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## THE IMPACT OF AIR MECHANISATION ON THE ORGANISATIONAL DEVELOPMENT OF AIRBORNE TROOPS (1935-2020)

A LÉGIDESZANTCSAPATOK SZERVEZETI FEJLŐDÉSE, KÜLÖNÖS TEKINTETTEL A LÉGI GÉPESÍTÉSRE (1935-2020)

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### **Abstract**

*The paper gives an overview of the organisational development of airborne troops between 1935 and 2020. Focusing on two periods, World War II and the age of modern warfare, it studies the organizational development of airborne troops centred on the process of air mechanisation, which transformed airborne organizations into mechanized organizations.*

**Key words:** airborne transport of troops, airborne organizations, paratroops, airmobile organizations, airborne troops, special operation forces

### **Összefoglalás**

*A légideszant és légi szállítású csapatok szervezeti fejlődését 1935-től 2020-ig tekinti át a cikk. Két korszakra – a II. világháborúra és a modern hadviselés időszakára - koncentrálna vizsgálja a légideszantcsapatok szervezeti fejlődését és kiemelt folyamatként a légi gépesítést, a légideszant szervezetek gépesített szervezetté válását.*

**Kulcsszavak:** csapatok légi szállítása, légideszant szervezet, ejtőernyős csapatok, helikopteres légimozgékony szervezetek, légi szállítású csapatok, különleges műveleti erők

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## **Introduction**

Since the beginning of the 1930s, the establishment of airborne organisations has made it possible to insert ground forces into denied areas through airborne operations, and this tactical opportunity eventually resulted in the organisational development of airborne troops.

Providing a general overview of the entire development process, the paper focuses on two periods, which are the following:

- World War II (1939-1945);
- from the Vietnam War to the present.

The reason for that approach is that air mechanisation, which transformed airborne organisations into mechanized organisations, was mainly accomplished during these two periods as a result of the availability of sufficient air transport capacities. Combat vehicles were first airlifted to the theatre by glider aircraft between 1939 and 1945, and this capability became available again with the emergence of helicopter based airmobile operations after the Vietnam War.

After a historical overview, specific types of air mechanised organizations are introduced, and the organizations of the two target periods are analysed through a comparison of their capabilities, focusing on the process of air mechanization.

### **1. A general overview of the development of airborne organisations**

In 1918, following the appearance of airplane and parachute capabilities, the establishment of paratroops was proposed by Colonel William Mitchell, a theoretician of the American Airforce. As a result, the first parachute battalions and regiments were set up between the two world wars, which were soon complemented by a new organisational form: The glider airborne unit.

During the Second World War, airborne troops were employed on a large scale, mainly by the American and British military. During this period, the focus was on the deployment of paratroops. Thus, the typical organisational form was the parachute division, but glider units

and other airborne elements also appeared. Airborne Special Operation Forces organizations, such as the SAS and Szpecnaz, inserted mainly paratrooper organisational elements into enemy territory. The American Marines also began to establish their parachute companies and they completed the first steps of air mechanisation as well; by the 1940s their glider organizations were able to airlift armoured fighting vehicles in a range of 8 – 20 tonnes to the theatre.<sup>2</sup> Airplane based airborne organizations were used mainly by the German military, which were developed all the way to division level (Luftland division).<sup>3</sup> By 1945, Ground Forces, the Marines and Special Operations Forces had become inseparable from Airborne organizations in the organizational structure of the developed military forces of the world.

However, due to the development of new air defence capabilities and the obsolescence of glider aircraft, airborne organizations were undergoing a decline by the 1950s. As a result of the emergence of modern air defence capabilities, the deployment of paratroopers had become increasingly risky, which caused a significant decrease in the proportion of parachute divisions and brigades by the next decade.

The next step in organisational development was facilitated by the appearance helicopters equipped with turbo propeller engines providing the organisers of airborne troops with a new tool, with the help of which the American military established the first helicopter based airmobile higher echelon unit (1st Air Cavalry – Air Mobile Division). The appearance of the helicopter had a fundamental impact on the military tactics of the American Marine force, and during the Vietnam War they established their airmobile organisations as well. The Soviet military set up its airmobile organisations during the Afghanistan intervention (1979 – 1988). Airmobile organisations went through a significant quantitative development process from the Vietnam War to the end of the Soviet – Afghan War (1968 – 1988). As a result of the development of turboprop helicopters, increased transport capacities and the construction of the CH-53 and Mi-26 models, an organisational development process called air mechanisation had emerged, which represented a qualitative change in airborne operations. It meant that the typically light infantry airborne organisations were transformed into a mechanised force in the

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<sup>2</sup> Hegedűs Ernő: A légideszantok fejlődése a második világháborúban és hatása napjaink légi gépesítési törekvéseire. Disszertáció, ZMNE KMDI, 2009.

<sup>3</sup> Turcsányi Károly - Hegedűs Ernő: A légideszant: 1. köt.: Elméletek, eljárások és a légi gépesítés a kezdetektől 1945-ig. Püedlo Kiadó, Debrecen, 2007.

developed military forces of the world.<sup>4</sup> The German military created the world's first armoured airmobile organisation, the airborne antitank battalion using the Wiesel light tank<sup>5</sup>. By that time, armoured vehicles had been widely used in both airmobile and airborne organisations in the Soviet military. The American military organised an airborne armoured battalion based on the Sheridan tank, and the establishment of air mechanised organisations had become paramount in the organisational development of airborne units in the coming decades. It is also typical of the establishment of airborne organisations that in the past 20 years only six airborne Stryker type wheeled armoured fighting vehicle brigades have been established in the American military as higher echelon units<sup>6</sup>.

## **2. The establishment of Airborne troops in World War II and the beginning of air mechanisation**

The first German parachute regiment was set up in April 1935. By 1938, the first airborne glider stormtrooper units had been established within the organizational structure of the paratroops. The 22nd Air Transport Division conducted exercises together with the paratroops in 1938. In 1939, the paratrooper forces were organised to a division level. In 1940, the 7th Parachute Division and 22nd Airborne Division were merged into the XI Airborne Corps. In 1943, the 22nd Airborne Division became fully mechanised.<sup>7</sup> In 1944, the 91st Luftland Mechanised Airborne Division was established.<sup>8</sup> They had the capability to airlift light armoured fighting vehicles by transport planes, and medium category armoured fighting vehicles by glider aircraft.

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<sup>4</sup> Grange – Wass – Liebert – Jarrot – Huber – Sparks: Air-Mech-Strike. Asymmetric Maneuver Warfare for the 21st Century. Turner Publishing Company, Paducah, 2002.

<sup>5</sup> Turcsányi Károly - Hegedűs Ernő: A légideszant: 2. kötet: Ejtőernyős-, helikopteres- és repülőgépes deszantok a modernkori hadviselésben: 1945-2010. Püedlo Kiadó, Debrecen, 2011.

<sup>6</sup> Turcsányi Károly - Hegedűs Ernő: A légideszant: 2. kötet: Ejtőernyős-, helikopteres- és repülőgépes deszantok a modernkori hadviselésben: 1945-2010. Püedlo Kiadó, Debrecen, 2011.

<sup>7</sup> Roger Edwards: German Airborne Troops 1936-1945. Garden City, Doubleday, 1974. 62. o.

<sup>8</sup> Bruce Quarrie: Das Grosse Buch der Deutschen Heere im 20. Jahrhundert. Podzun-Pallas, Friedberg, 1990. 121. o.

In the American military, in 1941 a parachute battalion started to conduct exercises together with an airborne infantry battalion established in the same year, and the first Marine parachute battalion was organised as well. In 1943, the American airborne division was set up, and in 1944 three additional airborne divisions were created. In August 1944, divisions in the European theatre were organised into an airborne corps.

The parachute divisions were reinforced with artillery regiments transported by gliders, the light guns of which were towed by light military trucks.<sup>9</sup>

In the British military, two airborne brigades were established in 1941. One brigade consisted of parachute battalions, while the other was organised as a glider unit. The most mobile organisational element of the division was the glider armoured reconnaissance regiment, which consisted of an armoured battalion with 22 light battle tanks, an armoured reconnaissance battalion with 25 armoured vehicles, a mechanised infantry battalion with 25 armoured personnel carriers (Bren Carrier), and a motorcycle and light truck reconnaissance company.

The Soviet airborne troops were organised into six brigades in 1938. The organisation of the airborne brigade was divided into three parts in 1940: A parachute, a glider and air transport group with two – two battalion size forces, where each group had a signal, reconnaissance and a motorcycle company.<sup>10</sup> The air transport groups were reinforced by an armoured company with 11 pieces T – 38 battle tanks.

The Soviet airborne corps, organised in 1941, consisted of three brigades. The corps was supported by an independent armoured battalion, which consisted of three armoured companies with 50 pieces T – 37 light battle tanks. A reconnaissance platoon equipped with armoured trucks and a platoon equipped with sidecar motorcycles were also part of the armoured battalion's organisation. The light battle tanks were airlifted by TB – 3 transport aircraft and they were delivered using the landing method.

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<sup>9</sup> Uo. 218. o.

<sup>10</sup> Glantz, David M.: The Soviet Airborne Experience. Combat Studies Institute, Fort Leavenworth, 1984. 21. o.

### 3. Mechanised airborne organisations since the 1980s

In the 1980s, the American 82nd Airborne Division was organised into five brigades: four airborne brigades and an airmobile brigade. The merger of the forces of the 82nd Airborne Division with mechanised units was made possible by the fact that by 1991 the Division had become fully mechanised with light (airportable, parachutable) wheeled vehicles, so they had 3200 vehicles in total, including 1400 HMMWV military trucks, LAV – 25 wheeled reconnaissance fighting vehicles, and an armoured division equipped with 56 Sheridan light battle tanks.

Since the 1980s, the highest organisational element of German airborne troops has been the airborne division. For the deployment of the elements of the division C -160 type transport aircraft, CH – 53 heavy and UH – 1 light transport helicopters are used. The Wiesel fighting vehicles have been organised into a parachute anti-tank battalion.<sup>11</sup> The anti-tank battalion consists of a support platoon with 1 Wiesel fighting vehicle and 1 command vehicle, and three anti-tank companies each equipped with 3 Wiesel fighting vehicles with anti-tank missiles, 2 Wiesel fighting vehicles with machine guns, and 2 ammunition transport vehicles. 37 of the fighting vehicles of the battalion are equipped with anti-tank missiles and 24 of them are with machine guns, so altogether there are 61 Wiesels in service.<sup>12</sup>

The British airborne battalion has about 5000 personnel, and it was established at the end of the 1970s with one HQ company, three parachute companies, one airmobile company, a light armoured battalion equipped with Scorpion, Scimitar, Spartan and Stryker fighting vehicles, a parachute artillery battalion, an airborne engineer battalion and three helicopter battalions. Since 1981, the Scorpion light tank equipped with a 90mm gun has provided a capability against limited armoured targets at the light armoured battalion.

The Artillery Battalion, equipped with 24 105mm guns, was re-equipped with LW 155 type 155mm light guns in 2003.<sup>13</sup> The

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<sup>11</sup> Reinhard Marek: Ejtőernyős páncélelhárító zászlóalj. Truppenpraxis, 1992. évi 6. sz.

<sup>12</sup> Wolfgang Mettler: The German Airborne Antitank Battalion and the Wiesel Armored Weapon Carrier. Infantry, 1995. 1.

<sup>13</sup> Daniel T. Head: The 2<sup>nd</sup> Parachute Battalion's War in the Falklands. Armor, 1999. 2. 9. o.

transportation of the anti – tank equipment of the battalion and the towing of the light infantry is supported by 44 Supacat light vehicles.

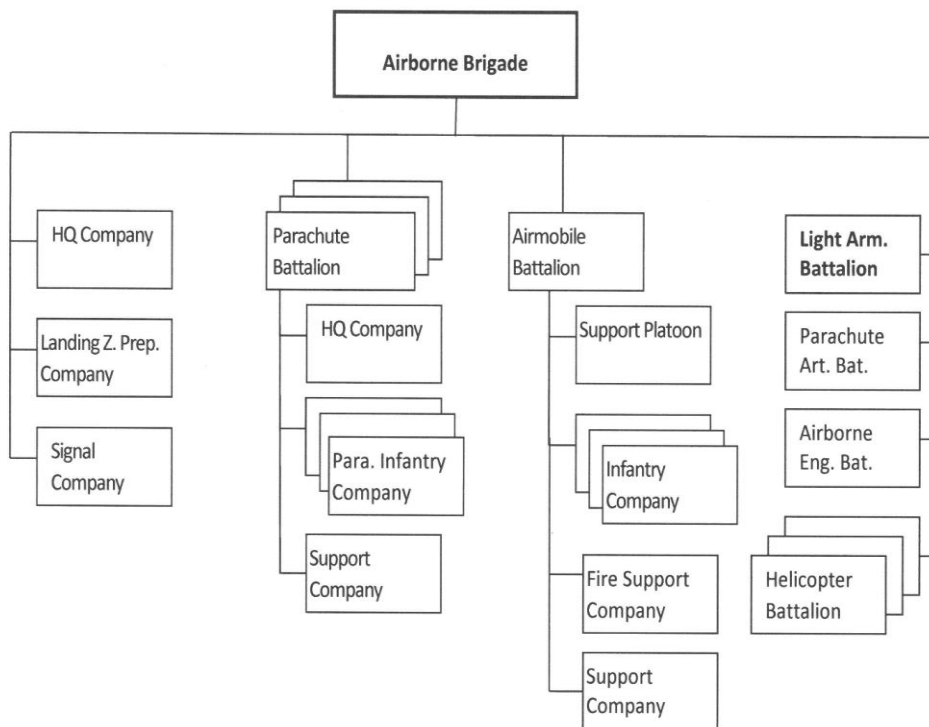


Figure 1. The British Airborne Brigade (1982)

The Soviet military had 5 operational airborne divisions and 9 airborne brigades in 1985, which were later mechanised with BDM and BRDM armoured fighting vehicles. The airlift and delivery of the 2600 strong Soviet airborne brigade is done by helicopters using the landing method. The organisation consists of a brigade staff, four airborne battalions, one anti – tank artillery battalion, an armoured reconnaissance company equipped with 4 BRDM armoured reconnaissance light fighting vehicles, an anti – tank battery equipped with 9 BRDM anti – tank missile carriers, an air defence artillery battery and other support elements.

Two of the airborne battalions have parachute capabilities to ensure the rapid deployment of a large number of troops, which, with the exception of the light military vehicles, are not mechanised. Both of the other two battalions are equipped with 64 BMD fighting vehicles. The airlift of the 8000 strong airborne division is done mainly by airplanes with the help of parachutes. The organisation of the division consists of three parachute infantry regiments, a parachute artillery regiment,

an anti – tank artillery battalion, an engineer and signal battalion, a reconnaissance company equipped with 9 BRDM armoured reconnaissance fighting vehicles, an air defence artillery battalion and other support elements. The parachute regiment has been mechanised with 105 armoured fighting vehicles and 13 BRDM armoured reconnaissance fighting vehicles.

The American Objective Force program, launched in 1992, aimed to establish mobile forces through the development of mechanised airborne organisations, which target was to be reached after 2010.<sup>14</sup> During this program, the decision was made to establish an airborne battalion equipped with mid - sized fighting vehicles which could be airlifted to any part of the world in order to provide second echelon reinforcement for airborne divisions. Presently, this function is performed by the Stryker Brigade Combat Team. The Stryker Brigades can be transported by C 130 Hercules transport aircraft.

So far, six such combat teams have been set up. The Stryker Airborne Brigade consists of three mechanised infantry battalions, an armoured reconnaissance battalion, a Howitzer artillery battalion, a support battalion, and an anti – tank, a signal and an engineer company. The airborne mechanised infantry battalion comprises an HQ Company composed of a reconnaissance, signal and heavy mortar platoon, three infantry companies, a 105mm self – propelled artillery company and a mortar squad. The armoured reconnaissance battalion is made up of three armoured reconnaissance companies. The reconnaissance companies are composed of three armoured reconnaissance – target acquisition platoons, a longrange reconnaissance platoon with a radar platoon including UAV and CBRN reconnaissance elements, and a heavy mortar platoon.

## Summary and conclusions

Airborne organisations experienced the most dynamic growth and development during the Second World War between 1939 and 1945. In addition to paratroops, glider airborne troops were also established during this period. Considerable efforts were made to achieve the mechanisation of these troops, and part of their transport vehicles were made suitable for conducting airborne operations in the theatre.

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<sup>14</sup> Owen, R. C. – Fogg, T. A.: Air Mobility Command and the Objective Force: A Case for Cooperativ Revolution. Military Review, 2001. 1. sz. 11. o.



During the period between 1945 and 1968, airborne organizations lost from their significance, mainly due to dynamic developments in the field or air defence.

Airborne troops have experienced a revival and undergone a second dynamic development phase between 1968 and 2020 with the emergence of airmobile organisations. By the end of the 1960s, based on high performance helicopters, a detailed airmobile methodology had been developed and the first airmobile organisations had been established.

Beginning in the 1980s, airborne armoured divisions were organised again in the British (Scorpion tank), American (Sheridan tank) and German (Wiesel tank) military. The Soviets used infantry fighting vehicles (BMD) to mechanise their airborne organisations, and the Americans set up airborne Stryker brigades after the turn of the millennium.

Altogether it can be concluded that a study of the organisational development of airborne organisations should be based on two periods: The time of the Second World War and the age of modern warfare (from the Vietnam War to the present).

The reason for that is that during the Second World War as well as in modern times, the technological development of military assets used by airborne organisations resulted from air mechanisation, the main elements of which were and still are airtransportable vehicles and fighting vehicles and air transport vehicles capable of landing in the theatre.<sup>15</sup> Air mechanisation, which transformed airborne organisations into mechanised organisations, was realised during two main periods resulting from the availability of the air transport capacities required.

The airlift of fighting vehicles to the theatre was made possible by glider aircraft between 1939 and 1945, and the same capability was provided again by the emergence of helicopter based air mobility after the Vietnam War.

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<sup>15</sup> Hegedűs Ernő: A légideszantok fejlődése a második világháborúban és hatása napjaink légi gépesítési törekvéseire. Disszertáció, ZMNE KMDI, 2009, 130 p. PhD tézis.

AIR MECHANISATION IN THE DEVELOPED MILITARY FORCES  
BETWEEN 1939 - 2020

Table 1.

	<b>Air mechanisation</b>	
	<b>1939-1945</b>	<b>1980-2020</b>
<b>German military</b>	„Luftland” Airborne Division	German Airborne Brigade Wiesel Anti-tank Armoured Bat.
<b>British military</b>	Airborne Brigade Armoured Rec. Regiment	British Airborne Brigade Scorpion Light Armoured Bat.
<b>American military</b>	Light Artillery of Glider Artillery Regiment and tow trucks	(1.) Airborne Division Sheridan Armoured Battalion; (2.) Stryker Airborne Brigade
<b>Soviet/Russian military</b>	Soviet Airborne Corps Independent Armoured Battalion	Airborne Brigade and Division BMD fighting vehicles

Air mechanisation as a form of organizational development was accomplished mainly in two periods: 1939-1945 and 1980-2020. The change in airborne capabilities is illustrated by Figure 2.

Based on the above, the following can be concluded with regard to the development of airborne organisations from the aspect of air mechanisation:

1. Air mechanisation started in 1939 with the introduction of high transport capacity, heavy duty glider aircraft, but this process came to a halt with the withdrawal of gliders from service in 1945 (Figure 2). In the 1980s, an increase in transport capacities gave air mechanisation as a form of airborne organisational development process a new momentum (Table 1).
2. The trend line in Figure 2 and a study of the organisations listed in Table 1 confirm that air mechanisation has been the main driving force behind the organisational development of airborne troops.
3. Air mechanisation as an organisational development process experienced an intensive growth in two main periods (1939-1945; 1980-2020) resulting from the availability of safe combat air transport capacities.

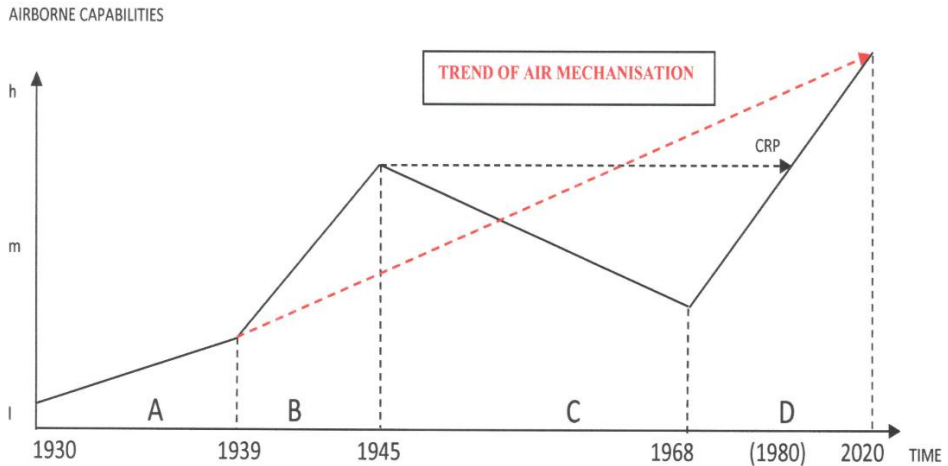


Figure 2. Time periods and tendencies in the change of airborne capabilities (1930-2020)

- A establishment of airborne units: the age of airborne infantry organisations;
- B dynamic development of airborne organisations, the beginning of air mechanisation;
- C crisis of airborne organisations;
- D dynamic development of airborne military assets and their application;
- CRP capability replacement point: the second phase of air mechanisation;
- h high capability level;
- m medium capability level;
- L low capability level.

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