany controlled Western Europe when the United States entered World War II and Japan conquered much of the Pacific in the war's first six months, the United States needed to forcibly establish bridgeheads in territories under enemy control. Only airborne and amphibious units could do this in the 1940s.¹¹⁵ The United States invested in both, including five airborne divisions, six Marine divisions and substantial army amphibious forces.

As with other aspects of ground warfare, early American airborne thought reacted to developments abroad and showed originality.¹¹⁶ However, once foreign demonstrations highlighted the value of parachute units, several branches within the Army fought for the authority to develop and control them.



U.S. paratroopers await jump.

When the Chief of Infantry proposed creating a small detachment of 'air infantry' in 1939, the Air Corps responded that airborne forces should answer to them instead. Not to be outdone, the Corps of Engineers reasoned that because airborne troops would operate behind enemy lines and enact sabotage missions they should answer to engineers. In late 1939, Army leadership moderated the competing claims of the Infantry, Air Corps and Engineers, deciding in favor of the Infantry.¹¹⁷ Later, in 1941, the Air Corps made another unsuccessful bid to control paratroop units.

Once jurisdictional issues were settled, the War Department ordered the Infantry to examine the feasibility of airborne forces. This decision, coming in January 1940, was followed on June 25, 1940 by the creation of a test platoon at Fort Benning.

Meanwhile developments abroad, including Germany's easy victories in Scandinavia and the Low Countries, and its successful invasion of Crete, hastened America's development of airborne forces.¹¹⁸ Ironically, the attack on Crete persuaded Germans that airborne forces were costly and vulnerable, yet won over military leaders in the United States and United Kingdom. General Maxwell Taylor, wartime commander of the 101st Airborne Division, observed, "On May 20 [1941], some 15,000 German parachute and glider troops had attacked and captured the island of Crete It was a brilliant *coup de main* which made an enormous impression in Washington as evidence of the feasibility of division-size airborne operations in the execution of a 'vertical envelopment.' Oddly enough, the effect on the Germans was quite the contrary."¹¹⁹

During this period, America's young airborne forces expanded from a platoon, to a battalion, to finally a regiment (the Provisional Parachute Group or PPG). By late 1941, airborne divisions were clearly the next step. Questions remained, however, about what types of division would be created and what would be their relationship with the Infantry, the Air Corps and other army institutions.

General William Lee, commander of the PPG, wanted large divisions of 15,000 troops complete with support personnel and organic transport. General Lesley McNair disagreed and favored stripped down 8,300 man divisions.¹²⁰ McNair had the final word as commander of Army Ground Forces and the smaller divisions were adopted. Under various operational pressures, however, airborne divisions grew to 11,000 men apiece by 1944.¹²¹ Originally airborne divisions consisted of two glider regiments and one parachute regiment, a ratio that was reversed before America's first divisional sized airborne operation in July 1943.

Another debate, more central to the future of airborne forces, centered on the scope, form and autonomy of parachute units. The PPG under Lee fought for an autonomous branch within the Army, on par with the armored force or the infantry, which would control its own air transport. The Infantry and the Air Corps opposed this measure. The Chief of Infantry argued that airborne infantry belonged in the same branch as their foot-bound and motorized brethren. The Air Corps refused to subordinate air transport to an airborne branch, but argued that if air transport and paratroops are interdependent, then both should answer to the Air Corps.

The outcome of this bureaucratic battle determined the fate of American airborne forces. Airborne forces won autonomy, but less than hoped for. Rather than becoming a separate branch, on par with the infantry or armor, airborne forces were incorporated as a privileged group within the Infantry, possessing its own high level administrative, combat and training commands.

They were allowed to create Airborne Command, later renamed Airborne Center. This higher-level administrative headquarters empowered airborne forces to write doctrine, supervise paratroop recruitment and training, establish equipment requirements, and liaise with the Army Air Corps Troop Carrier Command. Other airborne institutions included a new Parachute School at Fort Benning and a combat headquarters, the XVIII Airborne Corps.¹²²

Although American airborne forces failed to win control of air transport, the Army Air Corps also lost in its bid to dominate airborne forces. Ultimately, airlift and airborne forces remained administratively separate,

Table VI
Airborne Divisions as a Percentage of Total Force

Country	# Airborne Divisions	# Divisions	% Airborne
United States (1944)	5	90	5.6
United Kingdom (1943)	2	39	5.1
Soviet Union (1941)	10	220	4.5
Italy (1941)	1	64	1.6
Germany (1940)	1	156	0.6

but were frequently partnered up together. For example, the 505th Parachute Regiment collaborated with the 316th Troop Carrier Group during all of its airborne assaults from Sicily to Arnhem.¹²³

Taken as an ensemble, the American airborne institutions created in 1941 and 1942 are much more comprehensive and guarantee a higher degree of autonomy than their British equivalents; but they are much less extensive than the Soviet VDV.

When American airborne forces won a measure of autonomy from the Infantry and confirmed their independence vis-à-vis the Air Corps the stage was set for the creation of a very large and well-equipped airborne force. In August of 1942, the Army officially created two airborne divisions, the 82nd and 101st. Each consisted of one of the Army's six (Parachute Infantry Regiments) PIRs and two glider infantry regiments drawn from the 82nd Infantry Division.¹²⁴ In 1943, the Army formed three more airborne divisions – the 11th, 17th and 13th. A sixth division, the 15th, was planned, but never activated.

Although the United States was slow to develop airborne forces, by 1943 it had an airborne force of five divisions; the second largest and one of the best equipped in the world. In absolute terms only the Soviet Union's 10 airborne 'corps' were nominally larger than American airborne forces.¹²⁵

Relative to the size of American ground forces, the United States' airborne forces were even larger than the Soviet Union's or Germany's. At the height of the Second World War the United States fielded 90 divisions; of which approximately six percent were airborne. As Table VI above illustrates, percentages were lower in other great powers.¹²⁶

Besides being large, American airborne forces were expensive as well. Unlike other combat units, including the Marines, they were composed entirely of volunteers who were paid \$50 to \$100 a month more than other soldiers.¹²⁷ Substantial numbers of America's best-motivated soldiers were going airborne; a markedly different allocation of human resources than the Germans practiced, who concentrated volunteers in armored and mechanized divisions. Regarding American airborne soldiers, a staff officer observed, "Tough? God they are tough! Not just in the field, but twenty-four hours a day. Off-duty they'd move into a bar in little groups and if everybody there didn't get down on their knees in adoration, they'd simply tear the place up. Destroy it."¹²⁸

Besides consuming precious human resources, America's airborne divisions needed substantial materiel as well. The most advanced transport aircraft of the Second World War, the C-47, carried either 18 paratroops

Table VII
World War II Airborne Operations Behind Enemy Lines

Disasters	Indecisive Operations or Pyrrhic Successes	Successes
Oran, Algeria	Normandy	Tebessa
El Djem, Tunisia	Provence	Nadzab, New Guinea
Sicily	Arnhem	Corregidor
Avellino		The Rhine

or 6,000 lbs of cargo. To drop one airborne battalion required 50 C-47 transport aircraft; a regiment required 150. Large airborne operations entailed building thousands of aircraft.¹²⁹ Gliders were needed too and the United States built over 5,000 poor-quality gliders during the war at a cost of \$15,000 apiece.¹³⁰

Specialized equipment was designed for airborne forces as well. Perhaps the most costly type of ordnance developed for America's airborne divisions was the M22 "Locust" tank. With the exception of Britain, the United States was the only country to develop an air-transportable tank during World War II. As early as 1941, the Army began work on the M22 and by 1943 a specialized unit, the 151st Airborne Tank Company, was equipped with it.¹³¹ Unfortunately, technical problems led to increases in the M22's weight, edging it above 7-tons and the carrying capacity of C-47 transports and Waco gliders. Only the much-prized British Hamilcar glider could carry the American tank and there were too few of these to go around.¹³²

When American airborne forces saw combat in 1942 they were a new organization, barely two years old, but had received the pick of American manpower and materiel. How well did these forces perform in battle? Overall, as Table VII demonstrates, few American airborne operations were unqualified successes and most resulted in either costly successes or disastrous failures.

As should be evident, American airborne forces endured their share of catastrophic operations. Beginning with the Oran operation of November 1942, only 6 of 33 C-47s carrying paratroopers reached their destination in French Algeria and the 509th Parachute Battalion was unable to capture its intended airfields.¹³³ A month later, an airborne battalion's attempt to blow up the El Djem Bridge in Tunisia turned out even worse. After failing to blow up the bridge and running afoul of Axis patrols, only eight out of 32 paratroopers survived to reach Allied lines.¹³⁴

The American airdrop on Sicily, a much larger operation, also failed to achieve any of its objectives. Poor navigation led to 88 percent of the 505th Parachute Infantry Regiment being dropped off target and, in one of the most tragic friendly fire incidents of the war, 42 percent of the C-47s carrying the 504th Parachute Infantry Regiment were hit by American anti-aircraft fire.

The few paratroopers that actually landed in their drop zones immediately faced a nightmare scenario. When the German Hermann Göring Panzer Division attacked the American beachhead on Sicily, it went through the 82nd Airborne Division like a sieve. As one man bitterly put it, "We drove the German infantry off, but the tanks managed to get through us."¹³⁵ Altogether, 27 percent of American paratroopers committed to Sicily were killed, wounded or captured.¹³⁶

In addition to these outright failures, many American airborne operations were limited and very costly successes. During the Normandy invasion the United States' 82nd and 101st Airborne Divisions occupied the Douves and Meredet river valleys, four roads crossing the lagoon inland of Utah Beach and the strategic town

of Saint-Mère-Eglise during the morning of June 6, 1944. This success came at a cost of 19 percent of the Anglo-American airborne forces in one day, and losses were this low only because German forces on the Cotentin Peninsula remained inert.¹³⁷ Casualties were even heavier during Operation Market Garden. Although paratroops seized their appointed bridges, over 27 percent of the 82nd and 101st Airborne Divisions were either killed, wounded or captured before they were relieved by advancing British armored units.

The American airborne assault in Southern France was less costly, but was not completely successful either. When 60 percent of his paratroops failed to land in their appointed drop zones, Major General Robert Frederick felt that his 1st Airborne Task Force was too weak to seize its objective, the crossroads city of Mûy.¹³⁸ Fortunately, the Germans failed to take advantage of this situation to attack the Allied beachhead.¹³⁹

While it suffered several disasters and semi-disasters, the United States experienced few airborne triumphs. The four American airborne operations qualified as were successful were launched under the most permissive conditions. For example, the American battalion that seized Tebessa airfield in 1942 did so at the expense of Vichy French troops, who never opened fire. Victory at Nadzab, New Guinea, was easy because the Japanese had orders to withdraw as soon as attacked. Although retaking Corregidor in 1944 should have been a difficult task, “the [Japanese] defense showed neither spirit nor cohesion.”¹⁴⁰

Faced with such a mixed record of successes and failures, high-level commanders tried to abolish American airborne forces on two occasions and a virtual moratorium on airborne assaults existed by the end of the war. General Dwight Eisenhower began questioning the usefulness of airborne forces beginning in 1943, after Oran, El Djem and Sicily. As General Maxwell Taylor remembered it, “critics pressed for a reversion to the use of small parachute units primarily for sabotage behind enemy lines,” but “senior airborne officers, such as Generals Ridgway and Swing, fought back as best they could and, in the end, were able to defer any immediate changes in the concept of airborne operations.”¹⁴¹

After further disaster at Avellino, both Eisenhower and McNair favored abolishing airborne divisions. Eisenhower went on the record arguing that airborne divisions were “too



General Eisenhower talks to U.S. airborne force on eve of Normandy invasion.

large” and that they should be reduced to “strong regimental combat teams.” McNair, for his part, contended that airborne units should be battalion sized at most.¹⁴² General George Marshall, Army Chief of Staff, demurred. Instead of abolishing airborne divisions, he convoked a panel under General Joe Swing, commander of the 11th Airborne Division, to investigate recent failures.¹⁴³

Having twice escaped elimination in 1943, fresh disappointments resuscitated doubts about airborne operations in late 1944. Having fought bravely and captured public attention, American airborne divisions became too prestigious to disband. However, American commanders, including Eisenhower and MacArthur, declared a moratorium on airborne operations, especially ones deep in enemy territory. The plan for America’s final airborne assault of the war, Operation Varsity, reflects their doubts.

Despite the pitiful state of the German Army in early 1945, only after prodding by General Montgomery did Eisenhower consent to drop two airborne divisions in broad daylight, barely three miles behind enemy lines, where 3,000 allied guns supported them.¹⁴⁴ The limited results of even this operation persuaded American commanders not to use airborne forces in the planned invasion of Japan.¹⁴⁵

Given heavy losses, excessive costs and meager results, America could have abolished its airborne forces or at least let them sink into obscurity as the British did. This did not occur and American airborne forces have remained large ever since.

The key to the post-war survival of airborne forces lies in their wartime status. Because airborne forces were consciously established as an elite organization, they received the pick of army officers—those who would have had stellar careers in any case. Then, through constant use, the officers commanding three American airborne divisions earned the credibility and reputation needed to advance rapidly in the post-war army. Whether their operations were strategic successes or not, the 82nd Airborne Division was for Sicily, Salerno, D-Day and Arnhem; the 101st saw action in Normandy, Arnhem and at Bastogne; and the 11th Airborne fought in New Guinea and the Philippines.

Airborne officers were privileged in the post war army because of their elite status and hard earned combat record, both products of organizational choices made in the early 1940s. In fact, three World War II-era airborne generals, Matthew Ridgeway, Maxwell Taylor and William Westmoreland, became Chiefs of Staff of the Army while others, such as General James Gavin, occupied posts of critical importance within the army. Many World War II regimental or division commanders commanded regular divisions or corps after the war, including two who eventually commanded America’s armies in the United States’ two significant Cold War-era conflicts—the Korean and Vietnam Wars. As Richard Betts put it, “The leaders of the army in the cold war were the men who had led airborne divisions in World War II.”¹⁴⁶

With airborne officers occupying so many important command positions following World War II, airborne forces received preferential treatment in an era of drastic force reductions. In their new positions, Second World War airborne officers remained loyal to their wartime combat branch. This explains why two of the army’s 11 active divisions, or 18 percent of America’s available land combat power, consisted of airborne forces in 1947.¹⁴⁷ Airborne divisions comprised a larger percentage of American forces at this time than during the war (18% versus 6%) and were proportionally larger than Soviet airborne forces (18% versus 12%).

As time went on airborne forces struggled to maintain their status within the United States Army. Their relative success or failure in this endeavor explains significant shifts in the size of airborne forces detailed in Table VIII.¹⁴⁸

In general, airborne officers used two techniques to preserve the size and status of their forces. These included: 1) seeking out new missions to justify maintaining large airborne forces, 2) attempting to incorporate airborne jumps into military operations, whether or not they were necessary.

As part of airborne forces' struggle for size and identity, present and past airborne officers labored to convince policymakers that airborne forces were compatible with changing American military doctrines and foreign policies. To do this, they modified airborne forces to superficially correspond to the defense policies and strategic orientations of each administration. At various occasions, this involved marketing airborne forces as ideal for the atomic battlefield, superb rapid reaction forces or the key to waging successful counterinsurgency operations.

Under the Eisenhower administration, which espoused "massive retaliation" and the nuclear battlefield, airborne officers managed to increase both the relative and absolute size of American airborne forces by transforming them into test-beds to examine combat on an atomic battlefield. In fact, after John Foster Dullas enunciated American nuclear strategy in 1954, Maxwell Taylor, Army Chief of Staff between 1955 and 1959, reactivated the 101st Airborne Division, which he had commanded during World War II, and organized it as an experimental unit designed for an "atomic battlefield." Taylor's experiments with the 101st Airborne Division

led to the "Pentomic Army" initiative—a broad reorganization of the army for tactical nuclear warfare.

After the 101st Airborne Division, the 82nd and 11th Airborne Divisions became "pentomic" in March 1957.¹⁴⁹ Most of the remainder of the regular army converted to the pentomic format in 1958. By using airborne divisions as the test-beds and vanguard of the project, Taylor managed to temporarily expand the size of airborne forces from two to three divisions, meaning that they constituted three of the United States' 15 Army divisions, or 20 percent of the Army's combat units, in early 1958.¹⁵⁰

When the Kennedy Administration assumed office in January 1961, a new national strategy condemned airborne forces' pentomic role to obsolescence. President Kennedy and Secretary of Defense Robert McNamara were less interested in nuclear battlefields, but wanted military forces able to project power abroad and fight

insurgencies in the developing world. As soon as they discerned the outlines of Kennedy foreign and defense policies, airborne officers flocked to convince McNamara that large airborne forces were essential to the new administration's goals.

Taylor, now Chairman of the Joint Chiefs of Staff, and Gavin, Chief of Army Plans, Research and Development, succeeded in promoting airborne forces as the military means needed to accomplish the new administration's political ends by advertising the ability of airborne forces to respond to crises and supporting reforms to transform airborne divisions into counterinsurgency airmobile units.

As part of its more interventionist foreign policy, Taylor argued that the United States needed more airborne units as rapid reaction forces. With Taylor's prodding and Gavin's support, new regional airborne rapid reaction forces sprang into existence, eventually including an airborne brigade attached to a non-airborne division, an independent airborne brigade and three separate airborne battalions. Important regions, such as Asia and Europe, each received an airborne brigade—the 173rd Airborne Brigade and the 1st Airborne Brigade, 8th Infantry Division respectively. Less important regions, such as Latin America and Alaska, received battalion-sized forces.¹⁵¹

Table VIII
United States Airborne Forces 1945-95

(measured by infantry battalions)

1945 45 battalions

1955 21 battalions

1965 30 battalions

1975-85 9 battalions

1995 12 battalions

In addition to popularizing airborne forces based on their rapid deployment capabilities, Taylor also put them at the forefront of army counterinsurgency research in the early 1960s. From the very beginning, the idea of using troop-carrying helicopters for airmobile operations was developed and nurtured by airborne officers. Lieutenant General Hamilton Howze, an airborne officer, led the panel that investigated the feasibility of helicopter-borne operations in 1962.¹⁵² In 1963, Taylor insisted that the test-bed unit for helicopter-borne operations carry on the airborne traditions of the World War II-era 11th Airborne Division. Later, once helicopter air assault doctrines were elaborated, the 101st Airborne Division and the 173rd Airborne Brigade were among the first units converted to the new organizational format.

By making airborne units the army's rapid reaction forces and adapting them for counterinsurgency, Taylor and Gavin added six active airborne battalions to the army during the Kennedy administration—bringing the total to 30 parachute infantry battalions on the eve of the Vietnam War.¹⁵³

The Vietnam War soon reduced the size of America's parachute capable forces. Tight budgets, the military pressures of the Vietnam War and the eventual transition to an all volunteer force led successively to the abolition of Taylor's independent airborne battalions and mixed airborne/infantry divisions, the loss of airborne status by the 101st Airborne Division and, finally, the deactivation of the 173rd Airborne Brigade in 1972.¹⁵⁴

Although the size of American airborne forces fell from 30 parachute infantry battalions in 1965 to 9 parachute infantry battalions in 1975, the Vietnam War is an ambiguous watershed in the history of American airborne forces.

Although airborne forces shrunk, they remained large in both absolute and relative terms. Over time, they managed to find new missions to justify their continued existence.

In the late 1970s, airborne forces marketed themselves as America's rapid intervention force for the Persian Gulf after the Carter Administration explicitly

stated that the region contained American security interests. In 1978, the XVIIIth Airborne Corps became the principal contingency force for America's Rapid Deployment Force, later renamed Central Command. Because of this new role, the XVIIIth Airborne Corps preserved its independence and obtained resources to upgrade its subordinate units.¹⁵⁵

Table IX
New Missions for American Airborne Forces

Administration	Mission	Organizational Consequence
Eisenhower	Pentomic Army	101 st Airborne reactivated as "test" division
Kennedy	Rapid Reaction	three airborne brigades and three airborne battalions formed
	Counterinsurgency	11 th Airborne reactivated as an undersized "test" unit
Carter	Persian Gulf Interventions	XVIII th Airborne Corps acquires a strategic role
		Corps support units upgraded

In sum, after World War II American airborne forces defended their size and autonomy by repackaging themselves to appeal to each successive administration. Although airborne forces superficially adapted their organizational structures to new missions, the changes were rarely more than skin deep. As Betts observed, “An irrelevant tactical doctrine—airborne warfare—became indirectly influential by having permeated attitudes and established loyalties within a service elite, thus helping to channel innovative impulses in a conventional direction.”¹⁵⁶

Besides competing for politically desirable roles and missions, airborne forces strove to demonstrate continued relevance by lobbying to conduct paratroop operations. In almost every case, airborne operations were unnecessary and their contributions were indecisive to the military operations of which they were a component. However, the net effect of airborne officers lobbying for airborne operations is that American airborne forces have been amongst the world’s most active, second only to the French. Table X illustrates actual and planned American airborne operations after the Second World War.¹⁵⁷

Table X
Planned and Actual American Airborne Operations Post-1945

Year	Location	Size of Force	Opponent	Result
1952	Korea	1 regiment	China	Failed Encirclement
<i>1962</i>	<i>Cuba</i>	<i>2 divisions</i>	<i>Soviet Union and Cuba</i>	Aborted—resolved diplomatically
<i>1965</i>	<i>Dominican Rep.</i>	<i>1 battalion</i>	<i>Dominican rebels</i>	Aborted—Fear of casualties
1967	South Vietnam	1 battalion	Viet Cong	Failed Encirclement
<i>1970</i>	<i>Jordan</i>	<i>unknown</i>	<i>Palestinians</i>	Aborted—reasons unknown
1984	Grenada	2 battalions	Grenadan Army	Seized Airport
1989	Panama	6 battalions	Panamanian Defense Forces	Seized Airports
<i>1991</i>	<i>Gulf War</i>	<i>1 division</i>	<i>Iraqi Army</i>	Aborted—Fear of casualties
2003	Northern Iraq	1 brigade	Iraqi Army	Inconsequential

* Operations listed in normal script were carried out; aborted operations are in italics.

During the Korea and Vietnam Wars, airborne forces benefited from the patronage of theater commanders who were themselves former airborne officers. Nevertheless, only one airborne drop was carried out during each of these wars and neither was particularly successful. During the Korean War the goal was to trap enemy forces between an airborne blocking force, consisting of a parachute infantry regiment, and an armored column. This “hammer and anvil” operation, as General Ridgeway called it, failed to achieve significant results because North Korean and Chinese forces withdrew before the American 187th Parachute Infantry Regiment cut their line of retreat.¹⁵⁸

As with Korea, American airborne forces conducted only one combat jump during the Vietnam War, and this was hardly a success. Frustrated at not being employed in their intended role since they had been deployed in Vietnam in 1965, airborne officers serving in Vietnam lobbied to conduct a parachute drop. These pleas fell on the sympathetic ears of General William Westmoreland, an airborne officer from World War II, who ordered his subordinate commanders to prepare a proposal for a battalion jump in October 1966.

By February 1967 Westmoreland’s planners thought they had an operation suitable for airborne forces. During Operation Junction City one battalion of paratroopers jumped near Kontum to seize the chief communist military headquarters in South Vietnam, while five brigades of non-airborne troops formed a cordon to prevent communist forces from escaping. Unfortunately, as in Korea, a lightly equipped and elusive enemy avoided encirclement.¹⁵⁹

Airborne forces jumped into action on three occasions after Vietnam, but always in the most permissive circumstances and never to complete a mission that could not be accomplished by normal troops. During the 1983 invasion of Grenada, two battalions of Rangers parachuted on the Port Salinas Airport to save supposedly endangered American medical students. Although the Rangers succeeded in their mission, their success came at the expense of Grenadan and Cuban forces with neither surface-to-air missiles nor tanks, and who never planned to harm the medical students.

Later, in 1989, 5,000 Rangers and paratroops jumped into Panama to face a weak Panamanian Defense Force denuded of surface-to-air missiles, radar-guided anti-aircraft guns and tanks.¹⁶⁰ During this operation, only 1,700 troops or 34 percent of the total airborne force jumped behind enemy lines. The remaining 3,300 paratroopers of the 1st Brigade, 82nd Airborne Division parachuted near an airport, which was already in American hands. As always, paratroop casualties were disproportionate during the invasion of Panama. Altogether paratroops and Rangers comprised 19 percent of the force committed to Panama, they suffered 42 percent of the casualties.¹⁶¹

Most recently, an American airborne brigade jumped into northern Iraq in 2003. As with the Torrijos Airport airdrop in Panama, the Iraq operation was of doubtful military value. The paratroopers jumped into an area held by friendly Kurdish forces and American Special Forces and played an inconsequential role in the fall of Saddam Hussein’s regime.

Besides the five post-World War II airborne operations mentioned above, airborne operations were included in a number of operational plans. For example, the plan to invade Cuba during the 1962 Cuban Missile Crisis featured a strong airborne component. Influenced heavily by Taylor and Gavin, Operational Plan 316 entailed dropping the 82nd Airborne on the los Banos airfield and Jose Marti International Airport and the 101st Airborne on the Mariel and Baracoa military airfields, and port of Mariel.¹⁶²

Thankfully the Cuban Missile Crisis was resolved diplomatically, without an American invasion of Cuba. Had such an invasion occurred, its airborne component would have been a disaster. As previously mentioned, surface-to-air missiles and armored forces are the two greatest obstacles to modern airborne operations. In October 1962, the Soviet Union possessed 177 SA-2 surface-to-air missile launchers and four motorized rifle regiments in Cuba. They had more than enough military power to shoot down slow transport aircraft and overrun surviving paratroopers on the ground.¹⁶³

Army leaders rejected airborne operations on at least three occasions. In 1965 the United States Army planned to drop an airborne battalion on Santo Domingo in the Dominican Republic. However, fear of casualties precipitated a change of orders while the battalion was en route and the battalion landed at the airport instead of jumping into the capital.¹⁶⁴ During the 1970 civil war in Jordan plans were elaborated to drop airborne units on Palestinian held airfields. Ultimately, the operation, never favored by the Joint Chiefs of Staff, was not executed.¹⁶⁵

Later, during the 1991 Gulf War, airborne officers tried to persuade General Norman Schwarzkopf to include an airborne operation in the coalition battle plan. As General Bernard Trainor observed, “The 82nd commanders were constantly pressing Schwarzkopf to include in his war plans an air drop or at least a jump along the border as a show of force. But Schwarzkopf saw no need for a parachute assault; he planned to send the division by truck.”¹⁶⁶

Through constant lobbying, airborne forces managed to insinuate themselves into a large number of operational plans. In some cases, such as Operation Junction City (1967), Westmoreland’s desire to use airborne forces weighed heavily on how the overall operation was planned. In other cases, such as Panama (1989) and Northern Iraq (2003), some airborne troops were allowed to jump out of planes when landing them on friendly airfields was a militarily more appealing option. Finally, with the exception of the Cuban Missile Crisis, high command authorities rejected every suggestion that airborne forces be used in an environment rich in surface-to-air missiles, as existed in Jordan (1970) and Iraq (1991).

In sum, American airborne forces struggled to defend their size and autonomy throughout the Cold War and generally succeeded in doing so. The level of organizational size and autonomy American airborne forces inherited from World War II was inferior to that possessed by the Soviet VDV, but superior to that of the United Kingdom’s parachute regiment. This degree of institutional strength both enabled and forced American airborne forces to fight for a significant role in the post war army. They could neither rely on organizational strength to resist change, as the VDV did, nor were they automatically destined to wither away, as British paratroop forces were. As a result, American airborne forces fought to maintain their organizational strength and status over time, prompting them to embrace new missions and insinuate parachute drops into existing operational plans.

Overall, this strategy succeeded in preserving America’s large airborne forces. Although their size fluctuated significantly, from a high of 30 parachute infantry battalions to a low of nine, American airborne forces remained oversized. If one counts Ranger battalions, but not Special Forces, the United States currently maintains 15 parachute infantry battalions—an excessive number because three battalions is the largest force dropped behind enemy lines since World War II and the United States is unwilling to drop paratroops where there is even a moderate surface-to-air missile threat. In short, the United States retains, at heavy cost, 15 battalions of elite troops that can only use against third-rate opponents, such as the Panamanian Defense Forces or the Grenadan Militia.

Conclusion

As the Soviet, British and American cases demonstrate, institutions shape both the development and persistence of different military capabilities. In the Soviet case, strong institutions sheltered the airborne forces from a host of justifiable criticisms, permitting them to pursue a variety of innovative, yet ultimately futile efforts at improving the firepower and survivability of airborne forces. If the Soviet VDV presents a case of institutions hindering a rational appraisal of airborne forces and the utility of parachute assaults, the British case illustrates the inverse phenomenon. In the United Kingdom, the absence of strong and autonomous airborne forces opened the doors to a reasoned reappraisal of paratroop operations in the light of wartime experiences and postwar technological changes. This, in turn, permitted a rapid drawing-down of Britain’s airborne capabilities.

In the United States, where the strength of airborne institutions lay between the Soviet and British examples, airborne forces were obliged to defend their continued size and existence by seeking out new roles and missions, and participating in military operations whenever possible. In this case, airborne forces continually faced reappraisals of their utility, yet managed to create the illusion of continued relevance.

As a whole, these three cases help illustrate the darker side of Christensen's argument. Whereas Christensen rightly points out that tailor-made autonomous services or sub-divisions within a service are more likely to capitalize on potential innovations than extant organizations, the opposite holds true in cases where the military innovation in question proves less promising than originally anticipated. In these cases, strong institutions prevent armed forces from eliminating failures.

Once institutionalized, military capabilities, such as the ability to conduct parachute assault operations, neither die nor fade away. Rather, they continue to consume precious resources in a vain attempt to make the impossible feasible. As the example of parachute assaults reveals, the extent to which the great powers maintained airborne forces after World War II was largely determined by the degrees of institutionalization accorded these forces prior to war.

In many ways, these findings echo those of Edward Katzenbach's seminal article "The Horse Cavalry in the Twentieth Century." Katzenbach's claims that military officers need "a romanticism which, while perhaps stultifying realistic thought, gives a man that belief in the value of the weapons system he is operating that is so necessary to his willingness to use it in battle" and that "faith breeds distrust of change" would appear to be as applicable to airborne forces as they were to the horse cavalry.¹⁶⁷

However, not all organizations are equally capable of imposing their romanticized visions of war on the armed forces of a state. In this context, it is organizational strength and autonomy that enable the practitioners of an obsolete military art to overvalue their specialties to the detriment of the armed forces and the state. As such, armed forces and states must be extremely wary of cultivating new capabilities through institutionalization or the granting of organizational autonomy. Should they err in their prediction of the future, they may face defeat and at the very least will continue to pay a very high price for a flawed and ineffective portion of their military establishment.

The price that the United States and Russia pay for the autonomy they gave airborne forces in the 1930s and 40s can be measured in terms of the human and economic resources diverted from other, more valuable military units, and in the perverse incentives that possessing large and institutionally important airborne forces creates for their use.

The United States maintains 15 parachute infantry battalions and Russia four airborne divisions, which cost substantial amounts of money to train and equip and are filled with elite volunteers ready to undertake dangerous missions. Large numbers of transport aircraft and specialized airborne vehicles add astronomically to these costs. Most of these resources are misspent because modern military technology makes it unlikely that airborne battalions will ever jump behind the lines of competent adversaries.

Enemy armor and surface-to-air missiles precluded airborne assaults against Serbia and Iraq, and will do likewise if the United States goes to war with Iran, North Korea or Syria or if Russia fights either China or the Ukraine. Only small states with weak armed forces, such as Panama or Grenada, are realistic targets for airborne attack, and even in these cases helicopters are safer and more effective means for delivering troops.

Because large airborne forces consumed money and recruits, those resources are not available for states to fill other gaps in their conventional force structure. After the 1991 Gulf War many defense planners advocated creating light armored units equipped with wheeled vehicles. The Balkan Wars of the 1990s also demonstrated the need for distinct peacekeeping forces akin to Italian *carabinieri* or French mobile gendarmes. Finally, involvement in mountainous areas in Afghanistan, Chechnya and Kurdistan revealed that both the

United States and Russia lack dedicated mountain troops. While they maintain large and costly airborne forces it will be more difficult for the United States or Russia to address the deficiencies mentioned above.

A final drawback to the existence of large and autonomous airborne forces is the pressure paratroop officers exert to mount airborne assaults. Indoctrinated about the merits of their service and anxious to defend airborne institutions, paratroop officers lobby for airborne operations. Recently, airborne officers attempted to persuade their governments to launch airborne assaults during the 1991 Gulf War and conflicts in the former Yugoslavia.¹⁶⁸ Although reason prevailed, such may not always be the case. There is an incentive to use airborne forces as long as such units exist and paratroop officers have a bureaucratic need to prove their value.

In conclusion, the United States and Russia are still paying for the decisions they took prior to World War II to develop airborne warfare capabilities by creating powerful new institutions and granting them high degrees of organizational autonomy. In each case, airborne forces remain larger and more costly than is merited, and constitute a flawed and ineffective portion of national military establishments. The United Kingdom is fortunate that its institutionally weaker airborne forces faded away when operation experience revealed their defects.



Part of the cost of buying airborne forces.

Endnotes

¹ Christensen's argument addresses how innovation occurs in business settings. Nevertheless, the book is assigned widely within the armed forces (according to Colonel Kevin Benson, United States Army) and is required reading in academic courses on military innovation and organization theory. Clayton Christensen, *The Innovator's Dilemma* (New York: HarperCollins, 2000), 42-48.

² Amphibious assaults, carrier warfare, strategic bombing, integrated air defenses and armored warfare are the best known and most successful examples. Less successful innovations include: "air control," biological warfare, fortress systems, mixed horse-tank divisions, cruiser submarines, cruiser aviation, motor torpedo boats, and bicycle and motor-cycle infantry.

³ In retrospect, Mitchell's plan was almost certainly unworkable in 1919. Whether the Entente could have produced the 20,000 or so parachutes needed for an operation of this type and whether 12,000 infantrymen could have been trained in their use is doubtful. Moreover, key technologies such as the static line parachute and larger dedicated transport aircraft did not exist. See John Galvin, *Air Assault: The Development of Airmobile Warfare* (New York: Hawthorn, 1969), 1-4.

⁴ M.N. Tukhachevsky first wrote about airborne operations in 1928. The three missions articulated above were proposed by A.N. Lapchinsky at the same time period. See David Glantz, *A History of Soviet Airborne Forces* (London: Frank Cass, 1994), 4.

⁵ Glantz, 32.

⁶ Kurt Student, "Interview with Pierre Sergeant," Bad Salzuflen, Germany: November 1973. in Pierre Sergeant, *Histoire mondiale des parachutistes* (Paris: SPL, 1974), 70.

⁷ Galvin, 13.

⁸ Sergeant, *Histoire mondiale des parachutistes*, 45-47.

⁹ Ibid., 48.

¹⁰ It is interesting to note that in some nations airborne forces were created and controlled by air forces, where in others they fell under the command of armies. France and Germany were examples of the former phenomenon; the Soviet Union, the United Kingdom and the United States fall into the latter category. In Japan, both the Army and the Navy possessed their own paratroop forces. Finally, in Italy paratroops initially were under the jurisdiction of the air force, but later came under that of the army. See Ibid.

¹¹ The German experiment was carried out in 1935. Bruce Quarrie, *German Airborne Troops, 1939-45* (London: Osprey, 1983), 5. For more on the Soviets, see Zaloga, 9-10.

¹² This hole was the product of removing one of the Whitley's defensive gun turrets.

¹³ Ibid., 134-35.

¹⁴ See Quarrie, 22-25; and Gregor Ferguson, *The Paras, 1940-1984* (London: Osprey, 1984), 3-4.

¹⁵ Sergeant, *Histoire mondiale des parachutistes*, 73, 172.

¹⁶ Ibid., 180-81.

¹⁷ Janet Daly Bednarek, "Damned Fool Idea: The American Combat Glider Program, 1941-1947," *Air Power History* (Air Force Historical Association, Winter 1996), 44-47.

¹⁸ The German assaults on the Netherlands, Denmark and Norway all enjoyed the advantages of surprise and complete air superiority.

¹⁹ Student, 71.

²⁰ A.D. Harvey, *Arnhem* (London: Cassell, 2001), 31-37.

²¹ General James Gavin himself landed 30 miles from his correct drop zone. Galvin, 101-04.

²² Steven Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces, 1930-1995* (Novato, California: Presidio, 1995), 56-57.

²³ This under-strength force of 150 paratroopers managed to seize the Merville Battery, but in doing so 45 percent of the force was killed.

²⁴ Gregor Ferguson, *The Paras, 1940-1984* (London: Osprey, 1984), 17-19.

²⁵ The American paratroopers dropping into Normandy appear to have suffered just as heavily from dispersion effects as the British. For example, none of the American pathfinders landed near the drop zones they were supposed to illuminate. Moreover, the 2nd Battalion of the 502nd Regiment was able to assemble only 75 men during the first evening and the 3rd Battalion of the 506th Regiment could only muster 150. Sergeant, *Histoire mondiale des parachutistes*, 171-72.

²⁶ Matthew Ridgeway, cited in Galvin, 143.

²⁷ Ridgeway, cited in Smith, 55.

²⁸ The largest item of equipment in any World War II airborne force was the seven-ton British Tetrarch tank. Only Britain's enormous and costly Hamilcar gliders could carry the Tetrarch. As a consequence, only seven Tetrarchs were landed during the invasion of Normandy. See R.M. Ogorkiewicz, *Design and Development of Fighting Vehicles* (New York: Doubleday, 1968), 52.

²⁹ At this stage of the war, the Soviet Union lacked an adequate man-portable antitank gun. The PTRD antitank rifle had been adequate against the lightly armed Pz IIs and Pz (t) 38 light tanks in 1941 and 1942 but was completely inadequate when faced with the heavily armored panzers of 1943.

³⁰ Zaloga, 106.

³¹ Ibid., 108. And Glantz, 277.

³² Harvey, 35.

³³ Some of the German tanks that saw action at Arnhem were quite old. Amongst the armored vehicles encountered by the British were French Char B-1 bis tanks captured in 1940 and German Panzer IIs built before the war. See Ibid., 90-98.

³⁴ Unlike the movie version of Cornelius Ryan's book *A Bridge Too Far*, General Browning uttered his famous line before the battle began and not after its conclusion. Ibid., 7.

³⁵ Galvin, 200-12.

³⁶ The information presented in this table was gleaned from a variety of sources. See Sergeant, *Histoire mondiale des parachutistes*, Galvin, Zaloga and Glantz. Failures are defined in terms of operations not accomplishing their stated objectives. Pyrrhic victories are defined as operations that succeed, whether through the actions airborne forces or not, where the attacking force suffers over 25% casualties in its first 24 hours on the ground. Successes occur when operational objectives are seized and where the attacking force suffers fewer than 25% casualties during its first day on the ground.

³⁷ Student in Sergeant, *Histoire mondiale des parachutistes*, 71.

³⁸ While they did not conduct combat jumps, German paratroopers fought on as an elite infantry force (one of several) throughout the war.

³⁹ This offensive touched-off after the first atomic bomb had been dropped on Hiroshima. As such, the Japanese forces facing the Soviets were in no position to fight much of a defensive battle against a large attacking Soviet military force.

⁴⁰ In 1940, six percent of German divisions were armored (10 of 156). Seven percent of French divisions were armored (7 of 104). The Soviet Union had appreciably more, with 15 percent of its divisions armored (58 of 386). Of great power armies, the Japanese probably had the smallest percentage of armor, and the United States the greatest.

⁴¹ Throughout much of the Cold War, 16 of 20 US Army divisions were armored or mechanized and 162 of 170 Soviet Divisions were either motorized rifle or tank.

⁴² John Keegan, *Six Armies in Normandy: From D-Day to the Liberation of Paris* (New York: Penguin, 1982), 81.

⁴³ Only the Viet Cong cannot be characterized as incompetent, and it is noteworthy that the one use of airborne forces against them, Operation Junction City, was an operational failure because the lion's share of VC Main Force units escaped an attempted American encirclement. As mentioned above, none of the enemies that confronted airborne forces after 1960 possessed tanks. In fact, only three, the FLNC in 1978, the Grenadans in 1984 and the Panamanian Defense Forces in 1989 had any armor whatsoever, and this was comprised of elderly armored cars and inexpensive armored personnel carriers.

⁴⁴ Bernard Trainor and Michael Gordon, *The General's War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown and Company, 1995), 157.

⁴⁵ Mission d'information commune sur les événements de Srebrenica, "Testimony of François Léotard, Minister of Defense, March 1993 – May 1995" (Paris: February 12, 2001).

⁴⁶ The obvious exceptions were Germany and Japan, whose airborne forces were dismantled following their defeat in World War II.

⁴⁷ Table III counts only paratroop forces that remain jump-qualified and are trained in conventional airborne assaults. Therefore, units such as the US Army Rangers are counted as airborne, while others, such as the American 101st Airborne, is not. Special Forces, which use parachutes as an occasional means of clandestine insertion, are not included.

⁴⁸ Most Soviet conscripts' fates were decided for them by military commissariat in each town or district. By joining the Ossaviakhim, youths entered the VDV's pool of potential conscripts. See David Isby, *Ten Million Bayonets: Inside the Armies of the Soviet Union* (London: Arms and Armour, 1988), 113-14.

⁴⁹ Under the Red Army's supervision, Ossoaviakhim built over a thousand jump towers by the time World War II broke out. In addition to filling the ranks of the VDV, Ossoaviakhim provided the Soviet Air Force with many of its pilots. See Sergeant, *Histoire mondiale des parachutistes*, 48-52.

⁵⁰ During most of its history, Ryazan only educated future airborne officers. Later, however, it also undertook the education of officers for the special forces and air assault brigades. See Isby, *Ten Million Bayonets: Inside the Armies of the Soviet Union*, 69-93.

⁵¹ Without a doubt, the VDV's size—consisting of ten "army corps" during the Second World War and between seven and eight divisions throughout the Cold War—contributed to the existence of this independent airborne career-track. With an established strength of 10,419 troops, the airborne corps of the Second World War were in reality no larger than ordinary infantry divisions. Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces, 1930-1995*, 22-29.

⁵² The VDV has always enjoyed a hand-in-glove relationship with Soviet military airlift. In fact, before being known by the more generic name of Military Airlift Command (Voennoe-transportnaya Aviatsiya or VTA), Soviet transport aircraft were grouped together under the aegis of the TDA Air Assault Landing branch. Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*, 148-49.

⁵³ Zaloga, *Soviet Bloc Elite Forces*, 8-9.

⁵⁴ Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*, 14-15.

⁵⁵ Ibid.

⁵⁶ Glantz, 36.

⁵⁷ Interestingly, the VDV continued to grow after the purges. Ibid., 38-39.

⁵⁸ This average is based on the three operations: Viaz'ma, Demiansk and the Dnepr. Adequate information is lacking on the Finland airborne operation. The respective figures for these three operations are: 2,000 out of 14,000 survived the Viaz'ma operation; 900 of 7,000 survived the Demiansk operation; and less than 50 percent survived the Dnepr operation. See Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*, 69, 109. And Glantz, 260-61.

⁵⁹ Zaloga, *Soviet Bloc Elite Forces*, 7.

⁶⁰ Jonathan House, *Combined Arms Warfare in the Twentieth Century* (Lawrence, Kansas: University of Kansas, 2001), 193-95.

⁶¹ Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*, 26-27, 118-19.

⁶² Rosen does not account for: 1) the amount of resources expended on preparing the VDV for large parachute assaults; or 2) why an airborne force is particularly suited to this praetorian role as amphibious infantry, mountain troops, airmobile forces and mechanized infantry have all been viewed as elites and could also fulfill this role. Stephen Rosen, Course 17.953 (Cambridge: Harvard, April 30, 2002).

⁶³ Nowhere in the English-language literature on Soviet Airborne forces did I find evidence that the Soviet government maintained the VDV for internal security purposes. See Zaloga and Glantz.

⁶⁴ Dedicated Soviet internal security and counter-coup units varied in size, but remained large between 1917 and 1991. Prior to World War II the NKDV possessed 15 rifle divisions for internal security purposes. As the war developed, these forces actually increased to a size of 53 divisions and 28 brigades. Internal security forces shrunk following World War II and the repression of anti-Soviet guerrillas in Ukraine and the Baltic States. However, as they became smaller, internal security forces became more selective and professional. Throughout most of the Cold War the Soviet Union's counter-coup force par excellence was an elite KGB tank division located stationed outside of Moscow.

⁶⁵ Matthew Evangelista, "Stalin's Postwar Army Reappraised," *Soviet Military Policy* (Cambridge: MIT, 1989), 287.

⁶⁶ When an Arab defeat in the 1973 Arab-Israeli War appeared imminent, the Soviet Union used airborne forces as a signal of its willingness to intervene to prevent either the Israeli capture of Damascus or the destruction of the Egyptian 3rd Army. Six airborne divisions were put on “alert” status. A seventh division and an elite air transport unit were dispatched from its base just under one hundred miles south of Moscow to an airfield outside Belgrade in Yugoslavia for possible deployment to Damascus, Syria, where the division’s staff was already busy drawing up plans to intervene. The Insight Team of the London *Sunday Times*, *The Yom Kippur War* (Doubleday: New York, 1974), 409-10.

⁶⁷ The first public articulation of the new Soviet doctrine came at the 1966 XXIIIrd Soviet Communist Party Congress. Georges-Henri Soutou, *La guerre de Cinquante Ans: Les relations Est-Ouest, 1943-1990* (Paris: Fayard, 2001), 448.

⁶⁸ In addition to the specifically airborne weapons mentioned in this paper, the VDV also acquired abundant quantities of the light antitank weapons being distributed within the army as a whole. Prominent amongst these were B-10 and B-11 recoilless rifles and a family of rocket-powered antitank grenade launchers or RPGs descended from Germany’s World War II-era Panzerfausts. See Isby, *Ten Million Bayonets: Inside the Armies of the Soviet Union* (London: Arms and Armour, 1988), 55-56. And Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*, 128-29.

⁶⁹ Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*, 126-27.

⁷⁰ Whereas the ASU-57 could only penetrate 100mm of armor at 1000 meters, the ASU-85 could penetrate 122mm of armor out to the same range. Moreover, the ASU-85 had much improved optics over those of the ASU-57. See David Isby, *Weapons and Tactics of the Soviet Army* (London: Jane’s, 1981), 155-56, 292-94.

⁷¹ US infantry divisions acquired APCs and helicopters during the ROAD reorganization of the 1950s. House, 209-10.

⁷² Isby, *Weapons and Tactics of the Soviet Army*, 295.

⁷³ Contrary to appearances, the BMD is not a scaled down version of the Soviet BMP-1. In fact, the only component common to the two vehicles are their turrets. See Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*, 166.

⁷⁴ The original Soviet BMP-1 is the lightest IFV ever fielded, weighing a mere 14 tons. Western IFVs typically weigh substantially more. For example, the American Bradley and the British Warrior both weigh approximately 23 tons and the German Marder tips the scales at 29 tons. David Miller and Christopher Foss, *Modern Land Combat*, (New York: Salamander, 1987), 106-15. And Zaloga, *Soviet Bloc Elite Forces*, 10.

⁷⁵ This calculation is based on the Soviet Union’s seven airborne divisions receiving 330 BMDs apiece. According to some sources, BMD production during the 1970s was 250 vehicles per year. See Isby, *Weapons and Tactics of the Soviet Army*, 295. And Isby, *Ten Million Bayonets: Inside the Armies of the Soviet Union*, 56.

⁷⁶ *Military Herald* (1976) translated and cited in Glantz, 360.

⁷⁷ Operation Dnepr was the Soviet Union’s largest post-World War II military exercise. Presided over by Marshal A.A. Grechko, the Dnepr exercises were a typically Soviet mixture of propaganda and training. While the airborne units involved were regular line units, many of the other units which participated in Operation Dnepr were manned by excessive numbers of officers, officer cadets and non-commissioned officers. Also, to facilitate an underwater crossing of the Dnepr by tanks equipped with snorkels, the Red Army paved over part of the riverbed and built concrete furrows to guide the tanks along. Andrew Cockburn, *The Threat: Inside the Soviet Military Machine* (New York: Random House, 1983), 52-53, 166-67.

⁷⁸ Zaloga, *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*, 153.

⁷⁹ One author has referred to the process of being parachuted within a BMD as dangerous and “not for the faint of heart.” Ibid., 170-71.

⁸⁰ Airborne divisions possessed 330 BMDs, 31 ASU-85 assault guns, 27 BRDM-2 SP ATGM launchers and 8 BRDM-2 Reconnaissance Vehicles. Isby, *Ten Million Bayonets: Inside the Armies of the Soviet Union*, 56.

⁸¹ “Parachute Assault” *International Defense Review* (London: Jane’s, April 1989), 414.

⁸² Ibid., 415.

⁸³ For information relating to France’s decision not to drop paratroopers on Srebrenica, see Mission d’information commune sur les Événements de Srebrenica, “Testimony of General Quesnot, Chief of the President’s Personal Military Staff, 1995” (Paris: January 11, 2001).

⁸⁴ John Mearshimer dismissed the possibility of Soviet airborne forces conducting a mass drop in NATO’s rear areas out of hand. He argues that NATO’s air and ground defenses rendered this impossible. See John Mearshimer, “Correspondence: Reassessing Net Assessment,” *International Security* (Cambridge: MIT, Spring 1989), 138.

⁸⁵ Miller, 82-115.

⁸⁶ While the United Kingdom did not possess and was not in the process of developing airborne military units, the Air Ministry had set up a training school for secret agents who would be parachuted behind enemy lines. Ferguson, 3.

⁸⁷ Ibid.

⁸⁸ Rock was the commander of the paratroop project. Strange was the officer commanding the base where this project was being undertaken.

⁸⁹ This unit, the 11th SAS Battalion, bears no relationship to the SAS that was later founded by David Stirling and Jock Lewis in North Africa in 1941. The term SAS originally connoted a parachute-trained ad hoc unit. Steve Crawford, *The SAS Encyclopedia* (Miami: Lewis, 1996), 8-9.

⁹⁰ Hitler and Churchill drew opposite conclusions from the German assault on Crete. Whereas Hitler concluded, after the Germans had suffered appalling casualties in their offensive, that airborne forces had no future in warfare, the ultimate German victory on Crete convinced Churchill as to the utility of possessing airborne forces.

⁹¹ Hilton, 126.

⁹² Ferguson, 6-7.

⁹³ In fact, none of the British divisions that served in World War I can really be said to have an administrative existence stretching to the Second World War. Formations that garnered considerable fame during the former conflict—such as the 36th “Ulster” Division—were dissolved after its conclusion. Other divisions, which persisted in name during the inter-war period, underwent radical changes as to their battalion-level composition.

⁹⁴ One good, but concise description of the British regimental system is that, “The British infantry regiment – e.g., The King’s Own Scottish Borderers – had a ‘tribal’ but not a tactical identity. It had a continuous history, usually stretching back at least 250 years; an administrative depot which supplied men and services for the numbered battalions. Its individual battalions served – usually separately – alongside battalions of other regiments within the tactical brigades.” Martin Brayley, *The British Army, 1939-45 (I): North-West Europe* (London: Osprey, 2001), 18.

⁹⁵ Historically, one of the reasons divisions never acquired strong identities in the United Kingdom was the long tenure of the Cardwell System, whereby the battalions of a regiment rotated between overseas and home postings. Two byproducts of this system were that the battalion-level composition of British divisions in peacetime constantly changed and that battalions’ administrative links to regimental depots remained strong. Michael Howard has criticized this system for its stultifying military inventiveness. As he argues, the Cardwell reforms “may be an obstacle to full professional efficiency; but it is perhaps a barrier to much else as well.” See Michael Howard, “Soldiers in Politics,” *Encounter* (London: Encounter, September 1962).

⁹⁶ Within the United Kingdom’s military system, there are several ways that a higher level of institutional strength could have been granted the airborne forces. One of these would have involved creating multiple parachute regiments, rather than many battalions of a single regiment. A second method for increasing the administrative clout of airborne forces would have been to convert existing infantry regiments to the parachute role. This was the solution ultimately pursued with respect to armored warfare. Finally, the airborne role could have been assigned to an autonomous organization within a service other than the Army (i.e. the Air Force). This last approach bore fruit in the areas of airfield defense and amphibious raids with the RAF Regiment and Royal Marine Commandos respectively. See William Fowler, *The Royal Marines, 1956-84* (London: Osprey, 1984), 5-6. And www.rafregt.com.

⁹⁷ In theory, British regiments consisted of three battalions apiece. One battalion would be assigned to field service somewhere in the empire. One would be assigned to home or (post-1945) European service. The final battalion would be a depot and training regiment, responsible for training new recruits.

⁹⁸ The Gammon Bomb was invented by Captain Arthur Gammon of 1st Battalion, the Parachute Regiment, in 1941. It was basically a stockinet bag filled with plastic explosives. See Ferguson, 29.

⁹⁹ Tetrarch tanks were not originally designed for the airborne role. In fact, this tank began life in 1938 as a private venture on the part of Vickers. It was then taken over by the War Office for small-scale production in July 1940. By this time, however, the deficiencies inherent in light tanks were becoming clear to the British armed forces. As such, the War Office shipped most Tetrarchs produced to the Soviet Union in 1942, where they saw action in the Caucasus. Only the United Kingdom’s decision to create airborne divisions led to the continued manufacture of the Tetrarch. See *A17 Tetrarch Light Tank* www.angelfire.com/ab5/WWTanks/England/Tanks/Tetrarch/Tetrarch.html.

¹⁰⁰ Ogorkiewicz, 52.

¹⁰¹ The criteria used for judging pyrrhic successes in this table are the same as those employed in Table I (page 19). The metric for judging an operation to be indecisive is that some objectives are taken and others not, and that the airborne operation does not contribute appreciably the success of a broader campaign. See Ferguson 5-34. And Sergeant, *Histoire mondiale des parachutistes*, 336-37.

¹⁰² Ferguson, 34.

¹⁰³ Robert Jackson, *Suez: The Forgotten Invasion* (Shrewsbury, England: Airlife, 1996), 82.

¹⁰⁴ Ibid.

¹⁰⁵ Peter Tsouras, *Changing Orders: The Evolution of the World's Armies, 1945 to the Present* (London: Arms and Armour, 1994), 104.

¹⁰⁶ Ferguson, 36.

¹⁰⁷ Tsouras, 93.

¹⁰⁸ Ferguson, 41.

¹⁰⁹ Belgium, Yugoslavia, Portugal and Japan have all maintained parachute brigades throughout the last 30 years. France's airborne forces have fluctuated in size between a division and an over-strength brigade between 1962 and present. Similarly, China's airborne forces have varied in size between three brigades and three divisions. See *The Military Balance, 2000-2001*; and Jean-Pierre Husson, *Encyclopedie des forces speciales du monde* (2) (Paris: Histoire et Collections, 2001), 70-71, 271-72. Also see, You ji, *The Armed Forces of China* (London: I.B. Tauris, 1999), 143-44.

¹¹⁰ The 1982 Falklands War was a major publicity victory for Britain's paratroop forces. Popular clamor after the war led to the recreation of an airborne brigade, although this did not entail an expansion of Britain's parachute qualified forces.

¹¹¹ In addition to being comprised mostly of non-paratroops, the 5th Airborne Brigade's first commander was not a career airborne officer. Rather, Brigadier Tony Jeapes was a former commander of the 22nd SAS Regiment and British counterinsurgency campaign in Oman. See Ferguson, 45.

¹¹² "Parachute Assault," 414.

¹¹³ Some may argue that the decline of British paratroop forces was the result of an overall decline in national resources. While appealing, this argument fails to account for several facts: 1) the largest cuts in the United Kingdom's airborne forces occurred at a time when national service provided abundant manpower and defense spending constituted six percent of Britain's GDP; 2) countries with smaller defense budgets than the United Kingdom, such as France and Poland, maintained larger airborne forces throughout the Cold War.

¹¹⁴ W.A. Willcocks, "Airmobility and the Armoured Experience," *The British Army and the Operational Level of War* (Camberley, England: Staff College, 1989), 114.

¹¹⁵ In the 1950s, helicopters would make possible another type of forced entry.

¹¹⁶ Although the United States Navy and Army Air Corps were very innovative in the years preceding World War II, the Army was not. It lagged behind European states in the development of armor and preserved cavalry divisions inordinately long.

¹¹⁷ Gordon Rottman, *US Army Airborne, 1940-90* (London: Osprey, 1990), 5.

¹¹⁸ Clay Blair, *Ridgway's Paratroopers: The American Airborne in World War II* (New York: Dial, 1985), 30.

¹¹⁹ Maxwell Taylor, *Swords and Plowshares* (New York: Da Capo, 1972), 44.

¹²⁰ Blair, 32.

¹²¹ James Dunnigan and Albert Nofi, *Dirty Little Secrets of World War II* (New York: Quill, 1994), 253.

¹²² All airborne forces active in the European theater of operations answered to the XVIIIth Corps. The 11th Airborne Division, active in the Pacific, did not. Rottman, *US Army Airborne, 1940-90*, 7, 18-19.

¹²³ There is evidence that a close pairing of transport and airborne units bore results in this case. During the Normandy invasion the 505th Parachute Regiment landed closer to its assigned objectives than any other American airborne unit. Keegan, 90.

¹²⁴ Blair, 34.

¹²⁵ Germany theoretically had more airborne divisions than the United States, but these were airborne in name only. Hitler's refusal to countenance further airborne operations after the invasion of Crete in May 1941 and the destruction of Luftwaffe transport aircraft on the eastern front led to the abandonment of jump training. By the end of the war very few German 'paratroopers' were parachute trained.

¹²⁶ Figures are given for years when jump-trained airborne forces were their largest. Only division sized units are counted. If non-divisional units were counted as well, American airborne forces would appear larger yet, as the United States maintained an independent airborne regiment and several battalions. Soviet airborne 'corps' are counted as divisions. For Soviet divisional numbers see, Steven Zaloga, *The Red Army of the Great Patriotic War, 1941-45* (London: Osprey, 1984), 7-22. For overall numbers of divisions, see Dunnigan and Nofi, 84.

¹²⁷ During World War II the Marine Corps accepted draftees, but parachute regiments did not. Parachute officers received \$100 and enlisted men \$50 of extra pay. Blair, 32.

¹²⁸ Anonymous, cited in Blair, 51.

¹²⁹ Blair, 26.

¹³⁰ Bednarek.

¹³¹ Rottman, 18.

¹³² R.M. Ogorkiewicz, *Design and Development of Fighting Vehicles* (New York: Doubleday, 1968), 52.

¹³³ Blair, 66.

¹³⁴ Ibid.

¹³⁵ During the Hermann G^ring Division's attack on the beachhead at Gela, the division brushed past American airborne forces, but was eventually halted by the 1st Infantry Division and naval gunfire. Ibid, 96.

¹³⁶ 1,424 paratroopers were killed, wounded or captured out of a force of 5,307. Ibid, 96.

¹³⁷ For loss figures see "Le jour J: 6 juin 1944 – dÈbarquement alliÈ," *Histoire mondiale des conflits* (Paris: No. 3, May-June 2004), 39. German counterattacks tended to be small and disjointed. The largest involved a 190-man company, supported by two tanks, that attacked a platoon of the 3rd battalion, 505th PIR. Keegan, 93-105.

¹³⁸ The 1st ATF consisted of the American 517th PIR, the 509th PIB, the 550th Glider Infantry Battalion and the British 2nd Independent Parachute Brigade. Jeffrey Clarke and Robert Smith, *Riviera to the Rhine* (Washington D.C.: Center of Military History, 1993), 38-39.

¹³⁹ It was feared that the 19th Panzer Division, the only German armored unit in the south of France, would be committed. However, it was not. Only 480 Allied soldiers in total became casualties on the day of the invasion, August 15, 1944. Two hundred thirty of these, 48 percent, were jump and glider casualties suffered by the 1st ATF. Thus, even a relatively bloodless invasion resulted in casualties concentrated disproportionately in the airborne. Ibid, 103-04, 122.

¹⁴⁰ Samuel Morison, *The Liberation of the Philippines: Luzon, Mindanao, the Visayas, 1944-1945* (New York: Little, Brown, 1959), 203.

¹⁴¹ Taylor, 52.

¹⁴² Ibid, 171.

¹⁴³ The future of airborne forces was decided in a large Stateside test. On December 6, 1943, Swing's 11th Airborne Division was ordered to 'overcome' a regimental combat team of the 17th Airborne Division defending the Knollwood airport near Fort Bragg. The futures of both the 11th and the 17th Airborne Divisions were only secure if the former overcame the latter. As one historian put it, "Swing's troops knew they were testifying for or against the life of their division as well as the lives of all other airborne divisions, so they put maximum effort into every task." Blair, 173-74.

¹⁴⁴ Even under these circumstances losses were heavy—1,000 casualties in each of the American and British divisions. Blair, 460-61, 465.

¹⁴⁵ Airborne forces were used as a deception measure. John Skates, *The Invasion of Japan: Alternative to the Bomb* (Columbia: South Carolina, 1994), 163.

¹⁴⁶ Richard Betts, *Soldiers, Statesmen and Cold War Crises* (New York: Columbia, 1991), 134.

¹⁴⁷ A good standard of comparison for judging the relative size of airborne forces is comparing them to armored forces of the same time period. For example, while the United States possessed two airborne divisions in 1947, it had only one armored division. Rottman, 19.

¹⁴⁸ Drawn from Rottman. Figures do not include Rangers, who constituted an additional airborne regiment (really a brigade) from the 1950s onwards.

¹⁴⁹ Rottman, *US Army Airborne, 1940-90*, 24-26.

¹⁵⁰ Ibid., 27-28.

¹⁵¹ Ibid., 33-50.

¹⁵² Betts, 136.

¹⁵³ There were two divisions at this time—the 82nd and the 101st. The 11th Airborne Division was dissolved in July 1958 to troops to the 24th and 8th Infantry Divisions. Rottman, *US Army Airborne, 1940-90*, 26-27, 36.

¹⁵⁴ Ibid., 33-50.

¹⁵⁵ Ibid, 53.

¹⁵⁶ Betts, 137.

¹⁵⁷ The French Army conducted significant numbers of combat parachute drops following World War II, including at least ten battalion or larger sized operations. In Indochina the French launched significant operations at Nghia Lo (1951, two battalions), Hoa Binh (1951, one battalion), Tu Le (1952, one battalion), Na San (1952, three battalions), Phu Doan (1952, three battalions), Operation Castor (1953, six battalions) and Dien Bien Phu (1954, five battalions). Later, French forces engaged in airborne operations during the Suez Crisis (1956), to defend the French naval base of Bizerta (1961) and to save Kolwezi, Zaire (1978). See Martin Windrow, *The French Indochina War* (London: Osprey, 1998), 34-40. And Jean-Louis Dufour, *Les crises internationales de Pékin-1900 à Sarajevo-1995* (Paris: Complexe, 1996), 145-47, 189-92.

¹⁵⁸ Matthew Ridgeway, *The Korean War* (New York: Doubleday, 1967).

¹⁵⁹ Clifton Berry, Jr., *Sky Soldiers, An Illustrated History* (London: Bantam, 1987), 65-74.

¹⁶⁰ Gordon Rottman, *Panama, 1989-90* (London: Osprey, 1991), 14-15.

¹⁶¹ There were 5,000 paratroops and Rangers committed out of a total force of 26,000. They suffered 137 wounded out of 330 for the overall mission (105 of these were jump casualties). Ibid, 30-45, 53-54.

¹⁶² Dino Brugioni, "The Invasion of Cuba" *MHQ: The Quarterly Journal of Military History* (New York: MHQ, Volume 4, Number 2, Winter 1992), 92-101.

¹⁶³ "General Anatoly I. Gribkov Recalls the Soviet Military Buildup in Cuba (1962), 1992," in Karl Valois, ed. *The Cuban Missile Crisis: A World in Peril* (Carlisle, MA: Discovery, 1998).

¹⁶⁴ Rottman, *US Army Airborne, 1940-90*, 33.

¹⁶⁵ Betts, 102, 135.

¹⁶⁶ Bernard Trainor and Michael Gordon, 157.

¹⁶⁷ Edward Katzenbach, J.R.. "The Horse Cavalry in the Twentieth Century," *The Use of Force* (Boston: Little, Brown and Company, 1971), 297.

¹⁶⁸ American airborne forces lobbied for an airborne operation during the 1991 Gulf War. French airborne officers argued for the use of airborne troops during both the 1991 Gulf War and the 1995 Srebrenica Crisis. See Trainor and Gordon, 157. And Mission d'information commune sur les événements de Srebrenica, "Testimony of General Quesnot, Chief of the President's Personal Military Staff, 1995."

Bibliography

- Ailleret, Charles. *Général du contingent en Algérie, 1960-1962*. Paris: Grasset, 1998.
- Bednarek, Janet Daly. "Damned Fool Idea: The American Combat Glider Program, 1941-1947," *Air Power History* (Air Force Historical Association, Winter 1996): 44-47.
- Bergot, Erwan. *Les Paras*. Paris: Balland, 1971.
- Berry, Clifton. *Sky Soldiers, An Illustrated History*. London: Bantam, 1987.
- Betts, Richard. *Soldiers, Statesmen and Cold War Crises*. New York: Columbia, 1991.
- Blair, Clay. *Ridgway's Paratroopers: The American Airborne in World War II*. New York: Dial, 1985.
- Brayley, Martin. *The British Army, 1939-45 (I): North-West Europe*. London: Osprey, 2001.
- Brugioni, Dino. "The Invasion of Cuba," *MHQ: The Quarterly Journal of Military History* (New York: MHQ, Volume 4, Number 2, Winter 1992): 92-101.
- Christensen, Clayton. *The Innovator's Dilemma*. New York: HarperCollins, 2000.
- Clarke, Jeffrey and Smith, Robert. *Riviera to the Rhine*. Washington D.C.: Center of Military History, 1993.
- Cockburn, Andrew. *The Threat: Inside the Soviet Military Machine*. New York: Random House, 1983.
- Crawford, Steve. *The SAS Encyclopedia*. Miami: Lewis, 1996.
- Debay, Yves. *Paras: 11e Division Parachutiste—French Paratroops Today*. London: Windrow and Greene, 1989.
- Donnelly, C.L. "The Soviet Concept of the Desant," *The Royal United Services Institute Journal* (London: The Royal United Services Institute, September 1973): 52-55.
- Dufour, Jean-Louis. *Les crises internationales de Pékin-1900 à Sarajevo-1995*. Paris: Complexe, 1996.
- Dunnigan, James and Nofi, Albert. *Dirty Little Secrets of World War II*. New York: Quill, 1994.
- Ferguson, Gregor. *The Paras, 1940-1984*. London: Osprey, 1984.
- Foss, Christopher and Miller, David. *Modern Land Combat*. New York: Salamander, 1987.
- Fowler, William. *The Royal Marines, 1956-84*. London: Osprey, 1984.
- Gagét, Robert. *La saga des paras*. Paris: Jacques Grancher, 1998.
- Galvin, John. *Air Assault: The Development of Airmobile Warfare*. New York: Hawthorn, 1969.
- Genot, Emile. *Chesty George...Captain Blunt...Deux personnages hors du commun!* Brussels: ANPCV, n.d..

- Girardet, Raoul. *La société militaire de 1815 à nos jours*. Paris: Perrin, 1998.
- Glantz, David. *The History of Soviet Airborne Forces*. London: Frank Cass, 1994.
- Gordon, Michael and Trainor, Bernard. *The General's War: The Inside Story of the Conflict in the Gulf*. Boston: Little, Brown and Company, 1995.
- Harvey, A.D., *Arnhem*. London: Cassell, 2001.
- Hilton, Frank. *The Paras*. London: British Broadcasting Corporation, 1983.
- House, Jonathan. *Combined Arms Warfare in the Twentieth Century*. Lawrence, Kansas: University of Kansas, 2001.
- Howard, Michael. "Soldiers in Politics," *Encounter* (London: Encounter, September 1962).
- Isby, David. *Ten Million Bayonets: Inside the Armies of the Soviet Union*. London: Arms and Armour, 1988.
- _____. *Weapons and Tactics of the Soviet Army*. London: Jane's, 1981.
- Jackson, Robert. *Suez: The Forgotten Invasion*. Shrewsbury: England: Airline, 1996.
- Ji, You. *The Armed Forces of China*. London: I.B.Tauris, 1999.
- Katzenbach, Edward. "The Horse Cavalry in the Twentieth Century," *The Use of Force: International Relations and Foreign Policy*. Boston: Little, Brown and Company, 1971.
- Keegan, John. *Six Armies in Normandy: From D-Day to the Liberation of Paris*. New York: Penguin, 1982.
- Lartéguy, Jean. *Les centurions*. Paris: Presses de la cité, 1960.
- "Le jour J: 6 juin 1944 – débarquement allié," *Histoire mondiale des conflits* (Paris: Harnois, No. 3, May-June 2004): 4-48.
- Lynn-Jones, Sean et Miller, Steven. *Soviet Military Policy: An International Security Reader*. Cambridge, Massachusetts: MIT, 1989.
- Maestrati, Olivier. *Indochine: autopsie d'un Échec*. Toulouse: L'union, 1995.
- McGorman, Evan. *Life in the French Foreign Legion*. Central Point, Oregon: Hellgate, 2000.
- Miller, David. *The Cold War: A Military History*. New York: St Martin's, 1998.
- Mission d'information commune sur les événements de Srebrenica. "Testimony of Admiral Lanxade: Chairman of the French Joint Chiefs of Staff, 1991-95." Paris: December 14, 2000.
- _____. "Testimony of François Léotard, Minister of Defense, March 1993 – May 1995." Paris: February 12, 2001.
- _____. "Testimony of General Germanos: Deputy Chairman of the French Army General Staff, May 1994 to September 1995." Paris: February 12, 2001.

- _____. "Testimony of General Heinrich, chief of French military intelligence, 1992 – 1995." Paris: February 8, 2001.
- _____. "Testimony of General Quesnot, Chief of the President's Personal Military Staff, 1995." Paris: January 11, 2001.
- _____. "Testimony of Gilles Herzog: director of the documentary film 'Srebrenica, chute sur ordonnance.'" Paris: December 21, 2000.
- Morison, Samuel. *The Liberation of the Philippines: Luzon, Mindanao, the Visayas, 1944-1945*. New York: Little, Brown, 1959.
- Ogorkiewicz, R.M. *Design and Development of Fighting Vehicles*. New York: Doubleday, 1968.
- "Parachute Assault," *International Defense Review* (London: Janes Information Group, April 1989): 413-15.
- Quarrie, Bruce. *German Airborne Troops, 1939-45*. London: Osprey, 1983.
- Ridgeway, Matthew. *The Korean War*. New York: Doubleday, 1967.
- Rottman, Gordon. *US Army Airborne, 1940-90*. London: Osprey, 1990.
- _____. *Panama, 1989-90*. London: Osprey, 1991.
- Rothenberg, Gunther. *The Anatomy of the Israeli Army*. New York: Hippocrene, 1979.
- Roy, Jules. *The Battle of Dienbienphu*. New York: Carroll and Graf, 1984.
- Schmitt, Maurice. *De Diên Biên Phu à Koweït City*. Paris: Grasset, 1992.
- Schulze, Carl. *British 24 Airmobile Brigade*. Wiltshire, England: Crowood, 1999.
- Sergent, Pierre. *2ème R.E.P.: Algérie, Tchad, Djibouti, Kolwezi, Beyrouth*. Paris: Presses de la Cité, 1984.
- _____. *Histoire mondiale des parachutistes*. Paris: Société de Production Littéraire, 1974.
- _____. *La légion saute sur Kolwezi: Opération léopard*. Paris: Presses de la Cité, 1978.
- Skates, John. *The Invasion of Japan: Alternative to the Bomb*. Columbia: South Carolina, 1994.
- Smith, Carl. *US Paratrooper, 1941-45*. London: Osprey, 2000.
- Soutou, Georges-Henri. *La guerre de Cinquante Ans: Les relations Est-Ouest, 1943-1990*. Paris: Fayard, 2001.
- Taylor, Maxwell. *Swords and Plowshares*. New York: Da Capo, 1972.
- The International Institute for Strategic Studies. *The Military Balance, 2000-2001*. London: Oxford, 2000.
- The Insight Team of the London Sunday Times. *The Yom Kippur War*. New York: Doubleday, 1974.
- Tsouras, Peter. *Changing Orders: The Evolution of the World's Armies, 1945 to the Present*. London: Arms and Armour, 1994.

Valois, Karl ed. *The Cuban Missile Crisis: A World in Peril*. Carlisle, MA: Discovery, 1998.

Verier, Mike. *82nd Airborne Division*. London: Windrow and Greene, 1991.

Willcocks, W.A.. "Airmobility and the Armoured Experience," *The British Army and the Operational Level of War*. Camberley, England: Staff College, 1989.

Wilson, James Q. *Bureaucracy*. New York: Basic, 1989.

Windrow, Martin. *French Foreign Legion Paratroops*. London: Osprey, 1985.

_____. *The French Indochina War, 1946-54*. London: Osprey, 1998.

Zaloga, Steven. *Inside the Blue Berets: A Combat History of Soviet and Russian Airborne Forces*. Novato, California: Presidio, 1995.

_____. *Soviet Bloc Elite Forces*. London: Osprey, 1985.

_____. *The Red Army of the Great Patriotic War, 1941-45*. London: Osprey, 1984.